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Impact of Loose Parts Play on Children's Mental Well-being: A Scoping Review

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Abstract

The rationale behind loose parts play interventions lies in the introduction of movable materials and equipment into children's play spaces to promote unstructured, child-led play. Such play opportunities are increasingly recognized as essential, offering children valuable experiences that support holistic development. This scoping review examined the extent of the literature on the impact of outdoor loose parts play on children's mental well-being. Out of 2,589 publications screened, 10 studies met the inclusion criteria. Notably, none of the included studies explicitly examined mental well-being as a primary outcome. While findings suggest that loose parts play may support children's mental well-being, clearer and more intentional conceptualizations of mental well-being are needed to substantiate these claims. Overall, the evidence points to a promising yet underdeveloped field, pointing to the need for well-designed studies that explicitly conceptualize and measure mental well-being in relation to loose parts play.

Keywords**:** unstructured play; mental well-being; psychological well-being; emotional well-being; social-emotional development; children

Résumé

Le fondement des interventions de jeu avec des éléments mobiles (*loose parts play*) repose sur l'introduction de matériaux et d'équipements mobiles dans les espaces de jeu afin de promouvoir les jeux non structurés, dirigés par les enfants. De telles possibilités de jeu sont de plus en plus reconnues comme essentielles, offrant aux enfants des expériences précieuses qui favorisent leur développement global. Cette revue de la portée a examiné l'étendue de la littérature portant sur les effets du jeu extérieur avec des éléments mobiles sur le bien-être mental des enfants. Sur 2 589 publications examinées, 10 études répondaient aux critères d'inclusion. Il est à noter qu'aucune des études retenues n'a explicitement examiné le bien-être mental comme variable principale. Bien que les résultats suggèrent que le jeu avec des éléments mobiles pourrait soutenir le bien-être mental des enfants, des conceptualisations plus claires et plus intentionnelles du bien-être mental sont nécessaires pour étayer ces conclusions. Dans l'ensemble, les données disponibles indiquent un domaine de recherche prometteur mais encore peu développé, soulignant la nécessité de mener des études rigoureuses qui conceptualisent et mesurent explicitement le bien-être mental en lien avec le jeu avec des éléments mobiles.

Mots-clés**:** jeu non structure; bien-être mental; bien-être psychologique; bien-être émotionnel; développement social et émotionnel; enfants

Introduction

In early childhood, opportunities for unstructured, self-directed, free play prevail, affording children numerous learning and developmental opportunities (Tremblay et al., 2015). Specifically, when these play opportunities occur in outdoor settings, alongside their risks, they provide unique developmental and health benefits that cannot be replicated through indoor play (Bento & Dias, 2017; Canadian Paediatric Society, 2024). Studies have shown that outdoor unstructured play supports children's overall well-being, including cognitive and social development (Andersen et al., 2023; Beaulieu & Beno, 2024; Brussoni et al., 2015), physical health (Beaulieu & Beno, 2024; Brussoni et al., 2015; Herrington & Brussoni, 2015; Nijhof et al., 2018), mental health (Beaulieu & Beno, 2024; Dodd et al., 2022; Whitebread, 2017), emotional and behavioural self-regulation (Pellis & Pellis, 2007) and creativity and risk taking (Brussoni et al., 2012; Brussoni et al., 2015; Kemple et al., 2016). Additionally, compared to indoor play, outdoor free play opportunities encourage children to move more, spend less time sitting and to play longer. These behaviours are associated with numerous health benefits, including improved mental health (Tremblay et al., 2015).

Brussoni et al. (2015) and Janssen (2015) observe that, over recent decades, shifts toward heightened supervision and child protection within family and social contexts have led to a decline in unstructured, free outdoor play. This has paved the way to more planned and structured activities in children's lives, alongside a growing shift towards indoor play opportunities (Tremblay et al., 2015). The move from outdoor to predominantly indoor time has occurred alongside an increasing crisis of physical inactivity and sedentary behaviour in children (Tremblay et al., 2015). Biddle et al. (2010) further note that this trend is concerning, as activity and sedentary habits formed in childhood tend to track into adulthood, influencing long-term well-being trajectories. Tremblay et al. (2015) emphasize that ensuring healthy active living and active outdoor play in childhood is a child rights issue. Therefore, children represent a critical population for understanding the benefits of unstructured outdoor play opportunities and their contribution to their overall well-being. This underscores the relevance of focusing on children in this study.

In response to changes in children's active outdoor play patterns, many communities are reassessing the role of outdoor play in children's development and exploring ways to increase children's time and levels of outdoor activity (Tremblay et al., 2015). Flannigan and Dietze (2017) and Houser et al. (2016) indicate that one of the promoted strategies is engaging children in environments with diverse natural and synthetic loose parts. Natural loose parts comprise natural resources commonly found in typical outdoor environments, such as leaves and sticks. Synthetic materials are typically human-made elements, for example, tires, cartons and wood planks (Mackley et al., 2022). When loose materials are introduced into children's play spaces, they can be used in multiple ways and without specific direction, promoting opportunities for risky play (Canadian Public Health Association, 2019; Flannigan & Dietze, 2017) and supporting unstructured, child-led play (Lee et al., 2019).

