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Psychosocial mechanisms of change in symptoms of Persistent Complex Bereavement Disorder amongst refugees from Myanmar over the course of Integrative Adapt Therapy

Alvin Kuowei Tay [a,b], Hau Khat Mung[a], Mohammad Badrudduza[a], Susheela Balasundaram[c], Darlina Fadil Azim[d], Nur Arfah Zaini[d], Karen Morgan[d], Mohammed Mohsin[a,e] and Derrick Silove[a]

[a]School of Psychiatry, Faculty of Medicine, University of New South Wales, Sydney, Australia; [b]Perdana University-Centre for Global Health and Social Change (PU-GHSC), Kuala Lumpur, Malaysia; [c]United Nations High Commissioner for Refugees, Kuala Lumpur, Malaysia; [d]Perdana University-Royal College of Surgeons in Ireland (PU-RCSI) School of Medicine, Kuala Lumpur, Malaysia; [e]Psychiatry Research and Teaching Unit, Liverpool Hospital, NSW Health, Sydney, Australia

ABSTRACT

Background: The ability to adapt to the psychosocial disruptions associated with the refugee experience may influence the course of complicated grief reactions.

Objective: We examine these relationships amongst Myanmar refugees relocated to Malaysia who participated in a six-week course of Integrative Adapt Therapy (IAT).

Method: Participants (n = 170) included Rohingya, Chin, and Kachin refugees relocated to Malaysia. At baseline and six-week post-treatment, we applied culturally adapted measures to assess symptoms of Prolonged Complex Bereavement Disorder (PCBD) and adaptive capacity to psychosocial disruptions, based on the Adaptive Stress Index (ASI). The ASI comprises five sub-scales of safety/security (ASI-1); bonds and networks (ASI-2); injustice (ASI-3); roles and identity (ASI-4); and existential meaning (ASI-5).

Results: Multilevel linear models indicated that the relationship between baseline and posttreatment PCBD symptoms was mediated by the ASI scale scores. Further, ASI scale scores assessed posttreatment mediated the relationship between baseline and posttreatment PCBD symptoms. Mediation of PCBD change was greatest for the ASI II scale representing disrupted bonds and networks.

Conclusion: Our findings are consistent with the informing model of IAT in demonstrating that changes in adaptive capacity, and especially in dealing with disrupted bonds and networks, may mediate the process of symptom improvement over the course of therapy.

HIGHLIGHTS:
• Our finding supports the core premise of IAT in improving adaptive stress (reflected in the ASI scales) as apotential mechanism through which mental health symptoms can be mitigated with ASI-2 (bonds and networks) exerting the largest effect on PCBD symptoms at follow-up.

Mecanismos psicosociales de cambio en los síntomas del trastorno de duelo complejo persistente entre los refugiados de myanmar en el transcurso de la terapia de adaptación integrativa

Antecedentes: La capacidad de adaptarse a las alteraciones psicosociales asociadas con la experiencia de los refugiados puede influir en el curso de las reacciones de duelo complicadas.

Objetivo: Examinamos estas relaciones entre los refugiados de Myanmar reubicados en Malasia que participaron en un proceso de seis semanas de Terapia de Adaptación Integrativa (IAT por sus siglas en ingles).

Método: Los participantes (n = 170) incluyeron refugiados rohingya, chin y kachin reubicados en Malasia. Al inicio y seis semanas después del tratamiento, aplicamos instrumentos adaptados culturalmente para evaluar los síntomas del trastorno de duelo complejo prolongado (PCBD por sus siglas en ingles) y la capacidad de adaptación a las alteraciones psicosociales, según el índice de estrés adaptativo (ASI). El ASI comprende cinco subescalas de seguridad/protección (ASI-1); lazos y redes (ASI-2); injusticia (ASI-3); roles e identidad (ASI-4); y significado existencial (ASI-5).

Resultados: Los modelos lineales multinivel indicaron que la relación entre los síntomas de PCBD basales y posteriores al tratamiento estuvo mediada por las puntuaciones de la escala ASI. Además, los puntajes de la escala ASI evaluados después del tratamiento median la relación entre los síntomas de PCBD basales y posteriores al tratamiento. La mediación del cambio de PCBD fue mayor para la escala ASI II que representa los lazos y redes interrumpidos.

Conclusión: Nuestros hallazgos son consistentes con el modelo informativo de IAT al demostrar que los cambios en la capacidad de adaptación, y especialmente al tratar con los lazos y las redes interrumpidas, pueden mediar el proceso de mejora de los síntomas durante el curso de la terapia.

综合适应疗法过程中缅甸难民持续性复杂丧痛障碍症状改变的社会心理机制

背景: 适应难民经历相关的社会心理瓦解的能力可能会影响复杂哀伤反应的进程。

目的: 我们在移居了并参与了为期六周的综合适应疗法 (IAT) 马来西亚的缅甸难民中考察了这些关系。

方法: 170名参与者 (包括罗兴亚族, 钦族和克钦族难民) 移居马来西亚。在基线和治疗后六周, 我们采用了文化适应的测量来评估持续性复杂丧痛障 (PCBD) 的症状, 和适应应激指数 (ASI) 评估对心理社会干扰因素的适应能力。 ASI包括五个子量表:安全感/安全 (ASI-1);联结和网络 (ASI-2);不公正 (ASI-3);角色和身份 (ASI-4);存在意义 (ASI-5)。

