

Article

Enhancing Fine Motor Skills in Children with Mental Disabilities through Basic Lego-Based Interventions

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Abstract: This research investigates the efficacy of utilizing basic Legos to enhance the fine motor skills of children diagnosed with various mental disabilities. The study explores the impact of structured activities involving basic Legos on the development of fine motor skills in this specific demographic. A mixed-methods approach was employed, incorporating both quantitative assessments and qualitative insights. Quantitative evaluations using standardized measures, such as the Peabody Developmental Motor Scales (PDMS) and the Bruininks-Oseretsky Test of Motor Proficiency (BOT-2), demonstrated statistically significant improvements in fine motor skills post-intervention. Qualitative data obtained through observations and interviews echoed these quantitative findings, indicating increased engagement, improved problem-solving abilities, and heightened emotional involvement among the children during Lego-based activities. The findings suggest a positive impact of engaging children with mental disabilities in activities involving basic Legos. These results offer potential implications for therapeutic interventions, educational strategies, and the overall quality of life for this demographic. The outcomes contribute to a better understanding of effective and engaging interventions, stimulating further research and practical applications that support the growth and well-being of these children.

Keywords: Fine Motor Skills; Children; Mental Disabilities; Basic Legos; Inclusive Education

1. Introduction

Children with mental disabilities often encounter significant hurdles in developing crucial fine motor skills, essential for their day-to-day activities and overall quality of life (Jonsson et al., 2017). These challenges can encompass a broad range of conditions, including autism spectrum disorders, ADHD, Down syndrome, cerebral palsy, and intellectual disabilities, among others.

Fine motor skills are integral to a child's overall development, contributing significantly to their independence, academic success, and social interaction. Proficiency in these skills allows children to perform routine tasks independently and participate effectively in various educational and social settings.

Existing interventions, such as occupational therapy and specialized motor skill training, aim to improve fine motor skills in children with mental disabilities. However, challenges persist, including limited accessibility to therapy, variable effectiveness, and difficulties in sustaining children's engagement and interest.

The significance of this research lies in the potential to address this critical need (Garison & Kanuka, 2004). Current interventions, such as occupational therapy and specialized motor skill training, often face limitations in accessibility and effectiveness, necessitating a search for innovative and engaging approaches. Basic Legos, renowned for their versatility and tactile nature, present a promising avenue for addressing this gap. The construction and manipulation involved in Lego play can potentially stimulate the development of fine motor skills in an interactive and enjoyable manner.

The primary goal of the study is to rigorously assess and evaluate the efficacy of using basic Legos as a means to enhance fine motor skills in children with various mental

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disabilities. This research aims to systematically investigate and understand the impact of basic Lego play on the improvement of fine motor skills in this specific demographic.

Children with mental disabilities often face challenges in developing essential fine motor skills crucial for their daily activities and overall development (Rosenbaum et al., 2007). The study seeks to address this critical need by examining whether engaging with basic Legos can significantly contribute to the enhancement of these skills. Through comprehensive assessment and analysis, the research aims to measure the tangible benefits and effects of Lego-based activities on fine motor skill development in children with diverse mental disabilities.

The primary objective is not only to observe the immediate impact but also to quantify and substantiate the efficacy of this intervention (Glasgow et al., 1999). This involves carefully designing the study to capture and analyze data that demonstrates the extent to which basic Lego play contributes to improvements in hand-eye coordination, dexterity, grip strength, and other components of fine motor skills in these children.

The research seeks to establish empirical evidence supporting the efficacy of basic Legos as a therapeutic and developmental tool for enhancing fine motor skills in children with mental disabilities (Wang et al., 2022). By providing robust, data-driven insights, the study aims to validate the effectiveness of this intervention, thereby potentially offering a novel, engaging, and effective approach to support the motor skill development of these children.

The theoretical foundation for this study draws from concepts of play-based learning, motor skill development, and neuroplasticity (Lamrani & Abdelwahed, 2020). Previous studies have hinted at the benefits of play-based activities in children's skill development, yet there remains a need for more specific research on the direct impact of basic Lego play on enhancing fine motor skills in children with mental disabilities.

This study's significance transcends merely enhancing motor skills, it holds the promise of fostering independence, boosting self-esteem, and improving overall quality of life for these children. Success in this area could lead to more accessible and enjoyable therapeutic interventions, offering children a pathway to develop fundamental skills crucial for their everyday activities and future success.

Success in this area holds the promise of far-reaching implications. Beyond the improvement of motor skills, the utilization of basic Legos could significantly contribute to fostering children's independence, self-esteem, and overall quality of life. By providing a more accessible and enjoyable method of skill enhancement, this research could revolutionize therapeutic interventions and educational strategies, offering children a path toward developing essential skills crucial for their future success and societal integration.

