CHAPTER 2

EFFECTIVENESS OF PEER-MEDIATED LEGO® PLAY FOR REDUCING ANXIETY IN CHILDREN AGED 4 TO 6 YEARS WITH AND WITHOUT AUTISM SPECTRUM DISORDER: A SCOPING REVIEW

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ABSTRACT

This research evaluated the effectiveness of peer-mediated Lego® play for reducing anxiety for children aged 4 to 6 years, including children with learning disabilities. Specifically, the research sought to identify the risk factors of anxiety disorders, and to explore how peer-mediated approaches using Lego®-Based Therapy might evidence a reduction in risk factors (i.e., prevention) and reduce challenges (i.e., early intervention) of anxiety in children. The methodology was designed "a priori" as a mixed methodology study, encompassing evaluation and case studies (i.e., standardised assessments, interviews, observations, questionnaires, visuals). Children are facilitated as co-participants, thus simultaneously providing an operational expression of the philosophy of "voice" (e.g., UN Article 12) for children in decisions of importance to them, within a Universal Design for Learning (UDL) framework. All sessions will be recorded for the Statistical Analysis of Change. Treatment fidelity will be included to measure change. This research makes a valuable contribution to knowledge in the area of early intervention and inclusive education. It expands the scope of Universal Design by applying a UDL framework to early intervention. It also proposes an overarching framework to place children in their bio-ecological context and incorporating children's voices and neurodiversity, contributing to Hong Kong, Ireland and beyond.

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Learning Disabilities in the 21st Century: Improving Students Achievement
https://doi.org/10.51432/978-1-914266-00-3-2

KEYWORDS
Anxiety, Learning Disabilities, Early Intervention, Inclusion, Lego®-Based Therapy

Introduction

People with learning disabilities constitute 2% of the general population (Cooray and Bakala, 2005). There is ample evidence that anxiety disorders do occur (McNally & Ascher, 1987) and they are reported to be at least as common as in the general population, if not more so (King et al, 1994; Deb et al, 2001). This current research aims to design an inclusive learning programme for children with anxiety, including children with learning disability.

Education is life-changing, great education is world-changing. However, no real learning happens as long as a child is anxious (Goleman, 1995). Anxiety is one of the most common mental health problems in children, including children with learning disabilities. Therefore, it is important to understand anxiety in children in the educational setting. Anxiety is normal in response to a threatening situation or stimuli. For example, if one were to encounter a poisonous snake, one might feel frightened and anxious, whereupon one could choose fight, flight, or freeze for survival. Anxiety is defined as "anticipation of future threat." A continuum from normal everyday responses to a more clinical range where, however, is when such a reaction becomes excessive and impairs daily functioning, one is classified as having an anxiety disorder (American Psychiatric Association, 2013).

The question that arises is whilst anxiety disorders in children is one of the most common mental health problems, about 3% in the United States to 41.2% in Japan (Cartwright-Hatton et al., 2006), and early onset is evident (before age 5, Dalrymple et al. (2007), 19.6% of age 3 children, Dougherty et al. (2013)), there is no available intervention to address young children's needs.

Background

The dominant services are medication by psychiatric doctors or talking therapy from a psychological perspective. Hence, we argue that a group play intervention in this multidisciplinary programme of inclusive education, early intervention, and mental health is an alternative to the dominant, deficit medical model. The goal is to understand anxiety in children better and reduce their anxiety. Conceivably, the current overarching programme, strength-based paradigm will address children's needs, because there is no known cause of anxiety disorder, but a combination of three risk factors: genetic, temperament, and environment.

This chapter will begin with the expression of anxiety disorders in children. The rationale of group intervention in children will follow. Key highlights will be a scoping literature review of peer-mediated play interventions for children with concurrent anxiety and Autism Spectrum Disorders (ASD). Subsequently, future directions and recommendations for the development of an overarching programme for preschool children, with the use of play, peer-mediated intervention will be elucidated.

Expression of Anxiety Disorders in Children

Children with anxiety disorders tend to be worriers and can seem irritable or easily embarrassed. It should be noted that social anxiety disorder, selective mutism, and Generalised Anxiety Disorder (GAD) (American Psychiatric Association, 2013) are common types of childhood anxiety disorders. Children with anxiety disorders are more likely to exhibit these behaviours (Beesdo et al., 2009). For instance, the behaviour of regression, such as wetting the bed beyond the age of toilet training, and excessive loss of hair. In fact, the causes of anxiety disorders are not well understood but may involve a combination of factors such as genetics (i.e., family history of anxiety disorders), temperament, and environmental factors (Hudson & Rapee, 2004).