In this study, unstructured play refers to spontaneous, voluntary, child-led, and self-directed play affordances enabled by loose movable materials (Lee et al., 2019). Loose parts play aligns with this definition and forms the primary focus of this study. Gibson et al. (2017) describe loose parts play (LPP) as a technique designed as a strategy for enhancing the "quality of the play offer" (p. 296). It involves introducing movable materials and equipment in the play spaces for children to encourage them to engage with the materials as they wish, with minimal or no adult direction (Gibson et al., 2017). First suggested by Nicholson (1971), loose parts materials for play

are drawn from the affordance theory. Flannigan and Dietze (2017) define affordances as the possibilities that a feature or object in the environment provides to an individual. Nicholson's (1971) idea was that, compared to fixed object play materials, LPP materials and spaces offer greater opportunities for creativity and fantasy, resulting in children's multi-functional play.

There is growing evidence linking unstructured outdoor play to multiple dimensions of children's well-being; however, indications from a systematic review by Gibson et al. (2017) show that there is a limited amount of research of any kind concerning LPP. The available evidence links LPP to: the development of independence and emotional self-regulation (Pellis & Pellis, 2007), enhanced social behaviour and academic involvement (Gibson et al., 2017; Lester et al., 2010) improved self-esteem, confidence, social inclusion and happiness (James, 2012; , Lee et al., 2020), enhanced socialization, creativity and resilience (Razak et al., 2018), social interaction, risk-taking, inclusivity and language use (Flannigan & Dietze, 2017). Gibson et al. (2017) observe that a vast body of research on LPP has primarily focused on LPP's relationship with physical activity. Building on this recognition, the present study focuses on exploring how LPP supports children's mental well-being.

Health, according to the World Health Organization (1948), refers to "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (p.1). This definition positions mental well-being or mental health as an integral component of health (WHO, 2025) and as an intrinsic component of overall health (Gautam et al., 2024). Although mental well-being is often used interchangeably and more often concurrently with mental health, the two represent related yet varying phenomena (Gautam et al., 2024). Also, the two constructs reflect different disciplinary perspectives and are defined differently across research and policy contexts (Nyqvist et al., 2013). In this study, the focus is on mental well-being, which is described as positive mental health (Keyes, 2014) and viewed as a *positive* component of mental health (Nyqvist et al., 2013). As a form of positive mental health, mental well-being reflects that mental health is more than the absence of a mental health condition or illness. Rather, it encompasses a positive sense of well-being and/or the capacity to experience life fully while effectively managing its challenges (Canadian Mental Health Association, 2025).

The WHO (2004) definition describes mental health as a state of well-being. As Gautam et al. (2024) note, to have a meaningful discussion or understanding of mental health, it is essential to first define the concept of well-being. Well-being is widely recognized as a multifaceted construct, yet there is no consensus on a single, universally accepted definition, as interpretations vary across domains, disciplines and cultural or contextual perspectives (Bautista et al., 2023; Dodge et al., 2012; Gautam et al., 2024; Jarden & Roache, 2023). The Faculty of Public Health [FPH] (n.d.), a professional membership body and a registered charity in the United Kingdom for public health specialists, describes well-being as not a diagnostic entity, since its presence or absence does not constitute a diagnosis. Rather, well-being is widely recognized as a subjective state (FPH, n.d.; Keever, 2025) and it varies considerably among individuals, along with the factors that influence it (FPH, n.d.; Gautam et al., 2024). These understandings position well-being outside the traditional medical or clinical model of health that defines health as the absence of illness or disease and emphasizes a diagnosis and intervention (FPH, n.d).

Keever (2025) defines well-being as "the experience of living with connection, purpose, and capacity, as defined by each person, in relationship to their community, environment, and life circumstances" (p. 2). Similarly, the Centre for Well-being (2012) describes well-being as how people feel, which relates their emotions such as happiness or anxiety; how they function both on a personal and social level, referring to their sense of competence or connectedness to those around

them; and how they evaluate their lives as a whole, reflected in their overall life satisfaction or their perception of their lives compared to their ideal or best possible life (Centre for Well-being, 2012). These definitions recognize that well-being does not occur in isolation but rather is influenced by both internal and external capacities, including personal lived experience, their meaning-making process, and the relational and contextual dimensions (Keever, 2025).

Building on this understanding, mental well-being can be viewed as an integral component of overall well-being. It is considered a separate concept from mental illness and mental distress (de Cates et al., 2015). It is often described as subjective well-being, that is, our perception and evaluation of our life (Keyes, 2006). Gautam et al. (2024) describe mental well-being as a positive state of emotional, psychological and social health. It is marked by a sense of contentment, resilience and the capacity to navigate life's challenges effectively. As such, mental well-being involves the presence of positive emotions, having a sense of purpose, and the ability to participate in meaningful relationships and activities (Gautam et al., 2024). Faculty of Public Health (n.d.) and Gautam et al. (2024) align this definition with the WHO's holistic and positive conception of health (as described earlier), highlighting the dimensions of mental well-being as emotional, psychological and social well-being.

With increasing calls to reassess the significance of unstructured outdoor play in children's well-being (Tremblay et al., 2015) and LPP being recommended as a promoted strategy for increasing play activity time and levels (Flannigan & Dietze, 2017), there remains a need to systematically map and synthesize the existing literature on the influence of LPP on children's mental well-being. A preliminary scope of the literature was conducted to determine whether previous reviews on LPP exist. The search was conducted in PubMed, Academic Search Complete (EBSCO), and Google Scholar on November 14th, 2025. Across these sources, we identified six relevant reviews (five systematic reviews and one review of literature) examining LPP in relation to children's physical activity, cognitive, physical, social, and emotional development, and children's behaviour and health.