结果: 多水平线性模型表明, 基线和治疗后PCBD症状之间的关系受ASI量表得分中介。此外, 治疗后评估的ASI量表得分中介了基线与治疗后PCBD症状之间的关系。PCBD变化对于表示联结和网络瓦解的ASI II量表的中介作用最大。

结论: 我们的发现与IAT的信息模型相吻合, 证明了适应能力的变化, 尤其是在处理瓦解的联结和网络方面, 可能中介了治疗过程中症状改善的过程。

1. Introduction

Persistent Complex Bereavement Disorder (PCBD) is now included as a category of mental disorder in the fifth edition of the Diagnostic and Statistical Manual, with the proviso that further research is needed to confirm the nosological status of the category (American Psychiatric Association, 2013). Loss of someone close is a requirement for the diagnosis, but the triggering event, in itself, does not discriminate between those who develop a normal grief reaction as opposed to PCBD. One factor that may shape the course of the grief reaction is the extent to which the bereaved person is able to adapt to the broader psychosocial disruptions associated with the refugee experience. We draw on data from a randomized controlled trial (RCT) (Tay et al., 2020) to examine whether a novel Integrative ADAPT Therapy (IAT), designed specifically to promote the adaptive capacity to psychosocial disruptions, mediates change in PCBD symptoms amongst refugees from Myanmar. We have reported previously the uniformly superior outcomes at six-week post-treatment in which IAT was superior to CBT in symptom dimensions of PCBD, posttraumatic stress disorder (PTSD), Major Depressive Disorder and Generalized Anxiety Disorder (Tay et al., 2020). The primary finding of the RCT based on the present database was that six weeks after the intervention, IAT showed consistent superiority over an evidence-based cognitive behavioural therapy (CBT) approach in achieving positive change on a range of symptom domains of common mental disorders (CMDs) including PCBD (Tay et al., 2020).

More than a million refugees from Myanmar are resettled in Malaysia, the largest country of refuge for displaced populations in the region after Bangladesh (Unhcr, 2020). Prominent ethnic groups now living in Malaysia are the Chin, Kachin and Rohingya, minorities that have experienced extreme duress both in their own country and following migration. The Chin experienced decades of systematic violence and abuses including extrajudicial killings, movement restrictions, forced labour, arbitrary arrest and detention, extortion, forced military conscription, and confiscation of property throughout the Chin state of Myanmar. The long history of armed conflict in the Kachin state is well documented, with millions of Kachin being internally displaced and a large number fleeing persecution to neighbouring countries over the last decade (Hrw, 2018). The Rohingya have drawn special world attention because of the extreme violence that the community has experienced in its homeland, Rakhine state, in Malaysia, resulting in a mass exodus to surrounding countries (Tay et al., 2018b).

Each ethnic group lives in tight-knit communities in which they maintain their distinctive languages, cultures, customs, and religious practices. In general, refugees in Malaysia are at risk of violence, arbitrary arrest by police, detention, and deportation. There is limited access to secure shelter, healthcare and education, and many live under conditions of poverty and food insecurity (Tay et al., 2019f). The majority work under difficult conditions in order to support themselves and their families (Tay et al., 2018a).

Participants in our IAT programme were drawn from persons assessed in parallel epidemiological studies conducted in each of the three communities (Tay et al., 2019c). IAT is grounded in the Adaptation and Development After Trauma and Persecution (ADAPT) model (Silove, 2013). The model identifies five psychosocial systems or pillars that provide the foundations for stable societies and which are undermined by mass conflict and displacement. These pillars comprise safety and security; interpersonal bonds and networks; justice; roles and identities; and systems of meaning, including in the spheres of religious, spiritual, political or cultural beliefs (Tay & Silove, 2016).

Although the five ADAPT pillars usually are undermined simultaneously for refugees, exerting an adverse effect on mental health and psychosocial adaptation. In addition, there may be more specific relationships between the erosion of particular ADAPT pillars and categories of psychopathology. For example, disruption of ADAPT Pillar II, referring to bonds and networks may be strongly associated with symptoms of Prolonged

Complicated Bereavement Disorder (PBCD). Nevertheless, other pillars may be relevant in determining the course of PCBD and its response to interventions. Traumatic losses often occur in the context of extreme injustices (Pillar 3) for example, as a consequence of atrocities, extra-judicial murders and disappearances (Tay, Rees, Chen, Kareth, & Silove, 2015b; Tay et al., 2017, 2016), as indicated by previous studies in this area (Tay et al., 2015b). In addition, losses related to displacement from community, home and country are likely to generate disturbances in the sense of identity. For that reason, the capacity to adapt to disruptions of ADAPT Pillar IV is likely to be relevant to the course of the PCBD reaction in refugees undergoing psychosocial therapy (Tay, Rees, Tam, Kareth, & Silove, 2018c).

The background theory and development of IAT has been outlined previously (Tay et al., 2019c). The intervention draws directly on the five-domain ADAPT model to assist refugees to contextualize their personal and collective experiences of conflict, persecution, upheaval and dislocation within a framework that confers meaning on their lives and assists in explaining what otherwise seem to be alien symptoms of anxiety, depression, anger and alienation (Mahmuda et al., 2019; Tay et al., 2019a).

The aim of the present study was to assess whether positive changes in PCBD symptoms following IAT were mediated by improvement in the adaptive capacity of participants in relation to the erosion of the five pillars identified by the ADAPT model. We postulated that all five pillars of the ADAPT model would be relevant to this process but that there would be a relatively larger effect for Pillar II which subsumes the domain of bonds and networks.