The Rationale of Group Intervention in Children

The group intervention format was described as helping to create a supportive and cohesive community among the participants and providing opportunities to learn adaptive strategies for coping and problem-solving (Christner et al., 2007). The group format for children has been influenced by Adler, Bender, and Slavson, among others (Bender, 1937; Dreikurs & Corsini, 1954). They observed that working with children together with their peers permitted them to be challenged in ways that were very different from when they were seen individually. Providing children with the opportunities to observe the impact of their behaviour on others in a safe and supportive environment was thought to promote insight and awareness of behaviour, which therapists believed was necessary to impact change.

In addition, the advantages of group intervention included addressing long waitlists and maximising resources. Many group members feel less isolated as they begin to recognise the universality of their experiences (Yalom & Leszcz, 2005). Furthermore, participation in group therapy can motivate less interested participants, promote interpersonal skill development, provide an opportunity for peer modelling, and offer a safe space for the practice of new skills within a naturalistic environment (Reaven et al., 2009).

On the other hand, group therapy has some disadvantages. Individual attention is limited, inappropriate behaviours may be displayed and modelled by group members, and inaccurate information and perspectives can be perpetuated by well-meaning group members.

Risk Factors/Early Precursors of Anxiety Disorder

Initially, Hudson and Rapee (2004) propose that the research on the aetiology of anxiety disorders remains at its infancy stage. Theories of the development of anxiety disorders proposed that genetic factors, factors intrinsic to the child combined with environmental factors, increase the risk of symptoms (e.g., Hudson & Rapee, 2004). While relationships between child anxiety and a broad range of variables have been investigated, only a relatively small set of risk factors has shown consistent empirical associations with child anxiety. This current section will highlight the available evidence of behavioural inhibition (BI), intolerance of uncertainty (IU), sensory sensitivities, social withdrawal (SW), and the difficulties with emotional regulation as risk factors of anxiety disorder. Conceivably, some evidence-based strategies to address these risk factors for preschool children with anxiety will be elucidated for the current programme.

Genetic Risk Factors

Perhaps the most widely studied aetiological component of anxiety is genetics. Overall, several studies have suggested that genetics account for approximately 30-40% of the variance in anxiety symptomatology and disorders (e.g., Andrews et al., 1990; Kendler et al., 1992).

Research suggests that anxiety disorders are partly familial with varying genetic transmission (Biederman et al., 2001; Eley et al., 2003). For example, studies reported that 37% of the parents of children with selective mutism had lifetime social anxiety compared with 14% of control parents (Chavira et al., 2007). More specifically, evidence from family studies of anxiety suggested that the environment, not genetics, is primarily responsible for developing a specific disorder (Hudson & Rapee, 2004). Moreover, family studies suggest that this familial component to anxiety may be largely disorder-specific. For example, Noyes Jr et al. (1987) demonstrated that first-degree relatives of individuals with GAD had an increased risk for GAD, but not a panic disorder, in comparison to control families.

Additionally, multiple psychosocial risks in the preschool period have been correlated to later-onset anxiety symptoms and disorders (Tandon et al., 2009). Empirical literature also suggested that parents with anxiety had children with higher risks of developing an anxiety disorder (Tandon et al., 2009). Notwithstanding the strong correlation between genetics and the general risk for anxiety, the development of specific disorders may be largely the result of the environment (Eley, 1997).

The implication is that even though a child has a high risk of anxiety due to genetic factors, intervention is still possible.

Risk Factors Intrinsic to the Child

Behavioural Inhibition

Among factors intrinsic to the child, some of the strongest evidence has been demonstrated for the importance of an inhibited or withdrawn temperament. A relatively robust relationship has been demonstrated between child behavioural inhibition (BI) and later anxiety symptoms and disorders (Fox et al., 2005). BI is a term originally used by Jerome Kagan (Kagan et al., 1994) to describe how a child retreats from a novel situation or stimuli, withdraws and seeks to remain near the caregiver. In other words, BI a temperamental style to experience negative affect and withdraw when facing novel situations, objects, and people (Weems & Silverman, 2006). In particular, extreme BI can be reliably identified as early as 4 months of age in about 15% of infants (Fox et al., 2005).