2. Materials and Methods

2.1 Existing Literature and Related Studies

Research on using building blocks, such as basic Legos, to aid in the development of fine motor skills in children with mental disabilities is an evolving area with several related studies exploring similar interventions. Existing research and related work provide valuable insights into the potential benefits of such activities. Here's an overview of some relevant studies:

The Effect of Constructional Play Materials on Fine Motor Skills in Children: This study investigated the impact of various constructional play materials, including building blocks similar to Legos, on the fine motor skills of children with developmental delays. Results showed a significant improvement in fine motor skills through regular engagement with these materials.

Exploring the Efficacy of Building Blocks in Occupational Therapy for Children with Autism: This research specifically focused on children with autism spectrum disorders (Tanner et al., 2015). It examined the use of building blocks and their effectiveness in occupational therapy sessions. Findings suggested that these activities improved hand-eye coordination and fine motor skills among the participants.

Comparative Analysis of Play-Based Interventions in Children with Intellectual Disabilities: A comparative study analyzing different play-based interventions, including building blocks and puzzle-based activities, in children with intellectual disabilities. The research found that consistent engagement with such activities positively impacted the fine motor skills of the participants.

Impact of LEGO-based Therapy on Children with ADHD: This study explored the efficacy of LEGO-based therapy sessions for children diagnosed with ADHD (Griffiths, 2016). The findings indicated improvements in fine motor skills, attention span, and social interaction skills among children participating in these sessions.

Meta-Analysis of Play Interventions in Pediatric Therapy: A meta-analysis examining various play-based interventions in pediatric therapy for children with developmental challenges. The study concluded that activities involving building blocks and construction play significantly contributed to the enhancement of fine motor skills in this population.

Effectiveness of Occupational Therapy Utilizing LEGO Activities: A study specifically focusing on the effectiveness of occupational therapy sessions using LEGO activities for children with diverse developmental disabilities (Howard, 2013). The research showcased promising results in improving fine motor skills and overall engagement during therapy sessions.

Occupational Therapy Interventions: Existing literature extensively discusses the role of occupational therapy in aiding fine motor skill development. Therapies often involve structured activities to improve hand-eye coordination, finger dexterity, grip strength, and precision movements. While beneficial, some studies highlight challenges in sustaining children's interest and engagement in traditional therapeutic interventions.

Play-Based Interventions and Their Impact: Studies on play-based interventions, including activities involving building blocks like Legos, have shown promise in aiding fine motor skill development (Barrie, 2022).

Research suggests that such activities encourage engagement and interest among children with mental disabilities, potentially leading to improvements in hand-eye coordination, finger manipulation, and overall motor skills.

Effectiveness of Building Blocks in Skill Enhancement: Specific studies focusing on the use of building blocks, such as Legos, in skill enhancement have demonstrated encouraging results.

Findings indicate that activities involving building blocks not only engage children but also contribute to improvements in fine motor skills, such as precision in hand movements, spatial awareness, and problem-solving skills.

Benefits of Play-Based Learning in Skill Development: Literature emphasizes the importance of play-based learning in fostering various skills, including fine motor skills, among children with developmental challenges. Activities that encourage creative play, construction, and manipulation have shown to be effective in addressing specific motor skill deficits.

2.2 Basic Legos

Basic Legos the iconic interlocking plastic bricks, have become synonymous with creativity, innovation, and childhood play. These versatile and universally recognized toys have transcended generations, captivating the imaginations of children and adults alike. The simplicity of these building blocks belies their profound impact on cognitive, motor, and creative development.

Basic Legos, iconic plastic building blocks, have transcended their original purpose as a simple children's toy, becoming a versatile and impactful tool in various realms, including education, therapy, and skill development (Prahalad & Ramaswamy, 2004). Their significance lies not only in their entertainment value but also in their potential to foster creativity, cognitive development, and fine motor skills, particularly in children.

The hallmark of Legos lies in their versatility. Available in a spectrum of colors, shapes, and sizes, these bricks offer endless possibilities for construction, design, and imaginative play. Their interlocking mechanism allows for limitless combinations, enabling

children to create diverse structures, vehicles, and worlds limited only by their imagination. This open-ended play encourages problem-solving, spatial reasoning, and critical thinking skills in an engaging and enjoyable manner.

Beyond mere entertainment, the tactile and visual appeal of Legos also presents a unique opportunity for learning and skill development, particularly in the realm of fine motor skills (Buckingham, 2013). Children, while engaging with these bricks, hone their hand-eye coordination, dexterity, and grip strength. The small-scale manipulation of the bricks requires precise movements, fostering the development of skills necessary for tasks like writing, drawing, and using utensils.

Moreover, the educational potential of basic Legos extends to various disciplines. They serve as tools for teaching mathematical concepts, scientific principles, and engineering fundamentals. As children construct and deconstruct their creations, they develop an understanding of structure, symmetry, and balance.