Across all sources examined, no existing review was identified that focused specifically on LPP in relation to mental well-being. Even Gibson et al. 's (2017) systematic review highlights the limited amount of research available on LPP more broadly. Additionally, much of the present evidence discusses outdoor play broadly, often used interchangeably with terms such as unstructured play, risky play or free play, which encompasses an array of play activities beyond LPP. Consequently, as previously discussed, mental well-being is a broad construct that reflects different disciplinary perspectives and is defined differently across research and policy contexts (Nyqvist et al., 2013). As a result, the specific influence of LPP on mental well-being remains underexplored in the existing literature. This lack of focused investigation highlights the need for a scoping review to map how mental well-being has been conceptualized, measured, and addressed within LPP research.

Review question(s)

Guided by the Joanna Briggs Institute [JBI] (2022) reporting guideline and checklist for Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for scoping reviews (PRISMA-ScR), the following research questions guided this scoping review:

1. *What evidence exists regarding the relationship between LPP and* children's mental well-being
2. *What gaps remain in this literature?*

Inclusion Criteria

The eligibility criteria, also referred to as inclusion criteria (Peters et al., 2022), outline what sources are to be included/excluded in the review. Following the JBI's framework (Peters et al., 2022), the inclusion and exclusion criteria are outlined below, based on the Population, Concept and Context (PCC) framework (JBI, 2022).

Participants (P)

The P element in JBI's framework depicts the population or participants. In this review, the participants were children aged two to twelve years, in any early childhood (e.g., childcare, kindergartens, nurseries and pre-schools), school (e.g., primary school, elementary, middle schools) or community settings (recreational centres, public parks/playgrounds) where LPP was implemented. Accordingly, studies involving participants older than twelve years were excluded to maintain a focus on early and middle childhood. Additionally, studies conducted exclusively with highly specific clinical or high-risk populations (e.g., children with diagnosed mental disorders, specific medical needs, or hospital-based samples) were excluded, as these contexts and settings involve unique determinants that may influence children's mental well-being in ways that differ from general, non-clinical settings.

Concept (C)

The C element refers to the focus or key issue that informs the main objectives and research questions the scoping review seeks to explore (Peters et al., 2022). In this study, the impact of LPP on children's mental well-being represents the review concept. As such, for a study to be included in the review, the loose parts involved in the studies should be any movable materials and equipment introduced in children's outdoor play spaces, and that are unstructured and child-led. Any loose parts involving fixed material or equipment (for example, swings, slides, etc.) in the children's play spaces and that are adult-led or directed were excluded. Although mental well-being was the primary outcome of interest, eligibility was not limited to studies explicitly using this term, as mental well-being is a broad, multidimensional construct. However, to maintain conceptual focus, studies examining outcomes outside the psychological, emotional, or social domains of mental well-being, and those studies examining broader health or educational outcomes (e.g. physical activity, nutrition, sleep, sedentary and curriculum-related achievements) were excluded.

Context (C)

Lastly, the C (context) element of scoping review, also termed as 'setting' and 'environment', refers to the location where the sources of evidence have been carried out, and/or the field of the concept and/or participants (Peters et al., 2022). As such, studies were eligible for inclusion if they evaluated the impact of LPP on children within an LPP-participating school setting. Studies conducted in out-of-school or after-school LPP interventions, such as community and recreational centres, were also included. No restrictions were placed based on continent or country of origin; however, to ensure relevance and accessibility, peer-reviewed journal articles published in English were considered. Grey literature, such as theses, dissertations, reports and other non-peer-reviewed publications were excluded. Additionally, this review also considered studies employing quantitative, qualitative, or mixed methods. To ensure comprehensive coverage of the evidence base, scoping, systematic, or other reviews were screened but were not treated as primary sources of data. Instead, they were used only to identify additional eligible primary studies that may not have been captured through the database searches. These were retrieved and independently assessed for inclusion.

Methods

The proposed review was not pre-registered. It was conducted following the Joanna Briggs Institute (JBI) framework for scoping reviews (JBI, 2022). This methodology was selected since it provides a current framework developed to address the lack of a standardized checklist or guideline for conducting scoping reviews, ensuring transparency, viability and trustworthiness. In addition, the JBI framework is complemented by a reporting guideline and checklist for Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for scoping reviews (PRISMA-ScR). As such, this offers clear detail and reporting guidance of essential components of a well-conducted SR, which informed and guided this review.

Search Strategy

We used a combination of electronic and manual searching to identify studies. An initial search strategy was developed through consultation and assistance of a research librarian at the University of Alberta. The following electronic databases were selected: Embase (Ovid), PsycInfo (Ovid), ERIC (EBSCO) and PubMed. These four databases were chosen based on their focus on providing a comprehensive systematic list of literature on educational psychology, physical education and recreation, and public health, aligning with the study's focus. Also, since these databases are distinct and diverse, this helped the review maximize all available data by considering all relevant literature sources. The manual search process included screening and examining the reference lists of all the eligible studies and reviews. Both backward and forward citation chaining were conducted to identify any additional relevant studies (Booth, 2008; Hirt et al., 2021) not captured in the database searches. These were evaluated in the same way as the electronic searches.

Source of Evidence Screening and Selection

The scope of the review included ("loose parts/materials" OR "loose parts play") AND ("mental well-being") AND ("child"), which was employed as the search strategy in all the databases. Given the broad nature of searching and selection, there was a potential for new relevant terms, concepts and locations of evidence to be revealed (Peters et al., 2022). As such, during the preliminary scope of the literature, relevant articles were reviewed to help modify and expand the search strategy. The keywords and subject terms extracted from these studies were used to identify additional keywords. However, the terms that consistently yielded irrelevant results were excluded from the final search. A concept map summarizing a full list of synonyms and search terms used is outlined in Table 1.

