

Original Article

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Defining a combined constellation of complicated bereavement and PTSD and the psychosocial correlates associated with the pattern amongst refugees from West Papua

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Abstract

Background. Refugees are at risk of experiencing a combined constellation of complicated bereavement and posttraumatic stress disorder (PTSD) symptoms following exposure to complex traumas associated with personal threat and loss. Features of identity confusion are central to both complicated bereavement and PTSD and these characteristics may be particularly prominent amongst refugees from traditional cultures displaced from their homelands, families, and kinship groups. We investigate whether a combined pattern of complicated bereavement and PTSD can be identified amongst West Papuan refugees participating in an epidemiological survey ($n = 486$, response rate: 85.8%) in a remote town in Papua New Guinea.

Methods. Latent class analysis was applied to derive subpopulations of refugees based on symptoms of complicated bereavement and PTSD. Associations were examined between classes and traumatic loss events, post-migration living difficulties (PMLDs), and psychosocial support systems.

Results. The four classes identified comprised a complicated bereavement class (11%), a combined posttraumatic bereavement class (10%), a PTSD class (11%), and a low symptom class (67%). Symptoms of identity confusion were prominent in the posttraumatic bereavement class. Compared with the low symptom class, the combined posttraumatic bereavement class reported greater exposure to traumatic loss events (OR 2.43, 95% CI 1.11–5.34), PMLDs (OR 2.24, 95% CI 1.01–4.6), disruptions to interpersonal bonds and networks (OR 3.3, 95% CI 1.47–7.38), and erosion of roles and identities (OR 2.18, 95% CI 1.11–4.27).

Conclusions. Refugees appear to manifest a combined pattern of complicated bereavement and PTSD symptoms in which identity confusion is a prominent feature. This response appears to reflect the combined impact of high levels of exposure to traumatic losses, PMLDs, and disruption of relevant psychosocial systems.

Introduction

Prolonged or complicated bereavement has long been a controversial category in the field of Psychiatry. A turning point in the recognition of the category has been the inclusion of persisting complicated bereavement disorder (PCBD) as a provisional category in DSM5 (American Psychiatric Association, 2013) and the adoption of prolonged grief disorder in the forthcoming ICD-11 (Horowitz *et al.*, 1997; Bonanno and Kaltman, 2001; Maercker *et al.*, 2013; Bryant, 2014). These developments make it timely to examine the relationship of complicated bereavement and posttraumatic stress disorder (PTSD), disorders that are both triggered by traumatic losses. We investigate the pattern of overlap of the two constellations by applying latent class analysis (LCA) to data from a sample of West Papuan refugees displaced by mass conflict and persecution to neighboring Papua New Guinea (PNG).

Events such as atrocities, extrajudicial executions, and other forms of politically motivated killings commonly expose refugees to traumatic loss (of family and kin) and personal threat (Silove, 1999), experiences that are known to trigger both PTSD and complicated bereavement. Further, amongst refugees from collectivist cultures, disruptions to family and kinship groups, eviction from ancestral lands and displacement to foreign and deprived environments, may accentuate symptoms of identity confusion and alienation that are intrinsic to both PTSD and complicated bereavement (Momartin *et al.*, 2004a; Dorahy *et al.*, 2009; Boelen, 2015; Tay *et al.*, 2015c). We anticipated, therefore, that amongst West Papuan refugees, identity confusion would be prominent amongst symptoms of a combined pattern of complicated bereavement and PTSD.

The ADAPT (Adaptation and Development After Persecution and Trauma) model (Silove, 2013) offers a framework for examining the mental health impact of conditions of insecurity,

disrupted interpersonal bonds, and undermining of the sense of identity amongst refugees. The model identifies five support systems eroded by mass conflict and displacement, including safety and security; interpersonal bonds and networks; justice; roles and identities; and existential meaning (Silove, 2013). Two of these systems (safety and security and bonds and networks) are recognized as central to mental health in the National Institute of Mental Health Research Domain Criteria (RDoC) framework (Clark *et al.*, 2017). Consistent with the RDoC, the ADAPT model attempts to bridge the divide between a descriptive or nomothetic approach to identifying mental health problems (represented, e.g. by the operationalized diagnostic criteria used within the DSM system), and an idiographic framework in which personal development and collective experiences shape and give meaning to subsequent psychological reaction patterns. The ADAPT model, therefore, provides a framework for a transdiagnostic approach in which overlapping symptoms of PTSD and complicated bereavement may represent a meaningful response to concurrent exposure to complex ecological and social experiences such as mortal threat, traumatic loss, and disruptions to identities and roles (Rees *et al.*, 2013; Silove *et al.*, 2014).