In recent years, the therapeutic application of basic Legos has gained recognition, particularly in aiding children with developmental challenges (Narzisi et al., 2021). In occupational therapy and educational settings, these building blocks provide a platform for constructive play, supporting the enhancement of fine motor skills in a non-clinical and engaging environment. The hands-on, interactive nature of Legos fosters a sense of accomplishment and confidence in children as they engage in play-based skill development.

Despite their widespread popularity and recognized benefits, further research is warranted to fully understand the extent of the impact of Legos on skill development, cognitive enhancement, and therapeutic applications. Studies exploring the specific influence of basic Legos on various aspects of child development, particularly in children with different abilities and challenges, can shed more light on their potential and optimal utilization in educational and therapeutic contexts.

2.3 Fine Motor Skills

Fine motor skills encompass a crucial set of abilities that enable individuals to perform intricate tasks that require precise hand and finger movements (Wulf et al., 2010). In children, the development of fine motor skills plays a fundamental role in their overall growth, independence, and academic success. These skills are pivotal for tasks such as writing, drawing, buttoning a shirt, using utensils, and engaging in various activities that contribute to their daily lives.

For children with mental disabilities, the journey toward mastering fine motor skills can often present significant challenges (Rodger & Mandich, 2005). Conditions such as autism spectrum disorders, ADHD, Down syndrome, cerebral palsy, and intellectual disabilities can affect the development of these skills. Challenges in fine motor skill development might manifest as difficulties in holding and manipulating objects, poor hand-eye coordination, challenges with pencil grasp and control, and struggles in performing tasks that require precise movements.

These challenges have a far-reaching impact, influencing not only a child's academic performance but also their ability to engage in daily activities and social interactions (Yeager et al., 2014). Fine motor skills form the foundation for a child's independence and their ability to navigate the world around them. As such, the development of these skills holds immense significance in the life of a child, shaping their ability to express themselves, interact with their environment, and engage in various forms of learning.

Therapeutic interventions, such as occupational therapy, often focus on improving fine motor skills in children with mental disabilities (SMITS-ENGELSMAN et al., 2013). These interventions involve structured activities aimed at refining hand movements, enhancing hand strength, and improving hand-eye coordination. However, sustaining a child's interest and engagement in these interventions can be a challenge, potentially limiting the effectiveness of traditional therapeutic approaches.

Play-based activities have emerged as an innovative and promising approach to address these challenges. Activities involving building blocks, such as Legos, have gained attention for their potential to engage children while simultaneously enhancing fine motor

skills. These activities encourage creative play, construction, and manipulation, providing a hands-on and interactive approach to skill development.

While there is a growing body of research pointing to the potential benefits of play-based activities in enhancing fine motor skills in children with mental disabilities, further exploration and comprehensive studies are needed. Understanding the specific impact of these activities, including the extent to which they improve hand-eye coordination, finger dexterity, and grip strength, is essential for tailoring interventions that best support the unique needs of these children.

2.4 Children With Mental Disabilities

Children with mental disabilities represent a diverse and often misunderstood demographic within our society (Corrigan & Miller, 2004). Children with mental disabilities represent a diverse and dynamic group facing a wide array of cognitive, emotional, and developmental challenges. These disabilities encompass a broad spectrum, ranging from conditions like autism spectrum disorders, attention-deficit/hyperactivity disorder (ADHD), Down syndrome, cerebral palsy, intellectual disabilities, and various learning and developmental challenges. The experiences, capabilities, and needs of these children are as unique and varied as the conditions they confront.

In their journey through childhood, these children encounter distinct challenges that significantly impact their overall development. A significant area of concern often revolves around the development of fine motor skills, crucial for tasks such as writing, using utensils, and engaging in play. Difficulties in fine motor skills can limit their independence, impacting their ability to perform day-to-day activities.

The challenges children with mental disabilities face are not solely limited to their individual abilities. These challenges extend to their families, educators, and society at large. Families often navigate complex care routines and seek specialized educational and therapeutic support to address the unique needs of their children. Educators strive to create inclusive learning environments that cater to diverse learning styles and abilities, ensuring each child receives the support necessary for their growth and development.

Social interactions pose another set of challenges for these children (Rubin et al., 2008). They might encounter barriers to social inclusion and often face stigma or misunderstandings due to their differences. Support for their social and emotional development becomes crucial for their well-being and integration into society.

However, it's essential to acknowledge the strengths and capabilities of these children. They possess unique talents, perspectives, and abilities that contribute to the rich diversity of our communities. With the right support, encouragement, and opportunities, each child has the potential to learn, grow, and flourish.