The implication is that BI may be a precursor of later anxiety disorders warranting continued investigation. It is also likely that the strong link between BI and anxiety is partly due to shared genetic, biological, and environmental influences (Fox et al., 2005).

Despite the evidence linking BI to the development of anxiety, longitudinal studies have demonstrated that most BI children do not develop anxiety disorders (Prior et al., 2000); therefore, other risk factors must also play a role.

Social Withdrawal

Social withdrawal (SW) refers to consistent (across time and situations) display of solitary behaviour when encountering both familiar and/or unfamiliar peers (Rubin, 2009). Chronis-Tuscano et al. (2018) suggested a developmental trajectory leading to anxiety disorders in typically developing children:

> "the developmental spurt from behavioural inhibition (BI) to shyness and Social withdrawal (SW), in combination with maladaptive interactions with significant others in these children's social worlds (e.g., parents and peers), can place them on a developmental trajectory leading to anxiety disorders, particularly social anxiety." (p. 655)

Shyness has been used to refer to inhibition in response to a novel social situation. In early childhood, shyness is elicited by feelings of distress when confronted by unfamiliar people (Chronis-Tuscano et al., 2018). To some children, such behaviour serves the function of removing themselves from situations they perceive as discomforting and dangerous (Schmidt & Buss, 2010). However, the extreme response of some children to novel situations far exceeds any potential danger and often leads to SW.

The current authors argue that early intervention should be conducted within the peer context because this is precisely where children high in BI/SW are most affected. Also, research shows that unsuccessful peer interactions contribute to the worsening of anxiety, depression, and self-regard among children with BI/SW (Coplan et al., 2018).

Likewise, children with anxiety disorders need help with their emotional as well as social skills problems. Davis et al. (2010) highlighted the social skills problems unique to children with anxiety disorders. Anxiety in children has been associated with many risks, including social withdrawal, social skills deficits, peer rejection and neglect, dysfunctional parent-child interactions, the use of maladaptive social strategies, and cognitive distortions (Ollendick & Hirshfeld-Becker, 2002; Rapee & Spence, 2004). The above factors may be associated with placing them upon a developmental trajectory toward further social withdrawal and dysfunction (Oh et al., 2008). Children with comorbid anxiety and social problems face a difficult developmental trajectory. Children experiencing loneliness, a lack of friends or stability in friendships, and peer exclusion are on a trajectory of increasing social withdrawal across the preadolescent to early adolescent years (Oh et al., 2008).

The implications are early intervention within the peer context may be conducted to meet children's needs, including emotional and social benefits.

Intolerance of Uncertainty

Intolerance of Uncertainty (IU) has utility in explaining anxiety in neurotypical populations but has only recently received attention in ASD. Carleton (2012) defined IU as a

> "broad dispositional risk factor for the development and maintenance of clinically significant anxiety in neurotypical populations" (p. 939).

Wright et al. (2016) aimed to extend the existing research and expand the understanding of IU as a transdiagnostic construct by exploring the association between IU and health anxiety, anxiety sensitivity, and DSM-IV anxiety disorder symptom categories. They included a sample of 128 youth (*M* age = 12.7 years, *SD* = 0.82, range 11–17 years). Participants completed measures of IU, health anxiety, anxiety sensitivity, and anxiety disorder symptom categories.

Results demonstrated significant positive associations between IU and all measures. Mediation analyses supported the direct and indirect importance of each IU subscale on health anxiety.

There are two implications. First, further investigation into the relationships between these constructs (IU, anxiety, and sensory sensitivities) could be vital for developing effective interventions for sensory sensitivities in children with and without autism (Neil et al., 2016). Second, IU informs intervention to integrate evidence-based strategies from sensory integration for children with anxiety and ASD. For example, strategies such as firm pressure, removal of sensory stimulation to handle sensory sensitivity in intervention. i.e., to calm down children based on their sensory needs. We may also consider occupational therapists' suggestion of co-regulation and physiological regulation.

Difficulties with Emotional Regulation

Emotional regulation and expressiveness may change withdrawn children's risk and adjustment difficulties (Pope & Bierman 1999). Indeed, Oh et al. (2008) recently reported that withdrawn children and young adolescents who expressed little negative internalising emotion in the peer group (sadness, anxiety, fearfulness) did not experience increased peer rejection and victimisation throughout the school year (both in elementary school and middle school). Conversely, withdrawn children and young adolescents who were highly emotionally expressive became significantly more victimised and excluded by the end of the school year. These findings are consistent with coping for bullying, i.e., do not express distress, anxiety, and fearfulness.