Although several studies have investigated the relationship between PTSD and complicated bereavement in high-income countries (Prigerson *et al.*, 1996; Horowitz *et al.*, 1997; Momartin *et al.*, 2004b; Boelen and Van Den Bout, 2005; Bonanno *et al.*, 2007; Simon *et al.*, 2007; Fujisawa *et al.*, 2010; Shear *et al.*, 2011), there is a dearth of parallel research into the topic conducted amongst refugee populations. Although complicated bereavement was largely distinguishable from PTSD in a study amongst Bosnian refugees, the two constellations overlapped in relation to the domain of intrusive memories (Momartin *et al.*, 2004b). In a sample of Mandaean refugees in Australia, LCA identified a comorbid complicated bereavement and PTSD class (16%) in addition to pure complicated bereavement (16%) and PTSD (25%) classes, respectively (Nickerson *et al.*, 2014). Although suggestive of the importance of a combined complicated bereavement and PTSD class amongst refugees, the data did not clarify the psychosocial factors that may be specific to that pattern.

The long history of persecution that West Papuan refugees have experienced has exposed many members of the community to traumatic loss, mortal threat, disruptions to identities, and a sense of belonging (Brundige *et al.*, 2004). Since the invasion and annexation of the territory by Indonesia over 50 years ago, the occupying military has committed widespread atrocities, including torture, disappearances, extra-judicial imprisonment, and mass displacement of communities, in an attempt to suppress the low-grade armed resistance war waged by indigenous groups seeking national independence for the territory (Human Rights Watch, 2014). Successive waves of West Papuan refugees have crossed the border into neighboring PNG, the largest concentration resettling in Kiunga, a remote town near the border with the homeland. The community in Kiunga lives in constant fear of incursions by hostile elements from across the nearby border. In addition, they face multiple deprivations relating to geographical isolation, harsh living conditions including food and water shortages arising from floods and drought, and lack of employment opportunities and services. The absence of mental health services in the region means that West Papuan refugees have not been exposed to international concepts of trauma, PTSD or complicated bereavement.

The aims of our study were to identify a subpopulation of refugees with a combined constellation of complicated bereavement

and PTSD and to assess whether that pattern is associated with a specific profile of past and ongoing adversities. Using LCA, we tested the following hypotheses: (1) in this cross-cultural setting, it would be possible to identify subpopulations with relatively independent clusters of PTSD and complicated bereavement, respectively, thereby supporting contemporary international classification systems; (2) in addition, there would be a class manifesting combined symptoms of complicated bereavement and PTSD; (3) the latter class would be characterized by prominent symptoms of identity confusion and alienation; and (4) a distinctive pattern of traumatic events, post-migration living difficulties, and background psychosocial disruptions would characterize the complicated bereavement-PTSD class.

Method

Full details of the methodology are provided in online Supplementary Material 1.

Sample

Between March and September 2016, a full household survey was undertaken of all adult West Papuans living in the nine villages where the community is concentrated in Kiunga. We included persons originating from West Papua or born to at least one West Papuan parent. The analytic sample comprised all those with whom we made contact (486 adults), noting that 18.3% of the community were traveling in other parts of PNG during the entire course of the study.

Ethics

Ethical permission for the study was provided by the University of New South Wales Human Research Ethics Committee and the Medical Research Council of PNG Ethics Committee.

Measures

The Refugee Mental Health Assessment Package is a comprehensive tool assessing psychosocial factors and common mental disorders amongst refugees (Tay *et al.*, 2015b). Details of the qualitative and psychometric steps taken to develop, adapt and test the mental health measure in a study amongst West Papuan refugees have been provided previously (summarized in online Supplementary File 1).

Symptoms of complicated bereavement and PTSD

Details of the qualitative methods used to adapt the symptom measures to the culture are provided in online Supplementary Material 1. These steps included the development and testing of modules to assess complicated bereavement and PTSD symptoms using items consistent with both DSM5 and ICD-11 criteria.