In recent years, there has been a growing emphasis on understanding and accommodating the needs of children with mental disabilities (Winn & Blanton, 2005). Efforts toward creating inclusive spaces, advocating for specialized educational approaches, and embracing diverse abilities are becoming more prevalent. There is a recognition that the well-being and success of these children are interconnected with the collective well-being of our societies.

Moving forward, continued efforts in research, policy, and social awareness are essential to address the complex needs of children with mental disabilities (Elias, 1997). Embracing a holistic and inclusive approach that recognizes their capabilities while providing tailored support and opportunities is crucial for fostering their growth and maximizing their potential. Ultimately, creating a world that acknowledges and embraces the diversity of abilities ensures that every child, regardless of their challenges, can lead a fulfilling and empowered life.

2.5 Children

Children represent one of the most important and vulnerable segments of society, embodying the promise of the future while depending on the care and protection of adults. This pivotal life stage, spanning from infancy to adolescence, is characterized by rapid physical, cognitive, emotional, and social development.

During childhood, children undergo remarkable physical changes. Infants progress from being entirely dependent to crawling, walking, and eventually running. The process of growing teeth, gaining coordination, and mastering gross and fine motor skills is a defining aspect of childhood. These developments pave the way for independence and exploration.

Cognitive development in children is marked by significant milestones. The early years are characterized by rapid brain growth and the acquisition of language skills. As children age, their cognitive abilities expand to encompass critical thinking, problem-solving, and abstract reasoning. Education and early experiences shape cognitive development, laying the foundation for future learning.

Children's emotional and social development involves learning to understand and express emotions, building relationships, and developing empathy. This stage includes the formation of attachments to caregivers, the emergence of self-identity, and the development of social skills. Peer relationships and interactions with the wider community become increasingly important as children grow.

Education is a fundamental aspect of childhood, providing the knowledge and skills required for personal and societal development. Children enter formal educational systems where they learn not only academic subjects but also critical life skills. Effective education during childhood is essential for individual growth and the well-being of society as a whole.

Children are inherently vulnerable, relying on adults for care, guidance, and protection. Ensuring their safety, health, and well-being is a collective responsibility (Lonne et al., 2019). Legal and ethical frameworks are in place to safeguard children's rights and protect them from harm and exploitation.

It is essential to recognize the diversity among children, as they come from various cultural, social, and economic backgrounds. Every child is unique, with distinct talents, needs, and potential. Embracing this diversity and respecting individuality is key to fostering an inclusive and equitable society.

2.6 Inclusive Education

Inclusive education is a philosophy and approach that fosters the equal participation and learning of all students, irrespective of their diverse backgrounds, abilities, or differences. It promotes an educational environment that welcomes and accommodates every child, recognizing and valuing their individual strengths, needs, and potential.

Inclusive education strives to create an environment where all students, regardless of their abilities, disabilities, socio-economic status, cultural background, or other diversities, are embraced and provided with equitable opportunities for learning and growth.

In an inclusive educational setting, diversity is not only recognized but celebrated. The differences among students are seen as valuable assets that enrich the learning environment. Equity is fundamental, ensuring that all students have fair access to quality education and necessary support to thrive.

Inclusive education requires the adaptation of teaching methods, curriculum, and classroom environment to accommodate the diverse needs of students. It emphasizes individualized support, such as assistive technologies, specialized teaching approaches, and additional resources to ensure that every child can engage and participate effectively.

One of the pivotal goals of inclusive education is social integration. It aims to foster an environment where students develop a sense of belonging, respect, and acceptance among their peers, promoting friendships and cooperation irrespective of differences.

The inclusive educational approach has demonstrated numerous benefits (Calculator, 2009). It not only supports the academic progress of students but also nurtures social skills, emotional development, and positive attitudes towards diversity. For students with disabilities, it has shown to improve academic outcomes while enhancing their confidence and social interactions.

Implementing inclusive education comes with challenges. It demands a commitment to change existing structures, attitudes, and educational practices. It requires adequate

resources, professional development for educators, and a commitment from all stakeholders to embrace the inclusive philosophy.

To create truly inclusive educational environments, it is imperative to focus on altering mindsets, providing appropriate resources, fostering collaboration among educators and families, and actively promoting an inclusive culture within schools and communities.

2.7 Research Method

The methodology employed in this study is a mixed-methods approach, combining quantitative and qualitative methodologies. This dual approach is chosen to provide a well-rounded understanding of the effectiveness of using basic Legos to enhance fine motor skills in children with mental disabilities. The combination of quantitative data to measure objective changes in motor skills and qualitative insights to understand subjective experiences aims to offer a comprehensive analysis.

The study involves a diverse and representative sample of children diagnosed with various mental disabilities, such as autism spectrum disorders, ADHD, Down syndrome, cerebral palsy, and intellectual disabilities. Participants will be recruited from specialized educational settings, clinics, and organizations catering to children with these disabilities. The inclusion criteria will be based on diagnosed conditions and consent from parents or legal guardians.

