


Regular Article

When all is at sea: Attachment insecurity as a mediator of risk in Tamil asylum-seeking children

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Abstract

Limited data exists on the role of attachment in influencing the development and wellbeing of refugee children. Herein we describe patterning and correlates of attachment in an Australian sample of adolescent Tamil refugees. Sixty-eight adolescents, aged 10–18, were assessed for trauma exposure, mental health problems and pattern of attachment. Attachment representations were assessed by discourse analysis of structured attachment interviews. Mothers of the adolescents were assessed for post-migration family stressors, depression, and post-traumatic stress disorder (PTSD) using self-report measures. Inhibitory A and A+ patterns of attachment predominated. Attachment insecurity was associated with child trauma exposure ($\beta = .417$), post-migration family stressors ($\beta = .297$) and maternal PTSD ($\beta = .409$). Path modeling demonstrated that attachment insecurity mediated associations of child trauma exposure, family stressors and maternal PTSD with child mental health problems, the model yielding adequate fit (Comparative Fit Index [CFI] = .957; standardized root mean square residual [SRMR] = .066; R^2 .449). Our cross-sectional findings suggest that compromised attachment security is one potential mechanism by which the adverse effects of refugee family trauma and adversity are transmitted to children. Resettlement policy and psychosocial services should aim to preserve and/or reestablish attachment security in child-caregiver relationships through policy that reduces family stressors and interventions that bolster parental mental health and caregiver sensitivity.

Keywords: attachment security; child refugee; refugee family; mental health; trauma

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War makes attachment salient. In a monograph on children and war, set during the Second World War, Anna Freud and Dorothy Burlingham (1943) surmised that,

war acquires comparatively little significance for children so long as it only threatens their lives, disturbs their material comfort or cuts their food rations. It becomes enormously significant the moment it breaks up family life and uproots the first emotional attachments of the child. (p. 37)

For John Bowlby too, the Second World War was a crucible for his thinking on the role of separation and loss on child development, a set of ideas later formalized as attachment theory (Bowlby, 1939–1942; Duschinsky, 2020). As a developmental and relational theory sensitive to the organizing and disorganizing role of danger on caregiving and attachment behavior (Crittenden, 1999; Main & Solomon, 1986), attachment theory would appear well positioned to articulate how refugee family processes modulate the effects of war, forced migration and collective trauma on child development and wellbeing. Yet whilst the conceptual relevance of attachment theory to refugee contexts has long been recognized (Silove, 1999), until

recently, points of convergence between attachment theory and refugee research have been curiously limited, reflecting historical inter-disciplinary barriers. Following Bowlby and Ainsworth, the second generation of attachment researchers sought to legitimise attachment theory as a developmental science, preferencing highly codified lab procedures and specialized research institutes over ecological methods (Ainsworth, 1998; Duschinsky, 2020), thus setting up natural barriers for research with transient and marginalized populations. These barriers were mirrored by the first generation of refugee mental health researchers who adopted a skeptical stance to the imposition of universalist theories in transcultural refugee contexts (Bracken et al., 1995; Summerfield, 2000). In the midst of a global resurgence in armed conflict and forced displacement (Davies et al., 2023; UNHCR, 2022), there is an urgent need to better understand the impact of war and displacement on children and families. Over the past 15 years a growing, albeit disparate, body of attachment research on refugee families has emerged, from which the contours of an attachment model of refugee trauma can be discerned. We first summarize this research before identifying crucial gaps.

Attachment & the refugee family

Refugee trauma is distinguished from other forms of trauma in its chronicity, source and complexity. Danger is chronic, extending

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across pre-, peri- and post-migration phases, in the form variously of war exposure, collective trauma, forced migration, labyrinthine asylum journeys and prolonged resettlement limbo in host nations (De Haene *et al.*, 2007). Whilst danger originates primarily (but not exclusively) from outside of the family, its interpersonal dimensions implicate the attachment system. In adult refugees, there is a dose-dependent association between interpersonal trauma exposure and attachment insecurity (Morina *et al.*, 2016). In refugees with post-traumatic stress disorder (PTSD), neural processing of attachment stimuli is dysregulated, with anxious-avoidant attachment being associated with top-down over-regulation of awareness and responsiveness to threat and attachment stimuli, and anxious-preoccupied attachment associated with reduced emotion regulation in response to threat (Liddell *et al.*, 2022). Akin to psychological “landmines” (Crittenden & Landini, 2011, pp. 236–238), the presence of specific unresolved traumatic events have a disorienting effect when triggered (De Haene *et al.*, 2010; Riber, 2016), an effect that is potentiated in adult refugees with a history of childhood intra-familial trauma (Riber, 2017). Conversely, the enduring presence of secure representations of childhood attachment figures can be a source of narrative continuity and post-traumatic growth (De Haene *et al.*, 2010).

Alterations to the attachment system has important implications for caregiving in refugee parents, for the attachment and caregiving systems are complementary, both being activated by danger and deactivated by protection, and the latter system finding its template in earlier attachment experiences of caregiving (Solomon & George, 1996). PTSD disrupts caregiving sensitivity (van Ee *et al.*, 2012), the effects of which are more pronounced in refugee parents with insecure attachment representations (Van Ee *et al.*, 2017). Reduced caregiving sensitivity involves both an increased threshold for recognizing and responding to attachment signals from the child and decreased psychological capacity to reflect on the child’s emerging mind, and has been theorized as a self-protective caregiver response to minimize stimuli that may trigger negative affect and over-arousal (Anderson & van Ee, 2020; Van Ee *et al.*, 2017). One manifestation of deficits in psychological mindedness is the impaired capacity of the refugee parent to modulate trauma disclosure to the child in a developmentally sensitive manner (Dalgaard *et al.*, 2016; Measham & Rousseau, 2010; Montgomery, 2004), resulting in the child being implicitly aware of traumatic content that is beyond their developmental capacity to process.