Trauma and stressors

Based on our qualitative inquiries, we identified five items representing traumatic loss, each scored 1, if present. We adapted the Humanitarian Emergency Settings Perceived Needs Scale (Semrau *et al.*, 2012) to identify postmigration living difficulties (PMLDs). Based on a four-point ordinal scale (0=not problem at all; 1=a bit of a problem; 2=moderately serious; 3=a serious problem), we generated a mean PMLD score (range: 0.27–4.06). We applied the Adaptive Stress Index (ASI) to assess the five

domains of the ADAPT measure. The development and testing of the measure amongst a previous sample of West Papuan refugees in the PNG capital, Port Moresby, are described in online Supplementary Material 1 (Tay *et al.*, 2015a).

Procedure

Interviews were conducted by a field team in Bahasa Indonesian, English, and *Tok Pisin* (the pigeon English). The field interviewers were drawn from the West Papuan community and the team was managed by a West Papuan refugee (MK).

The team received 3 weeks' intensive training from a clinical psychologist followed by 3 months of piloting the interview in the field.

Statistical analysis

We applied LCA to data from the whole sample to identify sub-populations of West Papuans manifesting differential patterns of complicated bereavement and PTSD (Nylund *et al.*, 2007). We applied the Bayesian Information Criterion (BIC), sample size-adjusted Bayesian Information Criterion (SS-BIC), and the Akaike's Information Criterion to assess the fit of serial models (1–4) (McGCutcheon, 1987; Collins and Lanza, 2009). In addition, we applied the Vuong-Lo-Mendell-Rubin (VLMR) and the Lo-Mendell-Rubin (LMR) adjusted likelihood ratio tests to compare successive models (Nylund *et al.*, 2007). We applied the principle of parsimony, the degree of class separation, homogeneity of posterior probabilities within classes, and the interpretability of the classes to assist in deciding on the final model (Collins and Lanza, 2009). We ranked conditional probabilities according to recommended criteria as high (0.60 or greater), moderate (0.59–0.15) or low (0.14 or lower) (Burststein *et al.*, 2012).

We applied multinomial logistic regression to compare the classes with the traumatic event and PMLD counts, and the ASI dimensions. Collinearity required that we tested the three predictors in separate regression models. Analyses were performed in STATA version 13 and Mplus Version 7.

Results

Sociodemographic characteristics

The sample included 486 adults (men 55.9%), the mean age being 35.8 (s.d. = 0.65) years. Half the sample had completed primary school education (46.6%), and 9.5% held post-school degrees or certificates. Over half (56.9%) originated from West Papua, the remainder (43.1%) being offspring of West Papuan parents. The West Papuan born had lived in Kiunga for a mean of 15.6 (s.d. = 0.48) years. The majority (62.6%) of the sample had indeterminate status as displaced persons, 14.6% were PNG citizens, and 2.8% held permissive residency status which conferred the right to remain in PNG with some restrictions. A quarter ($n = 115$, 23.7%) reported one or more loss (death of a loved one) in the past 12 months and a third ($n = 166$, 34.2%) experienced a traumatic event (such as serious injury to self or others, exposure to atrocities, sexual violence), thereby meeting DSM-5 entry criteria for either PCBD or PTSD or both.

Tables 1 and 2 detail exposure to loss and traumatic events as well as PMLDs. The mean score for exposure to PMLDs was 1.82 (s.d. = 0.64).

Table 1. Exposure to conflict-related traumatic events (TEs) amongst West Papuan refugees from Kiunga ($n = 486$).