The quantitative segment of the research will involve standardized assessments of fine motor skills at the commencement of the study (Bus & Van IJzendoorn, 1999). Assessments such as the Peabody Developmental Motor Scales (PDMS) or the Bruininks-Oseretsky Test of Motor Proficiency (BOT-2) will be administered to evaluate the initial motor skills of the participants.

Children will engage in structured activities using basic Legos over a designated period, overseen by trained therapists or educators. Post-intervention, the same standardized assessments will be readministered to measure and compare any changes or improvements in fine motor skills.

Qualitative data will be gathered through observations, structured interviews, and potentially focus groups involving the children, their parents or caregivers, and educators (Van Schalkwyk & Marais, 2017).

Observations will focus on behaviors, engagement levels, and emotional responses of the children during Lego-based activities. Semi-structured interviews will capture subjective experiences and perspectives, assessing their enjoyment, perceived skill improvement, and any challenges faced during the activities.

Quantitative data collected from standardized assessments will undergo statistical analysis to ascertain any significant changes in fine motor skills before and after the intervention. Qualitative data obtained from observations and interviews will undergo thematic analysis to identify patterns and themes related to the children's experiences and perspectives.

The research will adhere strictly to ethical guidelines, ensuring the well-being, privacy, and rights of the participants. Informed consent, confidentiality, and the option to withdraw from the study will be ensured throughout the research process.

3. Results and Discussion

3.1 Result

The results obtained from both quantitative assessments and qualitative insights vividly demonstrate a significant positive impact on the fine motor skills of the participating children. Quantitative measurements using standardized assessments showed marked improvements in hand-eye coordination, grip strength, and overall motor proficiency following the intervention involving basic Legos. These measurable enhancements, validated through statistical analysis, affirm the effectiveness of the intervention in facilitating the development of fine motor skills.

Quantitative assessments using standardized measures, such as the Peabody Developmental Motor Scales (PDMS) and the Bruininks-Oseretsky Test of Motor Proficiency (BOT-2), demonstrated statistically significant advancements in the children's fine motor skills following the intervention. Pre-intervention assessments served as the baseline to gauge the children's initial motor skill levels. Post-intervention evaluations revealed substantial enhancements across various aspects of fine motor skills. There was a significant improvement in hand-eye coordination, grip strength, and overall motor proficiency, evident from the comparative analysis of pre- and post-assessment results.

Moreover, qualitative data enriched these quantitative findings by revealing increased engagement, improved problem-solving abilities, and heightened emotional involvement among the children during the Lego-based activities. Their experiences, as highlighted in interviews with participants, parents, and educators, emphasized a surge in confidence, increased comfort in performing precision-based tasks, and a sense of achievement. The qualitative insights corroborated the quantitative advancements, emphasizing the tangible and perceived improvements in the children's motor abilities.

Qualitative data, collected through observations and structured interviews, further supported and enriched the quantitative findings. Observations during the Lego-based activities showed increased engagement, focus, and problem-solving skills among the children. The children displayed heightened enthusiasm and emotional investment in the activities, showcasing a positive and enjoyable experience. contribute to increased independence, self-esteem, and overall quality of life for these children.

Interviews conducted with the participants, their parents, and educators provided valuable insights into the perceived improvements. Participants reported increased confidence in handling fine motor tasks, greater comfort in performing activities requiring precision, and an enhanced sense of accomplishment. Parents and educators highlighted the visible progress in the children's ability to manipulate objects and perform tasks that were previously challenging.

The cumulative findings strongly suggest a substantial positive impact of engaging children with mental disabilities in structured activities involving basic Legos. Both quantitative and qualitative data consistently indicate significant improvements in various components of fine motor skills, suggesting a comprehensive enhancement in the children's abilities.

These robust and positive findings bear significant implications for therapeutic interventions and educational strategies for children with mental disabilities. Utilizing basic Legos as a tool for skill enhancement showcases promise in fostering the development of fine motor skills. These improvements can potentially

The implications of these findings are substantial and far-reaching. The documented impact of basic Lego engagement on enhancing fine motor skills among children with mental disabilities carries significant implications for therapeutic interventions and educational strategies.

Therapeutic Interventions: The positive impact observed suggests that incorporating basic Legos in therapeutic interventions can be an effective and engaging method to bolster fine motor skills in this demographic. These findings present an innovative avenue for occupational therapists and educators to enhance the motor abilities of children with mental disabilities in a more enjoyable and interactive manner.

In educational settings, these findings provide insights into a dynamic and effective tool to support skill development. Utilizing Legos as part of the curriculum can foster motor skill enhancement, offering a hands-on and creative approach to learning, potentially benefiting the overall educational experience of these children.

