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Effects of early displacement experiences on the mental health and developmental trajectories of young children

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List of Abbreviations

ACE	Adverse childhood experience
CATS	Child and Adolescent Trauma Screening (Sachser et al., 2017)
CPTI-APT	Children's Play Therapy Instrument – Adaptation for Terror Research (Cohen et al., 2010)
D-ACE	Displacement-related adverse childhood experience
DSM-5	Diagnostic and Statistical Manual of Mental Disorders - 5th edition (APA, 2013)
ICD-10	International Statistical Classification of Diseases and Related Health Problems 10th edition (World Health Organization, 2016)
INCLUDE	InterCuLtUral Child DEvelopment Project
IQ	Intelligence Quotient
KABC-II	Kaufmann-Assessment-Battery for Children – 2nd edition (Melchers & Melchers, 2015)
MEDLINE	Medical Literature Analysis and Retrieval Online System
NA	Not applicable
NR	Not reported
NICE	National Institute for Health and Care Excellence
NVI	Nonverbal Index of the Kaufmann-Assessment-Battery for Children (Melchers & Melchers, 2015)
PRISMA	Preferred Items for Systematic Reviews and Meta-analysis (Page et al., 2021)
PTSD	Post-traumatic stress disorder
PORTA	Providing Online Resource and Trauma Assessment for Refugees (Sukale et al., 2017)
PPCT	Person-Process-Context-Time model (Bronfenbrenner & Morris, 2006)
RHS-15	Refugee Health Screener (Hollifield et al., 2013)
SDQ	Strength and Difficulties Questionnaire (Klasen et al., 2003)
SON 2.5–7	Snijders-Oomen Non-verbal Intelligence Test (Tellegen et al., 2007)
UN	United Nations
VBV	Verhaltensbeurteilungsbogen für Vorschulkinder (Döpfner, 1993)
WNV	Wechsler Nonverbal Scale of Ability (Petermann, 2014)
WPPSI-IV	Wechsler Preschool and Primary Scale of Intelligence – 4th Edition (Petermann & Daseking, 2018)

Summary

Young children are at high risk for adverse experiences during different stages of displacement, including exposure to war and violence, prolonged stays in refugee camps, and restricted access to education and play opportunities. While the negative consequences of forced displacement in older children and adolescents are widely documented, research on children aged 0- to 6-years is scarce. This thesis aims to investigate the effects of early displacement experiences on young children's mental health and development, as well as the contextual factors shaping their outcomes.

In a systematic review, we first analyzed findings from 32 studies encompassing 6,878 displaced children regarding their social-emotional and cognitive development. Studies reported diverse outcomes, including difficulties in peer relations, prosocial behavior, family functioning, play, intelligence, learning performance, and language development. Several factors were identified that influenced the presented outcomes: Frequency of adverse experiences, family separation, parental mental health, and duration and quality of resettlement in the host country.

Second, we conducted a cross-sectional study to evaluate the effectiveness of a systematic play observation in assessing the mental health and development of young children with and without refugee experience. Analyses yielded differential results for both groups: Play variables were significantly correlated with IQ testing performance, short-term learning, and vocabulary size in the clinical comparison group and with social-emotional competencies in a kindergarten setting, time spent in Germany, and parental distress in the refugee group. Children with more parent-reported adverse experiences demonstrated lower levels of social interaction during play in the overall sample.

The findings of this thesis indicate that young children are impacted not only by forced displacement itself but also by repeated exposure to adverse experiences and disruptions within their immediate and extended environments. We emphasize the need to systematically assess children's reactions using child-centered and strength-based diagnostic tools such as play observations to identify potential risk factors and resources. Children's resilience highly depends on the support of significant people and institutions within the host country. Thus, we advocate for policies that prioritize stable living conditions, early access to play-enhancing and educational environments, and caregiver support to promote healthy development and integration chances in displaced children upon arrival in the host country.

Definitions

Forcibly displaced person: A person who was forced to flee their home due to “persecution, conflict, violence, human rights violations and events seriously disturbing the public order” (UNHCR, 2023a, p. 2), including refugees, asylum-seekers, internally displaced persons, and other people in need of international protection.

Refugee: A person who has left their country of nationality due to fear of persecution based on their race, religion, nationality, membership in a particular social group, or political opinion, and who is either unable or unwilling to return to their home country because of this risk (UNHCR, 2010).

Internally displaced person: A person who has been forcibly displaced as a result of or to avoid armed conflict, generalized violence, or violations of human rights, and who has not crossed an internationally recognized state border (UNHCR, 2023a).

Asylum seeker: A person claiming or applying for international protection and whose “request for refugee status, or complementary protection status, has yet to be processed, or they may not yet have requested asylum but they intend to do so” (UNHCR, 2024, para. 1).

Political violence: Violence perpetrated by state- or non-state representatives to achieve or prevent politically motivated goals, such as genocide, denial of citizenship, wrongful detention, forced displacement, and lack of political representation or discrimination of minority groups (Schneider & Turshen, 2011).

1. Theoretical background[1]

1.1. Displaced children as a vulnerable group

According to the UN Refugee Agency, more than 43 million children were forcibly displaced and another 385,000 were born into refugee in 2022 (UNHCR, 2023b). In the same year, children under the age of six years constituted the largest group among child asylum seekers in Germany, accounting for 20.4% of all asylum applications filed (BAMF, 2023).

Displaced children[2] are a particularly vulnerable group. Before and during displacement, they are at heightened risk of witnessing or experiencing war and conflict, persecution, or separation from family members (Abdelhamid et al., 2023; Hanes et al., 2017; Solberg & Peters, 2020; van Os et al., 2016). After arriving in the host country, many children living in collective accommodations continue to face insecurity, frequent changes of residence, limited access to schools and health care, and a lack of opportunities for play and social interaction (Abdelhamid et al., 2023; Fazel et al., 2012). Therefore, displaced children not only face cumulative adverse experiences but are further deprived of a stable and age-appropriate environment (Aghajafari et al., 2020; Bürgin et al., 2022; Graham et al., 2016).

A growing body of research has reported high risks for mental health problems in displaced children, predominantly for post-traumatic stress disorder (PTSD; Blackmore et al., 2020; Bronstein & Montgomery, 2011; Fazel et al., 2005; Kien et al., 2019; Oberg & Sharma, 2023; Oleimat et al., 2022; Slone & Mann, 2016). Furthermore, studies highlight the negative effects of early displacement experiences on children's developing abilities in social-emotional, cognitive, and language domains (Aghajafari et al., 2020; Chierici & Hamdan, 2023; Elsayed et al., 2019; Graham et al., 2016; Joshi & O'Donnell, 2003; Kadir et al., 2019; Khamis, 2019; Michalek et al., 2022). These findings are particularly significant for young children, as the first years of life are a critical time for the development of these abilities (Scheeringa et al., 2005), and adverse experiences during this period may have long-lasting consequences for overall health and academic outcomes (Felitti et al., 1998; Hughes et al., 2017).

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[1] Parts of this work have been previously published in the studies conducted as part of this doctoral thesis and in the following book chapter:

Bernhardt, K. (2023). Risiko für Entwicklungsbeeinträchtigungen bei geflüchteten Kindern. In A. Hahnefeld, E. Weigand, S. Aberl, & V. Mall (Eds.), *Interdisziplinäre Versorgung von Kindern mit Fluchterfahrung: Mit psychoedukativem Gruppenkonzept für Eltern* (pp. 29-33). Hogrefe.

[2] In the following, the term *displaced* describes all children forced to leave their homes due to political violence (see *Definitions*). While acknowledging the existence of subcategories such as *internally displaced* or *refugee*, precise background information regarding the children under study was not always available. Whenever possible, the specific terms were utilized to describe the populations.

Despite the existing research on older children and adolescents, displaced children under the age of six years remain an underrepresented population in empirical studies (Gadeberg et al., 2017; Joshi & O'Donnell, 2003; Slone & Mann, 2016). This underscores the importance of deepening our understanding of the effects of forced displacement within the youngest age groups. Given their dependency on their immediate and extended environments (Bronfenbrenner, 1994; Bronfenbrenner & Morris, 2006), systematic assessments should not only focus on observing children's direct reactions but also examine the interactions of displacement experiences with the multiple systems they inhabit (Arakelyan & Ager, 2021; Magwood et al., 2022). Such insights can inform policymakers about measures to reduce the risks of re-traumatization and deprivation in displacement settings and promote positive developmental and integration trajectories among young, displaced children.

1.2. Adverse childhood experiences

Adverse childhood experiences (ACE; Felitti et al., 1998) refer to distressing and potentially traumatic events that children encounter before the age of 18. The concept of ACE was initially introduced by the Centers for Disease Control and Prevention (CDC, 2021) and the ACE study (Felitti et al., 1998) and encompasses ten types of experiences in the categories of abuse, neglect, and household dysfunction. The categories include exposure to physical, emotional, or sexual abuse, neglect, household substance abuse, and domestic violence, among others (CDC, 2021; Felitti et al., 1998). Early ACE during critical stages of brain development can have far-reaching consequences for a child's well-being in later life (CDC, 2021; Nelson & Gabard-Durnam, 2020; Teicher & Samson, 2016), affecting them through various pathways: biologically, by inducing brain changes that can distort stress response and immune functions (Gunnar & Donzella, 2002; Nelson & Gabard-Durnam, 2020; Teicher & Samson, 2016); socially, by disrupting attachment bonds and family dynamics (Hambrick et al., 2019); and psychologically, by altering perceptions of threat in the environment, potentially leading to maladaptive coping patterns (Sheffler et al., 2020). Consequently, children exposed to ACE are at great risk of developing chronic diseases, engaging in alcohol abuse, and experiencing psychological stress throughout their adolescence and adulthood (Felitti et al., 1998; Hughes et al., 2017; Oh et al., 2018). Importantly, this risk seems to increase depending on the number and severity of ACE (Felitti et al., 1998).

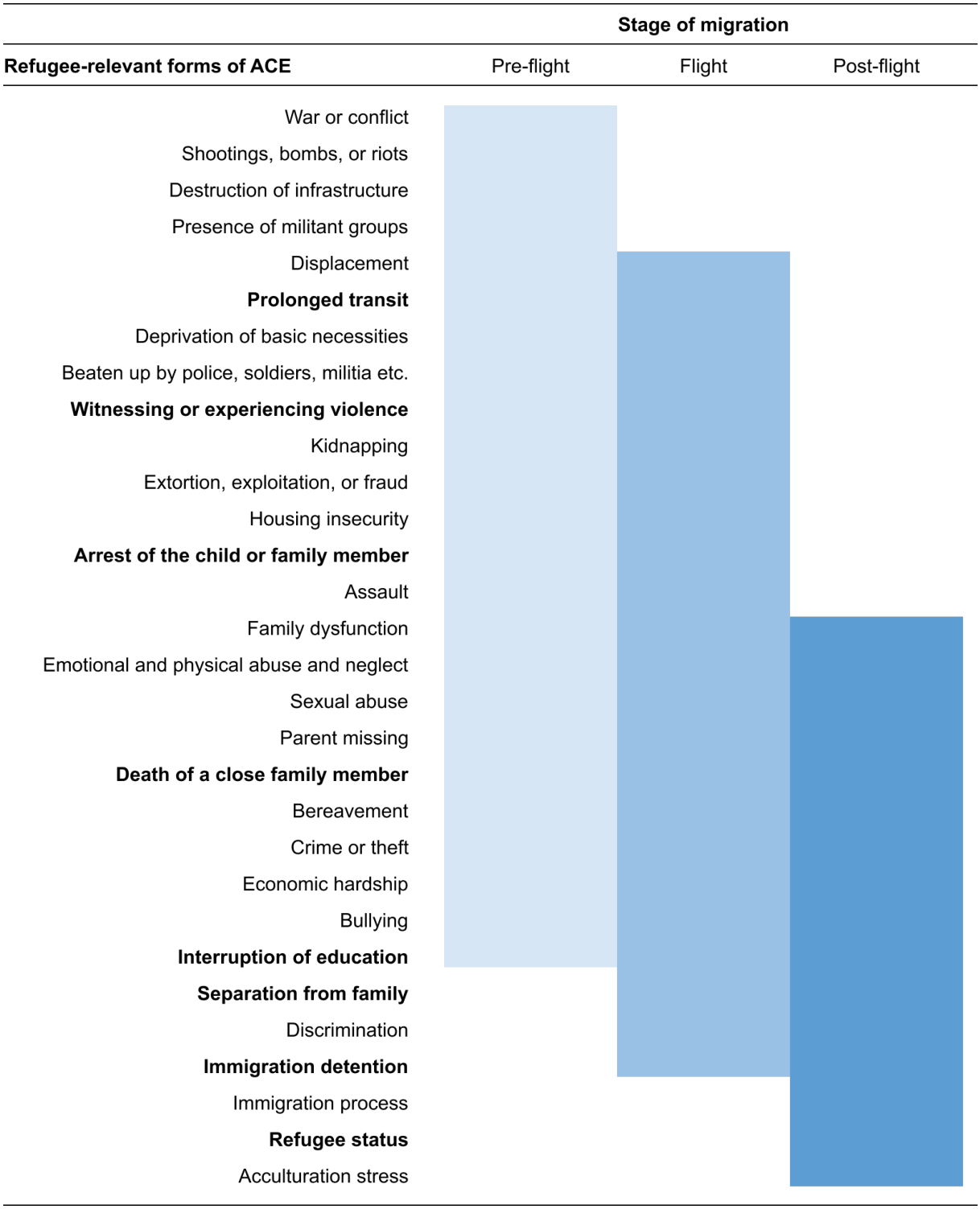
Due to their challenging life circumstances, young, displaced children are at high risk for ACE (Abdelhamid et al., 2023). In their systematic review, van Os et al. (2016) revealed that unaccompanied refugee children encounter an average of five to six potentially traumatic events before arriving in the host country. Accordingly, Hanes et al. (2017) reported that over 60% of their study population of refugee children and adolescents in Western Australia were

exposed to three or more ACE. Solberg & Peters (2020) found similarly high rates across 14 reviewed studies, with up to 80% of displaced youth and adults in low- and middle-income countries exposed to ACE. In comparison, around 10% of adults in the US report having experienced multiple ACE (Felitti et al., 1998; Sacks & Murphey, 2018), as do 8.9% in Germany (Witt et al., 2019).

Systematic assessments of the various adversities faced by displaced children are crucial to ensure early identification of vulnerable children (Abdelhamid et al., 2023). However, the established ACE categories primarily focus on the family context, while experiences of political violence and displacement are not sufficiently captured (Abdelhamid et al., 2023; Hanes et al., 2017; Müller & Kenney, 2021). In their systematic review, Abdelhamid et al. (2023) aimed to identify ACE questionnaires currently used in displacement contexts. The study revealed a lack of questionnaires specifically designed to capture refugee-relevant ACE and that existing tools do not sufficiently assess the extent and severity of experiences at different stages of displacement (*Figure 1*). Hanes et al. (2017) attempted to establish refugee-specific ACE by introducing nine types of adverse experiences to the traditional categories. These include refugee status, family separation (current or previous), prolonged transit, interrupted schooling, detention (prior or current or of a family member), witnessing trauma, and the death of a close family member. Notably, none of the experiences mentioned by both authors are included in the traditional classification of ACE, neglecting the broad range of affected areas in displaced children's lives. For this following work, we attempted to categorize displacement-related adverse childhood experiences (D-ACE; See *2.2.6 Displacement-related adverse childhood experiences*) based on the above-mentioned previous efforts (Abdelhamid et al., 2023; Hanes et al., 2017), recognizing the absence of a standardized classification of D-ACE in research and clinical practices.

Figure 1

Refugee-relevant ACE at different stages of migration



Note. ACE = Adverse childhood experience. Adapted from "Assessing adverse childhood experiences in young refugees: A systematic review of available questionnaires", by Abdelhamid, S., Kraaijenvanger, E., Fischer, J., & Steinisch, M., 2023, *European Child & Adolescent Psychiatry*, 1-17". Refugee-relevant adversity forms identified by Hanes et al., (2017) are accentuated in bold.

1.3. Effects of forced displacement

1.3.1. Mental health

Recent studies show a strong link between repeated exposure to D-ACE and psychological distress in children and adolescents, including anxiety, depression, suicidality, as well as emotional and behavioral problems (Blackmore et al., 2020; Bronstein & Montgomery, 2011; Carpiniello, 2023; Daniel-Calveras et al., 2022; Jin et al., 2021; Kien et al., 2019; Oleimat et al., 2022; Reed et al., 2012). PTSD, in particular, has been the main focus of research (for systematic reviews, see Blackmore et al., 2020; Bronstein & Montgomery, 2011; Kien et al., 2019; Oberg & Sharma, 2023; Oleimat et al., 2022; Reed et al., 2012). According to diagnostic guidelines, PTSD describes a stress response of an individual either directly exposed to or witnessing actual or threatened death, serious injury, or sexual violence (APA, 2013). Stress reactions can thereby manifest as intrusive and distressing thoughts or images of the traumatic events, avoidance of trauma-associated stimuli, emotional numbness, hypervigilance, and concentration or sleeping problems.

Although experiences from the first three to four years of life are typically not remembered, the consequences of traumatic experiences during this time can be particularly significant (De Young & Landolt, 2018; Scheeringa et al., 2003). In their pioneering work, Scheeringa et al. (2003, 2005, 2012) demonstrated that preschool children are just as likely as older age groups to develop PTSD. They state that approximately 30 – 40% of infants exposed to potentially traumatizing events exhibit clinically relevant symptoms afterward (Scheeringa et al., 2012). Their expressions of symptoms may thereby differ compared to older children and adolescents depending on their developmental stage (Joshi & O'Donnell, 2003; Scheeringa et al., 2003). Young children who are still developing their verbal skills often display age-specific symptoms that manifest on a behavioral level (Scheeringa et al., 2012; Scheeringa et al., 2003). For this reason, the Diagnostic and Statistical Manual of Mental Disorders (5th edition; DSM-5; APA, 2013) has established criteria for PTSD in preschoolers that rely less on a child's language and self-reflection abilities (*Table 1*). The revised criteria suggest that symptoms of traumatic re-experiencing may be displayed through repetitive play patterns instead of specific nightmares or flashbacks (APA, 2013; De Young & Landolt, 2018; Scheeringa et al., 2003). Diminished interest or participation in significant activities may be exhibited through constriction of play or social withdrawal (APA, 2013). Young children may also show increased irritability and temper tantrums as a sign of hypervigilance or exhibit forms of separation anxiety (APA, 2013; Scheeringa et al., 2003). One significant change in the classification involves lowering the threshold for highly internalized symptoms, such as avoidance of thoughts or feelings related to the traumatic event, which can be challenging to detect in young children (Cohen & Scheeringa, 2009).

Table 1

PTSD criteria for adults and adaptations for children aged six years and younger

	Criterium	Description	Adaptation for young children
A	**Traumatic event**	Exposure to actual or threatened death, serious injury, or sexual violence can occur through direct experience, witnessing, learning about it happening to a close associate, or repeated intense exposure to distressing details	Observing or knowing about event(s) that occurred to a parent or caregiving figure can be traumatizing
B	**Re-experiencing**	Intrusive symptoms associated with the traumatic event(s), including involuntary memories, distressing dreams, dissociative reactions, and psychological distress triggered by cues resembling aspects of the traumatic event(s)	Intrusive memories may not necessarily appear distressing and may be expressed as play reenactments. It may not be possible to ascertain that the content of frightening dreams is related to the traumatic event(s)
C	**Avoidance**	Avoidance of internal and external reminders that arouse distressing memories, thoughts, or feelings about the traumatic event(s)	Avoidance may show as new or extreme separation anxiety
D	**Negative cognitions**	Changes in cognitions and mood, including difficulties recalling details of the event(s), persistent negative beliefs or emotions, distorted thoughts about the cause or consequences of the event(s), inability to feel positive emotions, reduced interest in activities, detachment from others	Diminished interest mainly shows in respect to constriction of play and social withdrawal
E	**Increased arousal**	Marked alterations in arousal and reactivity associated with the traumatic event(s), hypervigilance, problems with concentration, and sleep disturbances	Typically manifests as temper tantrums, angry outbursts, heightened startle responses, along with difficulties falling asleep or refusal to go to bed
F	**Duration**	Symptoms show within six months after the traumatic event and last more than one month	Symptoms may occur at a later point and might be triggered by specific stimuli
G	**Clinical relevance**	The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning	Clinically significant impairments are observed mainly in relationships with parents, siblings, peers, or other caregivers or in educational settings

PTSD rates for child refugees and asylum seekers across low- to high-income countries range widely between 11% and 85% (Blackmore et al., 2020; Bronstein & Montgomery, 2011; Kien et al., 2019; Oberg & Sharma, 2023; Oleimat et al., 2022; Reed et al., 2012), with unaccompanied refugee minors showing the highest levels (Oberg & Sharma, 2023). These rates are substantially higher than PTSD prevalence in the general population, which is 1.5% among children and adolescents in Germany and 5% in the United States (Essau et al., 2000; Fairbank & Fairbank, 2009; Ruf et al., 2010). While previous studies have primarily focused on older children and adolescents, only one systematic review to date has examined the effects of forced displacement and war exposure on the mental health of preschool-aged children, drawing on data from 35 studies (Slone & Mann, 2016). The authors revealed high rates of PTSD (7.8% – 44.6%) and age-specific stress symptoms such as sleep disturbances, somatic

complaints, difficulties concentrating, regression in development, and traumatic reenactments during play. More recent studies revealed PTSD rates up to 60% (Lempertz et al., 2020), with the highest rates among children from Middle Eastern and African regions in German refugee camps (Buchmüller et al., 2018; Hahnefeld, Sukale, Weigand, Dudek, et al., 2021; Hahnefeld, Sukale, Weigand, Münch, et al., 2021; Lempertz et al., 2020; Nehring et al., 2021). Moreover, internalizing and externalizing problems with prevalence rates up to 90% have been documented in displaced children from various backgrounds (Buchmüller et al., 2018, 2020; Dybdahl, 2001; Ekblad, 1993; Hjern et al., 1998; Laor et al., 1996; Lempertz et al., 2020; Min et al., 2020; Sadeh et al., 2008; Ünver et al., 2021; Zwi, Mares, et al., 2018), including the following domains: attention problems, hyperactivity, aggressive behaviors, saddened mood, separation fears, increased dependency on caretakers, and social withdrawal.

Halevi et al. (2016) conducted one of the few existing longitudinal studies, following risk and resilience trajectories in 232 war-exposed children over ten years. Their findings indicated that 81% of children exhibited clinically relevant symptoms at some point during childhood and that war exposure increased the risk for chronic symptomatology by 24-fold. It appeared that affected children did not simply recover from their symptoms. Instead, they seemed to worsen over time, especially when children continued to live in high-stress and deprived environments. Similar findings were reported in a study with preschool-aged refugee children resettled in Sweden (Almqvist & Brandell-Forsberg, 1997). Twelve months after their arrival, 21% of children fulfilled all criteria for PTSD and follow-up analyses suggested that they did not experience a decrease in symptomatology within the next 2 ½ years. This complements the findings by Hjern et al. (1998), who reported symptom stability over 18 months in a comparable sample. In a study by Zwi et al. (2017) with refugee children in Australia, 22% of children showed a decrease in internalizing and externalizing symptoms between the second and third year of resettlement, while 74% remained on their symptomatic level and 3.5% worsened over time. All preschool-aged children, however, fully recovered within this period. Finally, Laor et al. (1996, 1997, 2001) reported that while the symptoms of war-exposed children in Israel continuously decreased within 2- to 5-years after returning to their homes, risk factors identified shortly after the war, such as displacement, low family functioning, and mother's distress continued to influence both general and post-traumatic stress symptoms in the children (Laor et al., 2001).

1.3.2. Developmental trajectories

Children undergo significant developmental changes during the first years of life (Jenni, 2021; Scheeringa et al., 2005). They learn to communicate, make logical connections, and solve problems by observing and interacting with their environment (Jenni, 2021). At the same time,

they start developing emotional regulation skills and form secure attachments through interactions with caregivers and peers. To reach important developmental milestones, children need to be provided with learning experiences within specific timeframes (Bick & Nelson, 2016; Nelson & Gabard-Durnam, 2020). Otherwise, they may encounter challenges in acquiring fundamental, and later higher-level developmental functions (Nelson & Gabard-Durnam, 2020; Teicher & Samson, 2016). Early ACE can hinder children from making these important experiences, particularly in unstable and insecure environments where broader social and structural environments are impacted (Bick & Nelson, 2016; Jenni, 2021; Lipscomb et al., 2021; Oh et al., 2018; Ray et al., 2020). The effects of ongoing adversity seem to intensify over time, as children's resources that should be invested in age-appropriate tasks are used to deal with the adverse circumstances (Halevi et al., 2016). Recent systematic reviews have related early ACE to lower social-emotional and cognitive development, affecting areas such as working memory, learning performance, academic performance, attention, and emotion and behavioral regulation (Bick & Nelson, 2016; Lund et al., 2020; Patel & Oremus, 2022; Ray et al., 2020). Some children may demonstrate their distress by being unable to perform age-appropriate tasks, while others experience developmental regression by temporarily losing previously acquired skills in response to ACE (Goldbeck & Jensen, 2017).

While researchers have started to recognize age-specific reactions of young, displaced children (Slone & Mann, 2016), literature on the developmental impacts of ongoing adversity and deprivation in displacement contexts is still scarce (Chierici & Hamdan, 2023; Graham et al., 2016; Kadir et al., 2019). Outcomes among older children and adolescents include low performance on cognitive tests measuring IQ (Chierici & Hamdan, 2023; Graham et al., 2016; Kaplan et al., 2016; Yeter et al., 2024), attention span (Chierici & Hamdan, 2023), memory (Chierici & Hamdan, 2023; Franck & Delage, 2022; Kim et al., 2020; Mueller et al., 2021; Yeter, 2022), and executive function (Chwastek et al., 2022; Franck & Delage, 2022; Kim et al., 2020; Yeter et al., 2024). The negative effects thereby seem to be more pronounced in children with higher exposure to adversity and are strongly associated with symptoms of PTSD (Mueller et al., 2021; Yeter et al., 2024). The development of basic cognitive abilities is known to predict the acquisition of higher-level cognitive, language, and academic skills in older displaced children (Aghajafari et al., 2020; Franck & Delage, 2022; Kim et al., 2020; Paradis et al., 2020). Accordingly, multiple studies have reported below-average academic outcomes within this population (Aghajafari et al., 2020; Chwastek et al., 2022; Graham et al., 2016; Halevi et al., 2016; Khamis, 2021; Kim et al., 2020), suggesting that D-ACE might interfere with children’s learning by causing trauma responses that impair concentration, reasoning, or memory function (Kaplan et al., 2016). The findings from two systematic reviews on academic outcomes in school-aged refugees and asylum seekers indicate that, with support from their teachers, children demonstrated academic performance similar to their native peers over time

(Aghajafari et al., 2020; Graham et al., 2016). Therefore, factors such as acculturation challenges or disruption in schooling may contribute to the academic outcomes of displaced children (Aghajafari et al., 2020).

Displaced children often face significant language barriers due to prolonged transit through multiple countries. Consequently, young children may possess basic skills in various languages, but may not be fluent in any language, including their mother tongue (Kaplan et al., 2016). In addition, many families in collective accommodations live very isolated, which limits opportunities for social interaction through which language acquisition in early childhood mainly occurs (Arakelyan & Ager, 2021; Jenni, 2021). Studies have reported a high prevalence of verbal learning impairments among displaced children (Chierici & Hamdan, 2023; Chwastek et al., 2022; Kaplan et al., 2016), and smaller vocabulary sizes than non-displaced peers (Yeter et al., 2024). This effect is particularly pronounced among displaced children exposed to traumatic events (Kaplan et al., 2016; Yeter et al., 2024), and with little contact with the host country's language (Paradis et al., 2020). As children grow older, it then becomes increasingly challenging to establish the necessary foundation for secure first language acquisition, which can subsequently impede their ability to learn a second language (Kaplan et al., 2016; Lohaus et al., 2015).

Impaired language development is further associated with problems in social-emotional domains, as children who cannot communicate their emotions or needs often react with frustration and aggression out of helplessness (McCabe & Meller, 2004). Recent studies report negative outcomes in emotion regulation, prosocial behavior, and relationships with peers and the family among war-exposed children (Chwastek et al., 2022; Demir et al., 2020; Elsayed et al., 2019; Khamis, 2019, 2021). A study with 7- to 11-year-old Syrian refugee children residing in Jordan showed that exposure to war-related trauma led to changes in their affective processing (Michalek et al., 2022). Specifically, children demonstrated increased sustained attention to angry and threatening stimuli, which was linked to the development of anxiety disorders and PTSD in this sample. Findings like this are of great significance for displaced children, as social-emotional abilities are recognized as important protective factors that can mediate the relationship between D-ACE and symptoms of distress (Demir et al., 2020; Masten, 2018; Masten & Narayan, 2012; Speidel et al., 2021). In support of this theory, higher social-emotional competencies were previously linked to displaced children's well-being, and better cognitive, and language abilities (Cho et al., 2019; Chwastek et al., 2022; Demir et al., 2020; Emerson et al., 2022; Speidel et al., 2021).

1.4. The influence of the immediate and extended environment

1.4.1. Bioecological models

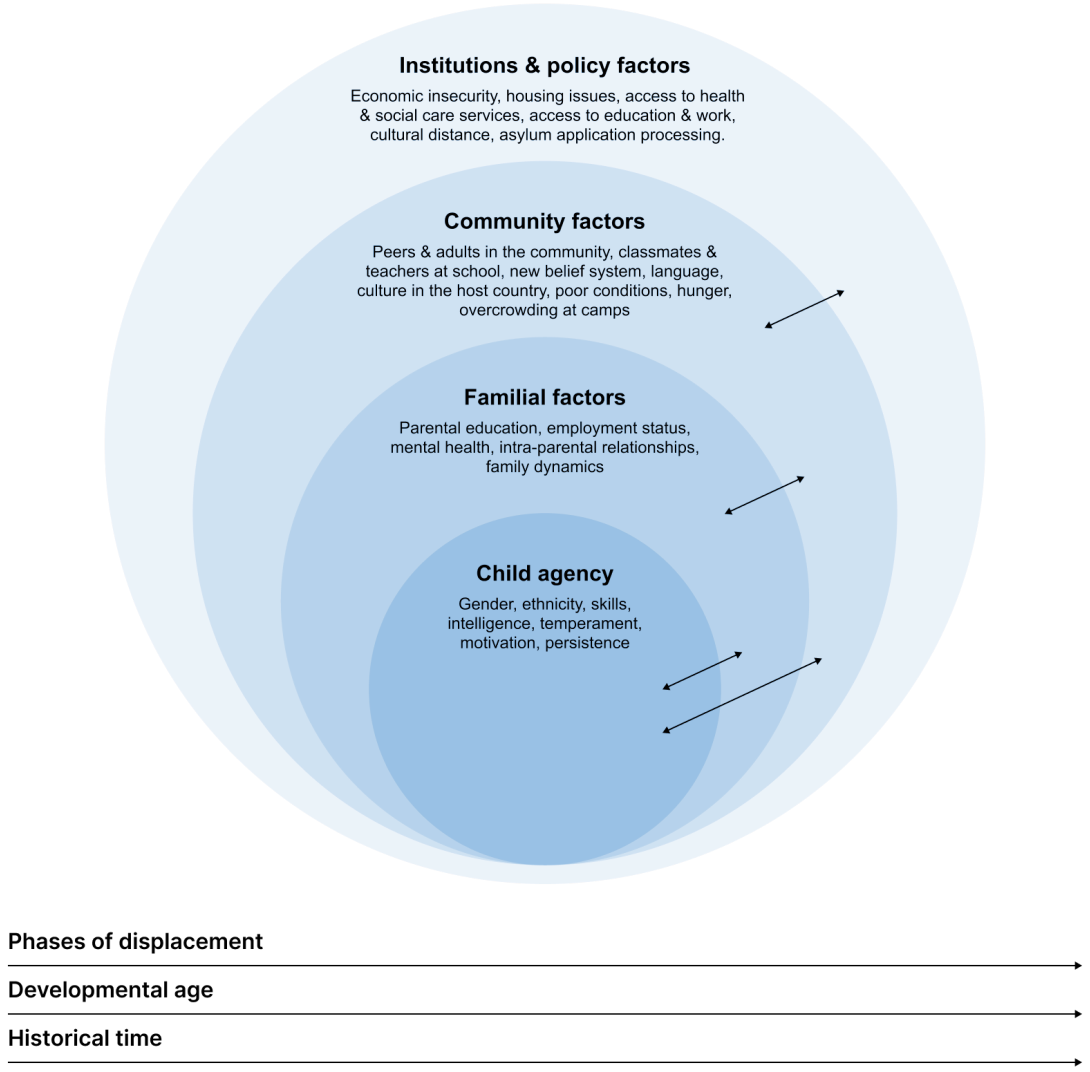
Young children are highly dependent on their immediate environment, not only for fulfilling their basic needs but also for their overall development and emotional well-being (Jenni, 2021). Bronfenbrenner's bioecological theory (Bronfenbrenner, 1994) offers a comprehensive framework in this respect: The model proposes that a child's development and psychosocial well-being are shaped by both individual factors and the various environmental systems in which they grow up. These systems range from the family environment as the closest sphere to broader micro-systems (e.g. peers, schools), exo-systems (e.g. family's socio-economic status), and macro-systems (e.g. cultural context, policies, agencies). The later Person–Process–Context–Time model (PPCT; Bronfenbrenner & Morris, 2006) extends the framework by introducing proximal processes, progressively evolving interactions between the child and their environments or among the systems themselves. These enduring interactions form the foundation for development and can either be a positive contributor, such as secure mother-child attachments or become increasingly dysfunctional for the child, as in cases of marital discord (Arakelyan & Ager, 2021). Another core proposition of the model is the time factor, encompassing life events as well as cultural conceptualizations of age, roles, and responsibilities (Bronfenbrenner & Morris, 2006). Different temporal aspects of children's (adverse) experiences, including type, timing, severity, and frequency of events are interconnected (Arakelyan & Ager, 2021; Bronfenbrenner & Morris, 2006; Hambrick et al., 2019; Javanbakht et al., 2021). Consequently, children's reactions may vary based on the developmental period during which the experiences occur and how their environments respond to them (Hambrick et al., 2019; Hayes, 2021).