Attachment & refugee children

Less is known about the impact of chronically compromised caregiving conditions on refugee children. Attachment theory posits that when caregiving is chronically compromised, children will adapt accordingly. Adaptation may take the form “conditional” attachment strategies (Main, 1990), based on distortions (“shortcuts”) in information processing that function self-protectively (Bowlby, 1973; Crittenden, 1999). Conditional attachment strategies are collectively referred to as insecure patterns of attachment. In the context of a consistently dismissive caregiver, the child will defensively down-regulate attachment signaling, so as to maintain physical proximity to the caregiver, whilst minimize instances of rejection. This pattern is referred to variously as “A” or anxious-avoidant attachment. In the context of an inconsistently responsive caregiver, the child will coercively up-regulate attachment signaling, so as to maximize proximity to the caregiver. This pattern is referred to variously as “C” or anxious-ambivalent

attachment (Ainsworth, 1979; Crittenden, 1992). Whilst both patterns function to maximize comfort and protection in the immediate context, they establish the child on a “developmental pathway” (Bowlby, 1973) that may compromise how the child negotiates the salient challenges of later developmental stages (Sroufe, 2005). Attachment research demonstrates that a secure pattern of attachment in childhood is associated with greater cooperativeness in the child-parent relationship (Kochanska *et al.*, 2009), social competence in peer relationships (Groh *et al.*, 2014), psychosocial adjustment at school (Granot & Mayseless, 2001) and self-regulation (Pallini *et al.*, 2018). In contrast, children with insecure patterns of attachment report greater internalizing and externalizing problems (Madigan *et al.*, 2016), consistent with developmental models that propose emergent psychopathology as a manifestation of the unsuccessful resolution of stage-salient developmental tasks (Cicchetti & Lynch, 1993).

The limited available attachment data on refugee children is consistent with the above. Attachment studies of refugee families demonstrate that parental PTSD, caregiving insensitivity (van Ee *et al.*, 2016) and “unfiltered” parental trauma communication (Dalgaard *et al.*, 2016) are associated with attachment insecurity and disorganization in early and middle childhood. Multiple studies demonstrate an association between attachment insecurity and mental health problems in refugee youth (Emery *et al.*, 2015; Eruyar *et al.*, 2020; Scharpf *et al.*, 2021).

Less is known about the specific patterning of attachment in refugee children. Such data is important because quality of attachment is likely to influence how refugee children negotiate salient developmental tasks, such as the processing of past trauma. Observational studies of refugee families have found that the quality of child-parent relationships is associated with the flexibility and organization of children’s play (Measham & Rousseau, 2010), the narrative coherence and affect regulation with which children recount forced migration narratives (De Haene *et al.*, 2013b) and negotiation of identity in adolescence (Johansen & Varvin, 2019) (Bek-Pedersen & Montgomery, 2006). To date, four studies have examined pattern of child attachment in refugee families, one using a dyadic behavioral observation, the Strange Situation Procedure, with preschool children (van Ee *et al.*, 2016), two using a projective method, the Attachment Story Completion Task, with 4–8 year old children (Dalgaard *et al.*, 2016; De Haene *et al.*, 2013a) and one using the Adult Attachment Interview with adolescents (Bettmann & Olson-Morrison, 2020). Two of the four studies were comprised of samples of children born in the host nation (Dalgaard *et al.*, 2016; van Ee *et al.*, 2016), and three of the four studies were on prepubertal children (Dalgaard *et al.*, 2016; De Haene *et al.*, 2013b; van Ee *et al.*, 2016), while the lone study on adolescents (Bettmann & Olson-Morrison, 2020) was not designed to examine the antecedents and correlates of attachment. There is a great need, then, for further data on quality, patterning and correlates of attachment in war-exposed refugee children, in order to ascertain determinants of attachment, the role of attachment in child wellbeing and the role of attachment in how refugee children negotiate developmental challenges.

Aims

In this paper we report patterning and correlates of attachment in a sample of adolescents from Tamil refugee families temporarily resettled in Australia, as one part of a larger study examining refugee family processes (Ratnamohan, 2023). Based on existing attachment research on refugee families, we hypothesized that:

- i. downregulated (A/A+) patterns of insecure attachment would be more common than upregulated (C/C+) patterns of attachment;
- ii. distal stressors including past trauma exposure, maternal psychopathology and post-migration family stressors would be correlated with attachment insecurity;
- iii. attachment insecurity would mediate associations between the aforementioned risk factors and child mental health.

Materials and methods

Participants

The study sample comprised 68 children, aged 10–18, from 43 Tamil refugee families, residing in Sydney, Australia, under temporary protection visas. Each of the families had entered Australia as “unauthorised maritime arrivals” (UMAs) from April 2010 to July 2013, seeking asylum from persecution in the aftermath of the Sri Lankan civil war (1983–2009). The ethno-regional conflict spanned multiple generations and was characterized by mass displacement, high civilian casualties and gross human rights violations (UNHCR, 2011), radically reconfiguring notions of home and kinship in Sri Lankan Tamil communities (Thiranagama, 2011). The arrival of Tamil asylum seekers in Australian territory as UMAs coincided with increasingly arbitrary and restrictive reception policies including mandatory off-shore detention, the prolonged suspension of processing of protection claims and denial of access to permanent resettlement in Australia even after a family’s claims to protection were recognized as legitimate (Crock & Bones, 2015). As such, participating families had been residing temporarily in the community under conditions of prolonged asylum stress, limited social support and seemingly permanent visa insecurity (UNHCR, 2018).

Children and mothers were eligible for the study if: i) the child was aged 10–18; ii) the family entered Australia as asylum-seeking UMAs between April 2010 and July 2013; iii) the family were residing in the community under a form of temporary protection; iv) the child was residing with their birth family; and v) the child had completed two years of mainstream schooling. Exclusion criteria were: i) limited fluency of the child in English; ii) child intellectual disability; or iii) acute risk issues (eg suicidality) warranting acute intervention. Fathers were not included as direct informants in the study, due to the high proportion of fatherless families in the Tamil refugee community and the likelihood that the availability of fathers would be limited by work commitments.