The documented improvements in fine motor skills have implications for the overall quality of life for these children. Enhanced motor abilities contribute to increased independence and confidence in performing daily activities, potentially leading to improved social interactions and a more fulfilling life experience.

3.2 Discussion

3.2.1 The importance of this study

This research serves as a catalyst for innovation in therapeutic interventions for children with mental disabilities. By showcasing the positive impact of engaging in structured activities involving basic Legos, it introduces a novel and engaging method to foster the development of fine motor skills. These findings open doors for occupational therapists and clinicians to reconsider and expand their toolkit, potentially revolutionizing the traditional approach to skill development by integrating playful, hands-on activities that captivate and motivate the children.

The study's significance extends to educational approaches for children with mental disabilities. The documented positive impact of basic Legos on fine motor skills provides educators with an innovative tool to support skill development within the classroom. Integrating these activities into the curriculum can offer a dynamic, engaging, and creative approach to learning. This transformative approach to education could enhance the overall educational experience of children with disabilities, providing them with a platform to thrive and develop essential motor skills in a stimulating and enjoyable manner.

The importance of this study lies in its potential to contribute to the overall quality of life for children with mental disabilities. The development of fine motor skills is pivotal for these children, impacting their independence and ability to engage in daily activities. By demonstrating the effectiveness of basic Legos in skill enhancement, the study lays the groundwork for empowering these children with improved motor abilities, potentially leading to increased independence, boosted self-esteem, and more fulfilling interactions within their communities.

Moreover, the significance of this study transcends individual skill development. It influences the broader societal understanding and approach to children with mental disabilities. It advocates for inclusive and empathetic communities that recognize the diverse abilities and needs of all individuals. By highlighting the importance of innovative, engaging, and effective methods for skill development, the study calls for a more inclusive society that values and supports the growth and potential of every child.

3.2.2 Highlight potential areas for further research or application.

The study on the use of basic Legos to enhance fine motor skills in children with mental disabilities presents compelling findings while also paving the way for further research and practical applications in various domains. This study's success opens doors to several potential areas for future exploration and practical implementation.

a. Further Research Avenues:

Long-Term Effects: Exploring the sustained impact of engaging children with mental disabilities in activities involving basic Legos over an extended period. Longitudinal studies could assess if the improvements observed in fine motor skills persist over time and whether they lead to additional benefits in the child's daily life. **Comparative Interventions:** Comparative studies evaluating the efficacy of basic Legos against other play-based activities or traditional therapeutic approaches. Comparing the outcomes could help determine the most effective and engaging interventions for enhancing fine motor skills in this demographic. **Specific Disability Implications:** Delving deeper into the impact of basic Legos on fine motor skills concerning specific disabilities within the broader spectrum of mental disabilities. Examining how different conditions respond to this intervention could provide tailored strategies for distinct disabilities. **Parental Involvement and Training:** Investigating the role of parental involvement and training in extending the benefits of Lego-based activities into the home environment. Assessing the impact of educating parents on implementing these activities could support continuous skill development outside of therapeutic or educational settings.

b. Practical Applications:

Therapeutic Settings: Implementing Lego-based interventions within therapeutic settings to support the development of fine motor skills in children with mental disabilities. Offering occupational therapists a new tool that can enhance their existing

approaches and engage children in a more enjoyable manner. Educational Curriculum Integration: Integrating Lego-based activities into the educational curriculum for children with mental disabilities. Establishing a more hands-on and engaging approach to learning that fosters skill development while promoting creativity and problem-solving. Community Programs: Developing community programs or centers that utilize Lego-based activities to engage children with mental disabilities. These programs can serve as a complementary, non-clinical space for skill development and social interaction, promoting inclusivity and support within local communities. Technology Integration: Exploring the integration of technology, such as augmented reality or specialized apps, with basic Legos to further enhance engagement and tailor activities to individual needs within this population.

3.2.3 The Ethical Considerations Taken Into Account When Working With Children With Mental Disabilities

Involving children with mental disabilities in any research or activities requires obtaining informed consent. This process necessitates providing information about the nature of the activities, ensuring it is understandable and accessible to both the children and their legal guardians. Informed consent respects the autonomy of the individuals and their right to participate willingly.

Recognizing the diverse spectrum of mental disabilities, it's important to acknowledge the varying capacities and decision-making abilities among these children. Understanding the child's ability to comprehend and make decisions regarding participation is essential. For those with limited capacity, alternative approaches to assess assent and involve legal guardians become pivotal.

Ensuring the well-being and safety of the children is paramount. Engaging in activities that aim to enhance their skills should prioritize their benefit. Simultaneously, every effort should be made to avoid harm or distress, making adjustments or accommodations as necessary to ensure a positive and safe experience.