Following this process, it became apparent that the terms "loose parts" and "playthings" returned a high volume of irrelevant records (articles outside the scope of this review) from digital technology, engineering and gaming contexts. To address this, NOT operators were applied where supported by the database syntax to exclude clearly irrelevant fields (e.g., engineering and gaming), and subject-area limits were also used. Searches were restricted to behavioural and psychological sciences, education, neuroscience, social sciences, humanities, and medicine (pediatrics, public health) to ensure relevance to children's play and mental well-being. The full search strings for each database are presented in Table 2. The shared list of search terms serves as a general guide for all databases. Truncation and other search tools were applied as appropriate, in accordance with the specific syntax and requirements of each database.

Table 1
List of Synonyms

Loose Parts	Open-ended materials Free-form materials Play objects Loose items Play pieces Playthings Scrap materials
Loose Parts Play	Unstructured play Free play Child-led play Open-ended play Heuristic play Imaginative play Discovery play
Mental Well-Being	Mental health Emotional well-being Psychological health Emotional health Mental wellness Psychological well-being Psychological resilience Emotional resilience
Child/Children (2–12 years)	Elementary school children Grade school children Young learners Early childhood students Lower school students Primary school students Early years children School-aged kids Young pupils Junior students Middle school student

Table 2
Concept Areas and Search Terms Used in the Review

Concept Area	Keywords/Search Terms
LPP	**Materials-based terms:** "loose parts" OR "loose materials" OR play material* OR scrap material* OR plaything* OR playpod* **Play-based terms:** loose parts* OR "unstructured play" OR "open-ended play" OR "free play" OR "outdoor play"
Mental Well-Being	"Mental health" OR "mental well-being" OR "mental wellbeing" OR "wellbeing" OR "well-being" OR "psychological health" OR "psychological well-being" OR "psychological wellbeing" OR "emotional health" OR "emotional well-being" OR "emotional wellbeing" OR "social-emotional development"
Children (2–12 Years)	child* OR preschool* OR "kindergarten" OR early childhood* OR primary school* OR elementary school* OR middle school*

Data Extraction

Using the terms listed above, searches were conducted in each selected database. All searches were limited to publications dated after January 2014 and those available in English only. Given the global shift toward promoting unstructured outdoor play, we chose this timeframe to capture the most current evidence on loose parts interventions. Similarly, the language restriction reflected practical feasibility, as English was the primary language of the research team. The initial search was completed in June 2025 and subsequently updated in December 2025. The total number of studies retrieved from the databases was imported into Covidence to manage duplication and further screening and extraction processes. Specific criteria for including and excluding were set in Covidence to support and guide the screening process (see Table 3).

With reference to the eligibility criteria, the first screening stage involved sifting the titles and abstracts, which was done by one reviewer. The second step involved the full text review, which was done by all reviewers. The sources excluded at the full-text level were reported in Covidence, along with a brief note explaining the reasons for exclusion. Any identified conflicts were resolved through team discussions guided by the eligibility criteria and accompanying notes. Conflicts were then resolved collaboratively, leading to a final agreed-upon decision on exclusion or inclusion.

Analysis and Presentation of Results

Once the final eligible studies were identified, data extraction was conducted using a structured charting form provided by Covidence. For each study, bibliographic details were extracted (author details, year, country); study characteristics (aim of the study, study design); Participants (participant age, sample size); Concept (play setting, structure of the play

environment), Context (intervention, nature of LPP used, reported mental well-being outcomes); key findings (authors reported recommendations, limitations); gaps in the research and cited references to consider.

The play settings were categorized into 1) school-based settings (including a range of early childhood education environments such as daycares, kindergartens, nurseries and pre-schools, as well as primary, elementary and middle schools), and 2) out-of-school LPP programs (e.g., in community and recreational centres and public parks/playgrounds). Guided by Gautam et al. (2024), mental well-being outcomes were categorized into three domains: emotional well-being (e.g. positive emotions, emotional regulation), psychological well-being (e.g. self-esteem, competence, autonomy) and social well-being (e.g. peer interactions, relationships, social connectedness and network). The target population, i.e. children (aged 2-12), were grouped as: toddlers (2 years), early childhood (3-5 years), and middle childhood (6-12 years).

The charting form was an interactive guide that ensured a comprehensive understanding of how LPP has been studied in relation to children's mental well-being. The extracted data were analyzed using a descriptive approach, with the results presented using a summary table (see Table 3) and further synthesized through a narrative summary. The narrative summary systematically outlined the aims of the reviewed sources, the concepts each adopted, and the findings in relation to the review question. The scoping review aimed to create a better understanding of the success of the impact of LPP on children's mental well-being, and thus the choice of this approach.