2. Methods

2.1. Study design and participants

Details of the RCT have been described elsewhere (Tay et al., 2020). In brief, the RCT was conducted amongst refugees from the Chin, Kachin, and Rohingya communities from Myanmar concentrated in and around Kuala Lumpur, the capital of Malaysia (September 2016 – May 2017). All had been fully assessed and registered as refugees by the UNHCR. Participants were drawn from three parallel representative epidemiological studies conducted with the Chin, Kachin, and Rohingya communities (results to be reported elsewhere) based on a clustered, multistage, probabilistic sampling framework.

Eligibility was based on the following inclusion criteria: (a) presence of at least one designated CMD, that is, PCBD, posttraumatic stress disorder (PTSD), complex PTSD (CPTSD), major depression disorder (MDD) or generalised anxiety disorder (GAD) (Tay et al., 2015a); (b) having witnessed or experienced at least one traumatic event related to mass conflict as measured by the Harvard Trauma Questionnaire; and (c) endorsement of at least one stressor based on the five domains of the ADAPT model as measured by the Adaptive Stress Index (ASI). Excluded were those younger than 18 years of age; and those exhibiting intellectual or other, cognitive disabilities or overt psychosis as assessed according to the World Health Organization (WHO) Mental Health Gap Action Programme (mhGAP) protocol (Tarannum, Elshazly, Harlass, & Ventevogel, 2019). Consenting refugees who met full inclusion criteria were randomly assigned to either IAT or a cognitive behaviour therapy (CBT) based treatment, based on a 1:1 ratio using a computer-generated randomization sequence. Masking was applied in relation to the assessment team, data manager and statistician in relation to treatment assignment; and to baseline, six-week posttreatment, and twelve-month follow-up assessments in relation to the treatment team. In the present analysis, we include only those who received IAT. All participants were assessed at baseline and at 6-week post-treatment.

2.2. Integrative Adapt Therapy (IAT)

The IAT programme involved six weekly 45-minute sessions; as indicated, it is grounded in the five psychosocial pillars of the ADAPT model (Tay et al.,). The process involves a psycho-education introduction in which refugees are provided the ADAPT framework and encouraged to reflect on their experiences – both personally and as a community – of past and ongoing disruptions to the self, the family and the society as a whole during the trajectory of the phases of mass conflict, upheaval, displacement, flight, transition, and resettlement. Participants are then assisted in making connections between these experiences and changes in their patterns of response noted by themselves or by others as being of major concern – with reference to their emotional, cognitive, behavioural and interpersonal lives. Contextualizing and providing an understanding of these maladaptive response patterns at the individual level within the context of the wider psychosocial disruptions identified by the ADAPT framework, provides the foundations that motivate the refugee to make changes aimed at improving their own lives and those of their families and communities. Refugees are offered a range of evidence-based skills including problem-solving and cognitive restructuring to make the desired adaptive changes based on concrete activities in their ongoing lives (Tay et al., 2019a).

As an example, refugees who experience uncontrollable episodes of aggression begin to understand the connection of their anger with the injustices

they and their families have experienced (Pillar III of the ADAPT model). Feelings of anger then become less alienating and incomprehensible, creating the basis for anticipating episodes and asserting control by learning and applying evidence-based strategies (cognitive, behavioural, interpersonal) that will assist in anticipating, preventing and curtailing episodes of aggression. These skills in turn improve interpersonal interactions and impact on the person's mental health overall. A similar process is followed in relation to other pillars of the ADAPT model (Mahmuda et al., 2019; Tay et al., 2019a).

The study was approved by the Human Research Ethics Committee (HREC) of the University of New South Wales and Institutional Review Board, Perdana University, Malaysia.

2.3. Measures

The Refugee Mental Health Assessment Package (RMHAP) (Tay et al., 2015a) includes modules assessing a full range of exposure to conflict-related trauma, postmigration living difficulties, common mental disorders, and the ASI (Tay, Rees, Tam, Kareth, & Silove, 2019g) the latter recording contextually relevant stressors arising from erosion of the five ADAPT pillars. All measures were translated and back-translated using internationally recommended standards for conducting this procedure.

2.3.1. Persistent Complex Bereavement Disorder (PCBD)

We assessed full 18 symptoms of PCBD according to DSM-5 (Tay et al., 2019e, 2015b). Symptom frequency is assessed on a four-point scale (1 = not at all, 2 = a little bit, 3 = quite a lot, 4 = extremely); the two highest frequency categories denote a level regarded as clinically significant. We consulted four psychiatrists from Myanmar and conducted four focus groups (with Chin, Kachin, and Rohingya refugees), each including 10 members, to assess the cultural and contextual relevance of PBCD items. Whereas the DSM5 items were consistently endorsed, both psychiatrists and community members suggested additional items emphasizing feelings of confusion, diminished sense of identity, and difficulties planning for the future. The consensus view as that these reactions were commonly associated with traumatic loss of close others in Myanmar refugees.

Respondents who reported at least one death or loss involving a family member and/or close friend in the past 12 months were administered the full interview, whether the death occurred in Myanmar, in transit or in Malaysia. All participants meeting the entry criterion responded to the full range of symptoms with no skip rules applied. As a result, persons with PCBD symptoms were included in the analysis whether or not they met full diagnostic criteria for the disorder. The items demonstrated a high level of internal reliability (α = 0.94).