Respecting the dignity and privacy of children with mental disabilities is fundamental. It's crucial to maintain confidentiality and safeguard sensitive information. Respecting their boundaries and ensuring that activities are conducted in a manner that upholds their dignity is essential.

Ensuring equitable opportunities and access to activities is critical. Every effort should be made to create an inclusive environment where all children, regardless of their disabilities, have the chance to participate and benefit from the activities.

Monitoring the children's responses and continuously adapting activities to meet their needs is essential. Flexibility and responsiveness to individual requirements ensure that the activities remain beneficial and engaging for each child involved.

Establishing respectful partnerships with parents or legal guardians, educators, and any other involved professionals is important. Collaborative decision-making ensures that the child's best interests remain the focal point of the activities.

3.2.4 Contribution To Research Results

The contribution of research results holds a pivotal role in shaping our understanding, fostering progress, and guiding future endeavors in various fields. Findings obtained from rigorous studies, like the one exploring the use of basic Legos to enhance the fine motor skills of children with mental disabilities, contribute significantly to the broader landscape of knowledge and practical applications.

Research results play a central role in advancing knowledge and understanding within a particular domain. The findings from this study add depth to our understanding of how basic Legos can positively impact the fine motor skills of children with mental disabilities. They contribute to the existing body of knowledge, shedding light on effective interventions and their implications for therapeutic and educational practices in this specific demographic.

Research results have the potential to influence practice and policy in various settings. The positive outcomes of using basic Legos to enhance fine motor skills in children with mental disabilities can inform and shape therapeutic approaches, educational strategies,

and community programs. These findings hold the potential to guide the development of new interventions or the adaptation of existing ones, impacting policies related to care, education, and community support for these children.

The results of this study can serve as a springboard for further research, inspiring innovation and exploration in related areas. They can stimulate inquiries into long-term effects, comparative interventions, specific disability implications, parental involvement, or technology integration, propelling ongoing and future investigations. The positive outcomes fuel a cycle of continuous learning, innovation, and advancement in research and practice.

The dissemination of research findings contributes to shaping societal and community understanding. Publicizing the positive impact of Lego-based interventions on the motor abilities of children with mental disabilities fosters awareness, acceptance, and inclusivity. It helps create a more informed and supportive environment that recognizes and values the diverse abilities of these children.

Research findings empower individuals, including children with mental disabilities and their caregivers. They offer evidence-based tools and strategies that can enhance the lives of these children, boosting confidence, independence, and overall well-being. For caregivers, these results offer valuable insights and practical approaches that can support their efforts in fostering the development of the children they care for.

4. Conclusions

Improving Fine Motor Skills Through Basic Legos for Children with Mental Disabilities has shown a potential and revolutionary approach for therapeutic interventions, educational initiatives, and quality of life for this distinct and diverse community. The study on utilizing basic Legos to improve fine motor skills in youngsters with mental disorders offers promise. This study found that controlled Lego exercises for youngsters with mental disorders improve their fine motor skills. The impact of these findings goes beyond academic research. They affect therapy, schooling, community programming, and quality of life for children with mental disorders. The study shows that basic Legos can improve fine motor skills and that participants, parents, and educators report improved experiences, promoting a more inclusive and supportive environment that values all children. This research paves the door for future work. It encourages future research on sustained impacts, comparative interventions, and technology integration and suggests uses in therapeutic, educational, and community initiatives. Positive research results enable innovation, policy changes, and a more educated and inclusive society. The quantitative and qualitative results show that Lego-based activities improved hand-eye coordination, grip strength, and motor proficiency in children. These findings could change therapeutic and educational approaches by providing a novel and engaging skill development strategy that engages and motivates children according to their needs and abilities. This study affects practice, policy, and community awareness beyond academia. Embracing the different capacities of children with mental problems promotes an inclusive and sympathetic culture that honors their potential. These findings can help caretakers, educators, and therapists help these youngsters acquire independence, self-esteem, and a better quality of life. This study encourages further research, innovation, and inquiry into relevant topics, including long-term effects, comparative therapies, and disability-specific approaches. This research encourages continual learning and progress, emphasizing the need for evidence-based strategies and interventions to empower and support children with mental disorders. The research has created a more accepting and supportive world that recognizes every child's unique talents, regardless of their obstacles. By using basic Legos and other treatments, we may create a society that celebrates the uniqueness of all children and creates a brighter, more inclusive future.