The psychosocial system becomes particularly significant amidst political violence and forced displacement, as these circumstances impact young children not only individually but also within their broader living contexts (Arakelyan & Ager, 2021; Hayes, 2021). Growing up in war-affected areas, enduring long flight durations, and residing in temporary accommodations disrupts the entire microsystem for many young children, including their extended family, peer groups, and communities (Arakelyan & Ager, 2021). Broader exo- and macrosystems are usually also impacted, with health care, and educational settings often inaccessible to newly arrived families awaiting asylum. Moreover, cultural understandings, societal norms, and socio-economic factors usually differ between the origin and the host country. While several comprehensive reviews exist on the risk and protective factors influencing outcomes in displaced children (Fazel et al., 2012; Reed et al., 2012), how these influences interact is poorly understood (Arakelyan & Ager, 2021). Arakelyan & Anger (2021) analyzed the mental health and psychosocial well-being of refugee children through the lens of the PPCT model (*Figure*

2). The authors state that how children react to displacement-related adversities depends on 1) their unique agency, including their age, self-regulation skills, and adaptability 2) the interference of their experiences with their developmental age, and 3) the way their multi-layered external systems respond to displacement and D-ACE. Thus, research with displaced children and targeted support offers should consider both children's direct reactions to forced displacement and the impact of their experiences on the various systems in which the events occur (Arakelyan & Ager, 2021; Hayes, 2021).

Figure 2

Bronfenbrenner's PPCT model applied to the displacement context



Note. Adapted from "Annual Research Review: A multilevel bioecological analysis of factors influencing the mental health and psychosocial well-being of refugee children", by Arakelyan, A. A., & Ager, A., 2020, *Journal of Child Psychology and Psychiatry*, 63(5), 484-509.

1.4.2. The family system

When extended family, community, and institutional support structures are disrupted, parents take on an even greater responsibility as the primary caregivers (Gilgoff et al., 2020; Gunnar & Donzella, 2002; Sim et al., 2018; Sroufe, 2005; Vaghri et al., 2019). Depending on their availability and responsiveness, the parental reference system can either shield children from adverse experiences or pose an additional risk to their well-being and development (Eltanamly et al., 2021; Feldman & Vengrober, 2011; Hambrick et al., 2019; Hayes, 2021; Masten, 2018; Reed et al., 2012; van Ee et al., 2012, 2016). While displaced parents are committed to creating stable and supportive environments for their children, structural constraints place additional stress on the family system, affecting both parent's and children's ability to deal with their circumstances (Arakelyan & Ager, 2021; Bürgin et al., 2022; Metzner et al., 2016; Sim et al., 2018). Moreover, displaced parents are usually exposed to the same experiences as their children. A recent meta-analysis reported prevalence rates of 31 – 46% for PTSD among adult refugees (Blackmore et al., 2020), making it plausible that many caregivers might suffer from stress-related symptoms themselves. The concept of *intergenerational transmission of trauma* in this respect describes the phenomenon where children display trauma-related symptoms in response to their parents' traumatization without being exposed to such events themselves (Dalgaard et al., 2016). Accordingly, research links parental stress to negative mental health, development, and academic outcomes in displaced and war-exposed children (Berg et al., 2022; Gredebäck et al., 2022, 2023; Peltonen et al., 2023; Qouta et al., 2021; Scharpf et al., 2023; van Ee et al., 2012, 2016). A study conducted in Sweden showed that 6- to 17-year-old refugee children of traumatized parents exhibited significantly lower psychological well-being, family relations, and IQ testing performance than children whose parents had not been tortured, irrespective of their own PTSD symptoms (Daud et al., 2008). In a longitudinal study involving war-exposed children, Halevi et al. (2016) demonstrated that maternal factors during early childhood, including maladaptive responses to trauma reminders, inadequate support, and maternal distress, heightened the risk of psychopathology among children approximately three years later. Laor et al. (2001) found that lower family cohesion and adaptability in children displaced by the Gulf War predicted their behavioral and stress symptoms five years later. Furthermore, children who displayed PTSD symptoms and had distressed mothers 30 months after the war showed a deterioration of symptoms over the next 2- to 3-years years, whereas those with well-functioning mothers appeared to improve over time.

The pathways linking parental distress and children's outcomes seem to be many-fold: Traumatized parents may struggle with regulating their emotions, subsequently affecting their capacity to respond to their children's needs sensitively (Bryant et al., 2018; Cohen & Shulman, 2019; van Ee et al., 2012, 2016). A child's distress can thereby trigger parents to re-experience

their trauma, potentially interfering with their ability to offer them a sense of security, guidance, or regulation (van Ee et al., 2016). This can lead to parenting behaviors characterized by increased withdrawal, avoidance, disengagement (Dangmann et al., 2022; Qouta et al., 2021; van Ee et al., 2016), or overprotection of their children (Bryant et al., 2018; Dangmann et al., 2022; Eltanamly et al., 2021; Masten, 2018). Both parenting behaviors have been observed among displaced parents (Dalgaard et al., 2016; De Haene et al., 2013) and have been shown to hinder children's willingness to explore their environments and engage in developmentally enhancing tasks (Qouta et al., 2021; van Ee et al., 2016). Another potential pathway seems to be limited or unfiltered intra-family communication about displacement experiences or parental traumatic events, which has been associated with insecure attachment styles in war-exposed and refugee children (Dalgaard et al., 2016; De Haene et al., 2013). Conversely, sensitive and consistent parenting styles and communication have been identified as protective factors, mitigating the negative effects of D-ACE (Feldman & Vengrober, 2011).

1.5. Assessment challenges in displacement settings

Considering the complex and far-reaching consequences of early displacement experiences, there is a great need for systematic screening and diagnostic procedures to identify vulnerable children early on (Blackmore et al., 2020; Horlings & Hein, 2018; Verhagen et al., 2022). However, research indicates a shortage of validated tools for displaced populations (Chierici & Hamdan, 2023; Horlings & Hein, 2018; Kyrillos et al., 2023; Magwood et al., 2022, 2023; Reed et al., 2012; Verhagen et al., 2022), particularly for children under the age of six years (Gadeberg et al., 2017).

Commonly used assessment tools have mostly been developed and normed in Western populations (Gadeberg et al., 2017). While many instruments examining mental health and developmental outcomes have been translated into relevant languages, culture-specific differences in the description and meaning of symptoms are often overlooked (Gadeberg et al., 2017; Gjersing et al., 2010; Metzner et al., 2016). This can lead to inaccuracies in measuring the intended constructs, as psychological, behavioral, and developmental concepts may vary across cultures (Chierici & Hamdan, 2023; Gadeberg et al., 2017; Gjersing et al., 2010; Kyrillos et al., 2023; Magwood et al., 2022; Wells et al., 2015). Many of the established instruments fail to account for specific living situations in displacement settings and D-ACE (Abdelhamid et al., 2023; Arakelyan & Ager, 2021; Metzner et al., 2016), potentially classifying culturally normal behaviors or understandable reactions to adverse circumstances as pathological (Kyrillos et al., 2023). This increases the risk of over-diagnosing displaced children, while vulnerable children who require specialized support may be overlooked (Gadeberg et al., 2017; Verhagen et al., 2022). Especially in the case of developmental testing,

measures are typically designed and normed for previously institutionalized children, who are familiar with test materials (Hahnefeld, Sukale, Weigand, Dudek, et al., 2021). Even IQ tests that claim to be language-free and culturally fair predominantly measure cognitive abilities that are commonly taught within educational environments (Kaplan et al., 2016). Consequently, displaced children without former educational experience face disadvantages when confronted with such measures (Graham et al., 2016; Hahnefeld, Sukale, Weigand, Dudek, et al., 2021).

Assessments with young, displaced children present further unique challenges: Young children are still developing their abilities to understand and articulate their experiences and symptoms (De Young & Landolt, 2018). As a result, researchers and clinicians need to rely on information from parents to gain a better understanding of a child's situation (De Young & Landolt, 2018; Gadeberg et al., 2017; Hahnefeld, Sukale, Weigand, Münch, et al., 2021). While parents are generally good at reporting on their children's behaviors, they may struggle to determine whether certain behaviors are typical or unusual (Fängström et al., 2019). This bias might be even more pronounced if parents are interviewed by researchers from different cultural backgrounds. In addition, research has shown that parent's perceptions of their children seem to be influenced by their own well-being, compromising the validity of their reports (Almqvist & Brandell-Forsberg, 1995; Bajeux et al., 2018; Cohen & Shulman, 2019; Hahnefeld, Sukale, Weigand, Münch, et al., 2021). Traumatized parents may find it difficult to differentiate their own emotional distress from their children's behaviors, potentially leading them to perceive their children as more challenging or symptomatic (Bajeux et al., 2018; van Ee et al., 2016). Contrarily, parents may not be aware of their children's symptoms or even deny them, possibly due to avoidance symptoms (Cohen & Scheeringa, 2009). It is recommended to include supplementary reports from educators to enhance the accuracy of assessments (Hahnefeld, Sukale, Weigand, Münch, et al., 2021). However, conducting multi-perspective assessments in displacement contexts can be challenging, as many children face limited access to daycare facilities (Baisch et al., 2016). It therefore becomes crucial to integrate child-centered perspectives such as direct observations when working with displaced children (Cohen et al., 2010; Feldman & Vengrober, 2011).

1.6. Play observations

1.6.1. The importance of play

Play is a natural way for children to learn, explore, and express their internal experiences (Hà, 2022; Höfer, 2016; Hyder, 2004; Jenni, 2021; Lifter et al., 2011). Through play, children can acquire and experiment with new skills in a safe environment and without penalties for mistakes (Petrović-Sočo, 2014). This promotes cognitive flexibility, abstract thinking, and

problem-solving skills, which are important for developing pre-academic abilities (Höfer, 2016; Jaggy et al., 2020; Jenni, 2021; Petrović-Sočo, 2014; Vig, 2007). Of particular significance is symbolic play, as it enables children to explore hypothetical scenarios, assume different roles, and act out various outcomes (Höfer, 2016). In doing so, children can refine their language skills, learn to interact and collaborate with peers, navigate social dynamics, and gain an understanding of others' perspectives (Hà, 2022; Hyder, 2004; Petrović-Sočo, 2014; Quinn et al., 2018).

The interpretation and context of free play vary across cultures, as norms and conventions shape play themes, social engagement during play, the use of toys, and the educational or emotional significance attributed to play (Hyder, 2004). Despite these cultural differences, play is assumed to be a universal phenomenon that contributes significantly to the development and well-being of young children (Hyder, 2004; Jenni, 2021). Play can stand as a developmental domain on its own and serves as an indicator of children's social-emotional, cognitive, and language abilities (Farmer-Dougan & Kaszuba, 1999; Höfer, 2016; Jenni, 2021; Lifter et al., 2011). Previous researchers have outlined the key developmental stages of play behavior in children up to six years old, categorizing them by increasing complexity and the age at which they typically emerge (Höfer, 2016; Jenni, 2021; see *Table 2*). Understanding these stages provides valuable insights into how play evolves and its role in children's developmental progress (Athanasiou, 2017; Jenni, 2021). For instance, construction play, where children build towers or arrange objects, can indicate their level of visual-spatial understanding (Jenni, 2021). Furthermore, the complexity of symbolic or role play can highlight young children's capacity for role-taking and navigating social rules.

Table 2

Chronological sequence of play development in children aged 0- to 6-years

Play form	Description
Sensimotor play	Touching and moving objects, exploring intensively with different senses, hitting/rubbing toys against each other
Functional / exploratory play	Exploring the function of objects, e.g. pushing a car, holding the phone to ear, cradling a doll, throwing a ball, pressing buttons
Construction play	Goal-oriented actions, e.g. building a tower, placing animals and figures on a ship, arranging objects, building blocks in sorting box, making objects out of modeling clay
Symbolic play	"As-if" or pretend play, objects that actually serve a different purpose are converted with fantasy and imagination and temporarily given a function: e.g. child pretends to cook, feed doll, use objects for something else (e.g. building block as food)
Role play	Dramaturgy, different Roles, character interactions (often accompanied by language), game sequences/sequences (e.g. all animals go onto the ship and are welcomed there), imagined objects (e.g. setting the table and then distributing imaginary food on plates)

Play is not only an important driver for children's development but also a valuable resource for children facing adversity (Cohen & Gadassi, 2018; Drewes, 1999; Hyder, 2004; Petrović-Sočo, 2014). Despite the restriction of play opportunities during war and displacement, children continue to engage in play by adapting their games to align with the reality of ongoing conflict (Cohen & Gadassi, 2018; Feldman, 2019). Even when children are temporarily deprived of opportunities to play, they seem to play longer and more intensely afterward (Jenni, 2021). Through play, children can explore different scenarios and reactions related to their trauma, allowing them to regain a sense of mastery over their emotions and discover new meaning from past experiences (Cohen et al., 2010; Cohen & Gadassi, 2018). The healing potential of play thereby primarily depends on the child's perception of control over play outcomes, helping them to change from a passive victim role into an active one (Chazan & Cohen, 2010). For displaced children, play can moreover restore at least temporary moments of childhood normality, making it an essential aspect of their recovery and well-being (Hyder, 2004).

1.6.2. Play observations as a diagnostic tool

Given the link between play abilities, mental health, and development, research has increasingly focused on integrating play observations into assessments with young children (Athanasiou, 2017; Farmer-Dougan & Kaszuba, 1999; Jaggy et al., 2020). Unlike developmental tests that typically involve specific tasks in a controlled environment, play assessments prioritize self-motivated, child-driven activities within a natural setting (Athanasiou, 2017). This approach enables a comprehensive evaluation of a child's strengths and weaknesses across various developmental domains and offers insights into their ability to execute skills within their everyday routine. Several established play assessment tools have demonstrated reliability comparable to standardized developmental tests (For reviews, see: (Besio et al., 2018; Farmer-Dougan & Kaszuba, 1999; Jaggy et al., 2020; Montoya-Fernández et al., 2024; O'Grady & Dusing, 2015). Some measures utilize questionnaires, self-reports, and interviews to explore children's play experiences, but the majority concentrate on directly observing children's free play (Besio et al., 2018). When observing children's undirected play, researchers suggest examining various aspects, including the level of play development, engagement, and interaction with others to gain a comprehensive understanding of developmental strengths and difficulties. Quantitative measures evaluating the presence or absence of age-appropriate play behaviors can thereby offer an objective impression of children's abilities (Montoya-Fernández et al., 2024).

Play allows children to express their subjective experiences and internal emotional states in a child-like manner (Hyder, 2004). Observing how children engage in play can therefore provide valuable insights into their well-being and processing of D-ACE (Cohen & Gadassi, 2018;

Drewes, 1999; Petrović-Sočo, 2014). Specific play behaviors are assumed to reflect trauma-related symptoms (Athanasiou, 2017; Cohen & Gadassi, 2018). For instance, repetitive reenactments of traumatic events might indicate that a child is not effectively processing and integrating the trauma and is unable to resolve the distress associated with the event (Chazan & Cohen, 2010). A child then repeatedly acts out their experiences in an unsuccessful attempt to regain a sense of control. Emotionless and disconnected play patterns, on the other hand, can indicate overwhelm or avoidance of the distressing aspects of the trauma (Cohen & Gadassi, 2018). Trauma during early developmental stages can moreover impact a child's ability to engage in higher-level play activities, such as symbolic and cooperative play with peers, often resulting in monotonous repetitive play patterns (Drewes, 1999).

1.6.3. Play assessments in war and displacement settings

Previous research highlights the potential benefits of using play observations to assess young children, particularly in settings where standardized instruments are not valid or feasible (Lifter et al., 2011; Vig, 2007). However, this method has received little consideration in war-exposed and displaced populations. Existing studies have focused on identifying trauma-related and clinically relevant play patterns (Almqvist & Brandell-Forsberg, 1995, 1997; Chazan & Cohen, 2010; Cohen et al., 2010; Cohen & Gadassi, 2018; Halevi et al., 2016), while the broader implications of play for displaced children's development are yet to be investigated (Vig, 2007).

Almqvist & Brandell-Forsberg (1995, 1997) used the Erica method (Sjolund, 1981) with 50 preschool children from Iranian refugee families living in Sweden, instructing them to build a world out of miniature toys within a sandbox. While the instrument is intended to assess both developmental and psychological processes, the authors focused on identifying signs of traumatic stress in children's play (Almqvist & Brandell-Forsberg, 1995, 1997). Among 42 children directly exposed to organized violence, 19 exhibited re-enacting play patterns, and 12 created clinically relevant worlds characterized by disorganized arrangements or a general lack of interest in the play activity. Björn et al. (2011) similarly demonstrated high levels of psychosocial distress among 5- to 12-year-old Bosnian children resettled in Sweden, as assessed through the Erica method. In both investigations, re-experiencing symptoms in children were generally not reported by parents, highlighting the benefit of complementing parent reports within direct observations of children's play (Almqvist & Brandell-Forsberg, 1995; Björn et al., 2011). The research conducted by Chazan and Cohen (Chazan & Cohen, 2010; Cohen et al., 2010) examined various aspects of post-traumatic play in 4- to 8-year-old Israeli children directly exposed to terrorism. They utilized the Children's Play Therapy Instrument – Adaptation for Terror Research (CPTI-APT; Cohen et al., 2010), which assesses various play elements, such as play durations, engagement, play interruptions, and the

presence or absence of traumatic play. The authors reported significant correlations between PTSD and increased negative affect during play, unresolved re-enactments, lower levels of play development, and reduced social interaction during play. Children who reenacted but were able to soothe themselves during play, on the other hand, displayed lower PTSD symptoms. Finally, Halevi et al. (2016) assessed war-exposed children's social engagement during free play, evaluating factors such as attention, positive affect, alertness, social initiation, symbolic play, and engagement with their environment. They found that reduced levels of social engagement during the first five years of life significantly predicted the development of pathology in later childhood.

1.7. Aims of this thesis

This thesis aimed to address significant gaps in previous research with young, displaced children, recognizing their heightened vulnerability during critical developmental stages. Specifically, the thesis had the following objectives:

1. Systematic review of existing literature (Study 1):

The first objective was to conduct a comprehensive review of existing literature on the social-emotional and cognitive development of 0- to 6-year-old children who have been directly exposed to political violence and forced displacement. The study aimed to investigate the direct impact of displacement and how the interactions of individual factors, D-ACE, and contextual factors influence developmental outcomes.

2. Evaluation of a standardized play observation (Study 2):

Recognizing the lack of appropriate assessment tools for young, displaced children, the second objective was to evaluate a self-developed play observation in a cross-sectional study involving 3- to 6-year-old children with and without refugee experience. We assessed both post-traumatic and developmental aspects of children's play by rating their level of play development, social interaction during play, traumatic re-enactments, and emotionless-cold play. Employing a multi-perspective assessment approach, we also evaluated children's mental health, social-emotional, and cognitive development, as well as markers of adversity through reports from parents and educators, along with IQ testing. We then correlated these factors with the play variables.

Through the analysis and discussion of both studies, this thesis' objective was to generate an ecological picture of the interconnected factors shaping mental health and developmental outcomes of young, displaced children. By exploring the use of systematic play assessments, we intended to contribute to a shift in research methodology towards child-centered and strength-based approaches that highlight children's resilience in the face of adversity. This perspective can help identify modifiable risk and protective factors, offering a better understanding of the unique needs of these children. Ultimately, our research seeks to inform policies and interventions that build upon the developmental potential of young, displaced children and promote their well-being and integration chances.

2. Study 1: Young children's development after forced displacement: A systematic review

Bernhardt, K., Le Beherec, S., Uppendahl, J. R., Fleischmann, M., Klosinski, M., Rivera, L. M., Samaras, G., Kenney, M., Müller, R., Nehring, I., Mall, V., & Hahnefeld, A. (2024). Young children's development after forced displacement: a systematic review. *Child and Adolescent Psychiatry and Mental Health, 18*(1), 20. https://doi.org/10.1186/s13034-024-00711-5

2.1. Study aim

The aim of this systematic review was to

(a) capture the existing literature on social-emotional and cognitive development in forcibly displaced children 0- to 6-years and to

(b) review influencing factors associated with these outcomes.

2.2. Methods

The procedure for creating this systematic review is presented below and was based on the Preferred Items for Systematic Reviews and Meta-analysis (PRISMA) reporting guidelines, an evidence-based protocol for writing systematic reviews and meta-analyses (Page et al., 2021).

2.2.1. Literature search

We systematically searched the following databases from May 2021 until October 2023: MEDline, Psyndex, Cochrane Library, and Web of Science. Additionally, libraries of the publishers Elsevier and Taylor & Francis, the Oxford Journal of Refugee Studies, the Journal of Immigrant & Refugee Studies, and Canada's Journal on Refugees were searched to enhance the number of results. Finally, reference sections of related systematic reviews were hand-searched for eligible articles. In the following, the different databases are described.

2.2.1.1. Medline

The Medical Literature Analysis and Retrieval Online System (MEDLINE, National Library of Medicine, 2024) is a web-based database that facilitates the search and retrieval of citations and abstracts in biomedical and life sciences. Established by the National Center for Biotechnology Information, this database contains over 31 million article references from 5,200

journals worldwide, encompassing 40 languages. The literature search is conducted through the PubMed search interface, which delivers references with metadata including authors, title, source, publication date, and abstract. PubMed offers advanced search capabilities, allowing users to combine search terms using Boolean operators (AND, OR, NOT). Search results can be filtered by various criteria such as article type, language, or the age of the study population. While MEDLINE is not primarily a full-text database, it does provide links to full-text articles in numerous instances.

2.2.1.2. Psyndex

Psyndex is a comprehensive reference database by the Leibniz Institute for Psychology that encompasses over 380,000 publications in psychology and related disciplines (ZPID, 2024). It is easily accessible through the PubPsych platform and is free of charge. The *Psyndex-Lit* section of the database specifically focuses on references from German-speaking countries and is expanded monthly by approximately 1,000 new entries. The two sub-sections *Psyndex Tests* and *Psyndex Interventions* focus on literature about psychometrics and psychotherapeutic measures. Users can input specific terms into the search bar to find relevant content by querying keywords, titles, authors, sources, and abstracts. For more targeted searches, field abbreviations and Boolean operators can be employed.

2.2.1.3. Cochrane Library

The Cochrane Library is a collection of databases that focus on compiling, updating, and disseminating evidence in the field of healthcare decision-making (Wiley, 2024a). It comprises the three databases Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, and Cochrane Clinical Answers. For this systematic review, the Register of Controlled Trials was of particular interest, as it contains over 2 million bibliographic records of randomized controlled trials, including evidence from multiple databases such as PubMed (Wiley, 2024b). The search mask offers a simple or advanced search, and the results can be filtered by publication type, publication date, and subject.

2.2.1.4. Web of Science

ISI Web of Knowledge is an interdisciplinary literature database offering an extensive collection of approximately 92 million records across various science fields, including art, social sciences, and humanities (Clarivate, 2024). The articles are sourced from over 22,000 peer-reviewed

journals, ensuring a diverse range of scholarly content. The literature search can be conducted through the platform Web of Science which encompasses a wide array of sources, including books, journals, and conference and symposium proceedings, dating back to 1900. Users can group their search terms according to subject, title, author, date, medium of publication, and author's address, all of which can be entered through the search window.

2.2.1.5. Elsevier

ScienceDirect is an online database from the publisher Elsevier, providing a vast collection of peer-reviewed scientific literature (Elsevier Inc., 2022). The platform grants access to over 19 million articles and book chapters from over 2,650 peer-reviewed journals. It covers a diverse range of disciplines including physical sciences and engineering, life sciences, and health science (Elsevier Inc., 2024). Users can employ the search mask to retrieve references based on title, abstract, journal or book title, author, or year of publication. The results can be filtered according to specific parameters such as publication year, article type, journal, subject area, and accessibility. ScienceDirect encompasses a substantial amount of open-access content, further broadening the availability of search results to users.

2.2.1.6. Taylor & Francis

Taylor & Francis Online is a web-based database that grants access to a collection of over five million high-quality journal articles sourced from the Taylor & Francis Group (Taylor & Francis Group, 2024b). It offers access to a comprehensive compilation of over 2,700 journals, encompassing disciplines of humanities and social sciences, science and technology, engineering, medicine, and healthcare (Taylor & Francis Group, 2024a). Conducting an advanced search is made convenient through the utilization of free text and Boolean operators, allowing users to refine their literature search. The search results contain references with metadata such as title, author, source, publication date, and abstract. In many instances, full texts are either provided directly or linked.

2.2.1.7. Oxford Journal of Refugee Studies

The Oxford Journal of Refugee Studies was selected as it publishes high-quality and peer-reviewed research on forcibly displaced persons (Oxford University Press, 2024a). The journal is issued quarterly and publishes contributions to theoretical and methodological understanding of forced displacement. It also seeks to advance knowledge of related concepts,

practices, and approaches to researching the effects of displacement. The journal has a 5-year impact factor of 2.0 (Oxford Universiry Press, 2024b). To facilitate effective searches, users can employ the free text search function and utilize Boolean operators to refine their queries within the journal's issues.

2.2.1.8. Journal of Immigrant & Refugee Studies

The Journal of Immigrant & Refugee Studies is a globally recognized interdisciplinary journal on migration and refugee-related research (Taylor & Francis Online, 2024a). It offers a wide range of comprehensive theoretical and empirical references about the governance and integration of migrant and refugee populations, along with associated policies and practices. The journal incorporates both quantitative and qualitative methodologies. Founded in 2002, it is published quarterly and has attained a 5-year impact factor of 2.1 in 2022 (Taylor & Francis Online, 2024b).

2.2.1.9. Canada’s Journal on Refugees

Canada's Journal on Refugees is a peer-reviewed, interdisciplinary journal promoting knowledge on forced migration (Refuge, 2024). Established in 1981, this independent and non-profit journal features academic and political contributions to research and practices related to forced migration. The journal also features a section dedicated to book and film reviews, occasionally releasing special issues on specific aspects of forced migration. In 2022, the journal transitioned to a continuous publication model, meaning that articles will be published as they are accepted. The journal has an open-access policy, granting unrestricted access to all current and archived editions through the website. Searches can be conducted through the search field which allows to apply filters based on publication year and author.

2.2.2. Search strategy

The search strategy for databases and journals is outlined below. Given the unique search interfaces of each database, a comprehensive procedure for conducting the systematic search and the corresponding results for each database are provided in *Appendix 1*.

We selected keywords and word stems that reflect a wide range of possible developmental outcomes in displaced children (*Table 3*). The search terms were grouped into four blocks and then systematically connected using Boolean operators. Whenever applicable, search terms

were truncated to broaden the scope of our search. The following terms were used: (refugee OR flight OR resettle* OR displace* OR migrat* OR asylum seeker) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play OR psycholog*) AND (develop* OR adjust* OR problem OR function* OR stress OR trauma OR skill* OR resilien*). The database search generated 13,049 results, of which 9,791 were retained after removing duplicates through the reference management software EndNote (Gotschall, 2021). The remaining records were then exported into Rayyan (Rayyan, 2022) for screening and cross-review of references.

Table 3

Search terms and blocks for the database search

Block 1		**Block 2**		**Block 3**		**Block 4**
refugee	AND	child*	AND	social	AND	develop*
OR		OR		OR		OR
flight		preschool*		emotion*		adjust*
OR		OR		OR		OR
resettle*		kindergarten		peer		problem
OR				OR		OR
displace*				relation		function*
OR				OR		OR
migration				behavior*		stress
OR				OR		OR
asylum seeker				behaviour*		trauma
				OR		OR
				intelligence		skill
				OR		OR
				IQ		resilien*
				OR		
				memory		
				OR		
				learn*		
				OR		
				play		
				OR		
				psycholog*		

2.2.3. Screening procedure and selection criteria

Figure 3 provides a detailed description of our search and selection process. In the first step, we screened the titles and abstracts of search results based on the inclusion criteria outlined in *Table 4*. Quantitative studies reporting social-emotional and cognitive outcomes in 0- to 6-year-old children forcibly displaced due to political violence (*Panel 1*) were considered eligible.

Studies with older children were included if they separately reported results for children under seven. As our team is currently conducting a separate systematic review focusing on qualitative studies with similar objectives, those studies were excluded alongside book chapters, case reports, systematic reviews, study protocols, and theses. Only pre-intervention data from intervention studies were reviewed. After the initial screening, 416 publications were selected for full-text review, which led to the rejection of another 393 studies. We added nine publications from reference lists and citing literature of included works and authors. Ultimately, 32 publications were included in the review.

Figure 3

Search and selection process

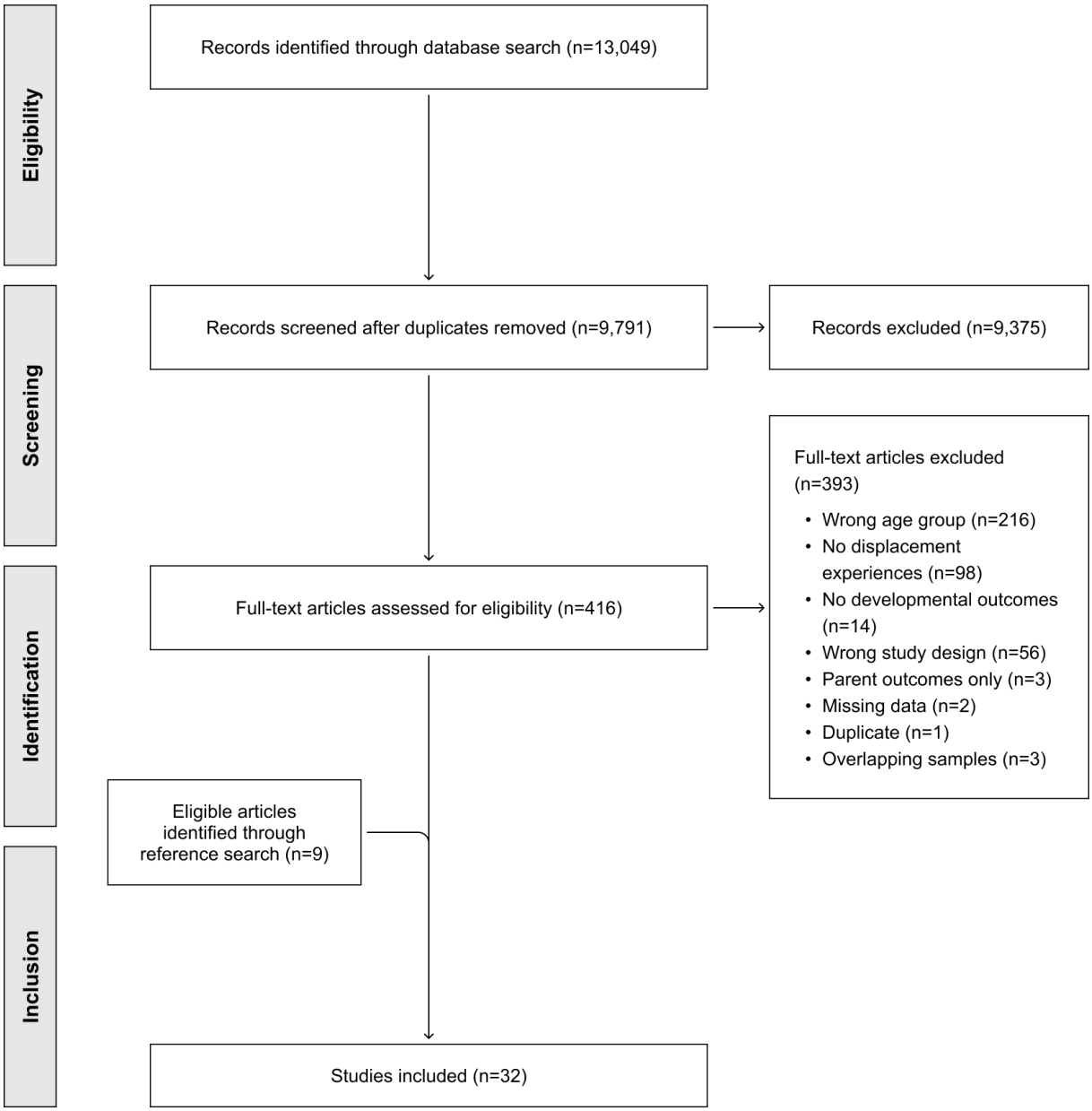


Table 4

Display of inclusion criteria

Population	• Children aged 0- to 6-years • Direct experiences of forced displacement due to political violence
Study design	• Quantitative design
Objectives	• Social-emotional and cognitive outcomes

2.2.4. Quality assessment

The Quality Appraisal Checklist for Correlation and Intervention Studies from the UK National Institute for Health and Care Excellence (NICE; NICE, 2016) was used to assess the quality of the included studies. The checklist is divided into four areas and contains questions about the study population, allocation to the intervention or comparison group, results, and statistical analyses. Each study was rated for its quality on the different items: (++) for high quality, (+) for moderate quality, and (-) for low quality if there were significant sources of bias. Items that were not reported or not applicable were marked with (NR) or (NA). Two independent authors rated each study with a total of six authors involved in the process. Consensus was reached on the final rating of each study's internal and external validity through discussion. A detailed protocol for the quality assessment is displayed in *Appendix 2*. Items concerning the selection and allocation of intervention groups (Items *2.1* and *2.3*) and follow-up timing (Items *3.4* and *3.5*) were omitted when rating the overall internal validity. This decision was made as the methodology and applicability of interventions were not pertinent to our research question. The settings of collective centers and asylum procedures differed among studies and countries, making it challenging to establish comparability with UK standards. Item *2.5* was therefore not considered in the quality assessment. We rated the overall external validity of the studies in light of this concern, recognizing that the specificity of the research samples and settings could limit the generalizability of the published findings.