Conflict-related TEs	<i>N</i>	%
Witnessing torture	189	38.9
Forced to live in poor conditions	135	27.8
Exposure to combat situations	121	24.9
No shelter	121	24.9
Displaced by conflict	120	24.7
No access to medical care	119	24.5
Forced to abandon family	105	21.6
Home destruction	103	21.2
Loss of family members	96	20
Disappearances	87	17.9
Witnessing dead bodies	84	17.3
Witnessing murders of others	80	16.5
Forced separation	79	16.3
Humiliated	77	15.9
No food or water	71	14.6
Witnessing murders of family or friends	68	14
Imprisonment	59	12.1
Former combatant	55	11.3
Unable to perform proper burials for the deceased	43	8.9
Witnessing rape or sexual abuse	41	8.4
Torture	38	7.8
Physical injury	33	6.8
Forced into military	31	6.4

Latent class analysis

LCA supported a four-class solution (Table 3). Specifically, model fit indicators improved up to and including the four-class model, but only marginal gains were achieved by increasing the number of classes beyond that point. The decision to adopt the four-class solution was supported further by the VLMR and the LMR adjusted likelihood ratio tests which showed no statistical changes ($p = 0.10$) when progressing from a four to five class model. Given these findings and the interpretability of the classes, we adopted the four-class model.

The four classes comprised a complicated bereavement class (11%, $n = 55$), a posttraumatic bereavement class including items of complicated bereavement and PTSD (10%, $n = 50$), a PTSD class (11%, $n = 54$), and a low-symptom class (67%, $n = 327$). Table 4 shows the posterior probabilities for symptoms of complicated bereavement and PTSD in relation to each class.

In the complicated bereavement class (class 1, comprising 11% of the sample), eight complicated bereavement symptoms exhibited high endorsements by over half of the sample (item probabilities >0.60) and the remaining 10 items received moderate endorsement (probabilities >0.59 and <0.15). Items in the high probability range included core bereavement characteristics of yearning, preoccupations with the deceased, and intense feelings of sorrow and emotional pain. In contrast, all symptoms of

Table 2. Exposure to postmigration living difficulties (PMLDs) amongst West Papuan refugees from Kiunga (*n* = 486)

PMLDs	<i>N</i> (%) No problem	<i>N</i> (%) A bit of a problem	<i>N</i> (%) Moderately serious	<i>N</i> (%) A very serious problem
Drinking water	6 (1.2)	39 (8)	104 (21.4)	337 (69.3)
Food	7 (1.4)	28 (5.8)	116 (23.9)	335 (68.9)
Shelter	20 (4.1)	73 (15)	120 (24.7)	273 (56.2)
Access to toilet	90 (18.5)	148 (30.5)	118 (24.3)	130 (26.8)
Hygiene	117 (24.1)	173 (35.6)	127 (26.1)	69 (14.2)
Access to clothes, shoes, bedding, blankets	37 (7.6)	178 (36.6)	160 (32.9)	111 (22.8)
Income or livelihood	7 (1.4)	31 (6.4)	65 (13.4)	383 (78.8)
Physical health	85 (17.5)	136 (28)	119 (24.5)	146 (30)
Access to healthcare	72 (14.8)	147 (30.3)	127 (26.1)	140 (28.8)
Distress	191 (39.4)	78 (16.1)	120 (24.7)	96 (19.8)
Safety	112 (23.1)	106 (21.8)	118 (24.3)	150 (30.9)
Access to education	49 (10.1)	64 (13.2)	162 (33.3)	211 (43.4)
Care of family members	94 (19.3)	137 (28.2)	136 (28)	119 (24.5)
Support from others	73 (15.1)	95 (19.6)	103 (21.2)	214 (44.1)
Separation from family members	172 (35.4)	113 (23.3)	82 (16.9)	119 (24.5)
Being displaced from home	199 (41)	99 (20.4)	74 (15.2)	114 (23.5)
Access to information	104 (21.4)	113 (23.3)	132 (27.2)	137 (28.2)
Access to aid	45 (9.3)	39 (8)	41 (8.4)	361 (74.3)
Humiliation or mistreatment	83 (17.1)	110 (22.6)	147 (30.3)	146 (30)
Frequent relocations due to climate and geographic conditions	101 (20.8)	145 (29.8)	135 (27.8)	105 (21.6)
Discrimination	77 (15.8)	89 (18.3)	135 (27.8)	185 (38.1)
Law and order in the community	85 (17.5)	152 (31.3)	110 (22.6)	139 (28.6)
Safety or protection for women from violence in the community	80 (16.5)	134 (27.6)	94 (19.4)	177 (36.5)
Alcohol or drug use in the community	69 (14.2)	106 (21.8)	101 (20.8)	210 (43.2)
Mental illness in the community	148 (30.5)	93 (19.1)	82 (16.9)	163 (33.5)
Care for people in your community who are on their own	56 (11.5)	91 (18.7)	100 (20.6)	239 (49.2)

PTSD in this class fell into the lower level of moderate or low probability range.