Table 3
Eligibility Criteria

Inclusion criteria	**Exclusion criteria**
Study characteristics: ● Available in English ● Research-based Publications (Qualitative, quantitative or mixed) ● Peer-reviewed ● Published after Jan 1, 2014	● Unavailable in English ● Review articles ● Grey literature: (position papers, commentaries, theoretical papers, ● theses and dissertations) ● Published before Jan 1, 2014
Population/participants ● Children (2-12 years)	● Children over 12 years ● Children below 2 years ● Clinical or high-risk populations ● (e.g., specific medical needs)
Play contexts: ● Loose materials: natural or manufactured (recycled or everyday materials) ● Play is child-led and minimally adult-directed ● Interventions occurring in Early childhood, primary school, or community play settings	● Fixed or manufactured play equipment only, with no loose components ● Highly structured, adult-led, or instructional activities ● Loose parts as therapeutic or clinical interventions or treatment (e.g., clinical play therapy) ● Hospital samples

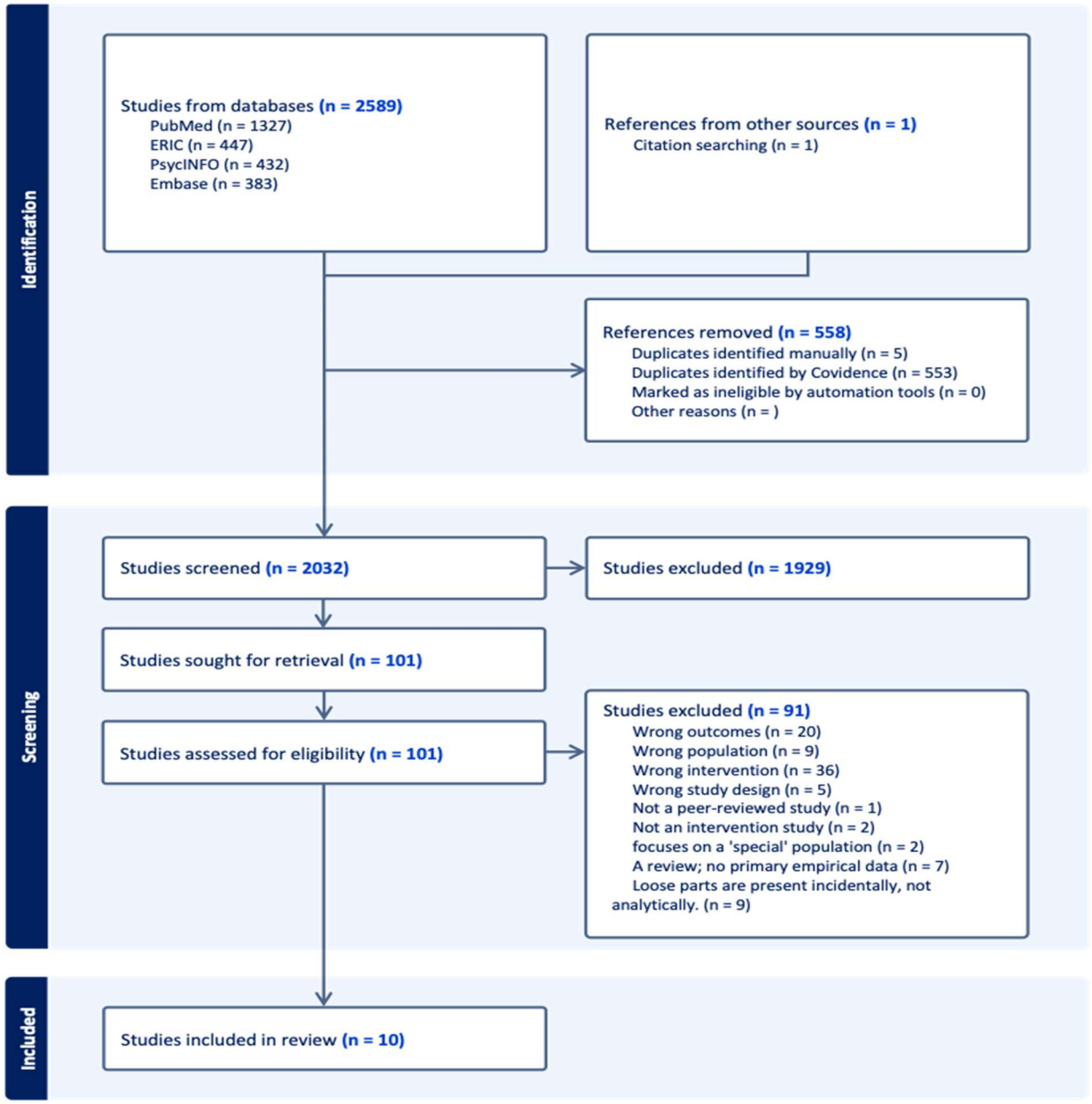
Results

Study Selection

An initial search was undertaken, and to ensure accuracy and consistency, a revised and updated search was subsequently conducted within the same project on Covidence. Only findings from the updated search are reported in this review. The updated search across the four databases identified 2,589 potentially relevant studies. Once the duplicates were removed, the titles and abstracts of 2,032 studies were screened, resulting in 101 studies selected for full-text screening. After full-text screening, 10 studies met the inclusion criteria, with the reasons for excluding other studies detailed in the flow chart. See Figure 1, PRISMA flow chart on the selection process.

Figure 1

PRISMA Flow Chart on the Selection Process



Study Characteristics

All 10 included studies, published between 2019 and 2025, were conducted across diverse geographic locations. Three studies were conducted in Australia, two in Canada, two in the Netherlands, and one each in the United States, the United Kingdom, and Hong Kong. All the studies were published in peer-reviewed journals and focused on children between the ages of three and twelve years. Across all included studies, the examined approaches were implemented primarily in school settings. Almost all studies (n = 7) examined LPP outcomes using standardized scales, observation tools and child self-reports, while fewer studies incorporated teacher perspectives (n = 1) or combined children's perspectives with those of teachers (n = 2).

The 10 included studies employed qualitative, quantitative or mixed methods designs. Quantitative approaches were most common (n = 5) and included three quasi-experimental (non-randomized) studies, one randomized experimental study and one field experiment. Qualitative approaches *(n = 4)* were primarily descriptive, with one study adopting an action research ethnographic design. One study *(n = 1)* used a mixed-methods design, combining quantitative and qualitative data within a case study (see Table 4).