2.2.5. Data extraction and synthesis

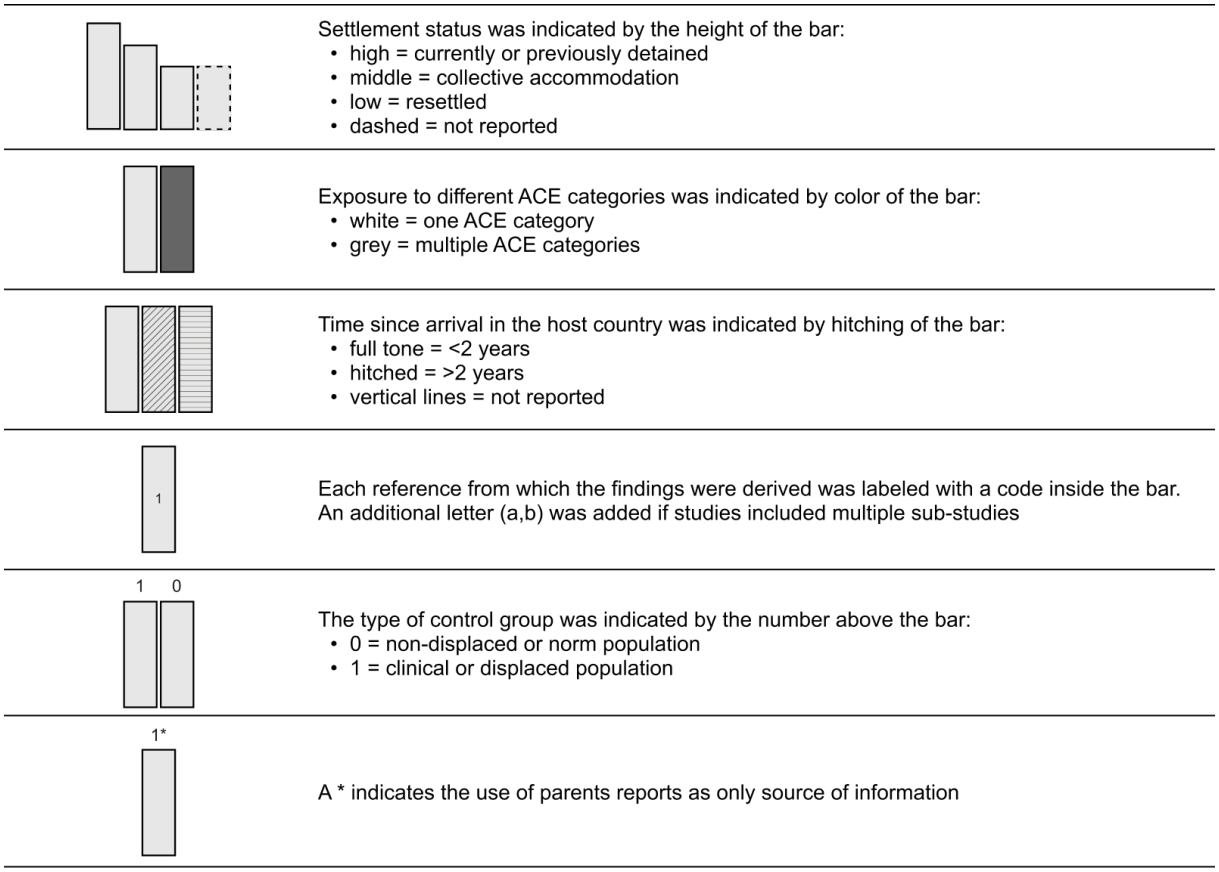
Data from included studies were extracted into a standardized form, including general study information, population, displacement characteristics, and outcome measures (*Appendix 3*). All data were extracted by one author and verified by a second.

The reviewed studies exhibited significant methodological heterogeneity, which did not allow for conducting a meta-analysis. Consequently, a narrative approach was applied to synthesize

the data. Harvest plots (Ogilvie et al., 2008) were used to display the reported results graphically. Initially designed to combine the benefits of forest plots with the narrative insights gained from complex and diverse studies, they facilitate identifying evidence gaps and consistencies of observed effects among studies (Crick et al., 2015; Ogilvie et al., 2008). Additionally, they allow for an investigation of potential reasons for inconsistencies in results. We created harvest plots to visualize the distribution of group differences between displaced and comparison children across social-emotional and cognitive outcomes. Each harvest plot was organized into matrices with rows (outcome variable) and columns (direction of group effect). Study findings were represented using bars that were assigned to the respective column and row. Those bars were customized to reflect various study and sample characteristics, including settlement status, exposure to different ACE categories, time since displacement, and type of comparison group and informant (*Figure 4*).

Figure 4

Legend for bars used in harvest plots



Note. ACE = Adverse childhood experience.

2.2.6. Displacement-related adverse childhood experiences

Recognizing the absence of a standardized classification for D-ACE, we categorized the diverse adverse experiences displaced children may encounter before, during, and after displacement based on previous research (Abdelhamid et al., 2023; Hanes et al., 2017). This classification focuses on potentially traumatic events at different stages of displacement, treating contextual factors as distinct from the D-ACE categories. Given young children's high dependency on their parents, we addressed separation or loss of family as a distinct category. Displacement itself was not listed independently since all children included in this review were directly exposed to forced displacement.

The following categories were employed in our classification:

a) witnessing or experiencing any type of violence, war, or armed conflict
b) witnessing or experiencing the death or injury of a parent or relative or being separated from family members
c) threat of, witnessing, or experiencing violence while in transit
d) exposure to harmful displacement conditions (e.g., immigration detention).

2.3. Results

This systematic review aimed to capture existing empirical literature about the impact of displacement experiences on 0- to 6-year-old children's social-emotional and cognitive development. Our database search generated 13,049 results, of which we included 32 studies with a total of 6,878 forcibly displaced children for review. Studies were published between 1993 and 2023 and encompassed children from the Middle East, Africa, Asia, Central and South America, the Western Pacific, and Eastern Europe mainly residing in high- and middle-income countries. Twenty-one studies conducted group comparisons with norm populations (Buchmüller et al., 2020; Busch et al., 2021; Dybdahl, 2001; Khan et al., 2019; Min et al., 2020; Zwi et al., 2017; Zwi, Mares, et al., 2018, Zwi, Woodland, et al., 2018), non-displaced children from the host country (Ayas et al., 2022; Çiçekoğlu et al., 2019; Erdemir, 2021; Flink et al., 2013; Pellizzoni et al., 2020), some of which were in clinical settings (Bernhardt et al., 2023; Buchmüller et al., 2020; Hahnefeld, Sukale, Weigand, Dudek, et al., 2021; Hahnefeld, Sukale, Weigand, Münch, et al., 2021), non-displaced children from war zones (Laor et al., 1996, 1997), and displaced children (Buchmüller et al., 2020; Busch et al., 2021; Wolff et al., 1995; Zwi, Mares et al., 2018). The studies utilized different sources of information such as parent and caregiver reports, medical records, and child assessments conducted by investigators. In eleven studies, parent reports were the only source of information (Ekblad, 1993; Fängström et al., 2019; Flink et al., 2013; Khan et al., 2019; Laor et al., 1996, 1997; Min et al., 2020; Sadeh et al., 2008; Zwi et al., 2017; Zwi, Mares et al., 2018, Zwi, Woodland, et al., 2018).

Experiences of forced displacement were associated with diverse reactions in young children, affecting their social-emotional and cognitive development to differing extents. Reported outcomes included difficulties in peer relationships (Almqvist & Brandell-Forsberg, 1997; Almqvist & Broberg, 1999; Buchmüller et al., 2020; Busch et al., 2021; Khan et al., 2019; Min et al., 2020; Ünver et al., 2021; Wolff et al., 1995; Zwi, Mares, et al., 2018) and prosocial behaviors (Buchmüller et al., 2020; Çiçekoğlu et al., 2019; Khan et al., 2019; Zwi, Mares, et al., 2018), that seemed to improve over time in stable settlement (Almqvist & Broberg, 1999; Zwi et al., 2017). Poor family function and child-caregiver relationships characterized by avoidance, parental absence, or oppositional behavior were prevalent (De Haene et al., 2013; Lembcke et al., 2020; Mares & Jureidini, 2004) and predicted displaced children's symptoms (Flink et al., 2013; Laor et al., 1996). Reenacting, repetitive play patterns, and general disinterest in play were reported (Almqvist & Brandell-Forsberg, 1995, 1997; Ekblad, 1993; Mares & Jureidini, 2004; Sadeh et al., 2008), as well as lower social interaction, but age-adequate play development in one study (Bernhardt et al., 2023). Studies reported overall low performance on cognitive measures, as evidenced by assessments of learning performance (Bernhardt et al., 2023; Hahnefeld, Sukale, Weigand, Dudek, et al., 2021; Pellizzoni et al.,

2020), executive functioning (Pellizzoni et al., 2020), and early math abilities (Erdemir, 2021; Pellizzoni et al., 2020). IQ scores fell below European and US norms (Bernhardt et al., 2023; Hahnefeld, Sukale, Weigand, Dudek, et al., 2021; Hahnefeld, Sukale, Weigand, Münch, et al., 2021) and limited speech capacities were observed in displaced children (Almqvist & Broberg, 1999; Ayas et al., 2022; Busch et al., 2021; Erdemir, 2021; Khan et al., 2019; Mares & Jureidini, 2004; Nehring et al., 2021; Seuring & Will, 2022; Ünver et al., 2021; Wolff et al., 1995; Zwi et al., 2017), persisting for several years after settlement (Almqvist & Broberg, 1999; Zwi et al., 2017).

Despite these findings, several studies indicated that young, displaced children showed resilience, performing similarly or better than comparison groups in social-emotional and language domains (Ayas et al., 2022; Bernhardt et al., 2023; Busch et al., 2021; Çiçekoğlu et al., 2019; Erdemir, 2021; Laor et al., 1997; Zwi et al., 2017; Zwi, Woodland, et al., 2018). This suggests that children's development might not only be influenced by the direct experience of displacement but by different contextual factors. Across studies, exposure to various forms of adversity was associated with negative developmental outcomes (Almqvist & Brandell-Forsberg, 1995; Bernhardt et al., 2023; Mares & Jureidini, 2004; Zwi et al., 2017), with separation from one or both parents being among the most important risk factors (Almqvist & Brandell-Forsberg, 1995; Khan et al., 2019; Wolff et al., 1995; Zwi et al., 2017). Post-migration stressors, such as prolonged stays in collective and detention centers (Dybdahl, 2001; Zwi, Mares, et al., 2018), and parental distress (Almqvist & Broberg, 1999; Bernhardt et al., 2023; Laor et al., 1996, 1997) had negative and long-lasting consequences for young children, highlighting their vulnerability in unstable environments. On the other hand, longer time in resettlement and access to preschool education emerged as protective factors for children's development and social adjustment (Almqvist & Brandell-Forsberg, 1997; Almqvist & Broberg, 1999; Buchmüller et al., 2020; Busch et al., 2021; Erdemir, 2021; Seuring & Will, 2022; Zwi et al., 2017).

This systematic review highlights the wide-ranging effects of forced displacement on young children's development, that reach beyond the commonly applied focus on PTSD symptoms. More high-quality research is needed that focuses on the youngest age groups and uses longitudinal, culturally appropriate, and child-centered approaches that recognize the resilience of displaced populations. With the reported influence of contextual factors on the children's developmental trajectories, we emphasize the importance of policies that promote secure and stable environments by minimizing exposure to camps, preventing family separations, and ensuring quick access to healthcare and educational institutions. Interventions should include practical support for caregivers, who might have undergone stressful and traumatic experiences themselves. Ideally, such resources should be available

from the time of arrival to shield children from post-displacement adversity and support their developmental and integration chances.

3. Study 2: Exploring mental health and development in refugee children through systematic play assessment

Bernhardt, K., Le Beherec, S., Uppendahl, J., Baur, M. A., Klosinski, M., Mall, V., & Hahnefeld, A. (2023). Exploring mental health and development in refugee children through systematic play assessment. *Child Psychiatry & Human Development*, 1-11. https://doi.org/10.1007/s10578-023-01584-z

3.1. Study aims

This cross-sectional study aimed to evaluate the effectiveness of a self-developed play observation in examining the mental health, social-emotional, and cognitive development of 3- to 6-year-old children with and without refugee experiences. In a second step, this study sought to investigate the correlations between play outcomes, exposure to adversity (number of adverse experiences, flight duration), and contextual factors (time in Germany, time in childcare, parental mental health).

The following hypotheses were tested:

H1.1 Refugee children show lower levels of play development and social interaction during play, and a higher rate of reenacting and emotionless play behavior compared to a clinical comparison group without refugee experience.

H1.2 Exposure to adversity correlates negatively with play development and social interaction during play, and positively with reenacting and emotionless play, while the opposite effect is expected for contextual factors.

H2.1 Reenacting and emotionless play, along with lower levels of play development and social interaction during play are associated with children's mental health.

H2.2 Levels of play development and social interaction during play are associated with social-emotional development, cognitive, and learning performance.

3.2. Methods

3.2.1. Study design and procedure

This cross-sectional study was part of the InterCuLtUral Child DEvelopment Project (INCLUDE). The design and methods were adapted from previously published studies (Hahnefeld, Sukale, Weigand, Dudek, et al., 2021; Hahnefeld, Sukale, Weigand, Münch, et al., 2021). The ethics committee of the Medical Faculty of the Technical University of Munich approved the study protocol. Study investigations were conducted between June 2021 and

August 2022. Prior to data collection, informed written consent was obtained from all parents. The consent form also included a reciprocal release from the duty of confidentiality, allowing the investigation team to communicate with the educators. Parents were asked for general information on age, education, medical history, mother tongue, cultural background, flight duration, and time since arrival in Germany (*Appendix 4*). They also completed questionnaires in their native language using the PORTA instrument (Sukale et al., 2017) or with the assistance of interpreters, while the investigators observed the children's free play. Participation in the study was voluntary and all families received compensation for their participation in the form of coloring books and pens for the children. They also received medical reports containing the psychometric study results. Applying a multi-centered approach, educators were asked to complete questionnaires about the participating children.

3.2.2. Study population

All families with children aged 3- to 6-years who stayed in two reception camps in Munich (Am Moosfeld, Fürstenfeldbruck) within the investigation period were personally contacted, received information about the study and were invited to a first appointment in separate examination rooms. Children within this age range who were born outside of Germany and were attended by at least one parent were eligible to participate in the study.

The clinical comparison group consisted of 3- to 6-year-old children referred to the Social Pediatric Center in Munich due to developmental problems in cognitive, social-emotional, and language domains. All children who were present in the center from January to April 2022 were informed about the study and invited to participate. Inclusion and exclusion criteria corresponded to those of the refugee sample, with the difference that the children in the comparison group were born and raised in Germany and had no prior history of displacement of their own. We excluded children with diagnoses of serious somatic or developmental disorders, intellectual impairment, and autism.

3.2.3. Psychometric measures

The following questionnaires and test instruments were used for data collection.

Play behavior

Standardized play observation: We conducted individual play observations with each child within a standardized setting including two dolls, cookware, a country farm set, and building

blocks. The investigators informed the children that they could play with the toys but gave no further instructions. Play sequences of ten minutes were videotaped and evaluated by two trained investigators using a self-developed play observation sheet (*Appendix 5*).

The play observation sheet was developed to encompass both developmental and mental health aspects for a comprehensive picture of children's outcomes. The sheet comprises four subscales and is based on several established scales previously used with displaced and non-displaced populations (Cohen et al., 2010; Halevi et al., 2016; Höfer, 2016; Kernberg et al., 1998; Sjolund, 1981). Our play observations were developed for resource-limited settings, making it feasible for use by professionals and aid workers through relatively short assessment times, a simple play setup, and the absence of a requirement for intensive training. In *Section A*, children's play development was coded based on the common conceptualization of developmental stages (Höfer, 2016; Jenni, 2021): sensorimotor, functional/exploratory, construction play, symbolic play, and role-play. A maximum of nine points can be awarded and the rating of a certain play level includes all previous levels. *Section B* evaluates children's social interaction during play, focusing on their initiative, perseverance, interaction, and language use. Each item was rated with "1" if the behavior was observed and "0" if the behavior was not observed, resulting in an overall rating between zero and seven points. Emotionless-cold play behavior and re-enactments of traumatic events as indicators of posttraumatic stress were coded separately in *Section C* and *Section D*. Regular play-coding sessions were held within the investigation team to ensure a standardized interpretation and coding of play observations. These sessions also served to address any discrepancies in ratings, ensuring they were not due to misunderstandings of the scale, and to assess the applicability of the scales based on our clinical experience. Analyses of interrater reliability yielded satisfactory results for the play development, social interaction, and emotionless-cold play sections, but could not be calculated for the reenactment item due to a lack of positive ratings (*Table 5*).

Table 5

Interrater reliability of the self-developed play observation sheet

	κ	ICC
Play development	-	.809
Social interaction during play	-	.825
Emotionless-cold play	.796	-
Reenacting play	-	-

Mental health

Child and Adolescent Trauma Screening (CATS; Sachser et al., 2017): All parents completed the CATS, a publicly available questionnaire to assess potentially traumatic experiences and resulting stress responses according to DSM-5 criteria for PTSD (APA, 2013). The questionnaire assesses previous traumatic experiences, post-traumatic stress symptoms, and functional limitations in important life areas. Each symptom is rated on a four-point Likert scale depending on the frequency and severity of each symptom (0= never, 1= rarely, 2= often, 3= almost always). A total symptom score can be calculated, with a cutoff of ≥ 16 indicating a clinically relevant level of stress symptoms. The instrument shows strong reliability, with alpha values between .81 and .94 (Sachser et al., 2017). Convergent and discriminant validity are satisfactory, with moderate to high correlations with depression (r=.62–.82) and anxiety measures (r=.40–.77), and low to moderate correlations with measures of externalizing symptoms (r=.15–.43). A confirmatory factor analysis confirmed the symptom clusters outlined in DSM-5.

Strength and Difficulties Questionnaire (SDQ; Klasen et al., 2003): The SDQ was administered to all parents and educators in the corresponding form. The screening questionnaire assesses behaviors of 2- to 17-year-old children and adolescents, including 25 items about emotional problems, behavioral problems, hyperactivity, peer problems, and prosocial behavior. A Total Difficulties score can be calculated, with results of ≥ 16 considered clinically relevant. Each item is rated on a three-point Likert scale (0= not true, 1= somewhat true, 2= certainly true). The SDQ shows good reliability with Cronbach's α = .81 and high discriminant validity, as shown by correlation with the Child Behavior Checklist (Achenbach et al., 2008). In addition, the questionnaire has been shown to reliably distinguish between clinical and field samples (AUC .91) and has been widely used in displaced populations (Stolk et al., 2017).

Social-emotional competencies

Behavior Observation Scale for Preschool Children (Verhaltensbeurteilungsbogen für Vorschulkinder; VBV-ER 3-6; Döpfner, 1993): The subscale for social-emotional competencies from the VBV was filled out by the educators to evaluate children's ability for interaction, communication, conflict resolution, and play intensity. Items can be rated on a five-point Likert scale. The reliability of the educator version is satisfactory to good, with internal consistency scores of Cronbach's α between .86 to .95, a residual test reliability of r_{tt}=.72 to r_{tt}=.80 within 4 weeks, and interrater reliability between .56 and .66. Age-specific norms (3- to 4-years and 5- to 7-years) are available for a representative sample of German children.

Cognitive development

Nonverbal Index (NVI) of the Kaufmann-Assessment-Battery for Children (KABC-II: NVI; Melchers & Melchers, 2015): All refugee children were tested with the nonverbal version of the KABC-II to assess their IQ testing performance. The KABC-II has good psychometric properties concerning reliability for children younger than six years, with split-half and consistency coefficients ranging between .70 and .97. The NVI shows high reliability coefficients between .90 and .95. Test results are interpreted based on population-representative norms of 3- to 18-year-old children in Germany, Austria, and Switzerland.

Comparison children were either assessed with the KABC-II or with an equivalent language-free IQ test: Wechsler Preschool and Primary Scale of Intelligence (4th edition; WPPSI-IV, Petermann & Daseking, 2018), Wechsler Nonverbal Scale of Ability (WNV; Petermann, 2014), or the Snijders-Oomen Non-verbal Intelligence Test (SON 2.5–7; Tellegen et al., 2007). Additionally, their vocabulary size in German was assessed with the subtest *Vocabulary* of the KABC-II.

The *Atlantis* subtest of the KABC-II was administered to all children to evaluate their short-term learning abilities. Each child was shown various pictures of fish, plants, and shells and asked to recall and identify them from a set of alternatives. The subtest shows high reliability (α=.97), especially for children aged three to six years. It also shows very little correlation with the total score on the NVI scale (r=.28–.35), indicating that it measures a separate ability that is not yet included in the total score (Melchers & Melchers, 2015).

Parent mental health

Refugee Health Screener (RHS-15; Hollifield et al., 2013): The RHS-15 is a culturally sensitive and empirically validated screening tool designed to identify emotional distress, including symptoms of anxiety, depression, and PTSD. The questionnaire was developed with and for individuals with refugee experiences and was administered to all parents in the study. Symptoms are rated on a five-point Likert scale (0= not at all; 4= extremely) and a total score can be calculated with a cut-off of ≥ 12 indicating a positive screening. Additionally, the severity of distress can be visualized via the filling of a displayed stress thermometer. The RHS-15 has demonstrated satisfactory reliability and validity values among Syrian refugees, effectively assessing clinically relevant levels of depression, anxiety, somatization, or PTSD, and showing medium to high correlations with established questionnaires (Borho et al., 2022).

Table 6

Overview of employed assessment measures

Child	
Variable	**Measure**
Play behaviour	Self-developed play observation
IQ testing	Nonverbal index of the Kaufmann-Assessment-Battery II
Learning performance	Subtest Atlantis of the Kaufmann-Assessment-Battery II
Parent	
Variable	**Measure**
Mental health	Child and Adolescent Trauma Screening
General symptom load	Strengths and Difficulties Questionnaire parent version
Parent mental health	Refugee Health Screener
Educator	
Variable	**Measure**
General symptom load	Strengths and Difficulties Questionnaire educator version
Social-emotional development	Behavior Observation Scale for Preschool Children

3.3. Statistical analysis

All statistical analyses were performed with SPSS Statistics for Windows (Version 28.0; IBM Corporation, 2021).

Tests of normality and homogeneity of variances were conducted to analyze the structure of our data. Due to violations of these assumptions, we employed non-parametric Mann-Whitney U-tests to compare play development and social interaction during play between groups of refugee and comparison children. Additionally, we utilized Spearman rank correlations (one-tailed) to examine associations between the play variables, trauma-related and general symptoms, developmental outcomes, markers of adversity, and contextual factors. To explore potential age-related effects on children's play development, we performed Kruskal-Wallis tests followed by post-hoc Mann-Whitney U-tests, using age as the grouping factor.

3.4. Results

This cross-sectional study aimed to evaluate a standardized play observation as a measure of mental health and development in young children with and without refugee experience. We conducted individual play sessions with 181 children aged 3- to 6-years, including 70 refugee children (M=4.94, *CI*=4.66-5.22) and 111 German-born children from a clinical cohort (M=5.20, *CI*=5.00-5.40). Both groups were rated and compared based on their level of play development, social interaction during play, traumatic re-enactments, and emotionless-cold play using a self-developed play observation sheet. We used a multi-informant assessment approach and examined IQ testing and learning performance with the language-free KABC-II. We gathered data from parents regarding sociodemographic factors, as well as children's mental health with the CATS and the SDQ, and parents' symptom load using the RHS-15. Educators completed the SDQ and provided additional information on children's social-emotional competencies using the VBV.

Parents of refugee children reported a significantly higher rate of potentially traumatic experiences (*U*=643.00, *Z*=-9.907, p<.001, r=0.74) and trauma-specific symptom load for their children (*U*=427.50, *Z*=-2.902, p=.004, r=0.32) as well as for themselves (*U*=655.50, *Z*=-9.133, p<.001, r=0.69). Refugee children had higher Total Difficulties scores on the SDQ by parent report (*U*=2718.50, *Z*=-2.729, p=.006, r=0.21), while educator reports indicated the opposite effect (*U*=1117.50, *Z*=-1.990, p=.047, r=0.19). Play variables did not correlate with trauma-related or general symptom load in parent and educator ratings for both groups individually, but children with more parent-reported adverse experiences showed less social-interactive play in the overall sample (r=-.178, p=.011).

Refugee children showed similar levels of play development (*U*=3516.00, *Z*=-0.38, p=0.701, r=0.03) but lower social interaction during play (*U*=2841.00, *Z*=-2.142, p=0.032, r=0.16) than the comparison group. Age was positively correlated with play development in the comparison group (*Kruskal-Wallis-H*=13.612, p=.003), whereas girls played on higher developmental levels than boys in the refugee group (*U*=441.00, *Z*=-2.03, p=0.042, r=0.24). Play variables significantly correlated with IQ testing (r=.184, p=.037), learning performance (r=.208, p=.010) and vocabulary (r=.208, p=.021) in the comparison group, who scored higher in these measures than refugee children ($U_{\text{learning performance}}$= 1838.00, *Z*=-4.986, p<.001, r=0.38; U_{IQ}= 2100.50, *Z*=-3.389, p<.001, r=0.27). In the refugee group, social interaction during play was correlated with time spent in Germany (r=.342, p<.001), parental distress (r=-.292, p=.034), and social-emotional competencies in educator reports (r=.368, p=.011), which was comparable among both groups (*U*=714.50, *Z*=-.460, p=.646, r=0.05),

Our play observations showed that high levels of adverse experiences and parental distress negatively affect the mental health and development of young children. This effect is especially

pronounced among refugee children, who often lack access to supportive play environments and stable living conditions. We highlight the usability of standardized play observations as a child-centered and strength-based measure for young children, particularly in low-resource refugee settings where parent reports or traditional methods may not be valid or meaningful. This approach allows clinicians and researchers to make more accurate assessments of children's resources and identify opportunities for further support. To enhance the validity of our standardized play observations, future studies should evaluate the effectiveness of play measures incorporating longer play sequences, additional play indicators, and testing across different populations.

4. Discussion

This thesis addressed a significant knowledge gap by investigating the impact of forced displacement on young children from an ecological perspective, focusing on their age-specific reactions.

Previous research with displaced children has mainly focused on mental health outcomes, reporting prevalence rates of PTSD between 7.8% and 60% (Buchmüller et al., 2018; Hahnefeld, Sukale, Weigand, Dudek, et al., 2021; Hahnefeld, Sukale, Weigand, Münch, et al., 2021; Lempertz et al., 2020; Nehring et al., 2021; Slone & Mann, 2016; Ünver et al., 2021). Accordingly, 40% of refugee children in Study 2 exhibited clinically relevant trauma symptoms, and 33% met full DSM-5 criteria for PTSD – in contrast to 4% in the clinical comparison group. Refugee children also displayed a high prevalence of internalizing and externalizing problems, which complements previous empirical findings (Slone & Mann, 2016). Our studies were novel in their developmental focus. They showed that forced displacement affects young children's social-emotional, cognitive, and language abilities to varying degrees (*Figure 5*), highlighting their vulnerability during critical developmental stages. Thus, solely focusing on categorical criteria for mental health conditions such as PTSD may not fully capture the diverse and age-specific reactions of young children (Scheeringa et al., 2005).

Our findings align with those of older displaced children and adolescents (Aghajafari et al., 2020; Chierici & Hamdan, 2023; Graham et al., 2016; Joshi & O'Donnell, 2003; Kadir et al., 2019), offering – for the first time – a comprehensive picture of developmental trajectories among the youngest age groups. While performance in cognitive domains was consistently low across the reviewed studies (Busch et al., 2021; Dybdahl, 2001; Hahnefeld, Sukale, Weigand, Dudek, et al., 2021; Hahnefeld, Sukale, Weigand, Münch, et al., 2021; Hanes et al., 2019; Khan et al., 2019; Pellizzoni et al., 2020; Ünver et al., 2021; Wolff et al., 1995; Zwi et al., 2017), findings regarding social-emotional and language competencies varied largely, highlighting both the strengths (Ayas et al., 2022; Busch et al., 2021; Çiçekoğlu et al., 2019; Erdemir, 2021; Laor et al., 1997; Ünver et al., 2021; Zwi et al., 2017; Zwi, Woodland, et al., 2018) and challenges (Almqvist & Brandell-Forsberg, 1995, 1997; Almqvist & Broberg, 1999; Ayas et al., 2022; Buchmüller et al., 2020; Busch et al., 2021; Çiçekoğlu et al., 2019; Ekblad, 1993; Erdemir, 2021; Flink et al., 2013; Khan et al., 2019; Laor et al., 1996; Mares & Jureidini, 2004; Min et al., 2020; Sadeh et al., 2008; Seuring & Will, 2022; Ünver et al., 2021; Wolff et al., 1995; Zwi et al., 2017; Zwi, Mares, et al., 2018) of displaced children. Our Study 2 mirrored these patterns: While refugee children performed poorly on the non-verbal IQ test and showed high levels of psychosocial problems according to parent reports, educators noted comparable social-emotional abilities for refugee and comparison children, with 84% of refugee children scoring within or above the normal range. Additionally, both groups demonstrated similar levels

of play development, although comparison children played more advanced with increasing age and engaged in more social interactive play.

The varying findings presented in both our studies indicate that children might be affected not only by the experience of displacement itself but also by associated stressors. This highlights the need to consider the broader implications of forced displacement on the lives of young children to fully understand their reactions (Arakelyan & Ager, 2021). While 82% of the reviewed studies, including Study 2, reported possible risk and protective factors, we observed a lack of systematic analysis and adequate statistical methods to analyze their interrelations. Additionally, minimal consideration has been given to how these factors, along with children's young age, might impact the methodological accuracy of the presented findings. Hence, the following chapters will discuss the reviewed studies and our own data to generate a comprehensive picture of the complex mechanisms shaping outcomes in and research with young, displaced children.