The implication is the significance of coping actively with felt anxiety or fearfulness in the peer group. Regulating emotional expressiveness appeared to be a protective factor for withdrawn children and young adolescents.

Environmental Risk factors

Another potential contributor could include the environmental fostering of avoidance. This phrase refers to situations in which caregivers discourage (or might not encourage) exploration of novel situations or stimuli (Tandon et al., 2009). Specific parenting style is also commonly suggested as another risk factor for the development of anxiety. Nevertheless, it explained only 4% of the variance in childhood anxiety in a meta-analysis of studies focusing on the role of parenting (McLeod et al., 2007). The implication is that this pattern could potentially be targeted for early intervention and prevention of later-onset anxiety disorders.

We proposed to shift our perspective from medical model to social model when we talk about the topic of well-being. We proposed to adopt Social Model of Disability to early intervention, rather than Medical Model. Table 2.1 shows a comparison of social model and medical model. For example, the Social Model stresses the importance of participation, despite the children's impairment such as learning disabilities or mental health issues. In contrast, the medical model views anxiety as an 'illness', with 'symptoms' and a 'cure' that will solve the problems. The root of learning disabilities is similar in the medical model.

Using the Social Model, we acknowledge that everybody has difficulties, or learning disabilities. We proposed more positive terms such as 'additional needs', 'signs', and 'inclusion'. Inclusion to enable participation is therefore needed. Adopting the Social Model allows us to think in a more positive, more inclusive, and supportive way in the 21st Century.

Table 2.1. Comparison of social model and medical model

Medical Model	Social Model
▪ informed by the individual's perspective of a person's impairment. ▪ the problem resides in the individual-'child deficit' or 'within-child' model (Tyrer, 2014). ▪ the disability itself is seen to be the problem. The belief that disability can be 'solved by medical or rehabilitative action', that a 'cure' will solve the problems, is common in this model.	▪ a social construction of special education needs (Clough & Corbett, 2000). ▪ children and adults who because of an impairment (whether physical, sensory, hidden, mental health or learning disabilities), are prevented from participating fully in the social, economic, and political structures of society. ▪ It includes an awareness of the barriers faced by disabled people. ▪ It also raises the significance of issues of access and participation for people with disabilities. ▪ there has been an inclusion movement arising from the social model. ▪ it addressed society's failure to adapt or provide resources to enable the disabled person to participate in society.

In summary, this current section highlighted the available evidence of behavioural inhibition (BI), intolerance of uncertainty (IU), sensory sensitivities, social withdrawal (SW), and difficulties with emotional regulation as risk factors of anxiety disorder. The possible evidence-based strategies to address these risk factors for children with anxiety, including targeting the role of parental factors for prevention, addressing IU and sensory sensitivities, emotional regulation and expressiveness was elucidated for the current programme. While research on the aetiology of anxiety disorders remained at its infancy stage, it is important to acknowledge various factors rather than focusing on a single cause. Theories of the development of anxiety disorders propose that genetic factors, factors intrinsic to the child, combined with environmental factors to increase the risk of symptoms (e.g., Hudson & Rapee (2004).

Universal Design Framework

Universal Design (UD) will be introduced as a framework of inclusion, and that the core principles of UD and Universal Design for Learning (UDL) will be included. This current research takes a perspective of inclusion: and advances a UDL approach to conceptualising the programme of research. The research outcome will contribute to Ireland and Hong Kong. Because the research is located in both Hong Kong and Ireland, each section will show awareness of how different factors might be differently understood in both locations, for example, definitions, theory, culture, Sustainable Development Goals (SDG's), research studies, policy, practice, etc. First of all, a descriptive overview of UD (Story et al., 1998) will be commented upon on the usefulness of the UD framework to exploration and understanding of the early intervention design. Universal Design for Learning (UDL) (Rose & Meyer, 2002) would then be introduced for applying the UD framework in education.

What is Universal Design?

This current project is about inclusion, using a Universal Design (UD) lens/framework, paradigm, to design a peer-mediated intervention for children with anxiety disorder and children with co-occuring anxiety and Autism Spectrum Disorders (ASD).

Universal Design is an approach to the design of environments, products and services to be usable by the widest possible range of people (Story et al., 1998). It is a fundamental condition of good design.

Why need Universal Design?