Families were recruited from August 2016 to January 2018 using multi-site recruitment and chain linking by the first investigator. Sydney suburbs with the highest density of Tamil asylum seekers were identified using government records (Department of Immigration and Border Protection, 2016) and community informants. Three recruitment sites were chosen on the basis that all asylum-seeking families would be equally likely to access them: a legal advocacy service run by a Tamil community group, a free English tuition service run by Tamil volunteers and a medical practice staffed by Tamil doctors. Workers at the sites were briefed by the first author and encouraged to discuss the study with eligible families. Interested families were then contacted by the 4th author, a native Tamil speaker with lived experience of the war, and formally invited to participate. We supplemented this process with chain linking, a recommended method for difficult-to-reach populations in which recruited participants refer other eligible participants from within their social networks (Sadler et al., 2010). A protocol was established for instances where acute risk was

identified (eg child or parental suicidality, child protection concerns) whereby a referral was facilitated to appropriate services. Recruiting continued for an 18-month period until no further families could be identified. Of the 47 families contacted for the study, 4 families declined, citing logistical grounds ($n=2$) or concerns regarding the interview process ($n=2$). Whilst the representativeness of our sample cannot be systematically evaluated due to restrictions in available census data, published data on the total number of UMA minors (Department of Immigration and Border Protection, 2016) and information from Tamil community leaders (V.Dhayanathan, 2016, personal communication), suggests that our sample represents approximately 80% of all eligible participants within the catchment.

Measures

Child pattern of attachment

Assessment and classification of attachment in adolescence remains the subject of debate, reflecting the challenges of developing constructs and measures of attachment that account for the rapid maturation in cognitive ability and the evolving function of attachment over the span of adolescence (Bosmans & Kerns, 2015).

In early childhood, attachment can be reliably assessed by behavioral procedures such as separation and reunification that predictably activate the attachment system. By middle childhood and beyond, behavioral procedures no longer reliably activate the attachment system. Instead, representational procedures that access the child’s internal scripts for negotiating danger offer a window into how the child regulates attention and affect vis-à-vis attachment figures when the attachment system is activated (Jewell et al., 2019). Such procedures typically consist of structured interviews in which semantic, episodic and procedural memory is elicited using autobiographical methods, modeled on the Adult Attachment Interview (Hesse, 1999), or projective methods, modeled on the Adult Attachment Projective (George & West, 2001). Several representational procedures exist for different age groups, none of which has established hegemony across the adolescent age range. The most well validated representational procedure, the Child Attachment Interview (Jewell et al., 2019), is designed for ages 7–13 and generates relatively simplistic qualitative data. Given the age range of our sample and the broader project need for rich qualitative data in order to explore refugee family processes (Ratnamohan et al., 2018, 2020), we opted to use the School Age Attachment (SAA) procedure (Kozłowska & Elliott, 2014) and the Transition to Adulthood Attachment Interview (TAAI) (Crittenden, 2005). Children aged 10–12 were administered the SAA procedure, a mixed projective and autobiographical method. In the SAA, the child is shown a series of captioned pictures with themes of age-appropriate danger (e.g., “The girl is going out alone”). For each picture the child is first asked to tell an imaginary story about the child in the picture and then to recall a similar episode from their own life. Children aged 13–18 were administered the TAAI, an autobiographical method that resembles the Adult Attachment Interview (George et al., 1996). In the TAAI, the speaker is prompted for semantic, episodic and procedural memory pertaining to formative attachment relationships and experiences of danger, trauma and loss. Both procedures were assessed and classified using the Dynamic Maturational Model of Attachment and Adaptation (DMM).

The DMM, like the more widely used Berkeley ABCD model, extends Ainsworth’s original tripartite classification system

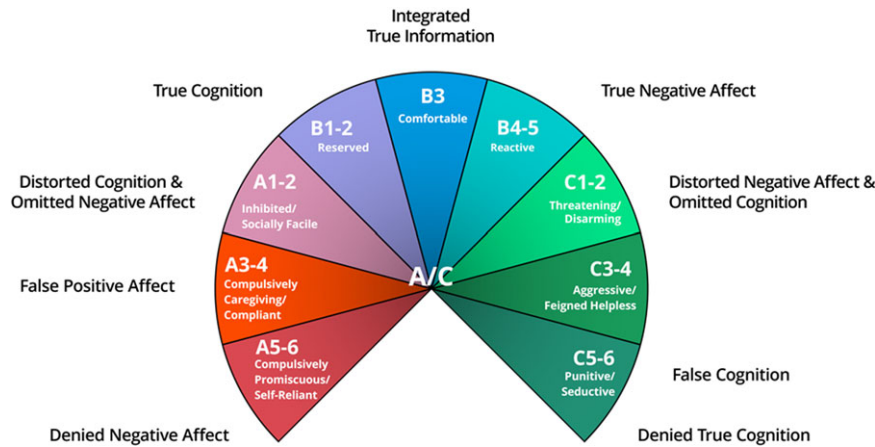


Figure 1. The dynamic maturational model of attachment & adaptation in adolescence. In the DMM, attachment is conceptualized as self-protective information processing strategies adapted to the local caregiving context. Attachment strategies are organized along two dimensions, represented visually as a horizontal axis of contrasting A and C patterns and vertically in terms of complexity of distortion in information processing. In contexts of consistently sensitive caregiving, children will develop B patterns of attachment characterized by balanced access to cognitive and affective information, integration of information across memory systems and narrative coherence. In contexts of consistently dismissive caregiving, children will develop A/A+ patterns of attachment, represented on the left side of the arc. A/A+ patterns are characterized by inhibition of negative affect, reduced awareness of distressing self-relevant memories and feelings, the preferencing of perspectives of attachment figures over self and the compulsive use of compliance, caregiving, or self-reliance to covertly elicit comfort and / or protection. In contexts of inconsistently available caregiving, children will develop C/C+ patterns of attachment, represented on the right side of the arc. C/C+ patterns are characterized by the focus on and exaggeration of negative affect, the omission of relevant cognitive-contingent information and the coercive use of aggression or helplessness to elicit comfort and / or protection. Reprinted with the permission of Dr Patricia Crittenden.

(A = anxious-avoidant; B = secure; C = anxious-preoccupied), however whereas the Berkeley model assigns the disorganized (D) classification for patterns of attachment not classifiable under Ainsworth's system, the DMM outlines A3-6 (collectively referred to as A+) and C3-6 (collectively referred to as C+) patterns to describe progressively more complex adaptations in attachment strategies in children and adolescents, providing a broader dimensional analysis of attachment sensitive to the patterns seen in high-risk samples (Landa & Duschinsky, 2013).