Figure 5

Harvest plots for developmental outcomes

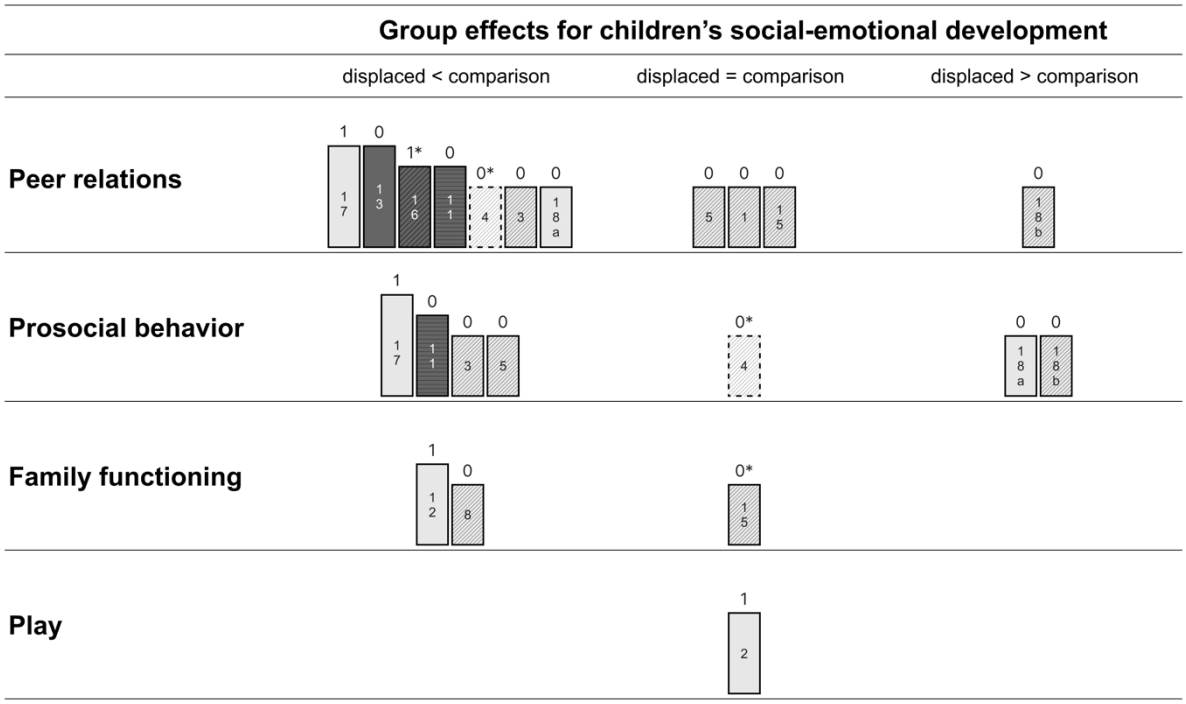
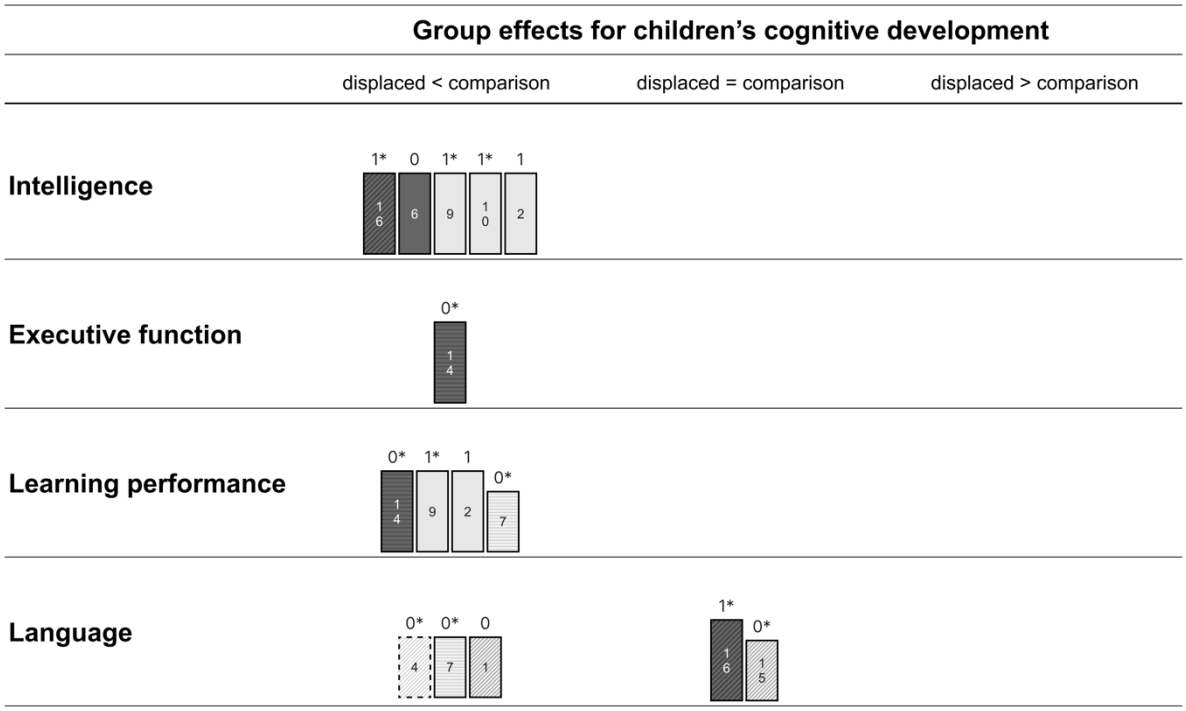


Figure 5 Continued



Note. Each study finding is represented in the respective row (outcome variable) and column (direction of group effect) using bars, with height indicating settlement status (high = detention, middle = collective accommodation, small = resettled, dashed = not reported), color denoting ACE exposure (white = one ACE category, grey = multiple ACE categories), and bar hitching showing time since arrival (full tone = <2 years, hitched = >2 years, vertical lines = not reported). Codes within the bars denote references. An additional letter (e.g., 18a, 18b) was added if the study included multiple sub-studies. The full list of references corresponding to the codes can be found in *Appendix 6*. The number above the bar indicates the type of comparison group (0= non-displaced or norm population, 1= displaced or clinical population). A * indicates the use of parent reports only.

4.1. Influencing factors

4.1.1. D-ACE

Forced displacement in and of itself is not only an adverse experience but also increases the likelihood of experiencing further D-ACE (Abdelhamid et al., 2023). In the reviewed studies, 15 to 100% of displaced children were exposed to potentially traumatic experiences. These experiences were associated with increased separation fears (Laor et al., 1996), reenacting play behavior (Almqvist & Brandell-Forsberg, 1995; Almqvist & Broberg, 1999; Ekblad, 1993), lower language and social-emotional development (Ayas et al., 2022), and lower social adjustment at follow-up (Almqvist & Broberg, 1999). In Study 2, 89% of children had experienced on average 4.37 types of traumatic events, which significantly correlated with play measures across the entire sample, but not within individual groups. While the absence of a statistical significance in the separate groups could be attributed to low variance, it also

indicates that traumatic experiences may impact children universally, irrespective of their exposure to forced displacement. Considering the high level of D-ACE exposure among the children included in both our studies, it is reasonable to assume that those experiences and subsequent stress reactions can impact children's cognitive and social-emotional functioning.

Only half of the reviewed studies assessed potentially traumatic experiences with many lacking accurate descriptions of the exact events. Our study group's investigations were the only ones to control for levels of PTSD, revealing no significant correlations with social-emotional and cognitive abilities (Hahnefeld, Sukale, Weigand, Dudek, et al., 2021; Hahnefeld, Sukale, Weigand, Münch, et al., 2021). While this challenges established assumptions about the direct link between traumatic exposure, PTSD symptoms, and children's developmental outcomes in displaced populations (Chierici & Hamdan, 2023; Kaplan et al., 2016; Michalek et al., 2022), it also supports research highlighting the influence of contextual stressors over pre-displacement adversity (Dangmann et al., 2022; Fazel et al., 2012). Accordingly, our harvest plots show that in all but one study, children exposed to cumulative D-ACE at different stages of displacement exhibited greater difficulties than non-displaced samples. Children residing in refugee and detention centers seemed to be at the highest risk (Dybdahl, 2001; Hahnefeld, Sukale, Weigand, Dudek, et al., 2021; Hahnefeld, Sukale, Weigand, Münch, et al., 2021; Hanes et al., 2019; Khan et al., 2019; Laor et al., 1996; Mares & Jureidini, 2004; Min et al., 2020; Pellizzoni et al., 2020; Wolff et al., 1995; Zwi, Mares, et al., 2018), highlighting the negative consequences of placements in transitory settings (Mares & Jureidini, 2004; Zwi, Mares, et al., 2018).

While time since displacement was mostly unrelated to developmental outcomes for children in collective and detention centers (Buchmüller et al., 2020; Flink et al., 2013; Hahnefeld, Sukale, Weigand, Dudek, et al., 2021; Lembcke et al., 2020; Min et al., 2020; Zwi, Mares, et al., 2018), studies with children in stable settlements reported a decrease in psychological and developmental concerns within the first 3- to 4-years of residence (Almqvist & Brandell-Forsberg, 1997; Almqvist & Broberg, 1999; Zwi et al., 2017). This effect was especially significant for preschool-aged children in one study (Zwi et al., 2017), highlighting the potential of young children to adjust to stable settings. Most reviewed studies reporting similar outcomes for displaced and non-displaced children were conducted in low- and middle-income countries (Çiçekoğlu et al., 2019; Erdemir, 2021; Khan et al., 2019; Laor et al., 1997; Ünver et al., 2021; Wolff et al., 1995). Ünver et al. (2021) suggest that shared psychosocial stressors — such as poor early learning environments, limited access to support systems, and high unemployment — might explain the comparable results. They found high rates of psychiatric diagnoses, attachment disorders, and developmental language impairments among both displaced and local children in Turkey, further underscoring the negative effects of resource scarcity on early development. Moreover, we found comparable evidence for developmental challenges in

internally displaced children, who might experience even greater post-displacement instability due to ongoing conflict in the country, residing in shelters, and interruption of schooling (Mooney, 2005; Perelli-Harris et al., 2023). Thus, the effect of displacement is likely moderated by the context in which time is spent and the availability of resources.

Findings about the protective effect of early preschool education among the reviewed (Busch et al., 2021; Erdemir, 2021; Hahnefeld, Sukale, Weigand, Dudek, et al., 2021; Wolff et al., 1995; Zwi, Mares, et al., 2018; Zwi, Woodland, et al., 2018) and previous studies (Aghajafari et al., 2020; Bronstein & Montgomery, 2011; Fazel et al., 2012; Graham et al., 2016; Marley & Mauki, 2019; Oleimat et al., 2022) provide further support. Two studies from the systematic review did not link time spent in collective accommodations to developmental outcomes (Busch et al., 2021; Seuring & Will, 2022). Seuring & Will (2022) attributed this to the children regularly attending preschools, which reduced their exposure to everyday life in the camps. Findings suggested that preschool attendance can improve displaced children's social-emotional, and cognitive development (Busch et al., 2021; Erdemir, 2021) and can be particularly beneficial for language acquisition in children with limited exposure to the host country's language (Seuring & Will, 2022). In Study 2, time spent in childcare was not correlated with either play measure. This could be attributed to 1) the little variance of time refugee children spent in childcare and 2) only 8.9% of refugee children attending kindergartens outside the camp. The open childcare groups within the camps considerably differed from the state institutions the comparison children were enrolled in in terms of structure and consistency. This limited exposure to enriching play and social environments among refugee children may also explain the absence of age effects in play development and lower social interaction during play within this group. Refugee children's play development, while unrelated to time in childcare, was correlated with overall time since displacement. Combined with the finding that educators rated refugee children's social-emotional competencies within a preschool setting as largely age-appropriate, this still suggests that children's play skills may have advanced as they settled into their new surroundings and got access to child-friendly environments.

4.1.2. Proximal processes

Bronfenbrenner's PPCT model (Bronfenbrenner & Morris, 2006) emphasizes the importance of proximal processes, the direct interactions between children and their immediate environment, in shaping their development. This focus is particularly relevant for displaced children whose social networks, including friends, extended family, classroom activities, and community ties are usually affected or disrupted by forced displacement (Ayas et al., 2022). As a result, young, displaced children depend greatly on their parents for essential social and

emotional interactions (Gilgoff et al., 2020; Gunnar & Donzella, 2002; Sim et al., 2018; Sroufe, 2005; Vaghri et al., 2019).

The findings of this thesis underscore the critical role of parental support for displaced children, with family separation, parental distress, and loss of family function identified as significant predictors of negative outcomes (Almqvist & Brandell-Forsberg, 1995; Almqvist & Broberg, 1999; Dybdahl, 2001; Ekblad, 1993; Khan et al., 2019; Laor et al., 1996, 1997; Lembcke et al., 2020; Wolff et al., 1995), particularly among the youngest age groups (Flink et al., 2013; Laor et al., 1997). Parents experiencing high stress levels may struggle to respond sensitively to their children's needs (De Haene et al., 2013; Jenni, 2021; Lembcke et al., 2020; Lohaus et al., 2015; Mares & Jureidini, 2004). Accordingly, parental distress has been shown to negatively affect family functioning (Laor et al., 1996) and attachment patterns (Mares & Jureidini, 2004), which were generally characterized by avoidance, parental absence, low maternal affection, and oppositional behavior in the reviewed studies (De Haene et al., 2013; Lembcke et al., 2020; Mares & Jureidini, 2004; Ünver et al., 2021). As disturbances in parent-child interactions might restrict children's willingness to engage in developmental activities (Qouta et al., 2021), this suggests that compromised family dynamics are a central pathway through which parental distress affects young children's development (Ranson & Urichuk, 2008; Schneider et al., 2001; van Ee et al., 2012). Parental stress has not been linked to children's cognitive development (Hahnefeld, Sukale, Weigand, Dudek, et al., 2021), but to their peer problems (Min et al., 2020), lower socialization (Laor et al., 1997), and, as observed in Study 2, reduced social interaction during play. As the correlation between parental mental health and children's social play in our study was significant only in the refugee group without regular childcare enrollment, this indicates that parental symptoms may have an even more pronounced impact on children who are primarily cared for by their parents.

While extensive research has explored the connection between parental distress and children's development in displaced populations (Bronstein & Montgomery, 2011; Fazel et al., 2012; Gredebäck et al., 2022, 2023; Peltonen et al., 2023; Qouta et al., 2021; van Ee et al., 2012), these investigations tend to overlook the specific challenges faced by parents (Hayes, 2021). Displaced parents often encounter legal and administrative hurdles in navigating the asylum process and life in collective accommodations, leaving them with limited time and structural resources to engage in educational activities and play with their children. Compared to children, adults often encounter even longer delays in accessing employment and language learning opportunities which further limits their social networks. At the same time, their extended familial structures are usually also disrupted (Kosyakova & Brenzel, 2020). Our reviewed studies revealed correlations between lower household income and social support, increased parental distress (Dybdahl, 2001), and less affectionate parenting (Lembcke et al., 2020), which negatively impacted children's well-being. Additionally, parental unemployment

and financial stress were linked to higher peer problems in children (Zwi et al., 2017), and parents' lower language competencies in the host country's language correlated with their children's lower proficiency (Seuring & Will, 2022). This suggests that parental acculturation difficulties affect both parents and children, potentially through reduced developmental opportunities in less integrated families (Kosyakova & Brenzel, 2020). In Study 2, 49% of refugee mothers were illiterate, and refugee parents had significantly lower educational levels than parents in the comparison group. Parental education has not been linked to displaced children's developmental outcomes in the reviewed studies (Hahnefeld, Sukale, Weigand, Dudek, et al., 2021; Zwi et al., 2017). This contradicts a previous study with 6- to 13-year-old refugee children in Canada, reporting that more frequent engagement in language-rich activities and higher parental education were associated with children's better first and second-language proficiency and cognitive development (Paradis et al., 2020). While those findings highlight the negative impact of restricted educational opportunities, both for children and their parents (Dubow et al., 2009; Paradis et al., 2020), further research should explore risk and resilience factors at the parental level and their influence on the provision of learning opportunities within displaced families.

Engaging children in proximal processes outside the family system, such as through interactions with educators and peers, is an important implication of the above-stated findings. Almqvist & Broberg (1999) revealed that having peers to play with was among the strongest predictors of positive social adjustment at follow-up, as was feeling supported by the general community in a study by Zwi et al. (2017). This aligns with previous research emphasizing the significant role of social relationships, mostly shaped in (pre-) schools, in fostering the well-being, social-emotional development, and integration of displaced children in their host communities (Emerson et al., 2022; Jafari et al., 2022; Oberg & Sharma, 2023; Reed et al., 2012). Seuring & Will (2022) showed that displaced children in Germany benefited most from preschools when they received language instruction from their teachers, especially those with limited exposure to the German language at home. Given the limited opportunities for social interaction and preschool education highlighted in our studies, a crucial chance is lost to enhance communication, relationship-building, and participation in educational and social activities for displaced children (Zwi, Woodland, et al., 2018).

4.1.3. Time

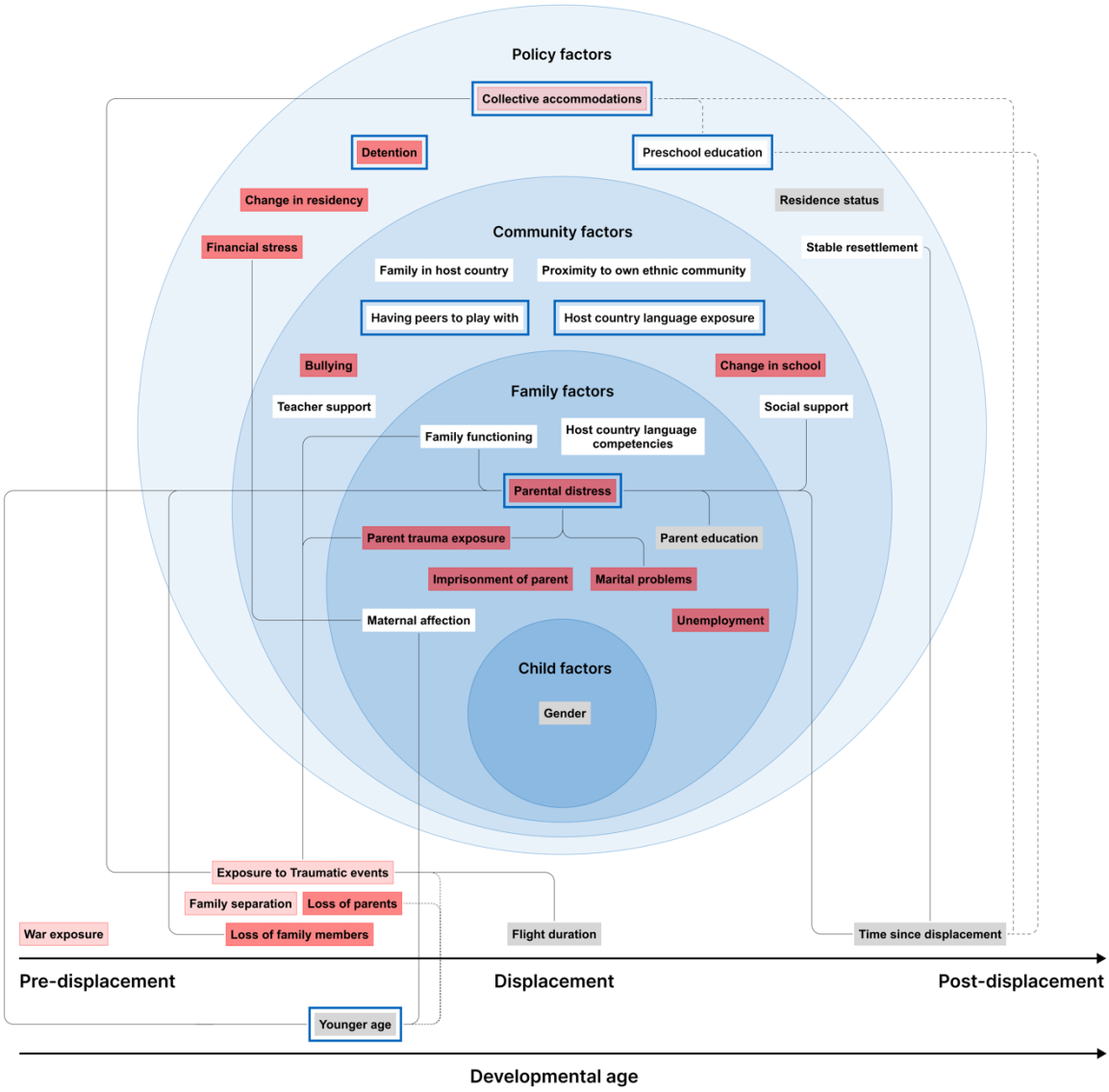
Children's development is dynamic and evolves as children grow and their environments change (Bronfenbrenner & Morris, 2006). Investigating how various risk and resilience factors influence children's development depending on the timing of exposure is thus of high relevance (Arakelyan & Ager, 2021). The reviewed studies found no clear link between displaced

children's age and their developing abilities. While some studies reported a higher risk of adverse outcomes among younger children (Almqvist & Brandell-Forsberg, 1995; Busch et al., 2021; Laor et al., 1996; Wolff et al., 1995), others found that older children faced greater risks (Ekblad, 1993; Laor et al., 1997; Lembcke et al., 2020; Zwi, Woodland, et al., 2018). This suggests that children may face unique risks and protective factors depending on their age: Younger children may be more vulnerable due to a lack of security necessary for early development, while older children are likely to have benefited from previous stability (Fazel et al., 2012). Older children, on the other hand, might experience higher levels of distress as they are more likely to comprehend the dangers and uncertainties associated with displacement (Kaplan et al., 2016).

The absence of a clear pattern regarding the effects of age and time since displacement may be attributed to the overall young age of children in both our studies. In Study 2, for example, refugee children were on average 4.94 years and spent 3.71 months in Germany after an average flight duration of 29.69 months. Consequently, they spent over half of their lives in instability and insecurity. Assuming most investigated children came from war- and crisis-affected regions, even older children likely never experienced stable environments. Another reason might be the methodological characteristics of the reviewed studies, most of which were cross-sectional. As such, they can only provide a snapshot of children's abilities at the investigation point and lack the ability to track developmental changes over time. The reviewed studies moreover lacked statistical analyses of potential confounding factors such as age at the onset of D-ACE, flight durations, and age-specific policies and resources, all of which likely affected the reported reactions (Fazel et al., 2012). Only two studies reported that children's younger age was correlated with more maternal affection (Lembcke et al., 2020) and potentially moderated the relation between parental and children's symptoms (Laor et al., 1996). Future research is needed to explore how the timing of experiences, length of displacement, and children's developmental ages intersect. This understanding can help identify the most beneficial points for targeted interventions.

Figure 6

Risk and protective factors for displaced children's developmental outcomes



Note. Risk and resilience factors for displaced children's developmental outcomes are displayed across individual, family, community, political, and temporal levels. Dark red indicates risk factors, while light red suggests possible risk factors with inconsistent evidence. White represents protective factors, and grey denotes factors with no evidence as either risk or protective. Solid lines signify significant correlations, whereas dashed lines indicate partial support for a correlation. Factors with blue borders highlight factors relevant to research with displaced children.

4.2. Methodological considerations

The wide-ranging effects of forced displacement have profound implications for research and assessment procedures.

Validity of standardized assessments

Traditional research tools designed for Western populations often fail to capture the unique experiences of displaced children and their families (Abdelhamid et al., 2023). In Study 2, many parents found it challenging to respond to certain items in the SDQ, the measure we used to assess psychosocial symptoms in the children. Questions such as "Does your child have at least one good friend?" or "Is your child generally liked by other children?" were often not applicable given the limited opportunities for play and peer interaction in the refugee camps, especially during the pandemic when our investigations took place. Moreover, many parents reported hesitating to let their children play unsupervised due to safety concerns or negative experiences in previous camps. Despite recognizing those external factors, many parents still marked the items as "not true". Previous researchers likely encountered similar challenges, since most reviewed studies employed the SDQ or equivalent measures to assess social-emotional abilities in displaced children. Fängström et al. (2019), for example, noted challenges with the interpretation of SDQ items, as some questions did not clearly distinguish between actual behavioral problems and typical behavior for a child's age given their challenging situations. Evaluating the relevance of questionnaire items to the specific circumstances of displaced families thus is essential when interpreting study results.

This concern becomes even more evident in the example of cognitive outcomes, which were consistently poor for displaced children in our studies. Our data from Study 2 and preceding investigations (Hahnefeld, Sukale, Weigand, Dudek, et al., 2021; Hahnefeld, Sukale, Weigand, Münch, et al., 2021) showed that IQ testing performance was below average for refugee children, with mean scores between 79.5 and 81.5. Fifteen children thereby fell into the category of potential mental retardation based on the criteria of the International Statistical Classification of Diseases and Related Health Problems (10^{th} edition; ICD-10; World Health Organization, 2016) criteria of IQ < 70. While the direct assessments of the children might suggest valid impressions of their cognitive abilities, previously reported neurological conditions or developmental delays were among the exclusion criteria for Study 2. Moreover, the results did not align with our clinical impression of largely age-adequate and clinically normal behavior in the sample. Instead, we noticed that tasks involving demonstration, imitation, and turn-taking were easier for the children than multiple-choice tasks, which proved more challenging even with the aid of interpreters. Since multiple-choice formats heavily rely on formal education (Brouwers et al., 2009), the lower performance of refugee children on these tasks may indicate structural disadvantages. Our correlational analyses in Study 2 further support these findings: In the comparison group with regular preschool attendance, short-term learning, IQ testing performance, and language abilities correlated significantly with the play variables (*Figure 7*). Notably, no such correlations were found among refugee children. Given that most children in both studies did not attend formal childcare, the presented cognitive

outcomes should be interpreted as limited test performance, rather than developmental impairments.

Similar concerns apply to the presented language findings. Eleven studies detected limited speech capacities in displaced children (Almqvist & Broberg, 1999; Ayas et al., 2022; Busch et al., 2021; Erdemir, 2021; Khan et al., 2019; Mares & Jureidini, 2004; Nehring et al., 2021; Seuring & Will, 2022; Ünver et al., 2021; Wolff et al., 1995; Zwi et al., 2017), that persisted up to 3 ½ years after settlement (Almqvist & Broberg, 1999; Zwi et al., 2017). Most studies evaluated language proficiency in the host country's language, making it reasonable for non-native, displaced children to be less advanced than local children. Only one study assessed proficiency in the mother tongue, revealing better language abilities in displaced orphans than those accompanied by their parents, although specific test scores were not provided. We did not assess refugee children's language development in Study 2. However, the significant correlation between social interaction during play and language development in the comparison group suggests that refugee children, who demonstrated less social play, may also have lower language proficiency. This would align with previous research linking children's abilities to engage in symbolic and interactive play to their early language development (Hà, 2022; Quinn et al., 2018). Our clinical observations support this, as most children played quietly without using language. However, our play observations took place within investigation rooms during parental interviews. In this environment, children had fewer opportunities for social play and may have played quietly to prevent interrupting parents and investigators, potentially explaining their lower language use and social interaction during play. Given the evidence that bilingualism can benefit displaced children in their second language learning (Yeter, 2022), further research should explore their language development in their mother tongue and its implications for acquiring a second language in the host country.

Multi-perspective assessments

Parents are typically the primary source of information regarding young children's outcomes, as infants are still developing their ability to comprehend or verbalize their experiences (De Young & Landolt, 2018; Gadeberg et al., 2017). Previous literature has reported that parental reports on their children's well-being and development are heavily influenced by their own symptoms (Bajeux et al., 2018; De Young & Landolt, 2018; Hahnefeld, Sukale, Weigand, Münch, et al., 2021). In Study 2, refugee children had significantly higher overall symptom loads than comparison children according to parents, while educator ratings indicated the opposite effect. Moreover, children's symptoms correlated with parental symptoms, but not with educator reports, IQ testing, learning performance, or play ratings. Given the high stress levels of parents, this suggests that they might have overestimated their children's distress.

Associations between parental and children's symptoms in the reviewed studies emerged mainly when outcomes were assessed through parent rating (Almqvist & Broberg, 1999; Flink et al., 2013; Hahnefeld, Sukale, Weigand, Münch, et al., 2021; Laor et al., 1996, 1997; Min et al., 2020). Thus, part of the strong correlation between parents' and children's distress can be attributed to interrater biases in the assessments. This is relevant, as less than half of the reviewed studies used a multi-perspective assessment procedure, which contributed to low ratings in our quality assessments regarding their internal validity. These findings are not surprising considering previous research indicates a lack of consensus between parents, educators, or children themselves regarding children's symptoms (Carneiro et al., 2021; Cheng et al., 2018). Thus, complementing parent perspectives with educator ratings or direct child observations is needed to enhance the sensitivity of measurements.

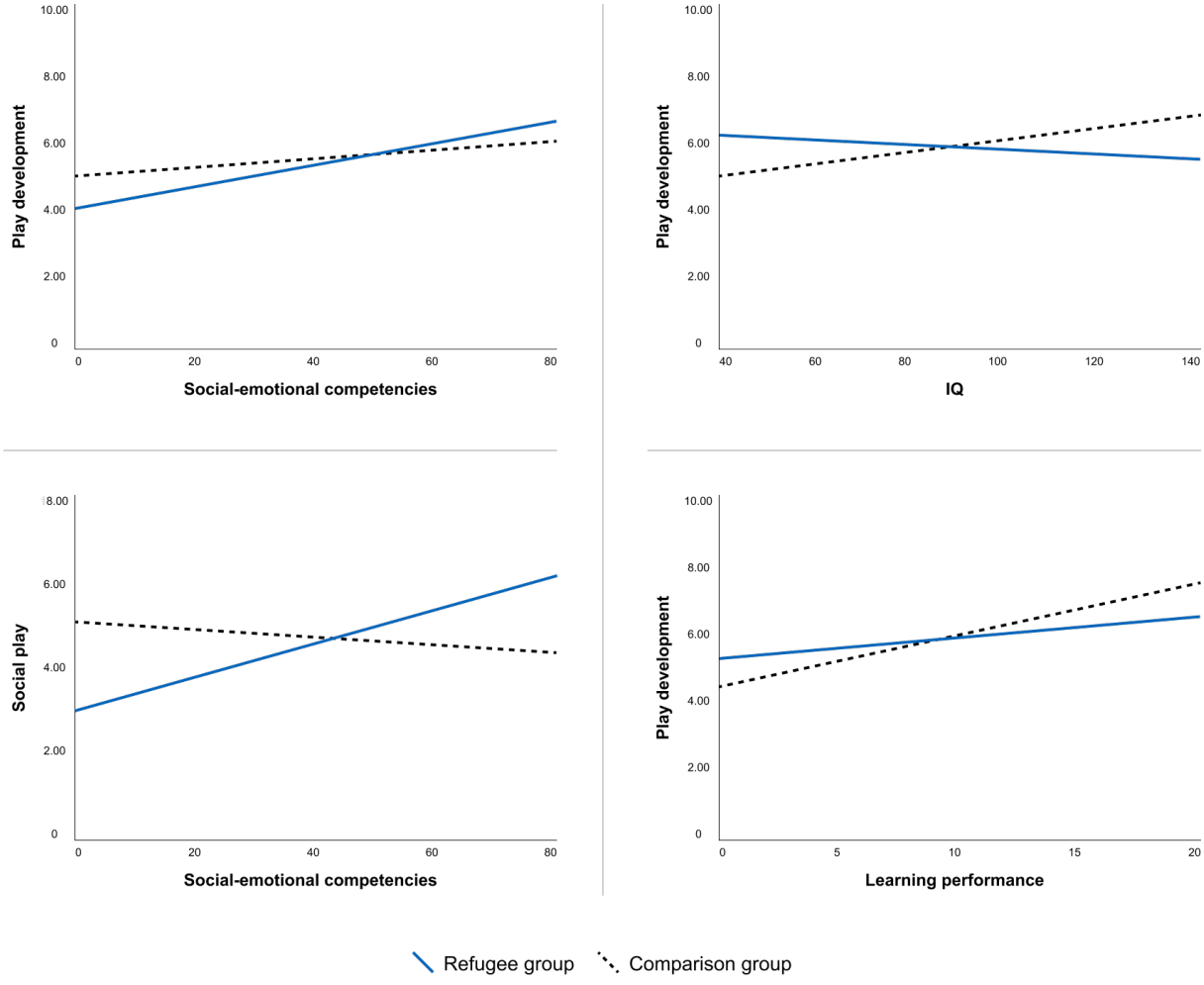
Study 2 was the first to attempt group comparisons of play behavior between refugee and non-refugee children, linking play outcomes to relevant contextual factors. Reliability analyses yielded satisfactory results for the items of play development, social interaction during play, and emotionless play. However, unlike previous studies (Almqvist & Brandell-Forsberg, 1995; Björn et al., 2011; Chazan & Cohen, 2010; Cohen et al., 2010), we did not identify reenacting patterns among refugee children – despite their high exposure to potentially traumatic events. One possible explanation might be methodological differences in the play assessment methods. Prior studies aimed to capture posttraumatic play (Almqvist & Brandell-Forsberg, 1995; Cohen et al., 2010), whereas we let children play freely and undirected with neutral materials. Previous studies moreover assessed longer play sequences, while our set duration of ten minutes and a play setting within the investigation rooms might not have allowed the right space for children to engage in reenacting play. On the other hand, the fact that all but one child played without indications of traumatic stress could also point toward their resilience in a stable setting. Previous literature indicates that different types of traumatic events may impact children's play in distinct ways, with a particular emphasis on interpersonal trauma (Drewes, 1999). Cohen et al. (2010) reported that the loss or injury of parents but not the severity of war exposure negatively influenced children's play activity. Additionally, Almqvist & Brandell-Forsberg (1995) observed play reenactments more frequently in displaced children whose fathers were imprisoned. Our sample size in Study 2 did not allow for sub-analyses with different types of traumata, which should be considered in future research with bigger samples. These studies should also incorporate additional indicators of trauma-related symptoms such as play interruptions, variations in children's emotional states, and manifestations of aggression during play (Chazan & Cohen, 2010; Cohen et al., 2010; Drewes, 1999).