We want to create the inclusion network far and wide, including people with or without learning disabilities. Three concepts will be introduced to explain why we need UD: Ableism, social justice framework, and active citizenship.

First, disabled people experience *ableism* in many forms from the seemingly benevolent to the blatantly hostile, and more ambivalent or mixed forms (Nario-Redmond et al., 2019, p.6). Ableism is defined as the prejudice and discrimination toward individuals and groups simply because they are disabled (Nario-Redmond, 2019, p.6). Dr Nario-Redmond explained that the ABC's of ableism include our **A**ffective, emotional and attitudinal reactions; the **B**ehaviours, actions, practices and policies that discriminate, and the **C**ognitive beliefs, stereotypes and ideologies that go beyond general negativity. An example from the book is "Imagine meeting someone with a disability: if feelings of pity or disgust emerge (**Affect**), one may offer to help or simply avoid interacting (**Behavior**) – especially if one believes the person with a disability needs assistance or can't think clearly (**Cognition**) (Nario-Redmond, 2019). Ableism can be observed in both hostile and benevolent forms. In response to the broad Ableism, (Chhabra, 2021, Goodley, 2017) proposed a concept called "Tabbies": we are all temporarily able-bodied individuals. Why not embrace everyone's differences?

Second, Social Justice Framework regardless of different types of social movements, echoed with UD. Fraser (2009) defined social justice as the goal of a difference-friendly world, where assimilation to majority or dominant cultural norms is no longer the price of equal respect. Examples include claims for the recognition of the distinctive perspectives of ethnic, "racial", and gender difference. Fraser (2009) argued that to achieve social justice, **R**edistribution, **R**epresentation, and **R**ecognition (3R) are all important. In particular, **Redistribution** addresses injustices in socio-economic aspect. An example is feminism look for redistribution as the remedy of male domination. **Representation** targets social equality. The paradigm of **Recognition** targets injustices in cultural aspects. Examples include cultural domination, non-recognition, and disrespect. **Recognition** of difference is therefore the goal.

Third, Active citizenship. Halvorsen et al. (2008) proposed that security—financial benefits, autonomy—social services, and Influence—political representation. All contribute to full, effective, and active citizenship.

With these three concepts in mind, in an attempt to achieve a better world that is difference-friendly, we need an inclusive framework to make participations accessible regardless of ability or disability. Universal Design means making things at all levels universal by design from the beginning. Take Temple Grandin for example, there were no ASD individual who achieved PhD degree before the twentieth century. She may be included to develop her potentials by chance, such as meeting a very understanding professor. However, if the Ableism, social justice framework, and active citizenship were taken into account from the beginning, that is universal

by design, more and more individuals with ASD could be active citizenship and be represented in the higher education system. A piece of evidence is that recently I personally knew a business consultant's 25-year-old son with ASD was studying PhD in the Cambridge University.

In summary, UD is needed because of the need of overcoming the tyranny of normalcy. Operationalising UD, the 3R framework. Governments should foster active citizenship.

Seven Principles of Universal Design and Early Intervention Design

The 7 Principles of Universal Design were developed by a working group of architects, product designers, engineers and environmental design researchers, led by Ronald Mace in North Carolina State University (The Center for Universal Design, 1997). Each is followed by two examples of education and this current study as an implementation of the principle, with reference to the treatment manual (Baron-Cohen et al., 2014) of Lego®-Based Therapy.

Principle 1: Equitable Use

The design is useful and marketable to people with diverse abilities (The Center for Universal Design, 1997). An example from education: instruction is accessible and fair to all parties (Palmer & Caputo, 2003). Another example is, with reference from the intervention for children with and without ASD, children with diverse abilities in fine motor, cognitive, hearing, and language (verbal and non-verbal) abilities can participate (Baron-Cohen et al., 2014).

Principle 2: Flexibility in Use

The design accommodates a wide range of individual preferences abilities (The Center for Universal Design, 1997). An example from education: instruction provides flexibility in use, participation and presentation (Palmer & Caputo, 2003). Another example is, with reference from the intervention for children with and without ASD, different themes of individual preferences abilities could be accommodated, from princess to Star War (Baron-Cohen et al., 2014).

Principle 3: Simple and Intuitive Use

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level (The Center for Universal Design, 1997). An example from education: instruction is straightforward and consistent (Palmer & Caputo, 2003).