In the combined posttraumatic bereavement class (class 2), comprising 10% of the sample, respondents rated most items of complicated bereavement and PTSD in the high probability range. Specifically, for complicated bereavement, probabilities for 15 out of 18 symptoms exceeded 0.60 (the high range) and the remaining three fell between 0.59 and 0.15 (the moderate range); and for PTSD, 16 of 20 symptoms exceeded probabilities of 0.60 and the remaining four fell between 0.59 and 0.15. For complicated bereavement, high probability items included core features of preoccupations and persistent yearnings but also extended to maladaptive appraisals, bitterness/anger, interpersonal problems and emotional numbness. The high probability items for PTSD in this class included flashbacks, intrusive thoughts, internal and external avoidance, and anhedonia. Symptoms falling into the moderate range included, for complicated bereavement, feelings of confusion, emptiness, and a diminished sense of identity

(items that had been added by community members in preceding focus group discussions); and for PTSD, concentration difficulties, insomnia, startle response and hypervigilance.

In the PTSD class (class 3, 11%), seven items fell into the high range (>0.6) including intrusive memories, psychological reactivity, avoidance, anhedonia, detachment, irritability, and post-traumatic amnesia, and the majority (13 out of 20 symptoms) fell into the moderate probability range of >0.59 and <0.15. In this class, virtually all complicated bereavement symptoms fell into the low probability range.

In the low symptom class (class 4), comprising two thirds (67%) of the sample, most symptoms of both complicated bereavement and PTSD yielded low probabilities.

Multinomial logistic regressions

Table 5 presents the findings of the three multinomial logistic regression models. The four-class LCA structure represented the

Table 3. Goodness-of-fit statistics for latent class 1 to class 5 models

Class	LR χ^2	BIC	SSABIC	AIC	Entropy
1 Class	-7739.11	15 713.29	15 592.68	15 554.21	-
2 Class	-4514.81	9505.96	9261.57	9183.63	0.99
3 Class	-3693.93	8105.46	7737.29	7619.86	0.99
4 Class	-3201.75	7362.36	6870.40	6713.50	0.99
5 Class	-3040.25	7280.62	6664.87	6468.49	0.99
Model	VLMR	<i>p</i>	LMR	<i>p</i>	
1 Class	-	-	-	-	-
2 Class	-7739.11	<0.001	6421.97	<0.001	
3 Class	-4514.81	<0.001	1634.99	<0.001	
4 Class	-3693.93	<0.001	980.30	<0.001	
5 Class	-3201.75	0.10	321.67	0.10	

LR χ^2 , Likelihood Ratio Chi Square; AIC, Akaike Information Criterion; BIC, Bayesian information Criterion; SSABIC, sample size adjusted BIC; VLMR, Vuong-Lo-Mendell-Rubin likelihood ratio test; LMR, Lo-Mendell-Rubin adjusted likelihood ratio tests.

dependent variable and individual predictors were the traumatic loss event count, the PMLD count, and the five ASI domains, in each instance controlling for sociodemographic variables. The comparison class in all analyses was the low symptom reference class.

No statistically significant effects were evident for socio-demographic factors in any of the three regression analyses. The only significant predictor for the complicated bereavement class (class 1) was the ASI domain of disrupted interpersonal bonds and networks (OR 2.16, 95% CI 1.09–4.28). In contrast, the combined posttraumatic bereavement class (class 2) was associated with higher exposure to traumatic loss events (OR 2.43, 95% CI 1.11–5.34), PMLDs (OR 2.24, 95% CI 1.01–4.6) and greater disruptions in the ASI domains of interpersonal bonds and networks (OR 3.3, 95% CI 1.47–7.38) and roles and identities (OR 2.18, 95% CI 1.11–4.27). The PTSD class reported higher exposure to traumatic loss events (OR 2.17, 95% CI 1–4.77) and was unique in its association with the ASI pillar of safety and security (OR 2.12, 95% CI 1.16–3.89). In common with the posttraumatic bereavement class, the PTSD class reported greater disruptions in the ASI domain of roles and identity (OR 2.21, 95% CI 1.16–4.22).