The procedures were audiotaped and transcribed and then analyzed by a blinded coder trained and certified in DMM discourse analysis. Analysis of the transcript proceeds in two stages, first discourse analysis of the narrative and then identification of the overarching pattern of information processing. Discourse analysis assesses balance between cognitive-contingent information and affective information; integration of retrieved information across semantic, episodic, and procedural memory systems; the balance of perspectives between self and attachment figure; recognition of personal responsibility; and the coherence of the narrative. As displayed in Figure 1, pattern of information processing ranges from secure (B) patterns characterized by balanced access to cognitive and affective information, integration of information across memory systems and narrative coherence, to the normative insecure patterns (A1-2: anxious-avoidant; C1-2: anxious-ambivalent) recognized in Ainsworth's original tripartite classification and characterized by some self-protective distortions in information processing, to complex insecure patterns (A+; C+) characterized by more extreme self-protective distortions in information processing (Crittenden & Landini, 2011). Downregulated A+ (A3-6) patterns are characterized by inhibition of negative affect through reduced awareness of distressing self-relevant memories and feelings, the preferencing of perspectives of attachment figures over self and the compulsive use of compliance, caregiving, or self-reliance to covertly elicit comfort and / or protection. Upregulated C+ (C3-6) patterns are characterized by the focus on and exaggeration of negative affect, the omission of relevant cognitive-contingent

information and the coercive use of aggression or helplessness to elicit comfort and / or protection. Validity studies of DMM discourse analysis demonstrate inter-rater reliability, discriminant validity and concordance between DMM measures of attachment (Crittenden *et al.*, 2010; Farnfield *et al.*, 2010), however concordance across DMM and Berkeley methods of classification is limited (Baldoni *et al.*, 2018), implying that each model measures different underlying constructs of attachment (Fonagy, 2013). In adopting terminology we have attempted to balance fidelity to a specific model of attachment, the DMM, with clarity to a wider set of readers. When describing attachment categorically in terms of patterning, we refer to B as "secure," non-B patterns as "insecure," A and A+ patterns of attachment as "downregulated," and C and C+ patterns as "upregulated." When describing attachment dimensionally in terms of degree of insecurity, we refer to B as "secure," C1-2 & A1-2 as "low insecurity," C3-4 & A3-4 as "moderate insecurity" and C5-6 & A5-6 as "high insecurity." The original tripartite A, B, and C patterns are collectively referred to as "normative," and A+ and C+ patterns as "complex."

Direct trauma exposure

The Harvard Trauma Questionnaire (HTQ) contains a 14-item inventory of potentially traumatic events commonly experienced by refugees. Mothers and children completed separate exposure inventories. To account for trauma exposure that the child could not recall, mothers also completed a trauma exposure inventory for the child. Child trauma exposure was taken as the total count of items in which either the child or mother reported direct child exposure. Total counts were taken as an index of direct child and maternal trauma exposure respectively.

Post-migration family stressors

Mothers completed a 22-item Post-Migration Living Difficulties Questionnaire (PMLDQ), a measure comprising various social and economic stressors related to forced migration (e.g. "No permission to work"). The measure has been validated with

Table 1. Participant characteristics, grouped by attachment classification

	Entire Sample N = 68	Normative Attachment [§] N = 31	Complex Attachment [§] N = 37	χ^2/F	df	p
Demographics						
Age	12.9 (2.4)	12.8 (2.3)	13.0 (2.5)	$F = 0.101$	1	.752
Female gender	44.1% (30/68)	32.3% (10/31)	54.1% (20/37)	$\chi^2 = 3.250$	1	.071
Single parent household	27.9% (19/68)	9.7% (3/31)	43.2% (16/37)	$\chi^2 = 9.439$	1	.002
Maternal education < 10 yrs.	32.4% (22/68)	29.0% (9/31)	35.1% (13/37)	$\chi^2 = 0.287$	1	.592
Time in mandatory detention (yrs.)	0.6 (0.5)	0.5 (0.6)	0.6 (0.4)	$F = 0.115$	1	.735
Time residing in community (yrs.)	3.9 (0.7)	3.7 (0.5)	4.1 (0.8)	$F = 4.154$	1	.046
Trauma exposure						
Child [§]	5.2 (2.6)	4.3 (2.4)	5.9 (2.6)	$F = 7.514$	1	.008
Maternal [§]	10.3 (2.5)	9.4 (2.4)	11.0 (2.4)	$F = 7.175$	1	.009
Post-migration family stressors [¶]	8.2 (3.6)	6.6 (3.2)	9.5 (3.3)	$F = 13.800$	1	<.001
Maternal mental health						
PTSD	2.99 (.56)	2.67 (.53)	3.26 (.44)	$F = 25.191$	1	<.001
depression	2.70 (.79)	2.34 (.62)	2.99 (.80)	$F = 13.331$	1	<.001

Data are % (n) or mean (SD), unless state otherwise. PTSD = post-traumatic stress disorder. [§]“Normative” refers to classification of attachment within the A/B/C range; “Complex” refers to classification within the non-normative A+ or C+ range. [§]Indicates number of different types of events the individual was exposed to on 14-item inventory. [¶]Indicates number of different types of post-migration stressors reported by mothers on 22-item inventory.

Tamil refugee samples (Silove et al., 1998). Items were rated on a 5-point Likert scale (“no problem at all”; “a bit of a problem”; “moderately serious”; “a serious problem”; “a very serious problem”) in reference to the past six months. A total family stressors count was generated by summing all living difficulties rated as 2 or greater (i.e., “a moderately serious problem”). Cronbach’s alpha was 0.93, indicating excellent internal consistency of the measure.