LPP Interventions

LPP interventions across the included studies were implemented using a range of loose materials, play structures, and contextual arrangements. All interventions included in the reviewed studies were conducted in school-based settings, primarily outdoors, where loose parts were intentionally introduced into existing play environments. The loose materials involved a range of natural, recycled, and everyday open-ended materials. One study (Parrott & Cohen, 2020) did not explicitly label the intervention as LPP; however, it involved child-directed free play with open-ended, moveable materials, which aligns with established definitions of LPP.

In almost all included studies, LPP was predominantly unstructured, open-ended, and child-led, with no prescribed tasks or expected outcomes. Children were afforded autonomy in how materials were used, either individually or collaboratively. In a small number of studies, LPP was supported through light adult facilitation while maintaining an open-ended approach. For example, in one study (Lee et al., 2020), unstructured play was intentionally used to support children's emotional regulation by reducing anxiety and enhancing focus and attention during mindfulness activities. The duration of LPP interventions varied across the included studies.

Mental Well-Being Measures and Outcomes

Mental well-being outcomes were examined across the included studies using a range of emotional, psychological and social-emotional indicators. None of the included studies explicitly identified mental well-being as a primary outcome; however, they all reported outcomes related to mental well-being as secondary or emergent findings. Emotional well-being outcomes included enjoyment, fun, happiness, enthusiasm, mood, and emotional expression, with several studies reporting high levels of enjoyment and playfulness during LPP. One study (Lee et al., 2020) differed from the other studies by integrating LPP with a mindfulness component. It reported increased playfulness and children's happiness as emotional well-being outcomes.

Psychological well-being outcomes encompassed self-regulation, focus and attention, autonomy, confidence, determination, resilience, problem-solving, and creativity. Across studies, children were reported to demonstrate increased independence, decision-making, and engagement in imaginative and flexible play. Social well-being outcomes included collaboration, teamwork, mentoring, leadership, friendship formation, and social inclusion. In contrast to the generally

Table 4

Studies Included in the Scoping Review

Authors	Country	Details of research study	Study design	Participants	Outcome measures	Key mental well-being and mental well-being -related findings
Branje, et al., 2021	Canada	**Aim:** Explored the efficacy of integrating outdoor loose parts play into Nova Scotia childcare centers	A multi-method randomized controlled trial	~Preschoolers aged 3 to 5 years	Educator's focus groups	**Educator reports:** Outdoor LPP supported holistic development, with children ~frequently engaging in problem-solving, mentoring, teamwork, imagination, communication, and displaying enjoyment, joy, and positive affect (e.g., laughter and smiling). ~Play experiences were described as supporting cognitive and socio-emotional development through active manipulation of materials and social engagement
Eichengren et al., 2023	Netherlands	**Aim**: Examined whether LPP can promote social participation for children with and without disabilities.	Non-randomised experimental study	~42 primary school children ~Age: 8–11 years (three had hearing loss or autism).	A Systematic observational tool: the System for Observing Outdoor Play (SOOP)	~Intense enthusiasm and enjoyment (for all children) **Children without disabilities** ~More imaginary (e.g., family role play) ~Collaborative play ~Creativity and independent problem solving (e.g., finding out by themselves how to build certain constructions) ~ an increase in solitude play (for children without disabilities) **Children with disabilities** ~Decrease in social interactions and social play (during the intervention). ~did not benefit socially from the intervention and became even more isolated compared with baseline level.

Gorrie & Udah, 2021	Australia	**Aim:** The action research aimed to examine how and why loose parts were used by children in the Outside-school-hours care (OSHC) service.	Action research, using a qualitative ethnographic methodology.	~350 children (aged between five and eleven years) ~ 23 educators	Observations made of children playing with loose parts by educators	Educators reported that LPP promoted ~collaboration, creativity, construction, and symbolic play. ~Children actively manipulated their environment to imagine, design, build, and solve problems, supporting negotiation, communication, and collaborative play (including multi-aged play).
Hyndman et al., 2014	Australia	**Aim:** To evaluate the effects of the LEAP intervention on quality of life (QOL), enjoyment and participation in PA	Quasi-experimental controlled trial.	~279 children aged 5–12 years (156 control; 123 intervention) ~Samples drawn from 2 Australian primary schools	~LEAP 39-item questionnaire (measured children's enjoyment of play activities) ~PedsQL) questionnaire (measured children's quality of life	~There were no significant treatment effects identified in the intervention school children's mean psychosocial scale and overall QOL scores compared to those in the control school.

Lee et al., 2020	Hong Kong	**Aim:** examined the effectiveness of unstructured loose parts play in addition to a mindfulness intervention in promoting physical activity level and emotional wellbeing,	Quasi-experimental study design	~42 children aged four to six years. ~ two kindergartens in Hong Kong	**Emotional well-being measures:** ~Smiley Face Likert Scale ~Children's Emotional Manifestation Scale. **Social well-being measures**: ~Penn Interactive Peer Play Scale ~Test of Playfulness Scale.	~Increased playfulness and improved emotional wellbeing in the group of children engaging in outdoor, LPP and short mindfulness sessions ~There were no significant differences in emotion scores (among the intervention and control groups) as the scores in both groups were high at all time points.
Mozaffar et al., 2021	United Kingdom	Aim: to understand how different play contexts (one facilitated with manufactured play equipment and the other facilitated with LPP materials) can encourage creativity among children.	A field experiment	~15 preschool children (aged between 3 and 5)	~ an observation recording procedure (using empirical duration recording [EDR]) ~and a video recording procedure	**Creativity outcomes:** ~LPP was significantly more supportive of creative play than manufactured play. ~Flexibility was the most frequently observed creativity factor and occurred more often in loose parts contexts, ~Originality was rare in both contexts with no notable differences. ~LPP supported flexible use, integration of elements, and higher levels of creative play overall.