Discussion

LCA yielded a four-class solution comprising three morbid classes and a low symptom class, the latter accounting for over two-thirds of the sample. The three morbid classes, each representing roughly one-tenth of the sample, comprised a complicated bereavement class, a combined posttraumatic bereavement class, and a PTSD class. Notably, the posttraumatic bereavement class was characterized by a distinctive combination of symptoms related to identity confusion and alienation.

Members of the posttraumatic bereavement class reported high levels of adversity reflected in traumatic losses, post-migration living difficulties and disruptions to two of the ADAPT psychosocial support domains of interpersonal bonds and networks and identity and roles. In support of conventional international classification systems, separate classes emerged for complicated bereavement and PTSD, respectively. In keeping with theory,

the ASI domain of disruptions to bonds and networks was associated with the complicated bereavement class, whereas erosion of safety and security was related uniquely to the PTSD class. The PTSD class also reported disruptions in roles and identities and exposure to high levels of traumatic loss.

Prior to discussing our findings, we consider the strengths and limitations of the study. We applied a rigorous sampling approach, identifying West Papuans according to the triangulation of census data and a whole-of-household survey. We achieved a high response rate (85.8%) even when absentees from the catchment were accounted for. Although Kiunga is the largest settlement of West Papuans in PNG, restriction of sampling to one location limits the generalizability of our findings. The study is cross-sectional, cautioning against drawing causal inferences from the analyses undertaken. Memory biases could result in either over- or under-reporting of past traumatic events. In addition, exposure to trauma may increase the tendency to report mental health symptoms. There is also a risk of transcultural error in measurement when undertaking studies of this type. To limit the risk, we followed a systematic mixed methods approach to develop and adapt our measures to the culture and context. Our qualitative inquiries suggested that the key mental health constructs of PTSD and complicated bereavement were well recognized by West Papuan refugees even though the population lacked familiarity with international terminology for classifying these reactions. Specifically, West Papuans recognized all the ICD and DSM symptoms of complicated bereavement, applying a specific term (*'Duka Cita'*) in Bahasa Indonesian to describe the syndrome in their culture. To avoid excessive complexity, we did not include other diagnostic categories such as depression which could be salient in generating symptoms of identity confusion and alienation. Because of restrictions in the sizes of the respective latent classes, we could only compare each morbid class with the no/low symptom class in our logistic regression analyses. In addition, in applying multinomial regression analysis, collinearity amongst our three predictors required that we assess the impact of traumatic loss events, PMLDs, and the ASI domains separately.

Caveats notwithstanding, our findings offer support for our key hypotheses. Conventional classes of complicated bereavement and PTSD emerged from the LCA. The ASI domain of disrupted bonds and attachments was associated with the complicated bereavement class as would be anticipated. Notably, the PTSD class reported high levels of exposure to traumatic losses, consistent with the criteria of international classification systems (see DSM5). In addition, the PTSD class reported greater erosion of the identity and role domain of the ADAPT model, supporting the importance of identity disturbance as an integral component of the PTSD reaction (Robinaugh and McNally, 2011; Dorahy *et al.*, 2015).

The key finding was that 10% of the sample exhibited the combined posttraumatic bereavement pattern. Importantly, the characteristics that were accentuated in this class extended beyond core PTSD and complicated bereavement symptoms to those that fall broadly under the domain of identity confusion and alienation, including maladaptive appraisals (mistrust of others, self-doubt), bitterness/anger, interpersonal problems, emotional numbness, feelings of confusion and emptiness, and a diminished sense of identity. It is notable that most of these symptoms were identified spontaneously by West Papuans participating in the preliminary focus groups.