2.3.2. Criterion validity testing based previous epidemiological study

During the piloting and adaptation phase of the previous epidemiological survey, our team (Rohingya, Chin and Kachin) conducted pilot interviews according the format of the planned survey for a six-month period in the field, allowing iterative refinement of their approach and the methodology during regular individual and group feedback sessions with supervisors (see (Tay et al., 2019f) for details).

The team undertook pilot assessments with 150 participants purposively selected from the three communities. At six-month follow-up, assessments were undertaken with the same participants using the RMHAP. Stability of PCBD symptoms over six months was shown by lack of significant change in mean symptom scores over time (t1–t2 difference = 6.5, P = 0.398). In parallel, prior to the RCT, we undertook a naturalistic criterion validity study in which we compared the percentage of (correct vs. incorrect) case assignments between PCBD positive and negative cases. We required a consistent level of 90% inter-rater reliability (IRR) (all but two trainees passed this threshold) in diagnostic assignments (including PTSD, GAD, MDD, PCBD) between trainees (using the RMHAP) and supervisors (using the Structured Clinical Interview for DSM-5) for the former to be certified to undertake definitive assessments. In relation to the IRR assessments, following six months of pilot assessments, all (exceeded 90% pass rate) but two field personnel (on the Rohingya team) achieved 85% on the number of correct case assignment. Further training and 1:1 supervision was provided accordingly and a satisfactory rating was achieved thereafter.

2.3.3. Adaptive Stress Index (ASI)

The Adaptive Stress Index (Tay et al., 2019g) comprises five individual scales, each consisting of items assessing the individual's capacity to cope with the stress arising from erosion of the corresponding ADAPT pillar: ASI-1 (12 items assessing safety and security); ASI-2 (14 items assessing disrupted bonds and networks related to losses and separation); ASI-3 (13 items assessing injustice); ASI-4 (11 items assessing role and identity disruptions); ASI-5 (14 items assessing existential meaning). Each item is scored on a 4-point Likert scale (0 = not at all, 1 = a little, 2 = quite a lot, 3 = extremely) generating a mean score by aggregating items for each ASI scale. The ASI was subjected to extensive qualitative and quantitative inquiry to ensure the cultural and contextual adaptation of the measure when used across the three

refugee groups as reported in detail elsewhere (Tay et al., 2019g).

2.3.4. Development, adaptation, and piloting of Integrative Adapt Therapy

We have previously documented the systematic process of developing, adapting, and piloting IAT amongst refugees in Malaysia (Tay et al.,) and Bangladesh (Mahmuda et al., 2019). In brief, the process of cultural adaptation was guided by a widely used framework (Bernal & Sáez-Santiago, 2006) which included a review of cultural idioms of distress and local terminologies for mental health symptoms (Tay et al., 2019h) in the respective cultural groups. A draft manual and associated material were translated into the relevant language (the Burmese and Rohingya languages) with the assistance of bilingual mental health professionals. An iterative process of qualitative research assisted in refining the accuracy and cultural appropriateness of translations. The procedure involved feedback from focus groups and interviews with key informants involving a range of community members and clinicians experienced in refugee mental health in each context. All materials were translated into Burmese and the Rohingya language. The design and implementation of treatment were specified in relation to length (45 minutes, 6 × 1 weekly sessions each of 45 minutes duration); language (simplifying and replacing technical terms with colloquial expressions); mode of delivery and administration (via extensive training and observer-evaluated piloting in relation to counsellors). The process of refinement of manuals involved the extensive inclusion of metaphors and other materials of specific cultural relevance, such as illustrative stories, and use of idioms and symbols to facilitate comprehension and a sense of affinity with the core concepts.

2.3.5. Personnel selection, training, competency assessment, and supervision

Details of training, supervision, and competency are reported elsewhere (Tay et al., 2019a, 2019c).

The intervention team consisted of 28 lay counsellors (eight from the Chin and Kachin and 12 from the Rohingya communities, ensuring a gender balance for each group). All treatment sessions were conducted by lay counsellors either at community offices or at the residences of the participants. Eight days were devoted to training in IAT. Training covered a range of topics including general mental health and psychosocial issues relevant to refugees; cultural notions of mental health and culturally relevant idioms of distress; generic counselling skills (attentive listening, rephrasing, empathy); the foundations of ADAPT and CBT therapy, respectively; systematic study of treatment modules of IAT; ethical principles in psychotherapy with vulnerable and refugee persons; and role play and other simulations of interventions.

Trainees then progressed to eight weeks' practice followed by six months of supervised implementation (Tay et al., 2019a) in which 20 assessments and 20 in vivo sessions of IAT were observed and rated by supervisors (MK, MB, AKT).

Each counsellor was assessed for their competency in basic counselling and in applying the treatment strategies specific to IAT. Twenty-two of the 28 trained counsellors scored a 2 (pass) on all items used to evaluate both basic counselling and level of fidelity to each treatment approach. Of the 120 IAT sessions observed by the Burmese/Rohingya-speaking clinical supervisors, 108 (90%) sessions, respectively, were rated as satisfactory or pass. The six counsellors who failed to achieve a satisfactory score on all items were given additional 1:1 support to enhance their skills and on re-assessment, each achieved a pass on at least 80% of the rated items.

Details of fidelity assessment and competency ratings for IAT are included in supplementary file 1.

2.3.6. Independent assessment team

A team of five research assistants (each receiving five days of training in the assessment protocol) conducted baseline and follow-up assessments independently of the intervention team. Inter-rater reliability (IRR) of assessments (90% concordance in assigning PCBD cases) were required for each assessment team member. We repeated the IRR assessments until the expected concordance was achieved.