Maternal mental health

Mothers completed the 24-item Tamil version of the HTQ (HTQ-T) (Weaver, 2016), a measure of PTSD, and the 25-item Hopkins Symptom Checklist (HSCL-25), a measure of depression and anxiety. Both measures have been validated in studies of war-affected Tamil populations (Tay et al., 2017). Items from each measure were scored on a 4-point Likert scale (0 = “not at all”; 1 = “a little”; 2 = “quite a bit”; 3 = “extremely frequently”). Dimensional scores for PTSD and depression were generated by calculating the mean of all items. Cronbach’s alpha was 0.96 for the HTQ-T and 0.97 for the HSCL-25, indicating excellent internal consistency of both measures.

Child mental health problems

Children completed the self-report version of the 25-item Strengths and Difficulties Questionnaire (SDQ-S) (Goodman et al., 2000), a screening tool for child mental health problems that has been validated in war-affected Tamil populations (Lukumar et al., 2008). The 25 items comprise five subscales: emotional problems; peer problems; conduct problems; hyperactivity problems and prosocial behavior. Items are scored on a 3-point Likert scale (0 = not true, 1 = somewhat true; 2 = certainly true). A “total difficulties” score is generated by summing the 4 problem subscales. Cronbach’s alpha was 0.73 for total difficulties,

consistent with the international literature on the SDQ-S (Achenbach et al., 2008).

Procedure

Data was collected from each child-mother dyad via face-to-face interviews conducted at a health clinic. Mothers were interviewed in Tamil by the fourth author, a Sri Lankan Tamil research assistant with lived experience of the war. Children were interviewed in English by the first author, a child and adolescent psychiatrist of Sri Lankan Tamil background. Participating families were provided with an \$AUD40 shopping voucher to compensate for costs associated with undertaking the study. Ethics approval was obtained from the South-West Sydney Local Health District Human Research and Ethics Committee.

Data analysis

All statistical procedures were performed in R (Version 4.2.1). To test the first hypothesis that downregulated (A/A+) patterns of insecure attachment would be more common than upregulated (C/C+) patterns, we used a chi-square goodness of fit. As published DMM studies of community samples of children report roughly equivalent rates of A/A+ to C/C+ classification with odds ratios (OR) between 0.66 and 1.5 (Crittenden et al., 2010, 2015; Nuccini et al., 2015), we set the maximum expected OR for A/A+ to C/C+ cases at 1.5. To test the second and third hypotheses that past trauma exposure, maternal psychopathology and post-migration family stressors would be correlated with attachment insecurity, and that attachment insecurity would mediate the associations between these risk factors and child mental health problems, path analysis was used. Attachment insecurity was coded as a 7-level ordinal variable using Crittenden’s “Scale of Attachment Strategies” (Crittenden et al., 2010), as follows: B1-5 = 1, C1-2 = 2, A1-2 = 3, C3-4 = 4, A3-4 = 5, C5-6 = 6,

A5-6 = 7. Paths reflected the implied longitudinal order (e.g., child trauma exposure precedes child mental health problems) and causal order favored in the scientific literature (e.g., post-migration stressors compound maternal PTSD; maternal PTSD worsens child attachment insecurity). Maternal depression was excluded from the model due to collinearity with maternal PTSD. Non-significant direct paths were retained to test mediation hypotheses. Variables and paths not directly related to hypotheses were excluded (e.g., from maternal trauma exposure to maternal PTSD) to limit number of model parameters. Model fit was assessed using the Comparative Fit Index (CFI) and standardized root mean square residual (SRMR), as recommended for closely-fitted models with low degrees of freedom (Shi et al., 2022), with a CFI ≥ 0.95 and SRMR ≤ 0.08 taken as thresholds for adequate fit (Hu & Bentler, 1998). R^2 was used as a measure of variance of each endogenous variable in the model. Bootstrapped confidence intervals with 5000 samples were used to infer path significance (Hayes, 2017). Estimated marginal means for total child mental health problems were derived at each level of attachment insecurity.

Results

Demographics

Sample characteristics are displayed in Table 1. The sample comprised 68 children from 43 families. Mean age of children was 12.9 years (S.D = 2.4 years), 56% were male and 72% came from two-parent households. Children had resided in Australia for a total mean duration of 4.5 years (S.D: 0.9 years), comprising a mean duration of 0.6 years (S.D: 0.5 years) in mandatory detention and 3.9 years (S.D: 0.7 years) in the community. Child and maternal trauma exposure and psychopathology, reported in greater depth in a separate publication, were high in comparison to other refugee samples (Blackmore et al., 2020; Ratnamohan et al., 2023).

Child pattern of attachment

As can be seen in Figure 2, of the 68 participants recruited to the study, 58 were classified with insecure patterns of attachment, of whom 45 had A or A+ patterns of attachment, whilst 13 had C or C+ patterns of attachment. A chi-square goodness-of-fit test indicated that the ratio of A/A+ to C/C+ cases was significantly greater than the maximum expected ratio of 1.5 reported in community samples ($\chi^2(2) = 7.474, p = .006$).

Paths to child attachment insecurity & mental health problems

Figure 3 displays a visual representation and Table 2 depicts the standardized solution of the final path model. Associations are reported in standardized estimates for interpretability, followed by unstandardized estimates and their p values. Metric for effect size of associations was $\beta \geq .10$, $\beta \geq .30$ and $\beta \geq .50$ for small, medium, and large effect sizes respectively. Mediation is reported in terms of the proportion of indirect to total effect size (P_M). The model yielded adequate fit (CFI = .957; SRMR = .066). R^2 was .449 for child mental health problems, .563 for attachment insecurity and .299 for maternal PTSD, implying that 45 and 56% of the variance in child mental health problems and attachment insecurity, respectively, could be accounted for by the model. As can be seen in Figure 3, direct paths of medium effect ran from child trauma exposure ($\beta = 0.417 [B = 0.326, p < 0.001]$), maternal PTSD ($\beta = 0.409 [B = 1.478, p < 0.001]$) and post-migration family stressors