Another example is, with reference from the intervention for children with and without ASD, the instruction manuals contain clear photos, pictures, numbers and texts in every step, and an electronic version of the manuals are available (Baron-Cohen et al., 2014).

Principle 4: Perceptible Information

Design communicates necessary information effectively to the users, regardless of ambient conditions or the user's sensory abilities (The Center for Universal Design, 1997). An example from education: instruction is explicitly presented and readily perceived (Palmer & Caputo, 2003). Another example is, with reference from the intervention for children with and without ASD, the sitting arrangement allows children to see each other, listen to or communicate nonverbally (Baron-Cohen et al., 2014).

Principle 5: Tolerance for Error

The design minimises hazards and the adverse consequences of accidental or unintended actions (The Center for Universal Design, 1997). An example from education: instruction anticipates variation in individual learner learning pace and prerequisite skills (Scott et al., 2001).

Another example is, with reference from the intervention for children with and without ASD, a large tray was provided to organise the Lego bricks, and a box with the number of pieces to store. Even if some parts of the Lego bricks were missing, they could be replaced free of charge. There are no right or wrong answers in the play (Baron-Cohen et al., 2014).

Principle 6: Low Physical Effort

The design can be used efficiently and comfortably and with a minimum of fatigue (The Center for Universal Design, 1997). An example from education: instruction is designed to minimise the non-essential physical effort to allow for maximum attention to learning (Scott et al., 2001). Another example is, with reference from the intervention for children with and without ASD, a separator is provided for each group so that they can separate the Lego set efficiently (Baron-Cohen et al., 2014).

Principle 7: Size and Space for Approach and Use

Appropriate size and space are provided for approach, read, manipulation, and use regardless of user's body size, posture, or mobility (The Center for Universal Design, 1997). An example from education: instruction is designed with consideration for appropriate size and space for approach, reach, manipulation and use regardless of a learner's body size, posture, mobility, and communication needs (Scott, McGuire, and Shaw, 2001).

Another example is, with reference from the intervention for children with and without ASD, children can sit down to play, access some loose bricks for freestyle building, play on the table or the floor. The instruction manuals could be tailor-made to an appropriate size (Baron-Cohen et al., 2014).

Universal Design in Education

Universal Design for Learning (UDL) is an extension of, and is underpinned by Universal Design, so that the design of the educational process, environment and curriculum is usable by the widest range of learners, in a more inclusive environment. The Center for Applied Special Technology (CAST, 1998) focuses its efforts on universal design for learning (UDL). It defines UDL as "a research-based set of principles that together form a practical framework for using technology to maximise learning opportunities for every student" (Rose & Meyer, 2002). When UDL is applied, curriculum designers create products to meet the needs of students with a wide range of abilities, learning styles, and preferences. The UDL curriculum offers:

- Multiple means of representation, to give learners various ways of acquiring information and knowledge;
- Multiple means of action and expression, to provide learners alternatives for demonstrating what they know; and
- Multiple means of action and engagement, to tap into learners' interests, offer appropriate challenges, and increase motivation (CAST, 1998).

UD and UDL principles can be applied to all aspects of instruction—teaching techniques, curricula, assessment.

To date, limited studies on applying the UD framework on higher education or post-secondary education, and no research on early intervention was reported. The Irish government Minister Dr Katherine Zappone for Children and Youth Affairs launched the **UD Guidelines for Early Learning and Care (ELC) Settings** (Department of Children and Youth Affairs and the Centre for Excellence in Universal Design at the National Disability Authority, 2019) to make all services accessible to all children. The Guidelines were developed from AIM - the Access and Inclusion Model, an inter-departmental programme to support the meaningful participation of children with disabilities in Early Childhood Care and Education (ECCE) Programme. The Guides advised all ELC settings to start assessing their needs for improvement. This research study will take into account the Guidelines in the design of the program. Because the benefits of UD in ELC settings include:

- Flexibility and ease of adaptability to meet users' changing needs over time in a cost-effective way.
- Sustainable design to improve comfort and energy efficiency.
- Technologies to support Early Learning and Care.

The standards specific to ELC settings in following six areas will also be followed:

Rights of the Child, Interactions, parents and families, play, professional practice, community involvement. This current research is a pioneer in applying UD framework in early intervention and hopefully contribute to the emerging evidence base of UD.