Parrott & Cohen, 2020	USA	**Aim**: examined the implementation of Let Grow Play Club at a Long Island, NY elementary school and, more generally, children's and teachers' perceived benefits of such unstructured play.	Mixed methods study- case study	~ 47 children from kindergarten through fifth grade ~6 teachers (two from kindergarten, three from first grade, and one from fifth grade).	~Observations of children's play periods ~child interviews, ~teacher interviews.	**Students perceived outcomes:** LPP improved ~ mood ~socialization ~ making new friends ~ working through problems **Teachers perceived outcomes:** LPP allowed students ~work through their own problems, rather than relying on adult intervention. (*Note: the authors highlight these two as social/cognitive skills)*
Simoncini & Meeuwisse, 2025	Australia	**Aim:** Explored children's and teachers' experiences and perceptions of the LPP sessions and whether there were differences between the two groups (structured vs unstructured play).	Qualitative method	~46 children (aged 9–10 years) ~Two teachers	~children's surveys and focus groups ~teacher interviews	Four themes emerged: (1) *Construction*—children reported enjoyment, collaboration, and autonomy ("choice" and "power"). (2) *Social skills*—teachers observed improved peer interaction and inclusion, though children reported challenges such as sharing and conflict. (3) *Creativity and imagination*—children perceived increased creativity over time, with some constraints noted (e.g., wheels limiting creativity); and (4) *Overall experiences*—both children and teachers expressed strong enjoyment and positive attitudes towards LPP

Spencer et al., 2019	Canada	**Aim:** to identify the benefits and challenges of incorporating loose parts play into the outdoor environments of childcare centres, as perceived by educators.	Qualitative description methodology	~Early childhood educators from 11 intervention centres	Focus groups with early childhood educators.	Educators reported that LPP ~enabled children to take risks; spark creativity and imagination. ~contributed to determination and resilience. ~cultivated independence and confidence. ~built relationships and leadership. ~improved problem-solving, social skills, ~enhanced self-assessment.
Van Rooijen et al., 2023	Netherlands	**Aim:** gaining an understanding of school-aged children's involvement in a loose parts intervention intended to stimulate risky play and facilitated by childcare practitioners.	Qualitative	~49 children aged 4 to 10 years from seven childcare institutions.	observations, informal conversations and roundtable talks with children	LPP gave: ~ a sense of confidence and mastery in children. ~ supported in building relationships with peers and adults ~ provided enjoyment ~elicited a range of emotions including fear and joy. ~empowered children in making their own decisions

positive social well-being outcomes reported across studies, Eichengreen et al. (2023) revealed a divergent pattern by examining differential social outcomes for children with and without disabilities. Their findings indicated reduced social interaction and increased solitary play among children with disabilities during the intervention period. Both child- and educator-reported findings highlighted opportunities for cooperative play and peer interaction, while some studies also noted challenges related to social skills, such as conflict or sharing difficulties.

Notably, mental well-being-related outcomes were measured using diverse methodological approaches. Quantitative studies employed standardized questionnaires, rating scales, and structured observational methods to assess emotional, social, and psychological dimensions of mental well-being. These included the Lunchtime Enjoyment Activity and Play (LEAP) 39-item questionnaire and the Pediatric Quality of Life Inventory 4.0 (PedsQL), which were used to assess children's enjoyment of play activities and quality of life (Hyndman et al., 2020). Emotional well-being measures included the Smiley Face Likert Scale and the Children's Emotional Manifestation Scale (Lee et al., 2020). Social well-being measures included the Penn Interactive Peer Play Scale and the Test of Playfulness Scale (Lee et al., 2020). Systematic observational tools such as the System for Observing Outdoor Play (SOOP) (Eichengreen et al., 2023) and empirical duration recording used in a field experiment (Mozaffar et al., 2021) were employed. Qualitative approaches primarily involved observations and educator or child perspectives, collected through focus groups, interviews, field notes, and informal conversations across studies (Gorrie & Udah, 2021; Branje et al., 2021; Spencer et al., 2019; Parrott et al., 2020; Van Rooijen et al., 2023; Simoncini & Meeuwissen, 2025).

Discussion

The current scoping review mapped existing evidence on LPP in relation to children's mental well-being, drawing on 10 studies with diverse designs, settings, and mental well-being–related outcomes. Notably, the findings reveal several consistent patterns in how LPP may support children's mental well-being. However, none of the included studies examined all the core domains of mental well-being (i.e., emotional, psychological, and social aspects of well-being; see Table 5) as a primary outcome of LPP. Instead, mental well-being was most often explored as a secondary or emergent outcome, typically emerging indirectly through children's play experiences or considered alongside other primary outcomes.