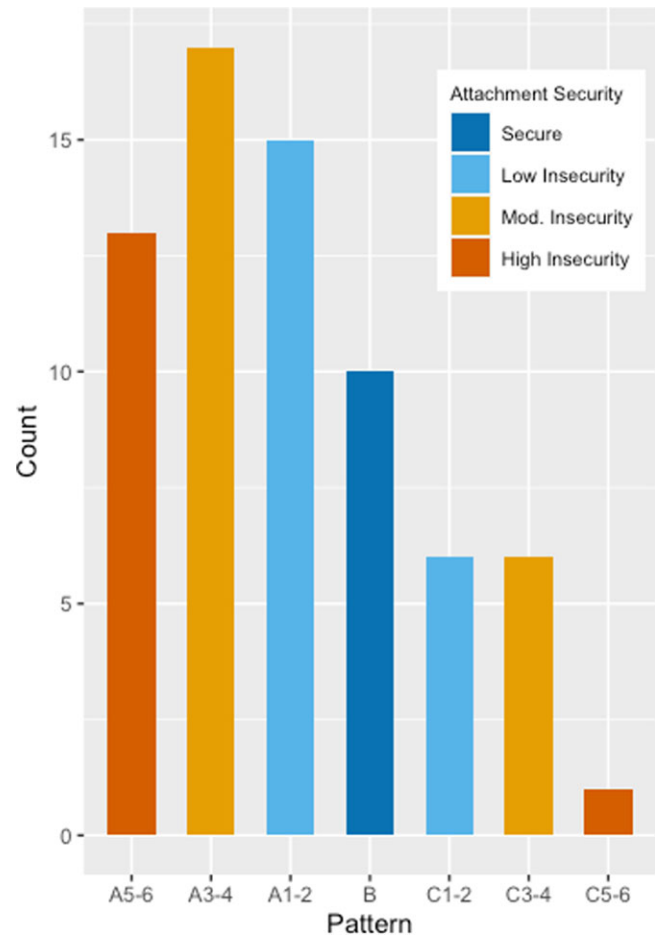


Figure 2. Distribution of pattern of attachment in the sample. The x-axis displays pattern of attachment ranging from A+ patterns on the left to C+ patterns on the right. The y-axis displays the frequency of each classification. In community samples there is typically an equal distribution of attachment across A/A+ patterns and C/C+ patterns. As can be seen visually, there is a disproportionately high amount of A/A+ classifications in comparison to C/C+ patterns.

($\beta = 0.297 [B = 0.170, p = 0.001]$) to child attachment insecurity. In turn, a direct path of medium effect ran from child attachment insecurity to child mental health problems ($\beta = 0.443 [B = 1.340, p = 0.001]$), with attachment insecurity fully mediating the associations of child trauma exposure, maternal PTSD, and post-migration stressors with child mental health problems. The total effect of trauma exposure on mental health problems was small ($\beta = 0.248 [B = 0.588, p = 0.016]$), with 74.4% being accounted for by the indirect effect via attachment insecurity ($\beta = 0.185 [B = 0.438, p = 0.012]$). The total effect of post-migration family stressors on child mental health problems was medium ($\beta = 0.406 [B = 0.701, p < 0.001]$) with 56.9% accounted for by the indirect effect via attachment insecurity ($\beta = 0.231 [B = 0.399, p = 0.004]$). The total effect of maternal PTSD on child mental health problems was medium ($\beta = 0.442 [B = 4.833, p = 0.001]$) with 41.0% was accounted by the indirect effect via attachment insecurity ($\beta = 0.181 [B = 1.981, p = 0.012]$). Estimated marginal means derived from the path model demonstrated that the effect sizes for attachment insecurity on child mental health problems were large for total difficulties ($\eta_p^2 = 0.16$) and peer problems ($\eta_p^2 = 0.15$), medium for conduct problems ($\eta_p^2 = 0.13$) and emotional problems ($\eta_p^2 = 0.07$), and small for hyperactivity problems ($\eta_p^2 = 0.04$) (see Figure 4).

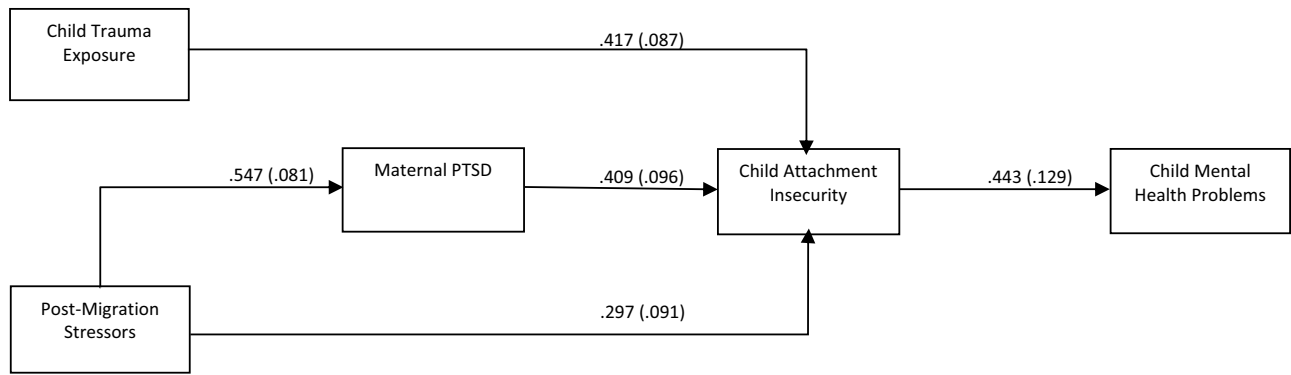


Figure 3. Path model showing significant paths. Standardized coefficients displayed. As can be seen, the effects of child trauma exposure, post-migration stressors and maternal post-traumatic stress disorder on child mental health problems are mediated by child attachment insecurity.