2.4. Statistical analysis

The analysis involved multilevel mixed linear models in which the five ASI scales and the aggregated PCBD symptom score were treated as level 1 indices, whereas participant ID was specified at level 2. We tested two sets of models, each comprising five analyses in which individual posttreatment ASI subscale scores were treated as the mediator variables and the posttreatment PCBD score as the dependent variable. In the first set of mediation models, we examined individual and indirect paths leading from baseline to posttreatment PCBD score in which the mediating variable was each of the five posttreatment ASI scores. In the second set of models, we examined whether the posttreatment PCBD score was mediated by each of the five posttreatment ASI scores.

We calculated direct and indirect effects using the nonparametric bootstrap method, a technique that is particularly suited for small samples. The process involves random resampling (with replacement) from the original data with 5,000 pseudo-bootstrap samples being generated. The estimates generated are used to calculate indirect effects and their 95%

Confidence Interval (CIs). Less than 5% of data were missing for each analysis. All analyses were conducted with STATA version 12.

3. Results

Table 1 reports the socio-demographic characteristics of participants. The sample consisted of Rohingya (44.7%), Chin (38.8%), and Kachin (16.5%) refugees with an overall mean age of 30.8 years (SD = 9.6). Almost three quarters were men (72.9%) and over half were married (62.9%), a demographic distribution consistent with those of the base communities as a whole. Two-thirds of all participants had completed primary school education (68.2%) and a minority had graduated from secondary school (20%). Most were employed (87.6%). Consistent with inclusion criteria, all participants experienced a loss event in relation to someone close in the previous 12 months.

3.1. Multilevel mediation models

3.1.1. Posttreatment ASI mediation of relationship between baseline and posttreatment PCBD

We commenced with testing for individual paths from (1) baseline PCBD to posttreatment PCBD scores (denoted as β_c) and (2) from baseline PCBD to each posttreatment ASI sub-scale scores (denoted as β_a). All five models showed a significant association between baseline PCBD and posttreatment PCBD scores. Similarly, in all models, there were significant associations between baseline PCBD scores and each of the five posttreatment ASI sub-scale scores (ASI-1: safety and security, ASI-2: bonds and networks, ASI-3: injustice, ASI-4: role and identity disruptions; and ASI-5: existential meaning) (Table 2 and Figure 1(a–e)).

Table 1. Demographic characteristics based on participants who received Integrative Adapt Therapy (n = 170).

Demographic variables	IAT (n = 170)
Age, mean (SD), year	
Sex	
Male	124 (72.9)
Female	46 (27.1)
Ethnicity	
Rohingya	76 (44.7)
Chin	66 (38.8)
Kachin	28 (16.5)
Marital status	
Single	56 (32.9)
Married/partnered	107 (62.9)
Widowed	3 (1.8)
Separated	4 (2.4)
Highest level of education completed	
None	2 (1.2)
Primary School	116 (68.2)
Secondary School	34 (20)
University/College	18 (10.6)
Employment	
Employed	149 (87.6)
Unemployed	21 (12.4)

Next, we examined the direct path from each posttreatment ASI sub-scale score to the posttreatment PCBD score (denoted as β_b). There were significant associations between each posttreatment ASI sub-scale scores and the posttreatment PCBD scores at six-week follow-up (Table 2 and Figure 1).

In the final step, we examined for mediation by posttreatment ASI scores (denoted as $\beta c'$) in the relationship between baseline to follow-up PCBD scores. The results showed that each of the post-treatment ASI sub-scale scores showed an indirect association (partial mediation) in the relationship between baseline and follow-up PCBD scores (Table 2 and Figure 1). The mediated effects of ASI scores ranged from 0.84 to 0.95, with the ASI-2 subscore of disrupted bonds and networks showing the highest value (0.84). Table 2 reports the standardized coefficients for direct and indirect effects of multilevel mediation models.

3.1.2. Mediation of posttreatment ASI scores between baseline ASI scores and posttreatment PCBD score

We followed the same steps in assessing individual paths from (1) baseline ASI sub-scale scores to posttreatment PCBD scores (denoted as β_c) and (2) from baseline ASI sub-scale scores to posttreatment ASI sub-scale scores (denoted as β_a). In all five models, there was a significant association between all individual baseline ASI sub-scale scores and the posttreatment PCBD score (Table 3, Figure 2). Moreover, there was a direct and significant association between each baseline ASI sub-scale score and each corresponding posttreatment ASI subscale score, respectively.

Next, we examined the direct path from each posttreatment ASI sub-scale score to the posttreatment PCBD score (denoted as β_b). The results showed that each posttreatment ASI sub-scale score was significantly associated with the posttreatment PCBD score (Table 3 and Figure 2).

In the final step, we examined the mediation effects of each individual baseline ASI sub-scale via corresponding posttreatment ASI sub-scale scores (denoted as $\beta c'$) on posttreatment the PCBD score. Each of the five baseline ASI sub-scale scores showed a direct and significant association with the posttreatment PCBD score. Nevertheless, in no instance was the relationship between the five baseline ASI subscale scores and the posttreatment PCBD score significantly mediated by the corresponding posttreatment ASI subscale score (Table 3 and Figure 2). Also, the proportion of total effect mediated in each model was small, ranging from 0.10 to 0.14, with the ASI-2 domain of disrupted bonds and networks (.14) exerting the largest influence on the posttreatment PCBD score. Table 3 reports standardized coefficients for direct and indirect effects of multilevel mediation models.