There are compelling reasons why West Papuans would highlight symptoms of identity confusion and alienation. The society

Table 4. Conditional probabilities for symptoms of complicated bereavement and posttraumatic stress disorder (PTSD): a four-class solution ($n = 486$)

Symptoms of complicated bereavement	%	n	Complicated Bereavement (Class 1, 11%)		Posttraumatic Bereavement (Class 2, 10%)		PTSD (Class 3, 11%)		Low-symptom (Class 4, 67%)	
			Prob	s.e.	Prob	s.e.	Prob	s.e.	Prob	s.e.
(1) Persistent yearning/longing	25.3	123	0.86	0.05	0.92	0.04	0.04	0.03	0.01	0.01
(2) Intense sorrow/emotional pain	12.1	59	0.89	0.04	0.96	0.03	0.04	0.03	0.03	0.01
(3) Preoccupation with the deceased	13.2	64	0.95	0.03	1.00	0.00	0.04	0.03	0.00	0.00
(4) Preoccupation with the circumstance of the death	21	102	0.71	0.06	0.98	0.02	0.04	0.03	0.00	0.00
(5) Difficulties accepting the death	13	63	0.53	0.06	0.96	0.03	0.00	0.00	0.03	0.01
(6) Disbelief/emotional numbness	21.4	104	0.73	0.06	0.86	0.05	0.00	0.00	0.00	0.00
(7) Difficulties reminiscing	17.7	86	0.64	0.07	0.88	0.05	0.00	0.00	0.00	0.00
(8) Bitterness/anger	13.6	66	0.51	0.07	0.84	0.05	0.00	0.00	0.03	0.01
(9) Maladaptive appraisals	10.1	49	0.65	0.06	0.76	0.06	0.00	0.00	0.00	0.00
(10) Avoidance of reminders of loss	13.2	64	0.58	0.07	0.84	0.05	0.02	0.00	0.00	0.00
(11) A desire to die	14.2	69	0.71	0.06	0.80	0.06	0.00	0.00	0.03	0.01
(12) Difficulties trusting others	16.9	82	0.53	0.07	0.86	0.05	0.00	0.00	0.00	0.00
(13) Detachment	17.3	84	0.44	0.07	0.76	0.06	0.00	0.00	0.00	0.00
(14) Feelings of emptiness	13.6	66	0.44	0.07	0.60	0.07	0.00	0.00	0.03	0.01
(15) Functional impairment	18.5	90	0.40	0.07	0.62	0.07	0.00	0.00	0.00	0.00
(16) Confusion	13.8	67	0.35	0.06	0.52	0.07	0.00	0.00	0.00	0.00
(17) Diminished sense of identity	9.8	48	0.42	0.05	0.46	0.07	0.00	0.00	0.03	0.01
(18) Difficulties planning for the future	10.3	50	0.42	0.05	0.58	0.07	0.00	0.00	0.00	0.00
Symptoms of PTSD										
(1) Suddenly thought about the event	25.3	123	0.29	0.06	0.96	0.03	0.89	0.04	0.03	0.01
(2) Had nightmares about the events	12.1	59	0.09	0.04	0.60	0.07	0.44	0.07	0.00	0.00
(3) Felt or behaved as though the event were happening again	13.2	64	0.04	0.03	0.66	0.07	0.52	0.07	0.00	0.00
(4) Got upset when reminded of the events	21	102	0.15	0.05	0.96	0.03	0.85	0.05	0.00	0.00
(5) Had strong physical reaction	13	63	0.07	0.04	0.68	0.07	0.46	0.07	0.00	0.00
(6) Tried to avoid thinking about the events	21.4	104	0.18	0.05	0.90	0.04	0.85	0.05	0.01	0.01
(7) Avoid people, places, talking about the events	17.7	86	0.09	0.04	0.80	0.06	0.70	0.06	0.01	0.01
(8) Difficulty remembering important part of the event	13.6	66	0.06	0.03	0.64	0.07	0.56	0.07	0.00	0.00
(9) Strong negative beliefs about yourself, other or the world	10.1	49	0.02	0.02	0.48	0.07	0.44	0.07	0.00	0.00
(10) Blamed yourself or others constantly for the event	13.2	64	0.02	0.00	0.70	0.07	0.52	0.07	0.00	0.00
(11) Strong negative feeling	14.2	69	0.00	0.00	0.74	0.06	0.57	0.07	0.00	0.00
(12) Lost interest in things that you used to enjoy	16.9	82	0.02	0.02	0.86	0.05	0.70	0.06	0.00	0.00
(13) Felt cut off or to stay away from people	17.3	84	0.13	0.05	0.90	0.04	0.59	0.07	0.00	0.00
(14) Difficulty experience positive emotions	13.6	66	0.09	0.04	0.62	0.07	0.56	0.07	0.00	0.00
(15) Felt irritable, angry, or aggressive towards people	13.8	67	0.20	0.05	0.74	0.06	0.59	0.07	0.03	0.00
(16) Risky behavior that may cause harm to self or others	9.9	48	0.11	0.04	0.66	0.07	0.46	0.07	0.01	0.01
(17) Felt suddenly scared for no reason	10.3	50	0.02	0.02	0.52	0.07	0.39	0.07	0.00	0.00

(Continued)

Table 4. (Continued.)