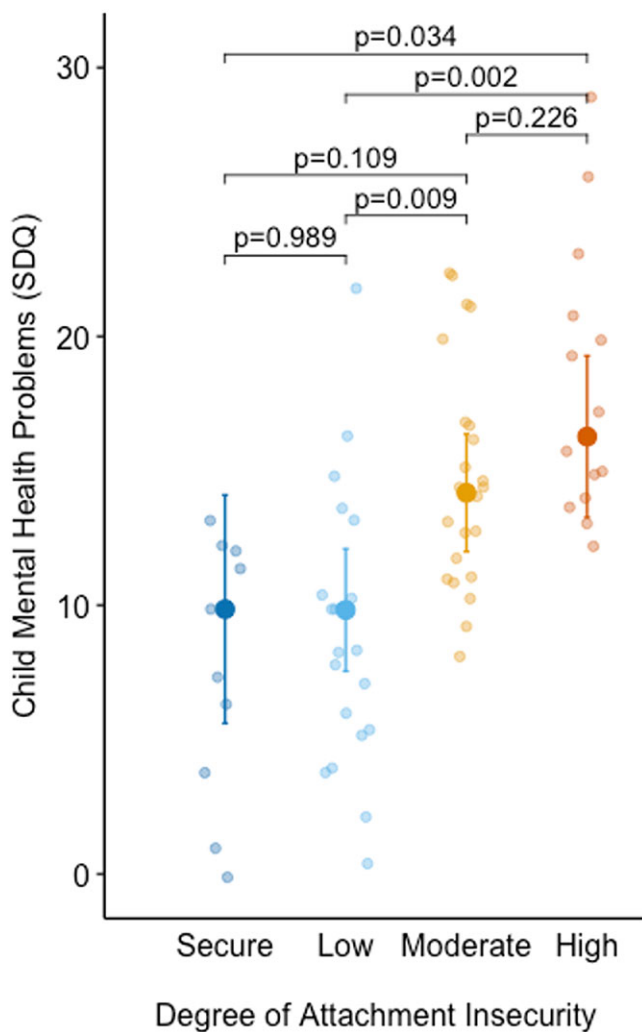


Figure 4. Estimated marginal means for child mental health problems, measured on the Strengths and Difficulties Questionnaire, at each level of attachment insecurity, derived from a linear model adjusted for age, gender, child trauma exposure, maternal post-traumatic stress disorder, and post-migration family stressors. Significant p values for post-hoc pair-wise contrasts are displayed. As can be seen, child mental health problems were significantly greater in the moderate and high-risk attachment groups compared to the secure and low risk groups.

Discussion

Attachment relationships shape how children process danger (Crittenden, 1999; Smith & Pollak, 2021). To deepen understanding of patterning and correlates of attachment in war-exposed refugee children, we assessed child pattern of attachment using DMM discourse analysis of structured interviews. We then modeled associations between attachment security, antecedent stressors (past trauma exposure, maternal PTSD and post-migration living difficulties) and current child mental health problems in a sample of Tamil adolescent refugees temporarily resettled in Australia.

Patterning of attachment

Over half the children in our sample were classified with complex, non-normative patterns of attachment (A+, C+), rates higher than community samples but lower than psychiatric samples (Crittenden et al., 2010; Kozłowska et al., 2011), reflecting both the strain placed on attachment relationships in contexts of war and displacement, but also the resilience of refugee families to preserve security in attachment relationships in spite of chronic adversity. As hypothesized, in our sample, when attachment security was compromised, it was typically towards inhibitory A/A+ patterns. In A/A+ patterns, awareness and display of negative affect is defensively inhibited, so as to minimize vulnerability when the attachment system is activated. In A+ patterns, a more extreme variant of anxious-avoidant (A) attachment, comfort and protection is elicited covertly, through conditional strategies such as compulsive caregiving and compulsive compliance that function to ensure physical proximity without risking alienating or antagonizing the caregiver (Crittenden, 1992; Main, 1990). Our findings of an over-representation of insecure A/A+ attachment is consistent with the lone existing study of patterns of attachment in adolescent refugees (Bettmann & Olson-Morrison, 2020) and is in line with evolutionary perspectives that posit inhibitory patterns of attachment as an ecological fit to harsh environments characterized by chronic danger, scarce resources, high parental stress and disrupted attachment networks (Belsky, 2008). Whether A/A+ patterns of attachment should be understood as a natural developmental pathway for refugee children warrants caution, however. On the one hand, attachment research in adolescence demonstrates an over-representation of avoidant-dismissive attachment and it has been argued that this may be a normative

Table 2. Non-standardized and standardized estimates from path model

	Non-standardized solution			Standardized solution		
	Estimate (SE)	Z	p value	Estimate (SE)	Z	p value
Maternal PTSD						
Post-migration stressors	0.086 (0.015)	5.649	<0.001	0.547 (0.081)	6.788	<0.001
Child Attachment Insecurity						
Child trauma exposure	0.326 (0.064)	5.127	<0.001	0.417 (0.087)	4.785	<0.001
Post-migration stressors	0.170 (0.053)	3.185	0.001	0.297 (0.091)	3.254	0.001
Maternal PTSD	1.478 (0.364)	4.056	<0.001	0.409 (0.096)	4.251	<0.001
Child Mental Health Problems						
Child trauma exposure	0.150 (0.263)	0.572	0.567	0.064 (0.110)	0.571	0.568
Post-migration stressors	0.056 (0.197)	0.284	0.776	0.032 (0.114)	0.284	0.776
Maternal PTSD	2.852 (1.502)	1.899	0.058	0.261 (0.137)	1.901	0.057
Child attachment insecurity	1.340 (0.410)	3.266	0.001	0.443 (0.129)	3.444	0.001

Dependent variables are shown with their associated independent variables indented beneath them. Positive estimates indicate that an increase in the independent variable is associated with an increase in the dependent variable. Standardised estimates express this increase in standardized units of measurement and nonstandardized in raw units of measurement. PTSD = post-traumatic stress disorder.

adolescent developmental process (Allen & Manning, 2007). On the other hand, studies of children and adolescents using the DMM classification method typically report an even distribution of A/A+ to C/C+ patterns in community and clinical samples (Crittenden *et al.*, 2010; Kozłowska *et al.*, 2011; Ratnamohan & Kozłowska, 2017), but a weighting towards A/A+ patterns in samples characterized by social deprivation (Kidwell *et al.*, 2015), suggesting that our findings are evidence of adaptation specific to refugee contexts and other settings of resource scarcity and chronic adversity.