Table 2. Multilevel mediation analyses examining the relationship between baseline ASI scores and six-week posttreatment PCBD score in a treatment cohort of refugees treated with Integrative Adapt Therapy (IAT) (n = 170).

Baseline PCBD (IVs)	Posttreatment ASI (mediator)	Effect of IV on DV* (β_c) (95% CI)	P-value	Effect of IV on Mediator (β_a) (95% CI)	P-value	Effect of M on DV (β_b) (95% CI)	P-value	Effect of IV on DV via mediator ($\beta c'$)	P-value	Proportion of total effect mediated
Baseline PCBD score	Posttreatment ASI-1	0.76 (.69, .85)	< 0.001	0.45 (.28, .63)	< 0.001	0.15 (.09, .21)	< 0.001	0.69 (.60, .77)	< 0.001	0.10
Baseline PCBD score	Posttreatment ASI-2	0.77 (.69, .85)	< 0.001	0.55 (.37, .73)	< 0.001	0.19 (.13, .25)	< 0.001	0.65 (.57, .73)	< 0.001	0.14
Baseline PCBD score	Posttreatment ASI-3	0.77 (.69, 0.85)	< 0.001	0.84 (.57, .71)	< 0.001	0.10 (.06, .15)	< 0.001	0.68 (.59, .77)	< 0.001	0.11
Baseline PCBD score	Posttreatment ASI-4	0.77 (.69, .85)	< 0.001	0.54 (.36, .72)	< 0.001	0.16 (.10, .22)	< 0.001	0.67 (.59, .76)	< 0.001	0.11
Baseline PCBD score	Posttreatment ASI-5	0.77 (.69, .85)	< 0.001	0.54 (.36, .71)	< 0.001	0.18 (.11, .25)	< 0.001	0.66 (.84, .95)	< 0.001	0.13

Abbreviations: Adaptive Stress Index (ASI)-1 (safety and security); ASI-2 (bonds and networks); ASI-3 (injustice); ASI-4 (role and identity disruptions); ASI-5 (existential meaning); *posttreatment PCBD score was used as a dependent variable in each mediation model.
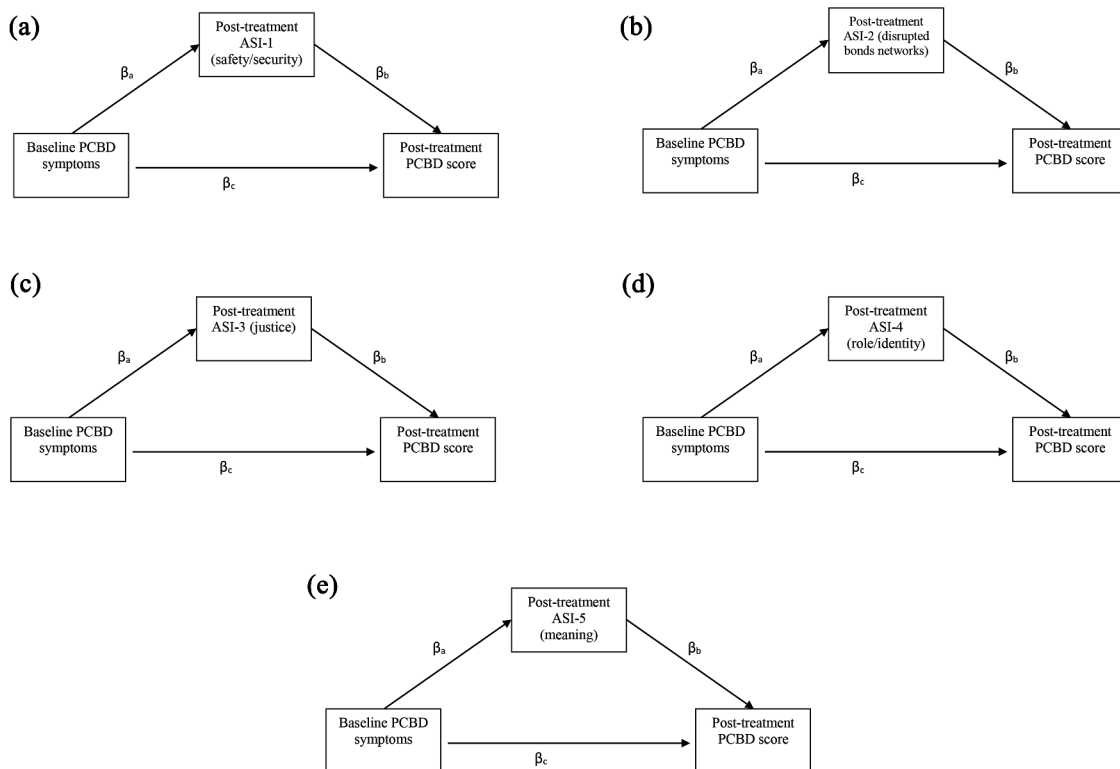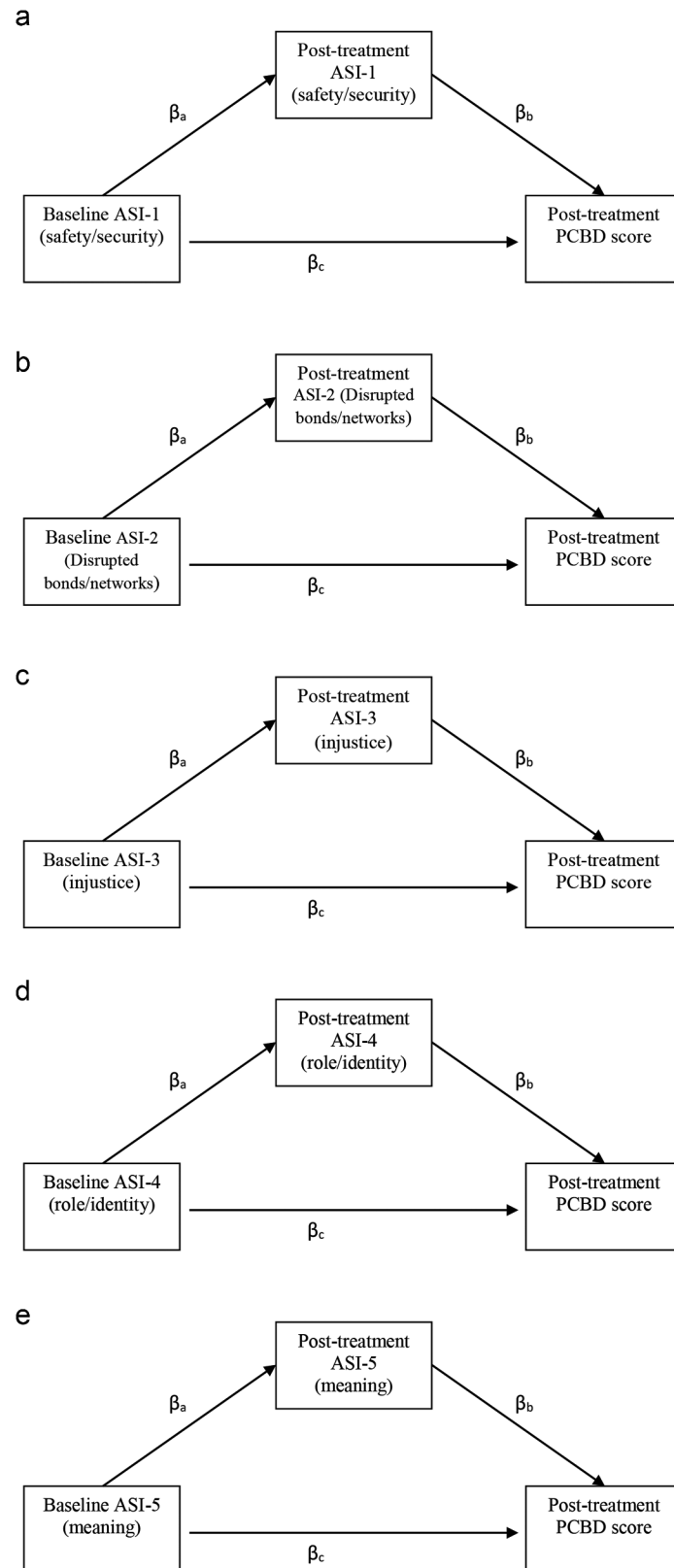