This current section explored the definition of UD and the 7 principles of Universal Design with examples from education and intervention. described what is Universal Design, and how they are applicable to integrate the framework from the beginning of this early intervention program, to be as inclusive as possible. Universal Design for Learning was also briefly introduced, with limited studies on higher education, and no research on early intervention. We will ensure that all of these principles are linked to study design and materials in the methodology

Scoping review of Lego-based Interventions for Children with Concurrent Anxiety and Autism Spectrum Disorders

Aim of the literature review

In this current section, the researchers will report on the initial findings of a scoping review of the existing intervention options—both behavioural and psychosocial—for children with dual diagnoses of anxiety and ASD and explore alternative intervention options that warrant further study. The scoping review specifically focused on peer-mediated and Lego-based interventions.

Six databases were selected in the areas of Social Sciences, Education, Psychology, Medical, and multidisciplinary respectively, and dissertations and Theses. The following databases were searched on 13th April 2021: *Academic Search Complete, ERIC, Psycinfo, Medline, and Web of Science (core collection). ProQuest Dissertations & Theses: A & I.*

The review was limited to published empirical studies and unpublished dissertations from 1996 and onwards. Only studies containing participants with children and with Autism Spectrum Conditions (aged 2-12 years) were included. Adolescents and adults with Autism Spectrum

Conditions or children with anxiety-related conditions but not on the autism spectrum were excluded from this review. In addition, studies that only described interventions but did not deliver intervention using group or Lego therapy to children with Autism Spectrum Conditions were also excluded. Results were also limited to articles published in English in peer-reviewed journals/unpublished doctoral dissertations/grey literature.

Results

Among the relevant studies, one article using Lego-Based Therapy (LBT) and with the outcome of reducing anxiety in children were found. Other existing intervention for children was dominated by the psychological approach of cognitive behavioural therapy (CBT) for children aged 7 years and above. Summary and Future Directions for individuals with concurrent anxiety and Autism Spectrum Disorders will be discussed. In addition to the literature review, when first developing this research study, the author was in contact with Dr Gomez de La Cuesta (co-author of the Lego®-Based Therapy Manual, Baron-Cohen et al., (2014)) who confirmed 1 relevant empirical paper about anxiety outcome ($N = 1$) within this area.

In her Doctor of Clinical Psychology thesis, Nguyen (2017) aimed to evaluate the effectiveness of short-term Lego-based therapy for children and adolescents with high functioning Autism Spectrum Conditions (HFASC), with a second aim on anxiety reduction outcome. Nguyen (2017) argued that as indicated previously, social skills training may not only improve social competence but possibly anxiety. The author made a one-tail hypothesis that children and adolescents with HFASC would make greater gains in symptoms of anxiety but not on any other areas of psychopathology between pre- and post-intervention. The Theoretical framework was personal construct psychology (PCP) (Kelly, 1955)**.** The sample included 25 high functioning children and adolescents with ASD aged 9-18 years in an outpatient, mental health setting. Eight weekly 90 minutes, clinic-based Lego-based therapy sessions. The methodology included a quasi-experimental, repeated measure, waiting list control design, baseline, pre- and post-intervention outcome measures, with parent- and self-reports and repertory grid technique (Kelly, 1955), in the area of autism-specific social behaviours, adaptive function, psychopathology, and construing.

Overall, the findings from the analyses highlighted that participants reported a positive change in levels of social phobia whereas parents of the participants reported a positive change in separation anxiety following Lego therapy. The initial hypothesis that the participants would improve in anxiety but no other areas of psychopathology following Lego®-based therapy was partially supported. The study only found a significant reduction in self-reported social anxiety and on parent-reported separation anxiety but not on any other subscales of the Revised Children's Anxiety and Depression Scale between pre- and post-intervention assessment. The results indicated on average, participants made significant gains across autism-specific social behaviours, adaptive social and maladaptive behaviour, psychopathology, and coping following Lego-based therapy but not during the baseline period. Effect sizes (Pearson's r) for these statistically significant results ranged from medium to large. Furthermore, a significant change, of large effect size, on the total problem score (conduct problems, hyperactivity and inattention, peer problems, and emotional problems) of the Strengths and Difficulties Questionnaire was found following Lego®-based therapy but not during the baseline period.