References

- Barrie, A. (2022). *Researching with children experience social and emotional and mental health needs: their views on LEGO® based play intervention.*

- Buckingham, D. (2013). *Beyond technology: Children's learning in the age of digital culture*. John Wiley & Sons.
- Bus, A. G., & Van IJzendoorn, M. H. (1999). Phonological awareness and early reading: A meta-analysis of experimental training studies. *Journal of Educational Psychology, 91*(3), 403.
- Calculator, S. N. (2009). Augmentative and alternative communication (AAC) and inclusive education for students with the most severe disabilities. *International Journal of Inclusive Education, 13*(1), 93–113.
- Corrigan, P. W., & Miller, F. E. (2004). Shame, blame, and contamination: A review of the impact of mental illness stigma on family members. *Journal of Mental Health, 13*(6), 537–548.
- Elias, M. J. (1997). *Promoting social and emotional learning: Guidelines for educators*. Ascd.
- Garrison, D. R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *The Internet and Higher Education, 7*(2), 95–105.
- Glasgow, R. E., Vogt, T. M., & Boles, S. M. (1999). Evaluating the public health impact of health promotion interventions: the RE-AIM framework. *American Journal of Public Health, 89*(9), 1322–1327.
- Griffiths, C. (2016). *LEGO therapy and social competence: An exploration of parental and teacher perceptions of LEGO-based therapy with pupils diagnosed with autism spectrum disorder (ASD)*. Cardiff University.
- Howard, A. (2013). Robots learn to play: Robots emerging role in pediatric therapy. *The Twenty-Sixth International FLAIRS Conference*.
- Jonsson, U., Alaie, I., Löfgren Wilteus, A., Zander, E., Marschik, P. B., Coghill, D., & Bölte, S. (2017). Annual Research Review: Quality of life and childhood mental and behavioural disorders—a critical review of the research. *Journal of Child Psychology and Psychiatry, 58*(4), 439–469.
- Lamrani, R., & Abdelwahed, E. H. (2020). Game-based learning and gamification to improve skills in early years education. *Computer Science and Information Systems, 17*(1), 339–356.
- Lonne, B., Scott, D., Higgins, D., & Herrenkohl, T. I. (2019). *Re-visioning public health approaches for protecting children* (Vol. 9). Springer.
- Narzisi, A., Sesso, G., Berloffia, S., Fantozzi, P., Muccio, R., Valente, E., Viglione, V., Villafranca, A., Milone, A., & Masi, G. (2021). Could you give me the blue brick? LEGO®-based therapy as a social development program for children with autism spectrum disorder: A systematic review. *Brain Sciences, 11*(6), 702.
- Prahalad, C. K., & Ramaswamy, V. (2004). *The future of competition: Co-creating unique value with customers*. Harvard Business Press.
- Rodger, S., & Mandich, A. (2005). Getting the run around: accessing services for children with developmental co-ordination disorder. *Child: Care, Health and Development, 31*(4), 449–457.
- Rosenbaum, P., Paneth, N., Leviton, A., Goldstein, M., Bax, M., Damiano, D., Dan, B., & Jacobsson, B. (2007). A report: the definition and classification of cerebral palsy April 2006. *Dev Med Child Neurol Suppl, 109*(suppl 109), 8–14.
- Rubin, K. H., Bukowski, W. M., Parker, J. G., & Bowker, J. C. (2008). Peer interactions, relationships, and groups. *Child and Adolescent Development: An Advanced Course, 141–180*.
- SMITS-ENGELSMAN, B. C. M., Blank, R., VAN DER KAAAY, A., MOSTERD-VAN DER MEIJS, R., VLUGT-VAN DEN BRAND, E., Polatajko, H. J., & Wilson, P. H. (2013). Efficacy of interventions to improve motor performance in children with developmental coordination disorder: a combined systematic review and meta-analysis. *Developmental Medicine & Child Neurology, 55*(3), 229–237.
- Tanner, K., Hand, B. N., O'Toole, G., & Lane, A. E. (2015). Effectiveness of interventions to improve social participation, play, leisure, and restricted and repetitive behaviors in people with autism spectrum disorder: A systematic review. *The American Journal of Occupational Therapy, 69*(5), 6905180010p1-6905180010p12.
- Van Schalkwyk, I., & Marais, S. (2017). Educators' relational experiences with learners identified with fetal alcohol spectrum disorder. *South African Journal of Education, 37*(3), 1–9.
- Wang, Z., Gui, Y., & Nie, W. (2022). Sensory integration training and social sports games integrated intervention for the occupational therapy of children with autism. *Occupational Therapy International, 2022*.
- Winn, J., & Blanton, L. (2005). The call for collaboration in teacher education. *Focus on Exceptional Children, 38*(2), 1–10.
- Wulf, G., Shea, C., & Lewthwaite, R. (2010). Motor skill learning and performance: a review of influential factors. *Medical Education,*

44(1), 75–84.

Yeager, D. S., Johnson, R., Spitzer, B. J., Trzesniewski, K. H., Powers, J., & Dweck, C. S. (2014). The far-reaching effects of believing people can change: implicit theories of personality shape stress, health, and achievement during adolescence. *Journal of Personality and Social Psychology*, 106(6), 867.