Although we did not establish direct links between play variables, IQ testing, and trauma-related symptoms within the refugee group, robust correlations emerged with social-emotional competencies in the childcare setting as assessed through educator ratings on the VBV.

Notably, no such correlations were observed with Total Difficulties scores on the SDQ, both in parent and educator ratings. This could be attributed to the SDQ's focus on problems or deficits (Sjö et al., 2021), while the VBV is strength-based and measures positive aspects of social-emotional development. Studies suggest that strength-oriented measures are more accurate in assessing children's psychosocial competencies without losing the ability to describe difficulties (Cox, 2006; Sjö et al., 2021). Potentially, our findings on the VBV and play observations were more reflective of children's competencies, highlighting their resilience in the face of collective accommodations in which the educator reports and play observations were obtained. Considering that most reviewed studies employed the SDQ or similarly structured measures to evaluate children's social-emotional development, there is a concern that these assessments may have underestimated children's abilities.

Figure 7

Correlations between play variables and children's developmental outcomes



4.3. Implications for research

The presented findings in this thesis have important implications for future research with young, displaced children. First, longitudinal assessments of age-specific psychological, behavioral, and developmental outcomes are needed to improve our understanding of the diverse reactions in displaced children – in high- but also in middle- and low-income countries. Only one third of the reviewed studies were conducted in respective settings, despite most displaced persons being hosted in developing nations (UNHCR, 2023b). As resources and support services are especially restricted in developing countries (Vaghri et al., 2019), systematic assessments of contextual risk and protective factors are needed to support displaced and local children. All but four reviewed studies included children from the host country as comparison groups, which is generally feasible and reasonable due to the difficulty of assessing prewar levels in displaced children. However, this approach increases the risk of overlooking culturally specific factors and implies that Western norms set the standard for development and behavior. Future studies should thus include comparison groups from similar cultural backgrounds or home countries to better understand the specific effects of displacement and the applicability of different standardized measures. This also applies to Study 2, where we included a clinical comparison group of children born and raised in Germany. As a high-risk group, our sample did not reflect the general population. While children with developmental disabilities generally show play behaviors comparable to healthy, normally developing children (Jenni, 2021), it still presents a limitation of our study.

The wide use of deficit-focused measures among the reviewed studies highlights a prevailing trend in empirical research with young, displaced children, which often pathologizes their reactions rather than recognizing them as an expected response to the various challenges they encounter (Mattelin et al., 2022; Miller et al., 2022; Müller & Kenney, 2021). This approach disregards the profound disruptions in the lives of young, displaced children (Pieloch et al., 2016) and underestimates their developmental potential when provided with adequate resources and stable living conditions (Masten, 2018). While we recognize the importance of assessing psychological and developmental challenges to identify and support vulnerable children early on, shifting towards a resilience perspective can fundamentally alter how we view and support them. By focusing on their potential, researchers and clinicians can identify adaptive capacities to build upon, acknowledging displaced children as active participants in their development (Masten, 2018; Pieloch et al., 2016). It moreover emphasizes the role of social environments and contextual factors in shaping children's well-being and developmental trajectories, offering critical insights for informing policies and interventions (Marley & Mauki, 2019; Mattelin et al., 2022; Pieloch et al., 2016).

The development of our systematic play observations aimed to contribute to this shift in research focus. We introduced a strength-based and child-centered measure that seems promising in refugee settings where standardized tests lack validity or relevance. While we demonstrated effective measurement of social-emotional competencies in the refugee group, future research is needed to verify those findings. Such studies explore the use of systematic play observations alongside developmental assessments and reports from different perspectives, particularly given our challenges in obtaining educator reports. The fact that over 80% of families in the refugee group originated from Afghanistan reflects a limitation in our study but also raises concerns about the generalizability of findings from the reviewed studies, which mainly included homogeneous groups within specific settings. While our study sample was representative of the refugee population in Germany at that time, our findings, particularly regarding the observed higher levels of play development among girls, may have been influenced by cultural and social norms, and require further support across diverse cultural contexts. This includes assessing potential differences in assumptions about the importance and role of children's play, which might differ in Western versus non-Western cultures (Hyder, 2004).

4.4. Political implications

The mechanisms through which forced displacement impacts the well-being and development of young children are wide-ranging, yet many of them can be modified. Displaced children's outcomes highly depend on available resources, both within the child and at political, community, and family levels (Bronfenbrenner & Morris, 2006; Masten, 2018). Thus, support offers should target the multiple systems in which displaced children are embedded (Bürgin et al., 2022; Pieloch et al., 2016).

Governments and institutions

The resilience of displaced children is not only their individual ability to cope with extreme situations; it is a political responsibility to provide them with secure and stable environments (Bürgin et al., 2022; Masten & Narayan, 2012). Governments need to minimize exposure to refugee or detention centers, prevent family separations, and guarantee quick access to stable housing and healthcare. Addressing these structural factors not only directly enhances children's well-being and development but also fosters synergistic changes in the broader ecosystems where families resettle (Arakelyan & Ager, 2021). Holding legal status in the receiving country, for example, grants access to essential resources and educational opportunities for children and enables parents to pursue employment and language learning

initiatives (Arakelyan & Ager, 2021; Kosyakova & Brenzel, 2020). Such opportunities have been shown to alleviate parental stress and contribute to the establishment of overall family stability (Jafari et al., 2022). In Germany, the average processing time until the first official decision on asylum applications is 7.8 months, with final decisions taking up to 22.9 months (Bundestag, 2023) – leaving families without the necessary support structures for extended periods. This highlights the urgent need for streamlined procedures to ensure timely access to essential services and rights for displaced families upon arrival, even without residence status. These services then need to be equally distributed (Miri, 2024), as disparities in resources and laws across different states in countries like Germany can exacerbate challenges for resettling families depending on their geographical location.

Education

Engaging displaced children in social-inclusive educational settings is an important task of integration policy (Busch et al., 2021; Erdemir, 2021), but is yet to receive adequate prioritization (Baisch et al., 2016). Article 24 of the UN Convention on the Rights of the Child mandates that primary education must be compulsory and free for all children (U.N. General Assembly, 1989). In Germany, legal foundations ensure that displaced children can attend schools from the age of six, typically after three months of residence (Baisch et al., 2016). The right to kindergarten access, however, is locally regulated and often excludes children from daycare institutions for extended periods. As a result, only 36% of kindergartens in Germany report to accommodate displaced children (Baisch et al., 2016). As research demonstrates the positive impact of formal education on children's social-emotional, cognitive, and language development (Aghajafari et al., 2020; Fazel et al., 2012; Kuru et al., 2023; Vaghri et al., 2019), policymakers must recognize educational access as a basic right for any child (U.N. General Assembly, 1989) – especially for those residing in low-resource and unstable environments (Erdemir, 2021).

To support the transition into the educational system and bridge gaps between displaced and local children, preschool-based initiatives should be implemented to enhance learning and language acquisition (Arega, 2023; Busch et al., 2021; Seuring & Will, 2022). Such programs can foster a positive classroom climate by guiding caregivers to understand the unique challenges displaced children face and incorporate cultural understanding into their teaching practices (Chwastek et al., 2021; Miri, 2024). These efforts have been shown to reduce discrimination, bullying, and negative stereotypes (Chwastek et al., 2021; Due et al., 2016; Miri, 2024; Pieloch et al., 2016) and foster a sense of belonging among displaced children (Arega, 2023; Betancourt et al., 2013; Fazel & Betancourt, 2018; Kuru et al., 2023) — a key

resilience factor for their well-being and academic outcomes (Arega, 2023; Due et al., 2016; Emerson et al., 2022; Miri, 2024; Pieloch et al., 2016).

Children's daycare enrollment can ultimately aid parents' integration progress (Baisch et al., 2016; Bujard et al., 2020; Fazel & Betancourt, 2018) as it frees time from childcare duties to pursue employment or language courses (Miri, 2024). If parents are actively involved in their children's education, it can provide opportunities to practice the host language, build social networks, and engage with the local culture (Baisch et al., 2016; Bujard et al., 2020; Gambaro et al., 2021; Miri, 2024). Gambaro et al. (2021) found that displaced mothers' active participation in preschool activities significantly enhanced their social integration, equivalent to living in Germany for over six years. The effects were particularly strong for language proficiency and employment prospects and improved children's academic performance and well-being in other studies (Fazel & Betancourt, 2018). Hence, supporting parental school engagement through regular parent-teacher meetings and volunteering opportunities should be a central part of preschool and later school curricula.

Community

Community systems like social workers in refugee camps, recreation centers, and religious organizations play a vital role in helping displaced families navigate the asylum process, build social networks, and engage in recreational activities (Jafari et al., 2022; Miri, 2024; Pieloch et al., 2016; Ventevogel et al., 2013). These initiatives are crucial as feelings of acceptance and participation in local communities significantly impact the well-being and development of displaced children (Arega, 2023; Fazel & Betancourt, 2018; Jafari et al., 2022; Reed et al., 2012). Establishing same-ethnic groups can thereby help maintain a connection to the home culture by preserving cultural practices, sharing experiences, and discussing acculturation challenges (Fazel & Betancourt, 2018; Pieloch et al., 2016) – additional factors that can promote the resilience of displaced children (Pieloch et al., 2016). Since community or social workers are often the ones arranging young children's access to early education facilities, these organizations also play a crucial role in their academic trajectories (Baisch et al., 2016).

To sustain healthcare- and community-level support, policymakers must provide adequate resources for those working with displaced populations (Sim et al., 2018). Service providers and practitioners often struggle with limited access to interpreters, which hinders their ability to assist families effectively. Additionally, concerns about living conditions or transfers are usually beyond practitioners' control but are among the biggest concerns in displaced families' lives. The continuous exposure to the hardships of displaced families and the risk of sudden

disruptions in therapeutic relationships due to abrupt relocations demand a high level of resilience and frustration tolerance from professionals and researchers (Chwastek et al., 2021; Sim et al., 2018). Addressing structural issues and ensuring comprehensive support for those working with displaced populations is urgently needed to maintain their ability to provide effective assistance (Sim et al., 2018).

Family

Young, displaced children are vulnerable due to their reliance on support from caregivers (De Young & Landolt, 2018), many of whom are dealing with traumatic experiences and post-migration stressors while carrying out their parenting responsibilities (Fazel & Betancourt, 2018). Thus, effective care for displaced children should target the family system as a whole (Fazel & Betancourt, 2018; Pieloch et al., 2016). Psychoeducational interventions that consider acculturation stressors and the effects of past traumatic experiences can help parents create a sense of normality for their children even under difficult conditions (Arega, 2023; Betancourt et al., 2013; Eltanamly et al., 2021; Hahnefeld et al., 2023; Pieloch et al., 2016). This can foster a supportive family environment characterized by joint activities, positive reinforcement, and consistent family rules which benefits both children's and parent's well-being (Elsayed et al., 2019; Hahnefeld et al., 2023; Pieloch et al., 2016). Our studies highlight the profound impact of parental distress on the outcomes of young, displaced children. Targeted interventions should be available to displaced parents that address their psychological health and help them cope with their own stressful experiences (Arega, 2023; Betancourt et al., 2013). Finally, better-educated parents who are familiar with the host country's language are more capable of providing educational opportunities for their children (Kuru et al., 2023). Parents should be supported in accessing language courses and employment opportunities, ideally from the time of arrival to ease the integration process for displaced families.

Child

Bronfenbrenner's PPCT model (Bronfenbrenner & Morris, 2006) emphasizes that children's development is not solely externally determined but also reflects a child's agency – the ability to actively shape their development through interactions with the environment. Interventions that strengthen children's individual abilities, aligned with their developmental stage, should thus be central to preventive efforts (Pieloch et al., 2016). Specialized treatments and therapeutic approaches at the child level, such as psychological first-aid, cognitive behavioral therapy, or narrative exposure therapy have been found effective in helping children deal with D-ACE (Arega, 2023; Fazel & Betancourt, 2018; Oberg & Sharma, 2023). However, access to

these treatments is often limited, particularly in low- and middle-income countries where most displaced children reside (Betancourt et al., 2013). Moreover, these treatments typically focus on mental health aspects, often overlooking the developmental implications of forced displacement.

Research has proposed the possibility of supporting children's agency by offering safe play spaces (Cohen & Gadassi, 2018; Degotardi, 2013; Jackson, 2006; Ventevogel et al., 2013). A study by Jackson (2006) found that supportive playgroups for refugee children in Australia fostered their prosocial behaviors, self-esteem, and self-efficacy, leading to smoother transitions to school and overall increased confidence for both children and parents. Another study on group Theraplay with refugee children in Turkey found that parent-child play activities not only improved children's PTSD symptoms but also parent-child attachment (Eruyar & Vostanis, 2020). Providing children with stable and child-friendly environments that promote their play activities is an important community and political incentive (Hyder, 2004). This could involve installing play spaces in refugee camps, providing families with play and educational materials, or ensuring proximity to playgrounds, all of which enable children's social interaction and reinforce their role as active participants in their community (Degotardi, 2013; Pieloch et al., 2016).

Timing

Time and its impact on developmental processes is another dimension that should be considered when implementing preventive measures (Hambrick et al., 2019). Research suggests that symptoms and developmental challenges tend to decrease in stable resettlement (Almqvist & Brandell-Forsberg, 1997; Almqvist & Broberg, 1999; Çiçekoğlu et al., 2019; Laor et al., 1996, 1997; Zwi et al., 2017). Consequently, support should be available for families upon arrival in the host country to help young children adapt and acculturate in secure and stable surroundings.

Specialized interventions should be tailored to children's individual needs, recognizing that each child may require a different level of support (Bürgin et al., 2022). Thus, assessments of displaced children should occur as soon as possible after their arrival. Common definitions of ACE focus on adversities children face within the family, while political violence and forced displacement are currently not covered by the framework (Abdelhamid et al., 2023; Hanes et al., 2017). To address this, a consistent approach is essential to capture the multifaceted challenges displaced children encounter at different stages of displacement, providing insights into stressors and available resources. This approach includes using assessment tools that are appropriate to children's developmental stage and life circumstances. This is especially

relevant since it is common practice in countries like Germany to use the results of standardized IQ tests when making school placement and financing decisions for children. Standardized tools may underestimate children's true abilities which could lead to their placement in schools and care where they are not adequately challenged or supported to develop their potential (Hahnefeld et al., 2023; Kim et al., 2020). Given the complexity of examining young children's needs (Scheeringa et al., 2012), assessment procedures should adopt multi-perspective approaches that incorporate direct observations of age-specific expressions of symptoms and abilities.

4.5. Conclusion

Although existing research on young, displaced children is limited, particularly in low- and middle-income settings, our studies showed that forced displacement presents multifaceted challenges to children’s mental health and development. Young children's reactions are crucially influenced by the dynamic interplay of potentially traumatic experiences, ongoing daily stressors, and disruptions within their environments and might differ from the expressions of older children and adolescents.

Forced displacement holds profound implications for research procedures. Culturally valid and child-centered measures can enhance the sensitivity of assessments, particularly when multi-perspective approaches are not available, and standardized tests may not be applicable or valid due to language and cultural barriers. By systematically observing children’s play behavior, we can gain insights into their subjective experiences, ensuring a strength-based approach to the assessment process that aligns with the developmental characteristics of young children.

Our findings reinforce the importance of interventions and practices at the political, community, family, and child level that prioritize safe and stable environments for displaced children. This includes ensuring access to healthcare and early education, practical and mental health support for caregivers, and shortened asylum processes for these children and their families. Ideally, such resources should be available from the time of arrival to support positive developmental and integration trajectories in young, displaced children.

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Appendix

Appendix 1

The initial literature search was conducted in May 2021 using the following terms: (refugee OR flight OR resettle* OR displace*) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play) AND (develop* OR adjust* OR problem OR stress OR function*). After a first review of the results, we found studies used various terms to describe displaced populations, which led us to perform an additional search in November 2021 that included the terms *migration* and *asylum seeker* to enhance search findings. Additionally, the terms *psycholog*, skill, trauma,* and *resilien** were added to capture a wider range of possible reactions in displaced children. An updated literature search was carried out after the manuscript was resubmitted in October 2023 using the same search terms. There were no restrictions for publication status, language, or publication date for the initial search. We limited the updated search to publications from 2021 to 2023 and, if the search mask allowed, to studies published after November 2021 to reduce the number of duplicates. The search strategy for each database is described below.

1. Medline

Terms from the different search blocks were linked using Boolean operators and inserted into the advanced search field for title and abstract search. An age filter narrowed the results to studies involving 0- to 5-year-old children in the age groups of newborns (birth to one month), infants (birth to 23 months), and preschool children (2- to 5-years). The searches generated a total of 2,302 results, with 986 duplicates and 1,316 references considered for further review.

Table 7

Search strategy and results for Medline database

Run	Date	Search terms	Filter	Results	Duplicates	Imported
1	May 2021	(refugee OR flight OR resettle* OR displace*) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play) AND (develop* OR adjust* OR problem OR stress OR function*)	Age group: 0- to 5-year-old children	625	0	625
2	November 2021	(refugee OR flight OR resettle* OR displace* OR migration OR asylum seeker) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play OR psycholog*) AND (develop* OR adjust* OR problem OR stress OR function* OR skill OR trauma OR resilien*)	Age group: 0- to 5-year-old children	1,393	913	480
3	October 2023	(refugee OR flight OR resettle* OR displace* OR migration OR asylum seeker) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play OR psycholog*) AND (develop* OR adjust* OR problem OR stress OR function* OR skill OR trauma OR resilien*)	Age group: 0- to 5-year-old children Publication date: 11/2021-10/2023	284	73	211

2. Psyndex

We linked the different blocks to search for keywords, titles, authors, sources, and abstracts in the Psyndex database. A filter was applied to restrict results to journal articles. For the updated search, we conducted three separate runs, each restricted to a single year between 2021 and 2023. From this, we retrieved 988 references, of which 719 were exported for further review after removing 269 duplicates.

Table 8

Search strategy and results for Psyndex database

Run	Date	Search terms	Filter	Results	Duplicates	Imported
1	May 2021	(refugee OR flight OR resettle* OR displace*) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play) AND (develop* OR adjust* OR problem OR stress OR function*)	Publication type: Journal article	187	12	175
2	November 2021	(refugee OR flight OR resettle* OR displace* OR migration OR asylum seeker) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play OR psycholog*) AND (develop* OR adjust* OR problem OR stress OR function* OR skill OR trauma OR resilien*)	Publication type: Journal article	656	220	436
3	October 2023	(refugee OR flight OR resettle* OR displace* OR migration OR asylum seeker) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play OR psycholog*) AND (develop* OR adjust* OR problem OR stress OR function* OR skill OR trauma OR resilien*)	Publication type: Journal article Publication year: 2023	42	10	32
4	October 2023	See above	Publication type: Journal article Publication year: 2022	54	3	51
5	October 2023	See above	Publication type: Journal article Publication year: 2021	49	24	25

3. Cochrane Library

Search terms within the respective blocks were connected using Boolean operators and entered in the advanced search bar to search for titles, abstracts, and keywords. The interface provides results for Cochrane Reviews, Protocols, Editorials, and Trials, with our focus solely on the trials section. In total, 1,243 results were obtained, with 972 imported into the literature management program after removing duplicates.

Table 9

Search strategy and results for the database of Cochrane Library

Run	Date	Search terms	Filter	Results	Duplicates	Imported
1	May 2021	(refugee OR flight OR resettle* OR displace*) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play) AND (develop* OR adjust* OR problem OR stress OR function*)	Study type: Trial	311	68	243
2	November 2021	(refugee OR flight OR resettle* OR displace* OR migration OR asylum seeker) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play OR psycholog*) AND (develop* OR adjust* OR problem OR stress OR function* OR skill OR trauma OR resilien*)	Study type: Trial	466	203	263
3	October 2023	(refugee OR flight OR resettle* OR displace* OR migration OR asylum seeker) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play OR psycholog*) AND (develop* OR adjust* OR problem OR stress OR function* OR skill OR trauma OR resilien*)	Study type: Trial Publication date: 11/2021-10 /2023	466	0	466

4. Web of Science

The Web of Science interface enabled searching within titles and abstracts using the combination of search blocks. The results were filtered to include only articles. A total of 3,781 references were found, with 2,750 transferred to the literature management program after removing duplicates.

Table 10

Search strategy and results for Web of Science database

Run	Date	Search terms	Filter	Results	Duplicates	Imported
1	May 2021	(refugee OR flight OR resettle* OR displace*) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play) AND (develop* OR adjust* OR problem OR stress OR function*)	Document type: Article	932	194	738
2	November 2021	(refugee OR flight OR resettle* OR displace* OR migration OR asylum seeker) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play OR psycholog*) AND (develop* OR adjust* OR problem OR stress OR function* OR skill OR trauma OR resilien*)	Document type: Article	2,321	813	1,508
3	October 2023	(refugee OR flight OR resettle* OR displace* OR migration OR asylum seeker) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play OR psycholog*) AND (develop* OR adjust* OR problem OR stress OR function* OR skill OR trauma OR resilien*)	Document type: Article Publication date: 11/2021-10 /2023	528	24	504

5. Elsevier

The ScienceDirect search mask allows a maximum of 8 Boolean connectors within one search request, and the use of wildcards (*) is not supported. Therefore, the search blocks had to be manually linked together, and *Block 3* and *Block 4* had to be divided into sub-blocks to avoid exceeding the maximum number of connectors (*Table 11*). To limit the results to relevant displaced populations, we only linked *Block 1* to all other blocks, while the other blocks were not linked with each other.

As a first step, we linked *Block 1* with *Block 2*: (refugee OR flight OR resettle OR displace) AND (child OR preschool OR kindergarten) and added the terms into the title search, revealing 22 results. In a second step, *Block 1* was combined with terms from *Block 3.1* ((refugee OR flight OR resettle OR displace) AND (social OR emotion OR peer OR behavior)), which yielded 85 results, and so forth. This resulted in total of five search runs for the initial search. After the additional search terms were added, the second and third search runs each resulted in 12 runs, as *Block 1.2* was added to the search list.

Table 11

Search terms and blocks for literature search on ScienceDirect

Block 1.1		**Block 2**		**Block 3.1**		**Block 4.1**
refugee	AND	child	AND	social	AND	develop
OR		OR		OR		OR
flight		preschool		emotion		adjust
OR		OR		OR		OR
displace		kindergarten		peer		problem
OR				OR		OR
resettle				relation		function
Block 1.2				**Block 3.2**		**Block 4.2**
migration			AND	behavior	AND	stress
OR				OR		OR
asylum seeker				behaviour		trauma
				OR		OR
				IQ		skill*
				OR		OR
				intelligence		resilien
				Block 3.3		
			AND	memory		
				OR		
				learn		
				OR		
				play		
				OR		
				psycholog		

Results were filtered by the disciplines of psychology, social sciences, nursing, and health professions and article type of research articles to narrow down the number of results. A total of 843 references were found, of which 546 references were saved for further screening after removing 297 duplicates.

Table 12

Search strategy and results for ScienceDirect database

Date	Run	Search terms	Filter	Results	Duplicates	Imported
May 2021	**1**	(refugee OR flight OR resettle OR displace) AND (child OR preschool OR kindergarten)	Discipline: Psychology, Social Sciences, Nursing, and Health Professions	22	0	22
	2	(refugee OR flight OR resettle OR displace) AND (social OR emotion OR peer OR relation)		85	31	54
	3	(refugee OR flight OR resettle OR displace) AND (behavior OR behaviour OR intelligence OR iq)	Article type: Research article:	34	12	22
	4	(refugee OR flight OR resettle OR displace) AND (memory OR learn OR play)		12	4	8
	5	(refugee OR flight OR resettle OR displace) AND (develop OR adjust OR problem OR stress OR function)		91	9	82
November 2021	**1**	(refugee OR flight OR resettle OR displace) AND (child OR preschool OR kindergarten)	Discipline: Psychology, Social Sciences, Nursing, and Health Professions	22	22	0
	2	(refugee OR flight OR resettle OR displace) AND (social OR emotion OR peer OR relation)		84	27	57
	3	(refugee OR flight OR resettle OR displace) AND (behavior OR behaviour OR intelligence OR iq)	Article type: Research article:	34	0	34
	4	(refugee OR flight OR resettle OR displace) AND (memory OR learn OR play OR psycholog)		12	12	0
	5	(refugee OR flight OR resettle OR displace) AND (develop OR adjust OR problem OR function)		48	24	24
	6	(refugee OR flight OR resettle OR displace) AND (stress OR trauma OR skill OR resilien)		75	56	19
	7	(migration OR asylum seeker) AND (child OR preschool OR kindergarten)		19	3	16
	8	(migration OR asylum seeker) AND (social OR emotion OR peer OR behavior)		93	56	37

Table 12 Continued

Date	Run	Search terms	Filter	Results	Duplicates	Imported
November 2021	**9**	(migration OR asylum seeker) AND (behaviour OR relation OR iq OR intelligence)		0	0	0
	10	(migration OR asylum seeker) AND (memory OR learn OR play OR psycholog)		5	1	4
	11	(migration OR asylum seeker) AND (develop OR adjust OR problem OR function)		18	12	6
	12	(migration OR asylum seeker) AND (stress OR trauma OR skill OR resilien)		28	12	16
October 2023	**1**	(refugee OR flight OR resettle OR displace) AND (child OR preschool OR kindergarten)		11	0	11
	2	(refugee OR flight OR resettle OR displace) AND (social OR emotion OR peer OR relation)		42	10	32
	3	(refugee OR flight OR resettle OR displace) AND (behavior OR behaviour OR intelligence OR iq)		14	0	14
	4	(refugee OR flight OR resettle OR displace) AND (memory OR learn OR play OR psycholog)		5	0	5
	5	(refugee OR flight OR resettle OR displace) AND (develop OR adjust OR problem OR function)		13	3	10
	6	(refugee OR flight OR resettle OR displace) AND (stress OR skill OR trauma OR resilien)		24	3	21
	7	(migration OR asylum seeker) AND (child OR preschool OR kindergarten)		7	0	7
	8	(migration OR asylum seeker) AND (social OR emotion OR peer OR behavior)		29	0	29
	9	(migration OR asylum seeker) AND (behaviour OR relation OR iq OR intelligence)		8	0	8
	10	(migration OR asylum seeker) AND (memory OR learn OR play OR psycholog)		0	0	0
	11	(migration OR asylum seeker) AND (develop OR adjust OR problem OR function)		3	0	3
	12	(migration OR asylum seeker) AND (stress OR trauma OR skill OR resilien)		5	0	5

6. Taylor & Francis

The database search interface allowed linking search blocks using Boolean operators. Given the large number of results retrieved, *Block 1* and *Block 2* were added to title search, while terms from *Block 3* and *Block 4* were searched within the full articles. This strategy yielded a total of 658 results, of which 554 were subsequently screened after removing 104 duplicates.

Table 13

Search strategy and results for Taylor & Francis database

Run	Date	Search terms	Filter	Results	Duplicates	Imported
1	May 2021	(refugee OR flight OR resettle* OR displace*) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play) AND (develop* OR adjust* OR problem OR stress OR function*)		495	101	394
2	November 2021	(refugee OR flight OR resettle* OR displace* OR migration OR asylum seeker) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play OR psycholog*) AND (develop* OR adjust* OR problem OR stress OR function* OR skill OR trauma OR resilien*)		79	2	77
3	October 2023	(refugee OR flight OR resettle* OR displace* OR migration OR asylum seeker) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play OR psycholog*) AND (develop* OR adjust* OR problem OR stress OR function* OR skill OR trauma OR resilien*)	Publication Year: 2021-2023	84	1	83

7. Journal of Refugee Studies

The combined search blocks were added to the database's search mask to scan the full texts of articles published in the journal. The results were then filtered by format and article type to enhance relevance. Since the database does not support the exportation of citations, the retrieved 1,776 titles and abstracts were manually screened, with 24 of them transitioned into the literature management tool for full-text screening.

Table 14

Search strategy and results for the Journal of Refugee Studies

Run	Date	Search terms	Filter	Results	Duplicates	Imported
1	May 2021	(refugee OR flight OR resettle* OR displace*) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play) AND (develop* OR adjust* OR problem OR stress OR function*)	Format: Journal Article Article type: Research articles	958	-	24
2	November 2021	(refugee OR flight OR resettle* OR displace* OR migration OR asylum seeker) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play OR psycholog*) AND (develop* OR adjust* OR problem OR stress OR function* OR skill OR trauma OR resilien*)	Format: Journal Article Article type: Research articles	736	-	0
3	October 2023	(refugee OR flight OR resettle* OR displace* OR migration OR asylum seeker) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play OR psycholog*) AND (develop* OR adjust* OR problem OR stress OR function* OR skill OR trauma OR resilien*)	Format: Journal Article Article type: Research articles Publication Year: 2021-2023	82	-	0

8. Journal of Immigrant & Refugee Studies

The Journal of Immigrant & Refugee Studies was searched for relevant results through the Taylor & Francis database. The search words were combined with Boolean operators and added to the advanced search mask. The search generated 1,044 results, of which 744 references were selected for further screening after the removal of 300 duplicates.

Table 15

Search strategy and results for the Journal of Immigrant & Refugee Studies

Run	Date	Search terms	Filter	Results	Duplicates	Imported
1	May 2021	(refugee OR flight OR resettle* OR displace*) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play) AND (develop* OR adjust* OR problem OR stress OR function*)		475	15	460
2	November 2021	(refugee OR flight OR resettle* OR displace* OR migration OR asylum seeker) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play OR psycholog*) AND (develop* OR adjust* OR problem OR stress OR function* OR skill OR trauma OR resilien*)		476	285	191
3	October 2023	(refugee OR flight OR resettle* OR displace* OR migration OR asylum seeker) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play OR psycholog*) AND (develop* OR adjust* OR problem OR stress OR function* OR skill OR trauma OR resilien*)	Publication Year: 2021-2023	93	0	93

9. Canada's Journal on Refugees

The search terms in the corresponding blocks were linked together using an advanced search and were entered into the search mask. As a result, 414 articles were retrieved. The database does not support the exportation of citations, which led to a manual screening of the titles and abstracts. After the screening process, 33 references were imported into the literature management program.