Figure 1. (a) Schematic diagram of baseline PCBD symptoms mediating the relationship between posttreatment Adaptive Stress Index scales and PCBD symptoms. (b) Schematic diagram of baseline PCBD symptoms mediating the relationship between posttreatment Adaptive Stress Index scales and PCBD symptoms. (c) Schematic diagram of baseline PCBD symptoms mediating the relationship between posttreatment Adaptive Stress Index scales and PCBD symptoms. (d) Schematic diagram of baseline PCBD symptoms mediating the relationship between posttreatment Adaptive Stress Index scales and PCBD symptoms. (e) Schematic diagram of baseline PCBD symptoms mediating the relationship between posttreatment Adaptive Stress Index scales and PCBD symptoms.

Table 3. Multilevel mediation analyses examining the relationship between baseline ASI scores and six-week posttreatment PCBD score in a help-seeking sample of refugees treated with Integrative Adapt Therapy (IAT).

Baseline ASI (IVs)	Posttreatment ASI (mediator)	Effect of IV on DV* (β_c)	P-value	Effect of IV on Mediator (β_a)	P-value	Effect of M on DV (β_b)	P-value	Effect of IV on DV via mediator ($\beta c'$)	P-value	Proportion of total effect mediated
Baseline ASI-1 score	Posttreatment ASI-1	0.24 (.14, .34)	< 0.001	0.64 (.57, .73)	< 0.001	0.30 (.20, .39)	< 0.001	0.03 (−.08, .15)	0.523	0.84
Baseline ASI-2 score	Posttreatment ASI-2	0.27 (.18, .36)	< 0.001	0.69 (.62, .75)	< 0.001	0.38 (.29, .48)	< 0.001	0.01 (−.11, .10)	0.971	0.95
Baseline ASI-3 score	Posttreatment ASI-3	0.22 (.16, .29)	< 0.001	0.85 (.80, .90)	< 0.001	0.34 (.24, .44)	< 0.001	0.06 (−.17, .04)	0.235	0.88
Baseline ASI-4 score	Posttreatment ASI-4	0.27 (.18, .37)	< 0.001	0.71 (.64, .78)	< 0.001	0.33 (.23, .43)	< 0.001	0.02 (−.09, .14)	0.683	0.91
Baseline ASI-5 score	Posttreatment ASI-5	0.28 (.17, .38)	< 0.001	0.72 (.65, .78)	< 0.001	0.44 (.34, .55)	< 0.001	0.03 (−.15, .08)	0.561	0.90

Abbreviations: Adaptive Stress Index (ASI)-1 (safety and security); ASI-2 (bonds and networks); ASI-3 (injustice); ASI-4 (role and identity disruptions); ASI-5 (existential meaning); *posttreatment PCBD score was used as a dependent variable in each mediation model.