Potential antecedents and sequelae of attachment insecurity

Modeling of associations identified two paths of medium-sized effect contributing to attachment insecurity, the first path from post-migration family stressors & maternal PTSD, the second from direct trauma exposure (Figure 3). Given the likelihood of overlap between child, maternal and family trauma exposure, it is plausible that these are inter-connected rather than distinct paths, a question that our study was not sufficiently powered to analyze. Nevertheless, consistent with attachment theory, our findings imply two processes contributing to attachment insecurity: i) factors that overwhelm the caregiving system and ii) factors that directly threaten child safety. In turn, children with greater attachment insecurity reported significantly higher mental health problems, even after adjusting for trauma exposure, family stressors and maternal PTSD (Figure 4). Indeed, attachment insecurity fully mediated the associations between premigration trauma exposure, post-migration family stressors and maternal PTSD, and child mental health (Figure 3). Consistent with bioecological models (Bronfenbrenner & Evans, 2000) then, our findings suggest that the effects of distal processes on child mental health were felt through their influence on the proximal process of child-parent attachment relationships.

To be certain, it is unlikely that attachment insecurity is the sole mechanism by which the risks associated with war exposure and forced displacement are transmitted to children. Rather, the construct of attachment insecurity is likely a proxy for a range of

salient developmental tasks that require the support of caregivers. These processes may include mastery of emotion regulation, the development of healthy peer relationships, learning, acculturation, identity formation and processing of past trauma. To take the processing of past trauma as one example, converging lines of research suggest that the capacity of refugee children to achieve resolution around past traumatic events is grounded in the emotional and narrative scaffolding provided by their caregivers. Such scaffolding tests the capacity of caregivers to modulate disclosure of information in a developmentally sensitive manner (Measham), a task that reflects the quality of the child-caregiver attachment relationship (Dalgaard). In qualitative research with the sample described herein, we found that children with higher-risk patterns of attachment were more likely to display preoccupied or disorganized responses when recounting past traumatic events (Ratnamohan *et al.*, 2018, 2020), suggesting that the past remained an ongoing source of distress.

Alternatively, attachment insecurity may leave children vulnerable to other risk factors such as child maltreatment. In a study of Burundian children living in Tanzanian refugee camps, Scharpf and colleagues (2021) demonstrated that the association between parental and child mental health was mediated sequentially by, in order, attachment insecurity and child maltreatment, leading the authors to argue that in the highly stressful camp environment, weakened child-caregiver bonds added “fuel to the fire” by reducing caregiving instincts and leaving children more vulnerable to parental maltreatment.

Implications & future directions

Attachment frameworks offer a potentially powerful heuristic for thinking about the relational and developmental dimensions of refugee family processes pertaining to danger, loss and trauma. Moreover, attachment research methods can be nested within bioecological frameworks to examine how proximal intra-familial processes modulate the effects on children of distal stressors originating from beyond the family. Several lines of enquiry warrant investigation. Longitudinal studies replicating existing

findings on attachment patterning, determinants and sequelae would provide more robust data. Further research is needed examining the influence of attachment networks on child wellbeing. Developing a set of attachment-informed, refugee-specific story-stem or narrative procedures would advance the field by allowing for greater data comparison and aggregation. Investigating the relationship between attachment insecurity and trauma processing would potentially inform clinical intervention. To date, the intervention literature on child refugee mental health is skewed towards individual interventions (Cowling & Anderson, 2023), reflecting the “dearth of conceptual frameworks and evidence-based interventions that consider the treatment needs of family systems affected by PTSD” (Fazel, 2019, p. 319). There is an urgent need then, for further research testing the feasibility, acceptability and effectiveness of attachment-informed, family-based interventions. Moreover, accepting “the ineluctable reality . . . that most refugees with mental health problems will never receive appropriate services” (Silove et al., 2017, p. 130), attachment-informed parenting group interventions warrant further investigation as a scalable, cost-effective and culturally adaptable modality that can be delivered in both low and high resource settings.

Limitations

The following limitations are acknowledged. One, generalisability of our findings to other refugee populations may be limited by the heterogeneity of refugee contexts. Our sample was high-risk in terms of post-migration stressors and trauma exposure (Ratnamohan et al., 2023). In contexts of greater post-migration security, such as those afforded to permanently resettled refugees, attachment security may be preserved, possibly diminishing the influence of attachment vis-à-vis other risk factors. Two, comparability of our findings vis-à-vis other attachment studies is limited by our use of DMM classifications, a method that has only limited equivalence to the more widely adopted Berkeley method (Baldoni et al., 2018).

Three, reliability of our findings on distribution of attachment patterning would have been enhanced if we had assessed inter-rater reliability in the classification of attachment transcripts, a process we were unable to carry out due to limited funding. Four, inferences of causality are limited by the cross-sectional design of the study. For instance, whilst we modeled attachment insecurity as preceding child mental health problems, possible bi-directional effects between attachment insecurity and mental health problems cannot be excluded. Five, the absence of paternal data limited inferences that could be made about the role of attachment networks on child attachment and mental health. It would be anticipated that paternal wellbeing would influence child wellbeing, either directly via the quality of child-father attachment relationship, or indirectly via the quality of the parental relationship. Six, the influence of culture on our findings is difficult to ascertain. Whilst the universality of attachment as a behavioral system is broadly accepted (Mesman et al., 2016), cultural goals of socialization may shape manifestations of attachment strategies, a concept that remains poorly delineated in attachment research (Keller, 2016).

Conclusion

Our findings build on earlier attachment research on refugee families by demonstrating how the unique constellation of war exposure, forced displacement and collective trauma compromises

caregiving conditions and undermines child attachment security. In a sample of Tamil adolescent refugees, we found that child attachment insecurity mediated the associations between child mental health problems and the well-known risk factors of past trauma exposure, current family stressors and maternal psychopathology, suggesting that compromised attachment security may be a central mechanism by which the effects of trauma and adversity originating from outside of the home are transmitted to children in refugee families. Our findings point to the pivotal role of child-caregiver attachment relationships in influencing the wellbeing of refugee children and demonstrate the generative potential of attachment frameworks in articulating the relational and developmental dimensions of refugee family processes. Interventions directed towards the mental health of refugee children should be aimed at preserving and / or reestablishing security in child-parent attachment relationships, whether through policy that reduces post-migration family stressors or clinical interventions that bolster parental mental health and parenting efficacy.

Data accessibility statement. De-identified data for the sample can be requested from the first author.

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