Table 16

Search strategy and results for Canada's Journal on Refugees

Run	Date	Search terms	Filter	Results	Duplicates	Imported
1	May 2021	(refugee OR flight OR resettle* OR displace*) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play) AND (develop* OR adjust* OR problem OR stress OR function*)		343	-	29
2	November 2021	(refugee OR flight OR resettle* OR displace* OR migration OR asylum seeker) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play OR psycholog*) AND (develop* OR adjust* OR problem OR stress OR function* OR skill OR trauma OR resilien*)		67	-	0
3	October 2023	(refugee OR flight OR resettle* OR displace* OR migration OR asylum seeker) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play OR psycholog*) AND (develop* OR adjust* OR problem OR stress OR function* OR skill OR trauma OR resilien*)	Publication Year: 2021-2023	4	-	4

Appendix 2

Table 17

Quality appraisal of the reviewed studies based on NICE-criteria

Reference	1.1	1.2	1.3	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3	4.6	5.1	5.2
Almqvist & Brandell-Forsberg, 1995	++	++	+	NA	+	NA	+	+	+	+	NA	NA	NR	+	-	-	+	+
Almqvist & Brandell-Forsberg, 1997	++	++	+	NA	+	NA	+	+	+	+	NA	NA	NR	+	-	-	+	+
Almqvist & Broberg, 1999	++	++	+	NA	+	NA	++	+	+	++	NA	NA	NR	++	+	+	+	+
Ayas et al., 2022	+	++	+	NA	+	NA	+	+	+	++	NA	NA	NR	+	+	+	+	+
Bernhardt et al., 2023	++	++	++	NA	+	NA	+	+	++	++	NA	NA	+	++	++	+	+	+
Buchmüller et al., 2020	++	++	+	NA	+	NA	-	+	+	+	NA	NA	NR	+	++	+	+	++
Busch et al., 2021	++	++	+	+	+	++	-	+	+	+	NA	+	NR	+	++	++	++	+
Çiçekoğlu et al., 2019	++	++	+	NA	+	NA	+	-	+	+	NA	NA	NR	+	+	+	-	+
De Haene et al., 2013	+	-	-	NA	+	NA	-	+	+	-	NA	NA	NR	+	-	+	+	-
Dybdahl, 2001	++	+	+	++	+	+	+	+	+	++	++	++	NR	++	+	+	+	+

Erdemir, 2021	++	+	+	NR	++	++	-	+	+	+	++	+	+	+	++	++	+	+
Ekblad, 1993	++	+	+	NA	++	NA	+	-	+	+	NA	NA	NR	++	-	+	-	-
Fängström et al., 2019	+	+	+	NA	+	NA	+	-	+	+	NA	NA	NR	+	++	+	-	+
Flink et al., 2013	++	+	+	NA	+	NA	++	-	+	++	NA	NA	NR	++	++	++	-	+
Hahnefeld, Sukale, Weigand, Dudek, et al., 2021	++	+	+	NA	++	NA	++	+	++	++	NA	NA	NR	++	++	+	+	++
Hahnefeld, Sukale, Weigand, Münch, et al., 2021	++	+	+	NA	++	NA	++	+	++	++	NA	NA	NR	++	++	+	+	++
Hanes et al., 2019	++	-	-	NA	+	NA	+	NR	-	+	NA	NA	NR	+	-	+	-	-
Khan et al., 2019	++	++	++	NA	+	NA	-	+	+	-	NA	NA	NR	+	+	+	+	++
Mares & Jureidini, 2004	++	-	-	NA	+	NA	-	NR	+	-	NA	NA	NR	-	-	+	+	-
Min et al., 2020	++	++	++	NA	+	NA	+	-	++	+	NA	NA	NR	+	+	+	-	++
Laor et al., 1997	++	+	+	NA	+	NA	++	-	+	++	NA	NA	NR	++	++	++	-	+
Laor et al., 1996	++	+	+	NA	+	NA	++	-	+	++	NA	NA	NR	++	++	++	-	+
Lembcke et al., 2020	++	+	+	NA	+	NA	++	+	++	+	NA	NA	NR	++	++	++	+	+
Nehring et al., 2021	++	+	+	NA	++	NA	+	++	+	+	NA	NA	NR	+	++	+	+	+

Pellizzoni et al., 2020	++	++	++	NA	++	NA	+	++	+	+	NA	NA	NR	+	++	++	++	+
Sadeh et al., 2008	++	+	+	+	+	+	+	-	+	+	++	+	NR	+	+	+	-	+
Seuring & Will, 2022	++	++	++	NA	++	NA	+	+	+	+	NA	NA	NR	++	+	+	+	+
Ünver et al., 2021	++	+	+	NA	+	NA	-	+	+	+	NA	NA	NR	-	+	+	+	+
Wolff et al., 1995	++	++	++	NA	+	NA	+	+	+	+	NA	NA	NR	+	++	+	++	+
Zwi et al., 2017	++	+	+	NA	+	NA	-	-	+	-	NA	NA	NR	+	++	+	-	++
Zwi, Mares, et al., 2018	++	+	+	NA	+	NA	-	-	+	-	NA	NA	NR	-	++	+	-	+
Zwi, Woodland, et al., 2018	++	+	+	NA	+	NA	+	-	+	+	NA	NA	NR	+	++	+	-	+

Note. ++ = good quality, + = moderate quality, - = low quality, NR = not reported, NA = not applicable.

Appendix 3

Table 18

Study and sample characteristics of the reviewed studies

Reference	Study population	Housing	N	Age in years M(*SD*), range	ACE category	ACE exposure N (*%*)	Time in host country in months M(*SD*), range	Outcome domains	Measures
Almqvist & Brandell-Forsberg, 1995	Refugee children from Iran in Sweden	Settlement	50	5.83, 4-8	a,b	42(*84*)	NR	Play	Parental Interview; Erica Method / World of Technique (Lowenfeld, 1950)
Almqvist & Brandell-Forsberg, 1997	Refugee children from Iran in Sweden	Settlement	39	8.4, 4-8	a	34(*87*)	Baseline: 12 Follow-up: 42	Play	Parental Interview; Erica Method / World of Technique (Lowenfeld, 1950)
Almqvist & Broberg, 1999	Refugee children from Iran in Sweden	Settlement	50	8.4, 4-8	a	42(*84*)	42	Peer relations, language development	Parental Interview; Child Assessment; Erica Method / World of Technique (Lowenfeld, 1950)
Ayas et al., 2022	Syrian refugee children in Turkey	Settlement	120	1.5-6	a	(*43.3*)	90% longer than 1 year	Peer relations, language Development	Denver II Developmental Screening Test (DDST-II; Frankenburg et al., 1989)
Bernhardt et al., 2023	Refugee children in Germany	Refugee camp	181	4.94(*4.66*)	a	62(*89*)	3.71	Social-emotional competencies, play, intelligence, learning performance	Play Observation Scale (Bernhardt & Hahnefeld, 2021); Verhaltens-beurteilungsbogen für Vorschulkinder; VBV-ER 3-6; Döpfner, 1993); Scale of Intellectual Functioning (SIF) of the Kaufmann-Assessment-Battery for Children (KABC-II; Kaufmann et al., 2015)
Buchmüller et al., 2020	Refugee children in Germany	NR	Study 1: 84 Study 2: 50 Study 3: 107	Study 1: 3.86(*1.18*) Study 2: 3.92(*1.22*)	a*	NR	Study 1: NR Study 2: 43.87(*37.59*) Study 3: 25.4(*20.11*)	Peer relations, prosocial behavior	Child-Teacher Report form 1·5-5 (C-TRF; Achenbach & Rescorla, 2000); Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001)

				Study 3: 5.79(*0.85*)					
Busch et al., 2021	Refugee Children from Middle East, Southeastern Europe, North Africa, and Sub-Saharan Africa in Germany	NR	207	T_1: 5.78(*0.85*), T_2: 5.87(*0.87*), T_{1m}: 6.54(*0.42*), T_c: 7.18(*0.63*)	a*	NR	T_1: 26.4(*21.1*) T_2: 26.3(*20.0*) T_{1m}: 27.19(*20.75*) T_c: 23.97(*16.2*)	Peer relations, cognitive development, language development	Peabody Picture Vocabulary Test (Dunn & Dunn, 2007); Subtest "Object Assembly" from the Wechsler Preschool and Primary Scale of Intelligence-III (Wechsler, 2002); Intelligence and Development Scales (Grob et al., 2009); Strength and Difficulties Questionnaire (SDQ; Goodman, 1997)
Çiçekoğlu et al., 2019	Refugee children from Syria in Turkey	Settlement	40	5.57, 5-6	a*	18(*90*)	12-36	Peer relations, prosocial behavior	The Ladd-Profile Child Behavior Scale (Ladd & Profilet, 1996); Peer Victimization Scale (Kochenderfer & Ladd, 2002)
De Haene et al., 2013	Refugee children from Iraq, Kosovo, Pakistan, Russia, Somalia, Sri Lanka, and Sudan in Belgium/ Denmark	NR	18	6.7(*2.2*), 4-9	a	8(*44.4*)	NR	Family function	Attachment Story Completion Task (ASCT; Verhueren et al., 1996)
Dybdahl, 2001	Internally displaced children in Bosnia	Refugee camp, private homes	87	5.5, 5-6	a,b,d	NR	NR	Intelligence	War Trauma Questionnaire (Macksoud, 1992) ; Raven's Colored Progressive Matrices (CPM; Raven, 1947); Birleson's Depression Inventory (BDI; Birleson, 1981); Child Assessment
Ekblad, 1993	Refugee children from former Yugoslavia in Sweden	Settlement camp	66	5-15	a	24(*37*)	5	Family function, play	Parent Interview
Erdemir, 2021	Refugee Children from Syria in Turkey	Settlement	373	5.11(*0.48*), 5-6	a*	NR	NR	Peer relations, Language development, math abilities,	Preliteracy and Prenumeracy Skills Scale (Adato & Bekman, 1989); Turkish Early Language Development Test (TEDIL-3; Güven & Topbas, 2014); Emotion Regulation Checklist (Shields & Cicchetti, 1997); Social Competence and Behavioral Assessment Scale (SCBAS; LaFreniere & Dumas, 1996)
Fängström et al., 2019	Refugee children from Middle East and Africa in Sweden	70% Settlement	61	3.75(1.4), 2-6	NR	9(*15*)	NR	Peer relations, prosocial behavior	Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001); Primary Care PTSD Screen (PC-PTSDM Prins et al., 2003); Child PTSD Symptom Scale (CPSS; Nixon et al., 2013)

Flink et al., 2013	Internally displaced children in Colombia	Settlement	279	4.2(*1.0*), 1.5-5	a	NR	12-60	Family functioning	The General Functioning (GF) Scale of the Family Assessment Device (FAD; Byles et al., 1988); KiddieSADS PTSD Traumatic Event Checklist (Kaufman et al., 1996)
Hahnefeld, Sukale, Weigand, Dudek, et al., 2021	Refugee children in Germany	Refugee camp	109	5.10(*1.15*), 3-7	a	73(*67*)	16.5	Intelligence, short term memory	Child and Adolescent Trauma Screening (CATS; Sachser et al., 2016); Scale of Intellectual Functioning (SIF) of the Kaufmann-Assessment-Battery for Children (KABC-II; Kaufmann et al., 2015)
Hahnefeld, Sukale, Weigand, Münch, et al., 2021	Refugee children mostly from Nigeria, Afghanistan, and Syria in Germany	Refugee camp	72	5.14(*1.17*), 3-7	a	32(*61.5*)	19(*17.72*), 0.5–60	Peer relations, prosocial behavior, intelligence, short term memory	Child and Adolescent Trauma Screening (CATS; Sachser et al., 2016); Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001); TST assessment form (Saxe et al., 2016); Scale of Intellectual Functioning (SIF) of the Kaufmann-Assessment-Battery for Children (KABC-II; Kaufmann et al., 2015)
Hanes et al., 2019	Refugee children from Asia and Africa in Australia	Detention	110	6.0(*4.72*)	a,b,d	a: NR b: NR d: 605(*97.3*)	13	Cognitive development	Centers for Disease Control and Prevention/ Adverse Childhood Experiences (CDC/ACE; Hanes, 2017)
Khan et al., 2019	Refugee children from Myanmar in Bangladesh	Refugee camp	622	0-to 2-year-old: 0.86(*0.54*), 2-to 16-year-old: 6.81(*3.53*)	a,d*	NR	NR	Peer relations, prosocial behavior, cognitive development, language development	Developmental Screening Questionnaire (DSQ: Khan et al., 2013); General development assessment (GDA); Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001)
Laor et al., 1997	Internally displaced children in Israel	Returned to homes	107	3.9	a	107(*100*)	30	Family function	Child Behaviour Checklist 1·5–5 years (CBCL 1·5–5; Achenbach & Edelbrock, 1983); Preschool Children's Assessment of Stress Scale (PCASS; Laor et al., 1996); Change of Functioning Scale (CFS; Laor et al., 1996); Vineland Adaptive Behavior Scales (Sparrow et al., 1984)
Laor et al., 1996	Internally displaced children in Israel	Hotels	230	4.0, 3-5	a	230(*100*)	6	Peer relations, family function	Child Behaviour Checklist 1·5–5 years (CBCL 1·5–5; Achenbach & Edelbrock, 1983); Preschool Children's Assessment of Stress Scale (PCASS; Laor et al., 1996); Change of Functioning Scale (CFS; Laor et al., 1996); Childhood Personality Scales (Cohen et al., 1977); Family Adaptability and Cohesion Evaluation Scales (FACES; Olson, 1986)

Lembcke et al., 2020	Refugee children from Syria and Iraq in Germany	NR	42	283(*1.54*), 0.42-5.58	a	24(*60*)	21.53(*11.57*), 1-40	Family function	Parenting Interactions with Children Checklist of Observations Linked to Outcomes (PICCOLO; Roggman et al., 2013)
Mares & Jureidini, 2004	Refugee children from Iran, Iraq, Afghanistan, and Palestine in Australia	Detention	20	0.92-17	a	20(*100*)	15, 12-18	Family function, Play	Child Assessment
Min et al., 2020	Refugee children from South America in the U.S.	Settlement	42	6.79(*4.42*), 2-16	a,c*	NR	1.17	Peer relations	Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001)
Nehring et al., 2021	Refugee children from Syria in Germany	Refugee camp	96	7.2, 0-14	a,b,c	a: 96(*100*)	1.3	Language development	Parent Interview; Child Assessment; Post-traumatic Stress Disorder Semi-Structured Interview (PTSDSSI; Scheeringa & Zeanah, 1994)
Pellizzoni et al., 2020	Refugee children from Syria (S) and internally displaced children in Iraq (Y)	Refugee camp	150	Y: 5.92(*0.55*), S: 5.73(*0.58*)	a,d*	NR	NR	Executive functioning, math abilities, short term memory	Backward and Forward Word Span Task (Lanfranchi et al., 2004); Stroop Task (Gerstadt et al., 1994); Numerical Intelligence Battery (BIN; Molin et al., 2007)
Sadeh et al., 2008	Internally displaced children in Israel	Refugee camp	Study 1: 74 Study 2: 191	4.7(*1.34*), 2-7	a	264(*99.6*)	0.53(*0.26*)	Play	War Related Experiences Scale (Sadeh et al., 2008); Stress Reaction Checklist (SRCL; Sadeh et al., 2008)
Seuring & Will, 2022	Refugee children in Germany	Refugee camp	2551	5.72	NR	NR	28.43	Cognitive reasoning, Language development	Peabody Picture Vocabulary Test (PPVT-4; Dunn & Dunn, 2007); NEPS-MAT (Lang et al., 2014)
Ünver et al., 2021	Refugee children from Syria in Turkey	Settlement	70	5.56(*1.09*), 0-6	a	0(*0*)	36	Family functioning, cognitive development, language development	The Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood: Revised Edition (DC:0–5: Zeanah et al., 2016)
Wolff et al., 1995	Internally displaced children and orphans in Ethiopia	Refugee camp, orphanage	148	5.7(*0.9*), 4-7	a,b,d*	a: 148(*100*), b: 74(*50*), d: 148(*100*)	32.4	Peer relations, intelligence, language development	Behavioral Screening Questionnaires (BSQ; (Richman, Stevenson & Graham, 1975); The Leiter International Intelligence Scale (Leiter, 1969); The Raven Progressive Matrices (Raven, 1958); Short version of the

									Token test (McNeal & Prescott, 1978)
Zwi, Mares, et al., 2018	Refugee Children from Eastern Mediterranean, Southeast Asia, Western Pacific, Africa in Sweden	Detention	86	8.4, 4-15	d	48(*55*)	7.27	Peer relations, prosocial behavior	Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001)
Zwi et al., 2017	Refugee Children from Southeast Asia, Africa, Eastern Mediterranean in Sweden	Settlement	61	6.0, 5-15	d	NR	Baseline: 13 Follow-up: 31	Peer relations, prosocial behavior	Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001)
Zwi, Woodland, et al., 2018	Refugee children in Sweden	Settlement	43	6.0, 0.5-15	d	NR	Baseline: 13 Follow-up: 31	Peer relations, prosocial behavior	Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001)

Note. ACE = Adverse childhood experience; ACE categories: a = witnessing or experiencing any type of violence, war, or armed conflict; b = witnessing or experiencing the death or injury of a parent or relative or being separated from family members; c = threat of, witnessing, or experiencing violence while in transit; d = exposure to harmful displacement conditions (e.g., immigration detention); NR = not reported; * = description by the authors only.

Appendix 4

Gruppe: ○ Moosfeld ○ FFB ○ SPZ

Klinikum rechts der Isar — Technische Universität München

Anmeldung zur Studie:

Nummer:	Datum
Geburtsdatum:	Geschlecht: ○ männlich ○ weiblich
Interviewpartner: ○ Mutter ○ Vater	

Kind

Geburtsort: _____ Muttersprache: _____
auf der Flucht geboren: ○ ja ○ nein
In Deutschland seit: _____ In der Unterkunft seit: _____
Dauer der Flucht: _____
Stationen der Flucht: _____
Sonstige Sprachkenntnisse (Deutsch, Englisch, Französisch, ...):
Besonderheiten/Erkrankungen?

Betreuung/Kindergarten/Schule aktuell?
○ in Familie (Nur Mutter/ Nur Vater/ Beide) ○ in Einrichtung: _____Std/ Woche
○ In Kindergarten ○ in Schule

Betreuung im Heimatland: _____

Aufenthaltsstatus:
○ Gestattung im laufenden Verfahren bis _____ ○ Erlaubnis bis _____
○ Duldung bis _____

Name / Alter	Mutter: Geb.:	Vater: Geb.:
Heimatland & Muttersprache:		
In Deutschland seit:		
Schule / Ausbildung		
Alphabetisiert		
Erkrankungen / Besonderheiten		
Anzahl aller Kinder		

Weitere Anliegen:

Appendix 5

Vpn-Nr.: _____ Beobachter/in: _____ Datum: _____
Videoaufnahme: ☐ Ja ☐ Nein

Spielbeobachtungsbogen (10 Minuten)

Anwesende Personen:

	Spielverhalten	**Beispiele**	**Punktwert**		
A	1. Sensomotorisch	Gegenstände bewegen, intensiv explorieren, gegeneinander schlagen/ reiben, in den Mund nehmen	**1**		**0-9**
	2. Funktional/explorativ	Funktion von Gegenständen entdecken: Auto schieben, Telefon an Ohr halten, Puppe im Arm wiegen, Schiff fahren, Ball werfen, Löffel zum Essen benutzen, Knöpfe drücken	**2**		
	3. Konstruktionsspiel	Zielgerichtete Handlungen mit Handlungsschritten: Turm bauen, Tiere / Figuren auf Schiff stellen, aufbauen, Gegenstände arrangieren (Schiff, Insel, Bäume), Bauklötze in Sortierbox	**3** mit Anleitung **4** ohne Anleitung		
	4. Symbolisches Spiel	Einfach: Gegenstände an sich selbst und anderen verwenden, z.B. aus Tasse trinken, Puppe füttern ... Gegenstände für etwas anderes verwenden, z. B. Bauklotz als Nahrung	**5** einfaches symbolisches Spiel		
		Nachahmen von Verhaltensweisen: Gegenständen werden benutzt und ihnen temporär eine Funktion verliehen: z.B. Kind zieht einen Stock hinter sich her und brummt dazu als würde es Staubsaugen, „Suppe“ kochen und anbieten	**6** komplexes symbolisches Spiel		
	5. Rollenspiel	Dramaturgie, unterschiedl. Rollen, Interaktionen der Figuren (oft sprachlich begleitet), Spielsequenzen/ Abfolgen (z.B. alle Tiere gehen aufs Schiff und werden dort begrüßt), imaginierte Gegenstände (z.B. Tisch decken und dann imaginiertes Essen auf Tellern verteilen)	**7** kurze Sequenz/en **8** mit Struktur/Plan **9** komplex, ausdauernd		
B	Initiative/Ausdauer	Das Kind fängt von allein an zu spielen.	**0**	**1**	**0-7**
		Zeigt Ausdauer, ist vertieft ins Spiel.	**0**	**1**	
		Zeigt Freude, hat Spaß am Spiel.	**0**	**1**	
	Soziale Interaktion	Nimmt Kontakt auf mit anderen Personen.	**0**	**1**	
		Bezieht andere in das Spiel mit ein.	**0**	**1**	
	Sprache	Spricht mit Bezugsperson/ Untersucher*in.	**0**	**1**	
		Das Kind spricht beim Spielen.	**0**	**1**	
C	Emotionsloses, kaltes Spielverhalten	Nachspielen von Film- o. Videospielsequenzen, floskelhafte Sprache, wenig emotionale Beteiligung, repetitive Spielmuster, stereotypes Spiel	**0**	**1**	**0/1**
D	Reinszenierungen	Nachspielen von Erlebnissen, z.B. Kind fällt von Schiff und ertrinkt	**0**	**1**	**0/1**

Bemerkungen:
(eintöniges vs. phantasievolles Spiel, laut/leise, Ausdauer, soziale Interaktion, Sprache, Besonderheiten, ...)

Appendix 6

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3 Buchmüller, T., Lembcke, H., Ialuna, F., Busch, J., & Leyendecker, B. (2020). Mental health needs of refugee children in specialized early education and care programs in GermanyJournal of Immigrant and Minority Health, *22*(1), 22-33. https://doi.org/10.1007/s10903-019-00896-4

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ORIGINAL ARTICLE

Exploring Mental Health and Development in Refugee Children Through Systematic Play Assessment

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Abstract

To evaluate a standardized play observation as a measure of young children's mental health and development in a clinical and refugee population. We conducted individual play observations with 70 refugee children aged 3- to 6-years and compared them to a clinical group of 111 age-matched children regarding their level of play development, social interaction during play, traumatic re-enactments, and emotionless-cold play. Additionally, we assessed children's mental health, social-emotional development and markers of adversity by parent and educator report as well as their IQ-test scores and learning performance and related these factors to the play variables. Play variables were significantly correlated with IQ-test scores ($r = 0.184$, $p = 0.037$), learning performance ($r = 0.208$, $p = 0.010$) and vocabulary ($r = 0.208$, $p = 0.021$) in the comparison group and with social-emotional development in educator report ($r = 0.368$, $p = 0.011$), time spent in Germany ($r = 0.342$, $p < 0.001$) and parental distress ($r = -0.292$, $p = 0.034$) in the refugee group. Children with more parent-reported adverse experiences showed less social-interactive play in the overall sample ($r = -0.178$, $p = 0.011$). Our child-centered approach to standardized play observation augments information obtained from parent and educator reports and can provide valuable insights in subgroups where other commonly used tests are not available or applicable.

Keywords Child · Displacement · Migration · Trauma · Development · Play observation

Abbreviations

PTSD	Post-traumatic stress disorder
SDQ	Strength and Difficulties Questionnaire [26]
VBV	Behavior Observation Scale for 3- to 6-year-old children [17]
KABC-II	Kaufmann Assessment Battery for Children [36]
IQ	Intelligence Quotient

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Introduction

Forced displacement has become an increasingly prevalent issue in recent years, affecting over 36 million children in 2021 alone [47]. Given the elevated risk of accumulating adversities in the course of displacement, collecting data on young children's mental health and development is highly relevant, though it is challenging due to their limited ability to verbally articulate experiences and symptoms [16, 43]. This has lead researchers and clinicians to rely on parental reports [24, 28, 29], although these may be influenced by the parent's own symptomatology [2, 16, 28, 29]. Supplementary reports by educators are recommended to enhance sensitivity [28, 29], but limited access to daycare makes it difficult to obtain a multi-context perspective in refugee

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settings [5]. Play observations offer a viable solution to these challenges [10, 12, 13, 22]. When fundamental needs such as security, nourishment, and sleep are fulfilled [19, 32], play provides a natural setting for children to express and regulate their emotions, build social skills and acquire language and cognitive abilities [13, 30, 32]. Despite cultural variations in the interpretation and context of free play [9], play is governed by a homeostatic principle and is assumed to reflect the child's overall progression and mental health [22, 32] based on an established chronological sequence of play development [8].

Forced displacement poses significant challenges for young children's mental health and development [6, 45], including their abilities and opportunities to engage in complex play [1, 6, 19, 39, 45]. Previous studies have described less developed and social-interactive play behaviors in war-exposed and refugee children due to deprivation and elevated stress [12]. Moreover, re-enactments of traumatic events and restriction in affect during play were shown to be indicative of PTSD and psychological distress [12, 13, 42] that was not detected in parent reports [2, 3, 7]. Despite the significance of play observations in assessing young children's development in challenging circumstances [37, 50], no standardized play measures have been utilized to examine developmental trajectories in refugee populations. The aim of this empirical study was to evaluate the effectiveness of a structured play observation in examining mental health, social-emotional and cognitive development of young children with and without refugee experiences and relate play outcomes to markers of adversity (flight duration, time in Germany, time in childcare, number of adverse experiences, parental mental health).

The following hypotheses were tested:

H1.1 We expect refugee children to show lower levels of play development and social interaction during play, and a higher rate of reenacting and emotionless play behavior compared to a clinical comparison group without refugee experience.
H1.2 We expect markers of adversity to correlate negatively with play development and social interaction during play, and positively with reenacting and emotionless play.
H2.1 Reenacting and emotionless play, along with lower levels of play development and social interaction during play is associated with children's mental health.
H2.2 Levels of play development and social interaction during play are associated with social-emotional development, cognitive and learning performance.

Methods

Study Design and Population

This article was part of the InterCuLtUral Child DEvelopment Project (INCLUDE), design and methods were adapted from previously published studies [28, 29]. The cross-sectional study was conducted between June 2021 and August 2022 in two reception camps for refugees in Munich, Germany. Data was collected directly in the camps in separate examination rooms. Children aged 3- to 6-years who were born outside of Germany and were attended by at least one parent were included in the study. Eligible families were contacted in the camps, received information about the study and were invited to an appointment, with interpreters if necessary.

An age-matched comparison group of children who were referred due to developmental, language and/or social-emotional problems was recruited and examined at the Social Pediatric Center (SPZ Schwabing) in Munich. All children who were present in the center from January to April 2022 were informed about the study and asked to participate. Children with diagnoses of serious somatic or developmental disorders, intellectual impairment and autism were excluded.

Study Procedure

The study protocol was approved by the ethics committee of the Medical Faculty of the Technical University Munich. Informed written consent was given by all parents prior to data collection. They were asked for general information on age, education, medical history, language, and cultural background as well as duration of flight and time since arrival in Germany. Children's play behavior was observed by the investigators while parents filled out the questionnaires in their native language (PORTA) [46] or with the help of interpreters. Families were remunerated for their participation with coloring books and pens for the children and received medical reports on the psychometric study results. Educators were asked to fill out questionnaires about the participating children.

Assessment

Play Observations

All children were offered the same set of toys in a defined arrangement including dolls, cookware, a country farm set and building blocks. The investigators did not give any instructions, allowing children to play naturally. Play sequences of ten minutes were videotaped, observed by two

Table 1 Inter-rater reliability of the self-developed play observation sheet

	κ	ICC
Play development	–	0.809
Social interaction	–	0.825
Emotionless play	0.796	–
Reenactments	–	–

Reliability analysis for the reenactment item could not be performed due to missing variance within the item

trained investigators and rated according to a self-developed observational measure adapted from several established scales [30, 33]. Children's play development was coded as follows: sensorimotor, functional/exploratory, construction play, symbolic play, role-play [30, 32]. Based on previous literature about play behaviors of war-exposed and traumatized children [11, 12, 33] and clinical experience, we created an index of social interaction that indicates children's initiative, perseverance, interaction and language use during play. Emotionless play behavior and re-enactments of traumatic events as indicators of posttraumatic stress were coded separately. Regular play-coding sessions were held with the investigators to ensure a standardized procedure regarding the coding of play observations. Analyses of interrater reliability yielded satisfactory results for all sections, apart from the reenactment item (see Table 1).

Children's Mental Health

Parents filled out the Child and Adolescent Trauma Screening (CATS; [41]), a validated and open-access screening tool designed for assessing potentially traumatic experiences and stress reactions according to DSM-5 [4] criteria for PTSD. We used the recommended cut-off value of ≥ 16 as an indication for a clinically relevant level of stress symptoms.

The Strengths and Difficulties Questionnaire (SDQ; [26]) was administered to all parents and educators in the corresponding form. It is a fully evaluated, behavior-oriented screening questionnaire for 2- to 17-year-old children and adolescents comprised of 25 items on children's emotional problems, behavioral problems, hyperactivity, peer problems and prosocial behavior. A total difficulties score can be calculated, with results of ≥ 16 being considered as clinically relevant.

Children's Social-Emotional Development

The subscale for social-emotional competences from the Behavior Observation Scale for Preschool Children, standardized and evaluated for 3- to 6-year-old children (Verhaltensbeurteilungsbogen für Vorschulkinder; VBV-ER 3-6; [17]), was filled out by the educators. Children's competences regarding interaction and communication, conflict resolution, and play intensity were rated on a five-point Likert-scale.

Children's Cognitive Development

The nonverbal version of the Kaufmann Assessment Battery for Children (KABC-II: SFI; [36]) was conducted with refugee children to assess their cognitive testing abilities. The KABC-II has good psychometric properties concerning construct validity and reliability and has been developed as a language-free and culture-fair diagnostic instrument [36]. The comparison children were either assessed with the KABC-II or with a similar standardized language-free IQ test (WPPSI-IV, WNV, SON 2-7) and completed the subtest Vocabulary of the KABC-II, where children were asked to name pictures in German. Additionally, the subtest Atlantis of the KABC-II was conducted with all children to assess their short-term learning performance.

Parent Mental Health

Parental mental health was assessed in both groups with the Refugee Health Screener (RHS-15; [51]), a culturally sensitive and empirically validated screening tool. The RHS captures symptoms associated with various psychiatric diseases and was developed with and for individuals with refugee experiences. A cut-off score of ≥ 12 or a distress thermometer score of ≥ 5 indicates a positive screening.

Statistical Analysis

All statistical analyses were performed with SPSS 28.0 for Windows (IBM [31]).

Due to violations of normality and homogeneity of variances assumptions in our data, we conducted non-parametric Mann–Whitney-*U*-Tests to compare play development and social interaction during play in groups of refugee and non-refugee children, and used correlations (Spearman rank correlation, one-tailed) to investigate associations between play variables, trauma-related stress symptoms, social-emotional outcomes as well as cognitive and learning performance and markers of adversity. To investigate possible age-related effects on children's play development, we conducted Kruskal–Wallis and subsequent Mann–Whitney-*U*-tests with age as group factor.

Results

Participants

Characteristics of the study population are described in Table 2.

In the refugee group, 70 children were analyzed. Children's mean age was 4.94 years, mean duration of time since arrival in Germany was 3.71 months (*CI* 3.03–4.39), after an average flight duration of 29.69 months (*CI* 24.51–34.87). Families were from Afghanistan (84%), Kongo (4%), Venezuela (4%), Bolivia (1%), Yemen (1%), Palestine (1%), Sierra Leone (1%), and Uganda (1%). Twenty (29%) children were born during flight. Most families were still in the process of asylum application (86%), 11% had a permanent residence permit and one family had a temporary halt to the deportation process. The 111 children of the comparison group were referred to the SPZ by educators, teachers, or parents. After medical and psychological examination, 32.4% received a diagnosis of combined developmental disorders (F83), 35% of speech or motor developmental disorders (F80, F82), and one child received a high-functioning Asperger diagnosis. Further, 43% received a psychiatric diagnosis (F43, F51, F90-F98) and 6% of comparison children did not receive a diagnosis. 78% of comparison children had a migration background with at least one parent born outside of Germany.