Figure 2. (a) Schematic diagram of posttreatment ASI-1 (safety and security) mediating the relationship between baseline ASI scores and posttreatment PCBD symptoms. (b) Schematic diagram of posttreatment ASI-2 (losses and separation) mediating the relationship between baseline ASI scores and posttreatment PCBD symptoms. (c) Schematic diagram of posttreatment ASI-3 (injustice) mediating the relationship between baseline ASI scores and posttreatment PCBD symptoms. (d) Schematic diagram of posttreatment ASI-4 (role and identity disruptions) mediating the relationship between baseline ASI scores and posttreatment PCBD symptoms. (e) Schematic diagram of posttreatment ASI-5 (existential meaning) mediating the relationship between baseline ASI scores and posttreatment PCBD symptoms.

4. Discussion

The findings suggest that reduction post-IAT in PCBD symptoms amongst refugees was partially mediated by improvement in adaptive stress related to all five psychosocial disruptions identified by the ADAPT model, although Pillar II, depicting erosion of interpersonal bonds and networks, accounted for the largest effect.

Prior to discussing the implications of our findings, we consider the strengths and limitations of the study. The sample was identified from representative epidemiological surveys conducted simultaneously across the three refugee groups, yielding a study group that had similar characteristics to the base populations. For example, there was a preponderance of men in the study group, in parallel with the gender distribution in the refugee community in general. Similarly, the recruitment strategy to IAT (give average figure) was high as was the retention rate (>90%) We followed a systematic approach to adapt and test the measures prior to conducting the epidemiological study and in trailing the procedure prior to commencing the IAT intervention in order to ensure the cultural, contextual and linguistic appropriateness of the therapy. Nevertheless, although our measures assessing PCBD and the ASI domains were subject to rigorous cultural and psychometric testing, the possibility of measurement error in this transcultural setting cannot be entirely excluded. Mitigating that possibility is that the analyses involved within-group comparisons of the relevant indices. Counsellors from the three ethnic groups completed rigorous training and competency evaluations and demonstrated a high level of fidelity in implementing treatments under the supervision of bilingual clinical supervisors.

We consider several implications of our findings. From a theoretical perspective, our results provide indirect support for the ADAPT model in relation to several of its core assumptions (Silove, Ventevogel, & Rees, 2017). 1. That the psychosocial stressors refugees experience, of which disruption of bonds and networks is an important element, influence the expression and course of disorders such as PCBD; 2. That promoting the capacity to adapt to these psychosocial stressors can assist in recovery from mental health symptoms; 3. That the ADAPT pillars converge in impacting on mental health as a whole but that there is a degree of specificity, for example, between Pillar 3 and grief reactions such as PCBD. In keeping with that principle, we found that improving adaptive stress related to all five pillars assisted in improving PCBD, but the impact was greatest for Pillar 2.

From a clinical perspective, our findings provide support for IAT in relation to its content and procedural validity, that is, the intervention appears to exert its effect at least partially according to the principles of the theoretical framework on which it is grounded. The findings indicate that the mechanism of change is partially due to a shift in adaptive stress related to the undermining of the five core pillars of the ADAPT model. To our knowledge, there is no other study in the field that has demonstrated a relationship of this type in that other brief therapies in use tend to be based on principles and strategies adopted from the general field of traumatic stress rather than focusing on the refugee experience specifically (Dawson et al., 2015; Markowitz & Weissman, 2012; Murray et al., 2014). The observation that the ASI partially but not fully mediated the effects of IAT accords with expectations given the known non-specific elements that are common to all therapies. Further research, therefore, is warranted to examine more closely the balance between the specific effects of IAT in relation to all five ADAPT domains and the impacts of the intervention that are common to other therapies. More broadly, our findings confirm that not only the loss itself but the psychosocial context of loss and the capacity of the psychosocial environment to support adaptation exert an influence on possible maladaptive grief reactions and their course (Tay et al., 2018c).

The findings raise the possibility of formulating a low-intensity variant of IAT that may be useful as a preventive or early intervention strategy to avert chronic or complex pathological outcomes such as PCBD amongst refugees. The intervention could be offered to those who screen positive at a community level on a threshold score on the ASI. The aim of the brief intervention, which could focus primarily on psycho-education and a limited array of self-help techniques, would be to ensure that normative grief reactions are facilitated without incurring a high population risk of PCBD. More generally, this and other studies indicate the importance of recognizing that refugees manifest a range of adverse mental health outcomes which are at least partly shaped by the constellation of psychosocial stressors they experience. These observations should guide both policy and mental health and psychosocial programmes (MHPSS) towards expanding the focus of attention beyond the usual emphasis on PTSD alone to included assessment and treatment for disorders such as PCBD.

5. Conclusions

Our findings support the fundamental tenets of IAT which to some extent seeks to shift the focus of psychotherapeutic treatments for refugees towards a consideration of the particular psychosocial

disruptions that these communities have experienced. The aim is to improve key elements of adaptive stress across five psychosocial domains identified in by the ADAPT model. Our findings indicate that this process plays a key role in reducing PCBD symptoms during the course of IAT. The results also provide potential insights into the factors, other than exposure to traumatic losses, that may influence both the onset and course of PCBD, thereby setting it apart from normative grief reactions.

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ORCID

Alvin Kuowei Tay http://orcid.org/0000-0002-9330-3929

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