Table 5
Mental Well-being Outcomes

Emotional indicators	Social indicators	Psychological indicators
Enjoyment	Social interaction	Autonomy
Happiness	Cooperation	Competence
Joy	Communication	Problem-solving
Improved mood	Friendship building	Imagination
Enthusiasm	Teamwork	Increased focus
Fear	Peer negotiation	Mastery
	Inclusion	Creativity
	Social skills	Confidence
	Relatedness	Self-assessment

This pattern aligns with pre-existing literature indicating that LPP research has predominantly emphasized physical activity outcomes, with comparatively limited attention to emotional or socio-emotional dimensions (Gibson et al., 2017; Pereira et al., 2024). As such, these findings suggest that reported mental well-being-related outcomes associated with LPP are related to its open-ended, child-led nature and embedded play affordances, rather than being the result of explicitly targeted mental well-being interventions, which were largely absent from the reviewed studies. This raises important questions about whether the current evidence base adequately reflects the breadth and complexity of children's mental well-being in LPP contexts, or whether important aspects of mental well-being remain underexplored.

Emotional well-being outcomes were most reflected through indicators such as enjoyment, happiness, positive affect, and playfulness. Across several studies, children were described as laughing, smiling, and expressing joy and enthusiasm during LPP engagement. Others reported improvements in mood or playfulness following LPP participation. Psychological well-being–related outcomes were reflected through children's autonomy, problem-solving, creativity, focus, and self-regulation. Together, these findings suggest that LPP could foster emotionally supportive play contexts that promote positive affect and psychological well-being, particularly when play is child-led, open-ended, and embedded within regular play routines. Studies reporting higher levels of flexibility and integration during LPP further indicate that open-ended materials may support psychological well-being by enabling children to make choices, take risks, and freely explore their ideas.

Social well-being outcomes were frequently reported across the studies and included collaboration, teamwork, friendship formation, mentoring, leadership, and social inclusion. LPP appeared to facilitate peer interaction by providing shared, flexible materials that encouraged cooperative problem-solving and negotiation. However, social outcomes were not uniformly positive across all groups. Eichengreen et al. (2023), for example, examined differential social experiences among children with and without disabilities and found reduced social interaction and increased solitary play among children with disabilities during the intervention period. These findings indicate that LPP may not equally support social well-being for all children. This highlights the importance of additional facilitation or inclusive design considerations to promote equitable participation.

Additionally, the included studies employed a variety of measurement tools to capture mental well-being-related outcomes, reflecting differing conceptualizations of mental well-being across the literature. Although mental well-being was not the primary focus in these studies, this review identified indicators of emotional, psychological, and social well-being, highlighting mental well-being as an emergent outcome of LPP. However, it reveals a conceptual gap in how its impacts are examined. These findings align with Gibson et al. (2017), who emphasize the need for deliberate selection of sensitive, valid, and reliable tools to measure social-emotional outcomes in LPP research.

Lastly, only two of the included studies incorporated child-led or child-reported perspectives, with the majority relying on adult-reported measures or observational indicators to infer children's emotional, psychological, and social well-being. This imbalance is notable given that LPP is inherently child-directed and grounded in children's agency. The limited use of child-led approaches suggests a methodological gap, where the subjective and experiential dimensions of children's mental well-being may be underrepresented. Greater inclusion of children's own voices may offer a more nuanced understanding of how LPP is experienced and how it supports mental well-being in everyday play contexts. This is consistent with prior research emphasizing

participatory and child-centred approaches (e.g. Eastham & Kaley, 2020; Stirrup, 2017; Sudarsan et al., 2022). Future research would also benefit from clearer conceptualization and measurement of mental well-being in the context of LPP, alongside greater attention to diverse populations, including children with special needs.

Limitations of the Present Review

One key strength of this review is that it followed the JBI methodology and was reported in accordance with the PRISMA-ScR guidelines, which provided clear guidance on key methodological and reporting components. Adherence to these frameworks enhanced the rigour and transparency of the review process. In addition, the search strategy was developed in consultation with experts in the field, including the research supervisors, and refined with the support of an academic librarian, which strengthened the comprehensiveness and relevance of the search. This approach was appropriate for mapping the breadth of literature examining the success, or lack thereof, of LPP on children's mental well-being, and for identifying gaps in the existing evidence.

However, several limitations should be acknowledged. First, in the included studies, mental well-being outcomes were not used as exclusionary criteria. As a result, mental well-being was rarely the primary outcome of LPP interventions. This likely limited the depth and specificity of conclusions that could be drawn about mental well-being outcomes alone. As well, LPP can fall under other names (as stated earlier) which may also have limited the findings despite best efforts to identify all relevant terms. Additionally, due to resource constraints, this review limited the final selection of studies to peer-reviewed, research-based publications from 2014 onward, excluding grey literature. As a result, some potentially relevant studies may have been excluded, which could have offered further insights and contributed to a more extensive and inclusive scoping review. Finally, the diversity among the studies, including differences in study designs, outcome measures, and conceptualizations of mental well-being, made direct comparisons difficult and limited the depth of synthesis across studies. Future research could adopt more clearly articulated mental well-being constructs and employ more consistent mental well-being outcome measures to strengthen the evidence base in this field.

Conclusions

In conclusion, this review highlights LPP as a promising yet underdeveloped area of research, with growing potential to support children's mental well-being. While the diverse studies have offered valuable insights, the lack of topic-sensitive research targeting core domains of mental well-being limits the ability to draw firm conclusions. Although the findings suggest that LPP may support children's mental well-being, a more intentional and clearly defined conceptualization of mental well-being is needed to substantiate these claims. Future research should adopt comprehensive frameworks that encompass the core domains and operational dimensions of children's mental well-being to ensure no critical areas are overlooked. Additionally, studies should examine how LPP can be implemented across diverse settings and populations and integrated meaningfully into various play environments to support broader aspects of children's mental well-being.

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