Data on children's and parents' mental health were obtained for 168 (92%) participants. Play assessments could not be obtained for 8 (4%) children, since they did not interact with the provided play material. Data on cognitive development were incomplete for 28 (15%) children, because IQ

Table 2 Demographic and symptom characteristics of the samples

	Refugee group	$N_{refugee}$	Comparison group	$N_{comparison}$
Mean age in years [CI]	4.94 [4.66–5.22]	70	5.20 [5.00–5.40]	111
Percent female (%)	34 (49)	70	32 (29)	111
Parental education in years [CI]	6.20 [4.62–7.78]	53	11.55 [10.82–12.28]	91
Number of literate mothers (%)	36 (51)	67	104 (94)	110
Day-care in hours/week [CI]	7.96 [5.90–10.02]	64	30.95 [28.82–33.09]	110
CATS				
At least one event reported (%)	62 (89)	67	28 (25)	110
Number of events reported [CI]	4.37 [3.77–4.98]	68	0.47 [0.28–0.66]	110
Mean number of symptoms [CI]	15.83 [12.81–18.85]	60	7.79 [3.68–11.90]	24
Children above threshold (%)	28 (40)	60	3 (3)	24
Full DSM-V criteria for PTSD (%)	23 (33)	61	4 (4)	24
SDQ parent				
Total difficulties [CI] *Above threshold (%)*	22.52 [20.93–24.12] *55 (79)*	65	19.79 [18.77–20.81] *76 (69)*	111
SDQ educator				
Total difficulties [CI] *Above threshold (%)*	17.00 [15.56–18.41] *24 (34)*	45	19.42 [17.94–20.90] *45 (41)*	64
VBV				
Social-emotional competences [CI] *Below normal range (%)*	40.08 [34.73–45.43] *11 (16)*	39	41.78 [36.83–46.73] *14 (13)*	39
KABC-II				
IQ-testing performance [CI]	81.1 [77.06–85.14]	61	90.03 [86.65–93.41]	101
Learning performance [CI]	6.42 [5.79–7.10]	66	8.98 [8.37–9.59]	102
Vocabulary [CI]	–	–	6.18 [5.54–6.83]	100
RHS				
Parents above threshold (%)	56 (80)	66	20 (18)	111
Play behavior				
Play development [CI]	5.59 [5.24–5.94]	70	5.64 [5.33–5.95]	104
Social interaction [CI]	4.24 [3.89–4.59]	69	4.77, [4.46–5.08]	102
Emotionless-cold play (%)	1 (1)	68	2 (2)	103
Reenactments (%)	0 (0)	68	1 (1)	103

CATS Childhood and Adolescent Trauma Screening, *SDQ* Strength and Difficulties Questionnaire, *VBV* Behavior Observation Scale for Preschool Children, *KABC-II* Kaufmann Assessment Battery for Children, *RHS* Refugee Health Screener

tests were not conducted within the study's timeframe for the clinical comparison group. We received complete educator ratings for 39 children in the refugee group (56%) and for 40 children in the comparison group (36%). The children without complete educator rating had lower rates of maternal literacy ($U = 3265.5$, $Z = -2.358$, $p = 0.018$, $r = 0.18$) but did not differ in any other outcome variables.

Test Results

In the clinical comparison group, there was a significantly higher rate of boys ($U = 3118.00$, $Z = -2.680$, $p = 0.007$, $r = 0.20$) and alphabetized mothers ($U = 2181.00$, $Z = -6.495$, $p < 0.001$, $r = 0.49$), more years of parental education ($U = 1134.50$, $Z = -5.300$, $p < 0.001$, $r = 0.44$), and more hours per week in day-care ($U = 615.00$, $Z = -9.102$, $p < 0.001$, $r = 0.69$).

Parents of refugee children reported a higher rate of potentially traumatic experiences ($U = 643.00$, $Z = -9.907$, $p < 0.001$, $r = 0.74$) and trauma-specific symptom load for their children ($U = 427.50$, $Z = -2.902$, $p = 0.004$, $r = 0.32$) as well as a higher symptom load for themselves ($U = 655.50$, $Z = -9.133$, $p < 0.001$, $r = 0.69$) than parents in the comparison group. Refugee children had significantly higher Total Difficulties scores ($U = 2718.50$, $Z = -2.729$, $p = 0.006$, $r = 0.21$) on the SDQ by parent report but scored significantly lower than comparison children for Total Difficulties by educator report ($U = 1117.50$, $Z = -1.990$, $p = 0.047$, $r = 0.19$).

There were no group differences on the VBV ($U = 714.50$, $Z = -0.460$, $p = 0.646$, $r = 0.05$). Refugee children scored lower than the clinical comparison group on measures of short-term learning ($U = 1838.00$, $Z = -4.986$, $p < 0.001$, $r = 0.38$) and IQ test performance ($U = 2100.50$, $Z = -3.389$, $p < 0.001$, $r = 0.27$).

H1.1 Group Differences

Refugee children scored similarly to comparison children regarding their play development ($U = 3516.00$, $Z = -0.38$, $p = 0.701$, $r = 0.03$), but significantly lower on social play ($U = 2841.00$, $Z = -2.142$, $p = 0.032$, $r = 0.16$). For play development, there was a significant effect for age in the comparison group (*Kruskal–Wallis-H* = 13.612, $p = 0.003$), but not in the refugee group, with post-hoc analyses indicating that 3-year-old children played at a significantly less advanced level than 4- to 6-year-old's ($U_{3-4} = 93.00$, $Z = -3.51$, $p < 0.001$, $r = 0.52$; $U_{3-5} = 163.00$, $Z = -2.77$, $p = 0.006$, $r = 0.38$; $U_{3-6} = 110.50$, $Z = -2.85$, $p = 0.004$, $r = 0.43$).

Gender differences emerged in play development among refugee children, with girls displaying higher levels of play development than boys ($U = 441.00$, $Z = -2.03$, $p = 0.042$, $r = 0.24$).

H1.2 Play as Indicator of Children's Exposure to Adversity

In the whole sample, children with more adverse experiences in parent rating showed less social-interactive play ($r = -0.178$, $p = 0.011$). This effect did not reach significance when both groups were analyzed separately.

Refugee children's play development was positively correlated to time since arrival in Germany, and refugee children's social interaction during play was associated with parent's symptoms (Table 3).

Parent ratings of their own and the children's trauma-specific and general symptom load were significantly correlated in the refugee group ($r_{RHS\text{-}CATS} = 0.506$, $p < 0.001$; $r_{RHS\text{-}SDQ} = 0.477$, $p < 0.001$), and the comparison group ($r_{RHS\text{-}CATS} = 0.354$, $p = 0.049$; $r_{RHS\text{-}SDQ} = 0.415$, $p < 0.001$).

H2.1: Play Behavior and Children's Mental Health

In the comparison group, one child showed reenacting themes, and two children displayed emotionless cold play behavior, as did one child in the refugee group. There were no significant correlations between play variables and trauma-related stress symptoms or general symptom load in parent and educator rating for both groups (see Table 4).

Parent and educator ratings of the children's general symptom load were not correlated ($r = 0.111$, $p = 0.128$), but we found high intercorrelations for educator ratings

Table 3 Pearson correlations of children's play behavior with markers of adversity

	Group	Flight duration	Time in Germany	Time in daycare	CATS events	RHS
Play development	Comparison	–	–	0.073	0.065	0.120
	Refugee	− 0.041	0.342**	0.019	0.135	0.022
Social interaction	Comparison	–	–	− 0.021	− 0.067	0.034
	Refugee	0.088	0.143	0.113	− 0.077	0.266*

CATS Child and Adolescent Trauma Screening, *RHS* Refugee Health Screener

*$p < 0.005$, one-tailed

**$p < 0.001$, one-tailed

Table 4 Spearman correlations of children's play and social interaction scores with trauma-related and general symptom load

	Group	Social interaction	CATS symptoms	SDQ-Parent	SDQ-Educator
Play development	Comparison	0.379**	0.088	− 0.040	0.060
	Refugee	0.320**	− 0.015	0.062	0.163
Social interaction	Comparison		0.344	0.077	0.151
	Refugee		− 0.094	0.010	0.151

CATS Child and Adolescent Trauma Screening, *SDQ* Strength and Difficulties Questionnaire

*p < 0.005

**p < 0.001

Table 5 Spearman correlations of children's play and social interaction scores with developmental outcomes

	Group	Non-verbal IQ	Learning performance	Vocabulary	VBV
Play development	Comparison	0.184*	0.232*	0.208*	0.167
	Refugee	− 0.061	0.073	–	0.368*
Social interaction	Comparison	0.012	0.054	0.215*	0.018
	Refugee	0.002	0.025	–	0.318*

VBV Behavior Observation Scale for Preschool Children

*p < 0.005

**p < 0.001

concerning children's scores on the VBV and the SDQ ($r = -0.295$, $p = 0.005$).

H2.2: Play Behavior and Development

In the comparison group, play development correlated with IQ test performance, learning performance and vocabulary, while no corresponding correlations emerged in the refugee group. A significant correlation was found between play measures and VBV scores in the refugee group, but not in the comparison group (see Table 5, Fig. 1).

Discussion

Our study findings highlight both similarities and differences in play behaviors of young children with and without refugee experiences.

While play development was comparable in both groups, advanced play was observed more frequently in older children from the comparison group, whereas no age-related effects emerged among refugee children. We did not observe a higher frequency of reenacting and emotionless cold play behavior in refugee children, but lower social interaction scores compared to the comparison group. Therefore, *Hypothesis 1.1* was partly verified.

As hypothesized, children with more parent-reported adverse experiences showed less social play in the overall sample, underscoring the potential impact of adversity on children's play. This effect is particularly relevant for refugee populations, who are at heightened risk of exposure to cumulative adversities, as shown in our study. Parental distress was identified as indicator for children's general and trauma-related symptom load in both groups, and significantly correlated with refugee children's social play. This is in line with previous findings that potentially traumatized parents may struggle to provide their children with a sense of security and stability [48, 49], affecting both children's mental health and engagement in play [14, 25, 28, 29, 40]. Childcare is known to serve as protective measure for children facing adversity [27, 38], which could explain why the correlation between parental distress and children's social play was significant only in the refugee group without regular childcare enrollment. This may also partially explain the lower level of social play, as well as the absence of age-related effects on play development in the refugee group. While time spent in childcare was not correlated with either play measure, this is possibly due to the little variance in time children spent in childcare, which consequently rendered additional covariate analyses in our study unfeasible. Moreover, childcare in the refugee sample consisted of playgroups within the camps that may differ from the regular and stable institutions the comparison children were enrolled in. Nonetheless, the positive correlation between the duration of stay in Germany and social play implies that a more secure environment can promote play and social behavior. Taken together, these findings indicate that it is not solely the experience of displacement itself, but rather the exposure to adverse experiences and environmental factors such as parental functioning and access to childcare that significantly impact a child's

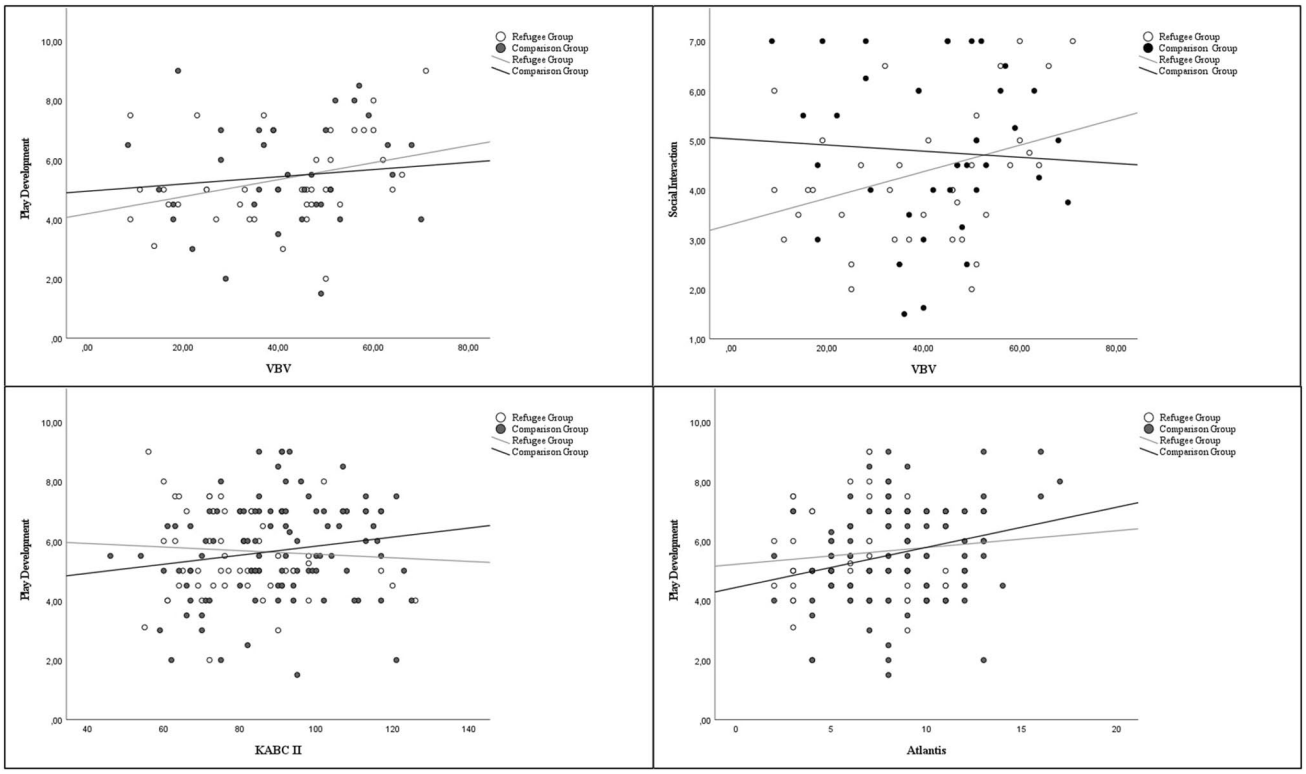

Fig. 1 Scatter Plots for play variables and social-emotional competencies in educator rating (VBV), IQ-testing performance (KABC-II) and learning performance (Atlantis)

engagement in play and overall healthy development, as supported by previous empirical literature [6, 12].

Our data revealed no associations between parent ratings of children's trauma-related and general symptom load and markers of child mental health from other perspectives such as systematic play observations or educator assessments, leading us to reject *Hypothesis 2.1*. Consistent with prior research [28, 29], it moreover suggests that parents might have overestimated their children's distress, underscoring the need for complementary perspectives of children's symptomatology.

Our standardized play observation effectively mapped short-term learning, IQ test performance, and language abilities in a help-seeking population born and raised in Germany. However, no corresponding relationships were found in the group of refugee children. This aligns with previous findings indicating that standardized tests designed for Western populations may not be valid measures for cognitive development in children from diverse ethnic and social backgrounds [23, 28, 29, 35]. The social interaction score was significantly correlated with language development in the comparison group. Given that refugee children demonstrated less social play, this may imply that they also exhibit lower language proficiency, which was already below average in our comparison group. However, assessing refugee children's language development was not feasible within the scope of this study and requires future research.

Our study found strong correlations between play observations and social-emotional competences in educator rating, suggesting effective measurement of social-emotional development in young refugee children. Notably, no corresponding correlations emerged with general symptom scores, suggesting that strength-based measures and our play observations may more accurately assess children's psychosocial competences than deficit-focused measures [15, 44]. Solely assessing children's symptom load may underestimate children's abilities, as social-emotional competences in a specific context may not equate to the absence of problem-based behavior [44]. Our findings highlight both difficulties and social-emotional abilities of refugee children, setting a focus on their resilience in the face of refugee accommodations in which the educator reports where obtained [34].

Strengths and Limitations

Despite marked effort, we only obtained 56% educator reports for refugee children and 36% for comparison children, which may have affected the accuracy of our findings. However, it is essential to note that the study took place during the pandemic lockdown, which limited daycare

availability. It also highlights the challenge faced by refugee children in accessing stable educational and play environments [1, 19], emphasizing the need for child-centered assessment methods.

In contrast to previous studies reporting high rates of reenacting play in traumatized and war-exposed preschool-age children [2, 12], we did not observe any such play themes in our sample. This discrepancy may result from differences in play measures used, as previous studies aimed to capture posttraumatic play, while we observed children's spontaneous and undirected play with neutral materials. While our defined duration of ten minutes for play sequences may not have allowed enough time for the children to engage in reenacting play, the observed absence of such play themes with neutral play materials may suggest the children's resilience in a stable environment. Previous literature has shown that different types of traumatic events may impact children's play in distinct ways. In a study with war-exposed children, specific experiences such as the loss or injury of parents negatively influenced various aspects of children's play activity, but not the severity of the terror events [12]. Future studies with larger sample sizes should explore the impact of different types of traumatic events on children's play in more depth.

The differing gender distributions within the groups could have influenced our results. While the literature suggests no gender differences in play development [21, 32], and our play materials appealed to both genders, our study found that girls had higher levels of play development than boys in the refugee group. This might be related to cultural and social factors that shape gender roles and expectations in different communities.

In the refugee group, we had a 49% rate of illiterate mothers and parents had a significantly lower educational level than parents in the comparison group. Parental educational level has been consistently identified as important predictor of children's developmental and behavioral outcomes [18, 28, 29]. Considering the lack of formal education among the children in the refugee group, it is reasonable to assume that educational experiences, both at the parental and child levels, might have impacted the outcomes observed in our study and should be considered as covariate in further research.

More than 80% of the refugee group consisted of families from Afghanistan, which may limit generalizability to other refugee populations. As a clinical sample, the comparison group represents a high-risk population that is not reflective of the general population, thereby emphasizing the relevance of our presented findings, especially regarding group differences in children's social play. However, literature suggests that children with developmental impairments show play development comparable to healthy, normally developing children [32]. Moreover, the comparison group also consisted of many families with migration background as a shared characteristic with the refugee group. Therefore, we can still draw meaningful conclusions from our findings and contribute to the understanding of play development in young children.

Implications for Research and Practice

Our study highlights the importance of standardized play observations when assessing young children's mental health and development, particularly in low-resource refugee settings where other commonly used tests may not be valid or meaningful. As a non-invasive, culture-fair, and strength-based measure it allows clinicians and researchers to make a more accurate assessment of children's strengths and resources, counteracting stereotypical perceptions and discrimination of refugee populations [20] and allowing for more targeted support and positive therapeutic treatments [15]. To further enhance the validity of our standardized play observations, future studies should compare the effectiveness of play measures incorporating shorter and longer play sequences and considering additional indicators like play interruptions, children's emotional state, and aggressive sequences during play [10, 12]. Given that forced displacement in and of itself is not only an adverse experience, but also increases the likelihood of encountering further adversities in different stages of migration, future studies should address the complex effects of displacement related experiences on various aspects of child development and play.

Conclusion

Our play observations showed that high level of adverse experiences and parental distress have a detrimental effect on the mental health and development of young children, especially for refugee children who are more likely to face restricted access to play-enhancing environments and stable settlement. We advocate for policies and practices that prioritize children's need for safe play spaces and foster supportive parent work for refugee families soon after arriving in the host country.

Summary

Our study aimed to evaluate the effectiveness of systematic play observations in assessing the mental health and development of young children. Our results provided valuable insights, indicating that children with more parent-reported adverse experiences showed less social-interactive play. Further, group comparisons yielded differential results for children with and without refugee experience: in the clinical comparison group born and raised in Germany, play variables were significantly correlated with

IQ-testing scores, learning performance, and vocabulary, whereas social play correlated with educator-rated social-emotional competencies, parental distress and time spent in Germany in the refugee group. These findings do not only highlight the detrimental effects of adverse experiences and parental distress on young children's play behavior, mental health, and development, but also show that our standardized play observation offers a child-centered and culturally sensitive diagnostic tool, particularly useful for refugee children where parent- or educator ratings are often not available and common assessment methods as IQ-, learning and language tests might not be applicable or valid due to language and cultural gaps.

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Author Contributions All authors contributed to the study conception and design, acquisition or analysis and interpretation of data, and read and approved the final manuscript. KB did study conception, material preparation, data collection, rating of the play observations recorded on video tape, data analysis and interpretation, and wrote the final manuscript. SLB and JU were involved in data collection, rating of the play observations recorded on video tape, data analysis and interpretation, and critically reviewed and revised the manuscript. M-AB and MK rated the videotaped play observations and critically reviewed and revised the manuscript. VM was involved in study conception, funding acquisition, data interpretation, supervision and critically reviewed and revised the manuscript. AH was involved in study conception, funding acquisition, material preparation, data collection, rating of the videotaped play observations, data analysis and interpretation, supervision and critically reviewed and revised the manuscript for important intellectual content. All authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

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Data Availability Deidentified individual participant data will be made available, in addition to study protocols, the statistical analysis plan, and the informed consent form. The data will be made available upon publication to researchers who provide a methodologically sound proposal for use in achieving the goals of the approved proposal.

Declarations

Competing interests The authors declare no potential conflicts of financial or non-financial interest with respect to the research, authorship, and/or publication of this article.

Ethical Approval This study was performed in line with the principles of the Declaration of Helsinki and the International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use (ICH) and was approved by the ethics committee of the Medical Faculty of the Technical University Munich on the 23.06.2021.

Consent to Participate All participating parents provided written consent and all participating children provided verbal consent.

Consent to Publish Not applicable.

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Child and Adolescent Psychiatry and Mental Health

REVIEW

Open Access

Young children's development after forced displacement: a systematic review

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Abstract

Objectives To examine the impact of displacement experiences on 0- to 6-year-old children's social-emotional and cognitive development, as well as influencing factors on reported outcomes.

Study design We systematically searched MEDline, Psyndex, Cochrane Library, Web of Science, Elsevier, TandF, Oxford Journal of Refugee Studies, Journal of Immigrant & Refugee Studies, and Canada's Journal on Refugees for existing literature regarding social-emotional and cognitive outcomes in children directly exposed to forced displacement due to political violence. Results were synthesized in the discussion and displayed using harvest plots.

Results Our search generated 9,791 articles of which 32 were selected for review and evaluation according to NICE criteria. Included studies provided results for 6,878 forcibly displaced children. Measured outcomes were diverse and included areas such as peer relations, prosocial behavior, family functioning, play, intelligence, learning performance, and language development. Repeated exposure to adverse experiences, separation from parents, parental distress, as well as duration and quality of resettlement in the host country were reported as influencing factors in the reviewed studies.

Conclusion As protective factors like secure and stable living conditions help to promote children's development, we call for policies that enhance participation in the welcoming society for refugee families. Early integration with low-threshold access to health and educational facilities can help to mitigate the wide-ranging negative consequences of forced displacement on young children's development.

Keywords Refugee, Displacement, Child, Preschool, Social-emotional development, Cognitive development

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Introduction

Adverse childhood experiences (ACE) are associated with an increased risk for disadvantageous developmental trajectories [1, 2]. The first years in life especially are a critical time period characterized by rapid physiological, cognitive and emotional changes [3, 4]. During this time, learning experiences are required for children to reach important developmental milestones in areas such as language acquisition, executive functions, perspective taking, emotion regulation, or social interaction [5]. When children are hindered from making these essential experiences within specific timeframes, they may encounter

challenges in social-emotional and cognitive development—therefore placing exposed infants at high risk for poor outcomes in the long-term [2]. Displaced children are a particularly vulnerable population at high risk for exposure to ACEs before, during and after flight [6] (See *Results: Adverse childhood experiences* for a detailed definition). In addition, their everyday lives in refugee accommodations are often characterized by insecurity, frequent changes in housing, limited access to school and health institutions, and a lack of interaction with peers or play material, which further restricts them from a stable, age-appropriate environment in a developmentally important phase of life [7]. Young infants are highly dependent on their caregivers [8]. Although displaced parents are committed to providing a secure and caring environment for their children, even in uncertain circumstances, they may face constraints due to their own exposure to adversities or structural inequalities, which further jeopardizes the child's development [9].

More than 43 million minors were forcibly displaced worldwide in 2022 [10]. In Germany, 20.4% of asylum applications were filed for children under the age of six, making them one of the largest groups among German asylum seekers [11]. While the negative consequences of forced displacement and associated risk factors on older children's and adolescents' mental health and development are well documented [7, 12–18], only one systematic review has outlined the effects of forced displacement on children of preschool age [19]. While this work has highlighted high rates of posttraumatic stress disorder (PTSD), sleep problems, disturbed play, and somatic complaints among young, displaced children, to our knowledge, no such work exists on developmental outcomes in this population. Understanding the effects of forced displacement on young children's progression is important, as developmental difficulties are considered predictors of later health and academic problems [13].

Our systematic review aims to address this gap by (a) capturing existing literature on markers of social-emotional and cognitive development in forcibly displaced children 0- to 6-years of age and (b) reviewing influencing factors associated with these outcomes.

Methods

PRISMA

Preparation and reporting of evidence in this systematic review is based on the Preferred Items for Systematic Reviews and Meta-analysis (PRISMA) reporting guidelines [20].

Search strategy

The following databases were searched from May 2021 until October 2023: MEDline, Psyndex, Cochrane Library, Web of Science. Additionally, libraries of the publishers Elsevier and TandF, the Oxford Journal of Refugee Studies, Journal of Immigrant & Refugee Studies and Canada's Journal on Refugees and reference sections of related systematic reviews were hand-searched for eligible articles. Results were found from 1940 to 2023. We included a wide range of search words regarding possible effects on the developmental outcomes of displaced children: (refugee OR flight OR resettle* OR displace* OR migrat* OR asylum seeker) AND (child* OR preschool* OR kindergarten) AND (social OR emotion* OR peer OR relation OR behavior OR behaviour OR intelligence OR iq OR memory OR learn* OR play OR psycholog*) AND (develop* OR adjust* OR problem OR function* OR stress OR trauma OR skill* OR resilien*). A total of 13,049 records were identified through database search and imported into EndNote [21]. 9,791 records remained after duplicates were removed manually and were exported into Rayyan [22] for screening and cross-review.

Screening procedure and selection criteria

We first screened all search outcomes by title and abstract based on the inclusion criteria. Quantitative studies examining social-emotional and cognitive outcomes in children directly exposed to forced displacement due to political violence (See *Panel 1*) were eligible for inclusion, if results were reported for children aged younger than seven years. Qualitative studies were excluded, as our study group is currently working on a separate review with a specific qualitative focus. Moreover, book chapters, case reports, systematic reviews, study protocols, and theses were excluded. Only pre-intervention data of intervention studies were included. We selected 416 publications for full-text review. Of those, 393 studies were rejected due to the lack of inclusion criteria. We additionally added publications from reference lists and citing literature of included works and authors. In total, 32 publications were included in the review. Figure 1 offers a detailed description of the search and selection process.

Quality assessment

Risk of bias was evaluated based on the Quality Appraisal Checklist for Correlation and Intervention studies (NICE) [23]. The checklist was applied prior to a final rating of a study's internal and external validity and was undertaken independently by two authors for each study with a total of six authors (KB, AH, SB, JU, MK, MF). Any discrepant ratings were resolved through group discussion. See Additional file 1 for description of the quality assessment.

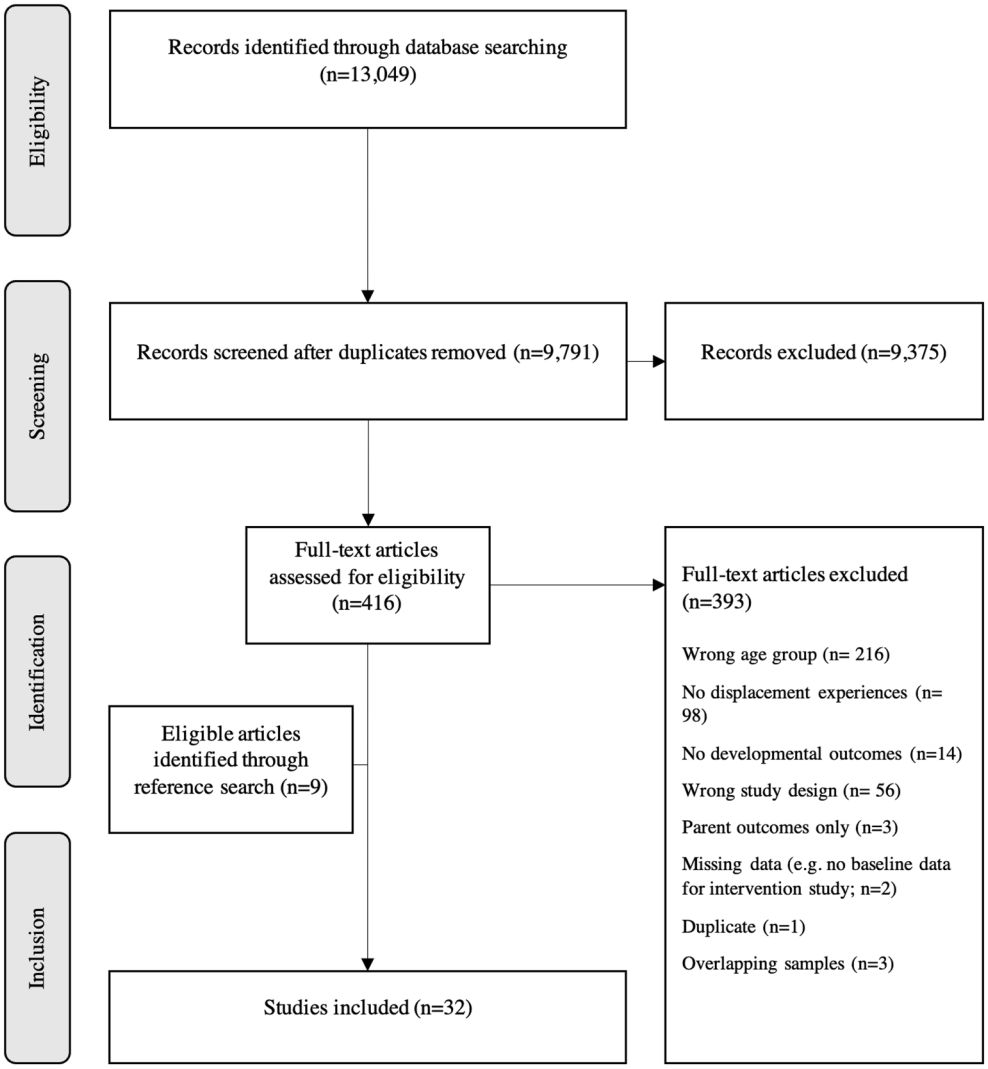

Fig. 1 Flow chart of the study selection process

Synthesis

Due to the significant methodological heterogeneity among the included studies, evidence was synthesized narratively, comprising the discussion section of this paper. Harvest plots [24] were used to graphically display the distribution of reported group comparisons between displaced and control samples in the outcome domains. Separate matrices were computed for each of the outcome categories consisting of rows (outcome variables) and columns (directions of group effect). Each study finding was represented with a bar that was assigned to the column and row for which that study had reported relevant results and each bar was customized to portray different study and sample characteristics (Fig. 2).

Adverse childhood experiences

According to the World Health Organization, "Adverse Childhood Experiences (ACE) refer to some of the most intensive and frequently occurring sources of stress that children may suffer early in life" [25], such as abuse, neglect, household dysfunction, and peer, community or collective violence. Based on previous research [6], we adapted this definition of ACEs to different experiences displaced children might encounter, including the following categories: (a) constant of violence; witnessing or experiencing of any type of war or armed conflict (b) witnessing or experiencing the death or injury of a parent or relative, or being separated from family members (c) threat of violence; witnessing, or experiencing violence while in transit (d) exposure to harmful refugee

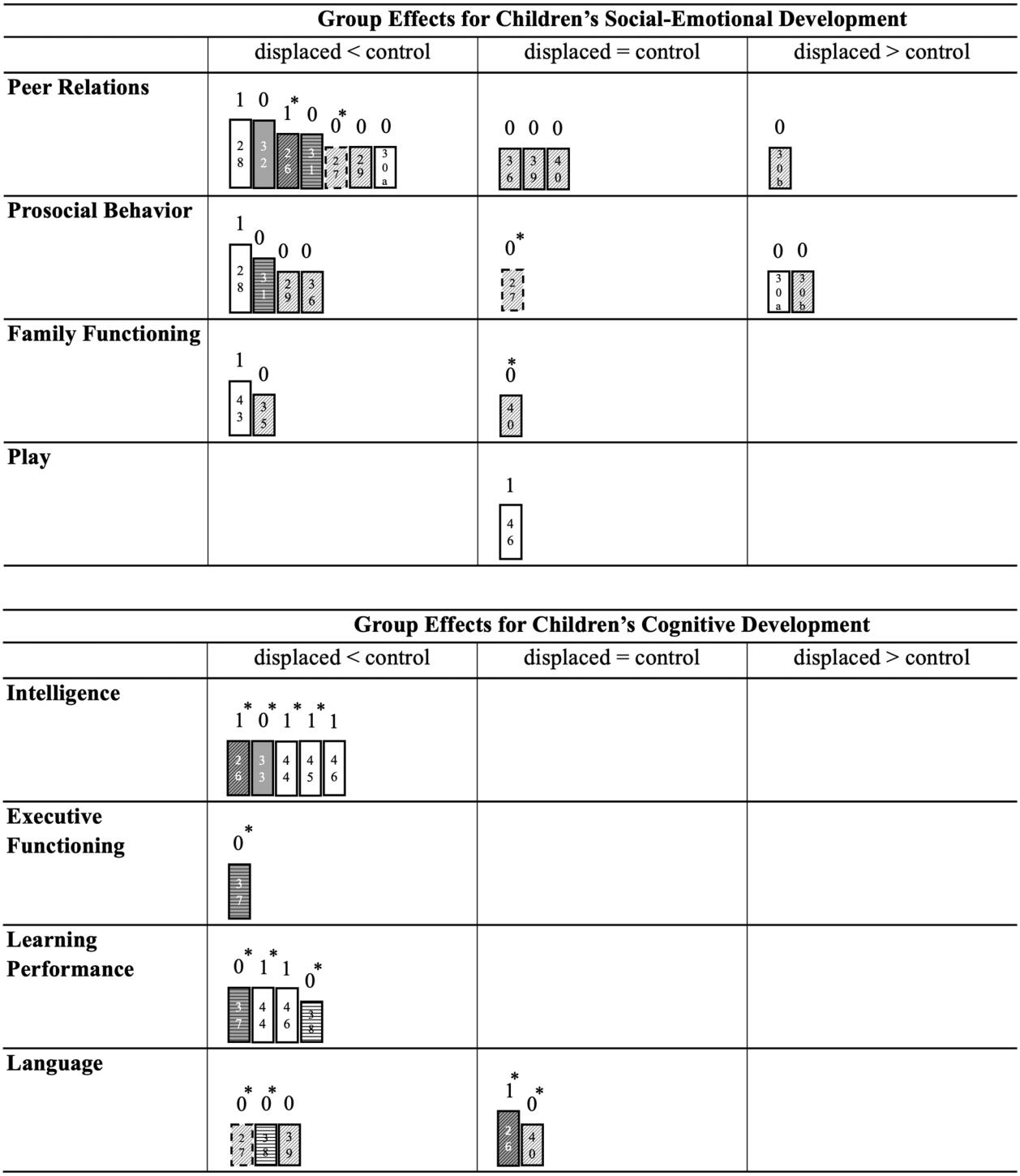

Fig. 2 Harvest plots for developmental outcomes. Each study finding is represented in the respective row (outcome variable) and column (direction of group effect) using bars, with height indicating settlement status (highest = detention, middle = refugee camp, small = resettled, dashed = not reported), color denoting number of ACE exposure (white = one ACE category, grey = multiple ACE categories), bar hitching showing time since arrival (full tone = < 2 years, hitched = > 2 years, vertical lines = not reported), and the number above the bar indicating control group type (0 = healthy/norm, 1 = clinical/displaced). A * indicates use of parent reports only. References are denoted by numbers within the bars. For follow-up studies, 'a' signifies the initial assessment, and 'b' signifies the follow-up results

conditions (e.g., immigration detention). As all children included in this review experienced forced displacement, it is not listed as an independent category.