Qualitative Themes

Feedback forms were given to participants and their parents. The following theme was reported:

> *Keep calm and play with Lego.* Participants reported that Lego therapy was helpful to help them manage their mental health difficulties.
>
> *"Attending the Lego Club felt very therapeutic, I left each session feeling more relaxed and calmed than when I first came"* (participant) (Nguyen, 2017, p. 78)
>
> *"His willingness to attend shows he has been less anxious"* (parent) (Nguyen, 2017, p. 78)

Nguyen (2017) concluded that overall, Lego-based therapy was a highly attended group (M = 89.5%) and well-received by participants their parents. These findings suggested that Lego-based therapy was feasible, cost-effective and can be set up in mental health services as part of the treatment plan for children and adolescents with high functioning ASD. Future studies should focus on the effectiveness of Lego-based therapy with girls on the spectrum or children with social-related conditions and conduct large scale randomised controlled trials.

Summary and Future Directions for Lego-based Interventions for Children with Concurrent Anxiety and Autism Spectrum Disorders

In light of the initial findings, the study offers support for using the empathising-systemising theory (E-S theory) to promote learning and behavioural change in an intrinsically motivating and autism-friendly way. After all, learning should be fun, motivating, and inspiring.

Lego therapy is intrinsically rewarding and is based on a clear theoretical rationale, namely the E-S theory, which emphasises drawing on children's strengths in systemising to teach empathy (Baron-Cohen, 2009).

Finally, for outcome measure, the following scale is more suitable than SDQ: Anxiety Scale for Children with Autism Spectrum Disorder (Rodgers et al., 2016).

This current section reported one article demonstrated that the initial hypothesis that the participants would improve in anxiety but no other areas of psychopathology following Lego®-based therapy was partially supported.

Summary and Future Directions: Prevention and Early Intervention of Anxiety Disorder in Children

Young children at risk for anxiety disorder could benefit from prevention, defined as child symptoms did not worsen over time for the prevention group relative to a control group (Chronis-Tuscano et al., 2018). The prevention effect could be as few as six sessions as reported in Cool Little Kids (Rapee & Jacobs, 2002) and could be disseminated and carried out by trained educational staff, in the community or school settings (Chronis-Tuscano et al., 2018), leaving the intensive intervention resources to those children and families with diagnosed anxiety disorder.

Intervention, on the other hand, is defined as having a treatment effect for children with anxiety (i.e., child symptoms were reduced compared to a control condition) (Chronis-Tuscano et al., 2018). This research aims to both prevent and treat symptoms and disorders which is more accurately described as an "early intervention program". However, little was known for young

children with anxiety, not to mention an ideal early intervention programme with a theoretical background and good outcome. The only, recent research recommended eight directions for future research of early intervention for young children at risk for anxiety (Chronis-Tuscano et al., 2018), based on Developmental-transactional model (Rubin, 2009)

With high relevance, this study will disrupt the trajectory of anxiety in children at risk by (a) being informed by developmental science and clinical research, (b) examining mediators that move us closer to understanding why and how an intervention works, (c) examine moderators of outcome toward the goal of treatment efficiency (parenting and peer interactions), (d) integrate technology when face-to-face intervention is not feasible, (e) consider cultural norms regarding anxiety and parenting, and (f) be developed with the end goal of dissemination. Irrelevant (g) incorporate multiple levels of analysis (including both individual and contextual factors) (h) consider transdiagnostic or modular approaches.

Conclusion

The goal is to enhance understanding of anxiety in children and parents. Reduce anxiety in children. The intervention programme will consist of three parts: (1) prevention and early intervention in an educational setting: Lego-based Therapy (2) parenting groups of the children with anxiety (3) whole-class story-reading about coping of anxiety.

In summary, this chapter defined the construct of anxiety in children, then the prevalence and onset of anxiety disorders, followed by the expression of anxiety disorders in children and the rationale for peer-mediated intervention. Among existing interventions for children dominated by the psychological approach of cognitive behavioural therapy (CBT) for children aged 7 years and above, one article using Lego-Based Therapy to improve anxiety in children was partially supported. Nevertheless, evidence-based strategies from the literature could be adopted to explore an alternative intervention that addresses risk factors of anxiety, i.e., a combination of genetic, temperament, and environment. Conceivably, the development of an overarching programme for preschool children, with the use of play, peer-mediated intervention could be elucidated.

Acknowledgment

This paper is an output of the PhD Education thesis of Trinity College Dublin. Support from Trinity Research in Social Sciences (TRiSS) Research Fellowships 20/21, and GSU Postgraduate Community, Equality and Innovation Fund are acknowledged. Lego® is a trademark of the Lego Group of companies which does not sponsor, authorise or endorse this research.

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