Results

Descriptions of included populations

Overview

Table 1 shows the key characteristics of displaced samples.

A total of 6,878 children aged 0- to 17-years were included in the reviewed studies, of which 5,858 were younger than seven years. Included studies were published between 1993 and 2023. Twenty-one studies conducted comparisons analyses with displaced populations [26–29], norm populations [27–34], healthy controls [35–39], children displaced in second generation [40, 41], and non-displaced children from war-zones [42, 43], and in clinical settings [29, 44–46]. Fourteen studies had at least partly overlapping samples. We included those studies if distinct outcomes were reported or contacted the authors to make separate calculations, if possible.

Flight history

Studies were conducted in Australia [28, 30, 34, 47, 48], Bangladesh [31], Bosnia-Herzegovina [33], Colombia [35], Denmark/Belgium [49], Eritrea [26], Germany [27, 29, 41, 44–46, 50, 51], Iraq [37], Israel [42, 43, 52], Sweden [53–57], Turkey [36, 38–40], and the US [32] and included children from the Middle East (Iraq, Syria, Afghanistan, Iran, Israel, Palestine, Pakistan, Lebanon), Africa (Somalia, Tunisia, Nigeria, Eritrea, Sudan), Asia (Myanmar, Sri Lanka), Central and South America (El Salvador, Honduras, Guatemala, Chile, Columbia), the Western Pacific, and Eastern Europe (Russia, Former Yugoslavia). Four studies included unaccompanied children [26, 31, 47, 48].

Quality assessment

As for internal validity, three (9.3%) studies met the criteria for high quality, 14 (43.8%) for moderate quality and nine (28.1%) studies were of low quality, mostly due to not controlling for confounding factors, solely relying on parents as informants or using insufficient analytical methods. Quality of external validity was rated as good in six (18.8%) studies, as moderate in 22 (68.8%) studies and as low in four (12.5%) studies, due to restricted generalizability of study findings (See Additional file 1). With respect to the methodical and practical challenges that can arise when conducting research with displaced populations [8, 45, 46, 58, 59], no studies were excluded due to low quality rating.

Outcomes

Categorization of the outcome variables employed is detailed in Table 2. Information sources included parent and caregiver reports, medical records, and child assessment by investigators. Nineteen studies used a multiple source approach [26, 27, 29, 33, 38, 40, 41, 44–51, 53–56] and in eleven studies, parent reports were the only source of information [28, 30–32, 34, 35, 42, 43, 52, 56, 57]. Modes of data collection were questionnaires [26–36, 38, 41–46, 50, 52, 57], structured interviews [40, 48, 51, 53, 54, 56], clinical observations [26, 27, 33, 37–41, 44–46, 48–51, 53–55], and review of mental health records [47].

Social-emotional outcomes

Experience of forced displacement was associated with difficulties in young children's peer relations (21–57.1%) [26–29, 31, 32, 40, 53, 54], such as not having friends to play with (15.6%) [31, 53], being offensive towards peers [26], and being bullied by peers [53], while six studies did not find group differences regarding displaced children's social-emotional competencies [34, 36, 38, 39, 42, 46]. Four studies described less prosocial behavior in displaced children compared to controls (10.3%) [28, 29, 31, 36], while one study reported the opposite effect [30], and one study found no significant group differences in this domain [27]. Six studies pointed out the co-occurrence of displacement experiences, disrupted family dynamics and children's symptomatology [35, 40, 41, 43, 48, 49]. Poor family function, overdependency on caregivers and separation fears were prevalent [52, 54], and significantly more frequent in displaced than non-displaced participants in two studies [35, 43], while one study reported comparably high prevalence of attachment disturbances in children with direct and family background of displacement [40]. Child-caregiver relationships were reported to be characterized by avoidant attachment, parental absence, low maternal affection, and oppositional behavior [41, 48, 49], which was further correlated with children's symptom load [35, 43]. Exposure to forced displacement was associated with disturbed play in 6–62% of investigated children, reflected as reenacting, repetitive or unstructured play or general disinterest or passivity in play activities [48, 52, 54–56]. However, one study did not observe reenacting and emotionless-cold play patterns among refugee children [46]. In the same study, refugee children showed comparable play development, but less social interaction during play compared to a clinical comparison group.

Cognitive outcomes

Overall, 23–78.5% of displaced children were reported to perform low on cognitive measures [26, 27, 30, 31,

Table 1 Study and sample characteristics

Reference	Study population	Housing	N	Age in years M(SD), range	ACE category	ACE exposure n(%)	Time in host country in months M(SD), range	Domains assessed	Measures
26	Internally displaced children and orphans in Ethiopia	refugee camp, orphanage	148	5.7(0.9), 4–7	a,b,d*	a: 148(100), b: 74(50), d: 148(100)	32.4	Peer relations, Intelligence, Language development	Behavioral Screening Questionnaires (BSQ; (Richman, Stevenson & Graham, 1975); The Leiter International Intelligence Scale (Leiter, 1969); The Raven Progressive Matrices (Raven, 1958); Short version of the Token test (McNeal & Prescott, 1978)
27	Refugee children from Middle East, Southeastern Europe, North Africa, and Sub-Saharan Africa in Germany	nr	207	T_1: 5.78(0.85), 3–7 T_2: 5.87(0.87) T_{1m}: 6.54(0.42) T_c: 7.18(0.63)	a*	nr	T_1: 26.4(21.1) T_2: 26.3(20.0) T_{1m}: 27.19(20.75) T_c: 23.97(16.2)	Peer relations, Cognitive development, Language development	Peabody Picture Vocabulary Test (Dunn & Dunn, 2007); Subtest "Object Assembly" from the Wechsler Preschool and Primary Scale of Intelligence-III (Wechsler, 2002); Intelligence and Development Scales (Grob et al., 2009); Strength and Difficulties Questionnaire (SDQ; Goodman, 1997)
28	Refugee children from Eastern Mediterranean, Southeast Asia, Western Pacific, Africa in Sweden	detention	86	8.4, 4–15	d	48(55)	7.27	Peer relations, Prosocial behavior	Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001)
29	Refugee children in Germany	nr	study 1: 84 study 2: 50 study 3: 107	study 1: 3·86(1.18) study 2: 3·92(1.22) study 3: 5.79(0.85)	a*	nr	study 1: nr study 2: 43.87(37.59) study 3: 25.4(20.11)	Peer relations, Prosocial behavior	Child-Teacher Report form 1·5–5 (C-TRF; Achenbach & Rescorla, 2000); Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001)

Table 1 (continued)

Reference	Study population	Housing	N	Age in years M(SD), range	ACE category	ACE exposure n(%)	Time in host country in months M(SD), range	Domains assessed	Measures
30	Refugee children from Southeast Asia, Africa, Eastern Mediterranean in Sweden	settled	61	6.0, 05–15	d	nr	baseline: 13 follow-up: 31	Peer relations, Prosocial behavior	Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001)
31	Refugee children from Myanmar in Bangladesh	refugee camp	622	0-to 2 year old's: 0.86(0.54), 2-to 16 year old's: 6.81(3.53)	a,d*	nr	nr	Peer relations, Prosocial behavior, Cognitive development, Language development	Developmental Screening Questionnaire (DSQ: Khan et al., 2013); General development assessment (GDA); Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001)
32	Refugee children from South America in the U.S	settled	42	6.79(4.42), 2–16	a,c*	nr	1·17	Peer relations	Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001)
33	Internally displaced children in Bosnia	refugee camp, private homes	87	5.5, 5–6	a,b,d	nr	nr	Intelligence	War Trauma Questionnaire (Macksoud, 1992); Raven's Colored Progressive Matrices (CPM; Raven, 1947); Birleson's Depression Inventory (BDI; Birleson, 1981); Child Assessment
34	Refugee children in Sweden	settled	43	6·0, 0.5–15	d	nr	baseline: 13 follow-up: 31	Peer relations, Prosocial behavior	Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001)
35	Internally displaced children in Colombia	settled	279	4.2(1.0), 1.5–5	a	nr	12–60	Family functioning	The General Functioning (GF) Scale of the Family Assessment Device (FAD; Byles et al., 1988); KiddieSADS PTSD Traumatic Event Checklist (Kaufman et al., 1996)

Table 1 (continued)

Reference	Study population	Housing	N	Age in years M(SD), range	ACE category	ACE exposure n(%)	Time in host country in months M(SD), range	Domains assessed	Measures
36	Refugee children from Syria in Turkey	settled	40	5.57, 5–6	a*	18(90)	12–36	Peer relations, Prosocial behavior	The Ladd-Profile Child Behavior Scale (Ladd & Profilet, 1996); Peer Victimization Scale (Kochenderfer & Ladd, 2002)
37	Refugee children from Syria (S) and internally displaced children in Iraq (Y)	refugee camp	150	Y: 5.92(0.55), S: 5.73(0.58)	a,d*	nr	nr	Executive functioning, Math abilities, Short term memory	Backward and Forward Word Span Task (Lanfranchi et al., 2004); Stroop Task (Gerstadt et al., 1994); Numerical Intelligence Battery (BIN; Molin et al., 2007)
38	Refugee Children from Syria in Turkey	settled	373	5.11(0.48), 5–6	a*	nr	nr	Peer relations, Language development, math abilities,	Preliteracy and Prenumeracy Skills Scale (Adato & Bekman, 1989); Turkish Early Language Development Test (TEDIL-3; Güven & Topbas, 2014); Emotion Regulation Checklist (Shields & Cicchetti, 1997); Social Competence and Behavioral Assessment Scale (SCBAS; LaFreniere & Dumas, 1996)
39	Syrian refugee children in Turkey	settled	120	1.5–6	a	43.3%	90% longer than 1 year	Peer relations, Language Development	Denver II Developmental Screening Test (DDST-II; Frankenburg et al., 1989)
40	Refugee children from Syria in Turkey	settled	70	5.56(1.09), 0–6	a	0(0)	36	Family functioning, Cognitive development, Language development	The Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood: Revised Edition (DC:0–5:Zeanah et al., 2016)

Table 1 (continued)

Reference	Study population	Housing	N	Age in years M(SD), range	ACE category	ACE exposure n(%)	Time in host country in months M(SD), range	Domains assessed	Measures
41	Refugee children from Syria and Iraq in Germany	nr	42	283(1.54), 0.42–5.58	a	24(60)	21.53(11.57), 1–40	Family functioning	Parenting Interactions with Children Checklist of Observations Linked to Outcomes (PICCOLO; Roggman et al., 2013)
42	Internally displaced children in Israel	returned to homes	107	3.9	a	107(100)	30	Family Function	Child Behaviour Checklist 1·5–5 years (CBCL 1·5–5; Achenbach & Edelbrock, 1983); Preschool Children's Assessment of Stress Scale (PCASS; Laor et al., 1996); Change of Functioning Scale (CFS; Laor et al., 1996); Vineland Adaptive Behavior Scales (Sparrow et al., 1984)
43	Internally displaced children in Israel	hotels	230	4.0, 3–5	a	230(100)	6	Peer relations, Family function	Child Behaviour Checklist 1·5–5 years (CBCL 1·5–5; Achenbach & Edelbrock, 1983); Preschool Children's Assessment of Stress Scale (PCASS; Laor et al., 1996); Change of Functioning Scale (CFS; Laor et al., 1996); Childhood Personality Scales (Cohen et al., 1977); Family Adaptability and Cohesion Evaluation Scales (FACES; Olson, 1986)

Table 1 (continued)

Reference	Study population	Housing	N	Age in years M(SD), range	ACE category	ACE exposure n(%)	Time in host country in months M(SD), range	Domains assessed	Measures
44	Refugee children in Germany	refugee camp	109	5.10(1.15), 3–7	a	73(67)	16.5	Intelligence, Short term memory	Child and Adolescent Trauma Screening (CATS; Sachser et al., 2016); Scale of Intellectual Functioning (SIF) of the Kaufmann-Assessment-Battery for Children (KABC-II; Kaufmann et al., 2015)
45	Refugee children mostly from Nigeria, Afghanistan, and Syria in Germany	refugee camp	72	5.14(1.17), 3–7	a	32(61·5)	19(17.72), 0.5–60	Peer relations, Prosocial behavior, Intelligence, Short term memory	Child and Adolescent Trauma Screening (CATS; Sachser et al., 2016); Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001); TST assessment form (Saxe et al., 2016); Scale of Intellectual Functioning (SIF) of the Kaufmann-Assessment-Battery for Children (KABC-II; Kaufmann et al., 2015)
46	Refugee children in Germany	refugee camp	181	4.94 (4.66 5.22)	a	62(89)	3.71	Social-emotional competencies, Play, Intelligence, Learning Performance	Play Observation Scale (Bernhardt & Hahnefeld, 2021); Behavior Observation Scale for Preschool Children (Verhaltensbeurteilungsbogen für Vorschulkinder; VBV-ER 3–6; Döpfner, 1993); Scale of Intellectual Functioning (SIF) of the Kaufmann-Assessment-Battery for Children (KABC-II; Kaufmann et al., 2015)

Table 1 (continued)

Reference	Study population	Housing	N	Age in years M(SD), range	ACE category	ACE exposure n(%)	Time in host country in months M(SD), range	Domains assessed	Measures
47	Refugee children from Asia and Africa in Australia	detention	110	6.0(4.72)	a,b,d	a: nr b: nr d: 605(97.3)	13	Cognitive development	Centers for Disease Control and Prevention/ Adverse Childhood Experiences (CDC/ACE; Hanes, 2017)
48	Refugee children from Iran, Iraq, Afghanistan, and Palestine in Australia	detention	20	0.92–17	a	20(100)	15, 12–18	Family functioning, Play	Child Assessment
49	Refugee children from Iraq, Kosovo, Pakistan, Russia, Somalia, Sri Lanka, and Sudan in Belgium/ Denmark	nr	18	6.7(2.2), 4–9	a	8(44.4)	nr	Family functioning	Attachment Story Completion Task (ASCT; Verhueren et al., 1996)
50	Refugee children from Syria in Germany	refugee camp	96	7.2, 0–14	a,b,c	a: 96(100)	1.3	Language development	Parent Interview; Child Assessment; Post-traumatic Stress Disorder Semi-Structured Interview (PTSDSSI; Scheeringa & Zeanah, 1994)
51	Refugee children in Germany	refugee camp	2551	5.72	nr	nr	28.43	Cognitive reasoning, Language development	Peabody Picture Vocabulary Test (PPVT-4; Dunn & Dunn, 2007); NEPS-MAT (Lang et al., 2014)
52	Internally displaced children in Israel	refugee camp	study 1: 74 study 2: 191	4.7(1.34), 2–7	a	264(99.6)	0.53(0.26)	Play	War Related Experiences Scale (Sadeh et al., 2008); Stress Reaction Checklist (SRCL; Sadeh et al., 2008)
53	Refugee children from Iran in Sweden	settled	50	8.4, 4–8	a	42(84)	42	Peer relations, Language development	Parental Interview; Child Assessment; Erica Method/World of Technique (Lowenfeld, 1950)

Table 1 (continued)

Reference	Study population	Housing	N	Age in years M(SD), range	ACE category	ACE exposure n(%)	Time in host country in months M(SD), range	Domains assessed	Measures
54	Refugee children from Iran in Sweden	settled	39	8.4, 4–8	a	34(87)	baseline: 12 follow-up: 42	Play	Parental Interview; Erica Method / World of Technique (Lowenfeld, 1950)
55	Refugee children from Iran in Sweden	settled	50	5.83, 4–8	a,b	42(84)	nr	Play	Parental Interview; Erica Method / World of Technique (Lowenfeld, 1950)
56	Refugee children from former Yugoslavia in Sweden	refugee camp	66	5–15	a	24 (37)	5	Family functioning, Play	Parent Interview
57	Refugee children from Middle East and Africa in Sweden	70% settled	61	3.75(1.4), 2–6	nr	9(15)	nr	Peer relations, Prosocial behavior	Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001); Primary Care PTSD Screen (PC-PTSDM Prins et al., 2003); Child PTSD Symptom Scale (CPSS; Nixon et al., 2013)

ACE categories

a constant of violence; witnessing or experiencing of any type of war or armed conflict

b witnessing or experiencing the death or injury of a parent or relative, or being separated from family members

c threat of violence; witnessing, or experiencing violence while in transit

d exposure to harmful refugee conditions (e.g., immigration detention)

PTSD posttraumatic stress disorder

* Description by the authors only

Table 2 Outcome categories in reviewed studies

Category	Outcome	N of articles (%)
Socio-emotional outcomes	Peer relations	14 (43.8%)
	Prosocial behavior	6 (18.8%)
	Family functioning	7 (21.9%)
	Play	7 (21.9%)
Cognitive outcomes	Intelligence	7 (21.9%)
	Learning performance	5 (15.6%)
	Language	11 (34.4%)

33, 37, 40, 44, 45, 47]. Three studies in German refugee camps found displaced children's nonverbal IQ scores to be normally distributed, with means more than one standard deviation below those of the German norm population [44–46]. Dybdahl [33] reported IQ scores of children exposed to the Bosnian war on 25th percentile for European and US norms. Wolff et al. [26] reported 6- to 7-year-old, displaced orphans to perform better on cognitive and language measures than accompanied displaced children. However, the authors did not report exact IQ scores for both groups. Further, learning performance [37, 44, 46], executive function [37], and early math abilities [37, 38] were all reported to be less developed in displaced children compared to control groups. Eleven studies detected limited speech capacities in displaced children (7–50%) [26, 27, 30, 31, 38–40, 48, 50, 51, 53], that persisted up to 3 ½ years after settlement [30, 53].

Influencing factors

Twenty-seven (84.4%) of the included studies conducted correlational, regression, or group analyses to identify influencing factors of children's developmental outcomes after forced displacement.

ACEs

Exposure to different forms of adversity was positively associated with separation fears [43], play behavior [46, 53, 55, 56], language and social-emotional development [39], and was among the factors that most strongly determined children's social adjustment at follow-up [53]. As can be seen in our Harvest plots, all but one studies investigating displaced children exposed to cumulative ACEs reported higher levels of disturbance compared to control groups. Separation from one or both parents thereby emerged as one of the most important risk factors for social-emotional and cognitive developmental problems [26, 31, 33, 34, 55]. Displaced children from war and non-war zones did not differ in regard to peer problems in one study [29], and four studies did not relate flight duration to learning performance, non-verbal IQ, family functioning and play behavior [41, 44–46].

Settlement

Follow-up studies suggested a decrease in developmental concerns within the first 3- to 4-years of settlement [30, 36, 42, 43, 53, 54], while children's social adjustment improved over time [53]. Harvest plots accordingly indicate that children who stayed in the host country for shorter periods of time were more symptomatic than control children. While time in the host country was associated with better language and learning performance [27, 44, 51], and social interaction during play [46], nine studies did not link time since arrival in the host country and residence status with children's developmental state [26, 28, 29, 34, 35, 44, 51, 55], and family functioning [48]. Four studies found that (longer) attendance of childcare centers was correlated with improvement on measures of peer problems, prosocial behavior, nonverbal reasoning and language abilities [27, 29, 38, 51], although effects did not apply to cognitive development [27] and play behavior [46] in two studies. Four studies reported comparable outcomes for children in the first and second generation of displacement [34, 35, 40, 41]. Accordingly, the impact of post-migration stressors, such as unstable housing, on children's development was highlighted across studies [26, 29, 34, 42–44, 56]. Eight out of the nine studies conducting group comparisons with children living in refugee and detention centers reported developmental levels below norm, indicating that placement in refugee accommodations jeopardizes social-emotional and cognitive functioning, with risk increasing the longer children are living in such environments [48, 56]. Children held in immigration detention, especially, were shown to be at higher risk than non-detained displaced children with similar exposure to pre-arrival adversity [28] and displayed the highest prevalence of developmental concerns across all included groups in this review [28, 32, 47, 48].

Children's age and gender

Twelve studies analyzed the effect of age and gender on children's reactions to forced displacement. In five studies, the youngest age groups showed relatively more social-emotional problems [42, 43] and reenactments in play [55], and performed less advanced than older peers on cognitive and language measures [26, 27]. Moreover, one study found age effects for play development in clinical comparison, but not refugee children [46]. Findings on the effects of gender were mixed and pointed towards increased vulnerability for both boys [53–55] and girls [33], who showed more social play and prosocial behavior in two studies [27, 46]. Six studies did not report any

effects of age or gender on presented outcomes [26, 33, 34, 41, 43, 50].

Parental factors

Parental distress, mostly mother's symptoms, strongly affected displaced children's adaption in the host country, socialization and play behavior in children [42, 43, 46, 53], while fathers mental health was only assessed in one study [53]. Limited maternal affection thereby was reported as risk factor for children's development [41], while increased affection towards the child [41] and optimism of mothers [56] were reported as potential protective factors.

Discussion

In addition to previous findings reporting high prevalence of the categorical diagnosis of PTSD among displaced children [19], this review was novel in its developmental focus and showed that young children's social-emotional, cognitive and language development is negatively affected by displacement experiences. Solely focusing on mental health outcomes by applying the categorical criteria for PTSD does not sufficiently reflect the diversity and interplay of possible reactions in young infants, that might differ from expressions of older children and adults [60].

The wide-ranging prevalence rates for developmental issues presented in this review indicate that children might not only be impacted by the experience of displacement itself, but also by associated stressors. Forced displacement in and of itself is not only an adverse experience, but also increases the likelihood of experiencing further ACEs and structural inequalities [6]. Despite lacking detailed descriptions of experienced ACEs, the included studies suggest that risk factors for poor outcomes include cumulative exposure to war-experiences, prolonged stay in immigration centers, family separation and parental distress. This emphasizes the role of contextual variables during and after flight rather than restricting investigations to the direct effects of pre-displacement and flight events.

The impact of family separation on displaced children's outcomes highlights their dependency on parental support [26, 31, 33, 55], particularly for the youngest age groups [35, 42]. The family environment can either form a protective shield against adverse experiences or jeopardize children's development, if parents are themselves distressed and struggle to respond to children needs in a sensitive way, crucial to engage in developmental tasks [61]. Indeed, parental distress and loss of family function were identified as important risk-factors for children's development in several studies included in this review [41–43, 46, 53, 56]. As it is often also structural inequalities that make it difficult for parents to give their children a sense of security and stability, parents should be supported in creating an atmosphere of normality for their children by maintaining daily routines and small rituals even under difficult conditions.

All studies conducted with children living in refugee and detention centers reported poor outcomes in at least one of the outcome domains, pointing to the negative consequences of prolonged stays in transitory settings [28]. Time since stable resettlement on the other hand emerged as a protective factor influencing children's development in a positive way [30, 36, 42, 43, 53, 54]. Although the exact circumstances of resettlement were not described in most of the included studies, it can still be assumed that as families resettle in the host country, their environment is likely to become more stable, as children gain access to health care and formal education. Thus, the effect of displacement is likely to be moderated by the context in which time is spent. The protective effect of early childcare and preschool education has been emphasized across studies included in this review [26–28, 34, 38, 44] and in recent literature [12, 13, 17, 62, 63]. Daycare centers can provide displaced children with a child-friendly and playful learning environment known to promote social-emotional and cognitive development, which can give them a sense of stability, security and belonging that might reduce symptoms of distress [27, 38]. At the same time those factors have been shown to facilitate transitions to school systems and promote academic learning and cohesion between displaced and local children [38], as preschool settings offer opportunities for displaced children to catch up in development with their peers. On the other hand, unresolved asylum claims often limit access to preschool institutions. Therefore, an important opportunity is lost to improve chances for positive developmental trajectories and integration in the long-term [34].

Limitations

This systematic review was limited by the quality of included studies, of which 25 were cross-sectional and 14 were given a low rating regarding their internal and/or external validity. The large heterogeneity across studies did not allow for a statistical analysis conducted in meta-analyses. While the resulting diversity among studies may restrict their comparability, it allowed for the creation of a more complex picture of the effects on diverse displaced populations in different settings.

Assessing young children presents a challenge as they may lack the ability to comprehend or verbalize their experiences, making it necessary to rely on information provided by the parents. The validity of parental reports has been discussed in previous literature, as the

perception of their children's well-being and development might be influenced by their own symptomatology [45, 46]. Eleven studies used parents as their only data source which may have resulted in over- or underestimation of children's development. Further, the use of standardized measures that may not have been culturally appropriate questions the validity of reported findings [44, 64]. Confronting displaced populations with measures normed for Western contexts presupposes that understandings of psychological, behavioral or developmental phenomena and manifestations of distress can be generalized across different cultures [64]. Developmental tests commonly used in study settings are usually created and normed for children who already know comparable play material and assignments from educational contexts, disadvantaging displaced children without former educational experience [44]. This is especially critical, when measures are not only utilized for research purposes, but in educational or clinical settings to determine school suitability. As most children included in this review did not attend any kind of childcare or educational facilities, the reported developmental outcomes could therefore be interpreted as limited test performance rather than developmental impairments [26, 29].

Only ten (31.3%) of the reviewed studies were conducted in middle- or low-income countries, even though 83% of refugees are hosted in developing countries [10]. Resources and support services are especially restricted in those settings and therefore contribute to the vulnerability of young children placed within them [38].

Implications

Further research

Longitudinal assessments of age-specific developmental outcomes are needed to improve our understanding of the diverse reactions in young, displaced children—in high- but also in middle- or low- income countries. Investigation of prewar levels or comparisons with peers from the home country can elucidate whether test materials are biased towards children with experience in Western educational settings. Future researchers should make use of culturally appropriate assessment tools and incorporate modes of nonverbal expressions of children and educator reports as a supplement to parent rating.

Current empirical research often uses approaches that classify developmental outcomes in displaced persons as pathologic rather than seeing it as an expected response to facing the various challenges associated with forced displacement [18, 65, 66], therefore underestimating their ability to reach their full developmental potential when provided with the necessary support systems and stable living conditions [67]. Although this article highlighted the negative effects of displacement experiences, several results point towards the resilience of young children. Overlooking the strengths of displaced populations perpetuates a deficit view and places them at risk for discrimination, which has been shown to directly affect psychological distress in youth and adolescent refugees [68]. Instead, there is a need for studies that draw on children's reactions to forced displacement from a resilience perspective in order to understand how both individual qualities, social relations, and modifiable contextual factors contribute to children's acculturation, well-being and positive developmental trajectories in the long-term [17, 18].

Displaced children are especially vulnerable to high risks for ACEs, emphasizing the need of systematic assessment of those experiences to develop effective intervention strategies. Common definitions of ACEs focus on adversities children face within the family, while political violence and forced displacement are currently not enough covered by the framework [6, 69, 70]. It is therefore necessary to develop a broader definition that reflects the experiences that displaced children face outside the household.

Our review encompasses studies on both refugee and internally displaced children. While studies on internally displaced children did not provide prevalence data, they indicated challenges in peer relations, family functioning, and cognitive and language development [26, 33, 35, 42, 43, 52], similar to findings for refugee children. Despite expectations of higher difficulties for refugee children due to prolonged flight durations and acculturation challenges, internally displaced children faced unique adversities—residing in shelters, orphanages, or close to conflict zones, exposing them to repeated war and violence experiences. Most studies with internally displaced children were conducted in Israel where the initiating conflict was unresolved, which has been recognized as risk factor for internally displaced persons mental health [71]. Additionally, post-displacement stressors, such as unstable housing and unemployment have been reported for internally displaced populations [72], and further underscore the vulnerability of these children. Notably, no studies have explored distinctions between these two populations, representing a compelling avenue for future research.

Political implications

This review shows that the negative effects of forced displacement on children, even at a very young age, are wide-ranging and powerful; however, stressors experienced in the host country, though prevalent, are modifiable. Post-migration factors provide opportunities for governments to contribute to secure and stable environments for displaced populations by keeping exposure to

camps and reception centers at a minimum, preventing family separations and guaranteeing quick access to healthcare and educational institutions. Especially in low-resource environments, participation in socially inclusive preschool programs can promote healthy development and school readiness [27, 38]. Young, displaced children are vulnerable, especially because of their dependency on caregivers, who might have also undergone stressful and traumatic experiences [8]. Interventions should offer practical and mental health support for caregivers and provide childcare and education programs to shield children from post-displacement adversity. Ideally such resources should be available from the time of arrival. A resilience-based research approach is essential which instead of focusing on an individual's ability to cope with extreme situations draws on social and environmental factors and political responsibilities to protect and provide vulnerable populations with resources and support systems [38].

Conclusion

Although existing research with displaced children is limited, particularly regarding young children and children in low- or middle-income settings, there is no doubt that forced displacement and associated ACEs have negative effects on children's development. Reactions of 0- to 6-year-old children are diverse and crucially influenced by contextual factors such as housing situation, separation from family members or parental distress. Our findings reinforce the importance of creating policies and practices that provide access to healthcare and early education and support the stable settlement of these children and their families to promote resilience and positive developmental and integration trajectories in young, displaced children.

Panel 1: Definitions.

Refugee: A person who is, due to fear of being persecuted because of their belonging to a certain race, religion, nationality, social group or political opinion, outside the country of his nationality and is unable or, owing to such fear, is unwilling to return to it [73].

Internally displaced person: A person who has been forcibly displaced from their home or place of residence as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who has not crossed an internationally recognized state border [74].

Forcibly displaced person: A person who was forced to flee their home due to conflicts, violence, fear of persecution or human rights violations, including internally displaced persons, refugees, asylum seekers and Venezuelans displaced abroad [75].

Political violence: Violence perpetrated by state- or non-state representatives to achieve or prevent politically motivated goals. Examples include war, genocide, terrorism, denial of citizenship, wrongful detention, enslavement or forced displacement. Another form of political violence can be non-action of a government such as lack of political representation or discrimination in the provision of civil services for women or other minority groups [76].

Abbreviations

PTSD	Post-traumatic stress disorder
ACE	Adverse childhood experience
IQ	Intelligence quotient

Supplementary Information

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Additional file 1: Quality appraisal of the included studies based on NICE-criteria.

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Author contributions

All authors contributed to the study conception and design, read and approved the final manuscript and agreed to be accountable for all aspects of the work. KB did conception, literature search, screening of literature search results, quality assessment of included studies, data analysis, visualization, and writing of the manuscript. SLB was involved in conception, literature search, quality assessment of included studies, supervision, and commented on the final manuscript. JU did quality assessment of included studies, reviewed, and edited the manuscript. MF was involved in quality assessment of included studies, as was MK1 who also read and commented on the final manuscript. LR was involved in conception, screening of literature search results, and supervision. GS, MK2, and RM contributed to conception, validation, and supervision. MK2 also did language editing for the final manuscript. IN contributed to the conception, literature search, data analysis, visualization, supervision, and writing and commented on the final manuscript. VM did conception, funding acquisition, supervision, contributed to writing, and commented on the final manuscript. AH was involved in conception, funding acquisition, project administration, literature search, quality assessment of included studies, visualization, supervision, and writing and reviewed and edited the final manuscript.

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Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication
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The authors declare that they have no competing interests.

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