Symptoms of complicated bereavement	%	n	Complicated Bereavement (Class 1, 11%)		Posttraumatic Bereavement (Class 2, 10%)		PTSD (Class 3, 11%)		Low-symptom (Class 4, 67%)	
			Prob	s.e.	Prob	s.e.	Prob	s.e.	Prob	s.e.
(18) Been on guard constantly	11.1	54	0.02	0.02	0.58	0.07	0.37	0.07	0.00	0.00
(19) Difficulty concentrating	12.6	61	0.02	0.02	0.58	0.07	0.44	0.07	0.00	0.00
(20) Trouble falling or staying asleep	13.4	65	0.04	0.03	0.64	0.07	0.50	0.07	0.00	0.00

Table 5. Multinomial logistic regressions examining predictors of latent class memberships (n = 486)

Predictors of class membership	Multivariate analysis	
	OR (95% CI)	p value
Sociodemographic characteristics		
Age (ref: 18–25 years)		
Complicated bereavement (Class 1)	1.07 (0.56–2)	0.842
Posttraumatic bereavement (Class 2)	1.28 (0.61–2.69)	0.511
PTSD (Class 3)	0.81 (0.41–1.59)	0.542
Low symptom (Class 4)	1 (reference)	
Gender (ref: male)		
Complicated bereavement (Class 1)	1.16 (0.86–1.57)	0.325
Posttraumatic bereavement (Class 2)	0.86 (0.61–1.21)	0.393
PTSD (Class 3)	0.98 (0.71–1.35)	0.912
Low symptom (Class 4)	1 (reference)	
Marital status (ref: married)		
Complicated bereavement (Class 1)	1.20 (0.53–2.68)	0.662
Posttraumatic bereavement (Class 2)	1.29 (0.53–3.1)	0.573
PTSD (Class 3)	1.05 (0.46–2.39)	0.904
Low symptom (Class 4)	1 (reference)	
Employment (ref: employed)		
Complicated bereavement (Class 1)	1.15 (0.46–2.9)	0.762
Posttraumatic bereavement (Class 2)	2.18 (0.86–5.5)	0.102
PTSD (Class 3)	1.51 (0.59–3.86)	0.904
Low symptom (Class 4)	1 (reference)	
Exposure to traumatic loss events		
Complicated bereavement (Class 1)	1.1 (.89–1.30)	0.452
Posttraumatic bereavement (Class 2)	2.43 (1.11–5.34)	0.027*
PTSD (Class 3)	2.17 (1–4.77)	0.05*
Low symptom (Class 4)	1 (reference)	
Postmigration Living Difficulties (PMLDs)		
Complicated bereavement (Class 1)	0.76 (0.40–1.42)	0.39

(Continued)

Table 5. (Continued.)

Predictors of class membership	Multivariate analysis	
	OR (95% CI)	p value
Class 4 (low-symptom) as reference class		
Posttraumatic bereavement (Class 2)	2.24 (1.01–4.6)	0.029*
PTSD (Class 3)	0.61 (0.98–1.08)	0.127
Low symptom (Class 4)	1 (reference)	
Adaptive Stress Index (ASI) scores		
Threats to safety and security		
Complicated bereavement (Class 1)	0.9 (0.54–1.51)	0.695
Posttraumatic bereavement (Class 2)	1.49 (0.80–2.78)	0.205
PTSD (Class 3)	2.12 (1.16–3.89)	0.015*
Low symptom (Class 4)	1 (reference)	
Erosion of interpersonal bonds/networks		
Complicated bereavement (Class 1)	2.16 (1.09–4.28)	0.028*
Posttraumatic bereavement (Class 2)	3.30 (1.47–7.38)	0.004**
PTSD (Class 3)	1.13 (0.51–2.48)	0.767
Low symptom (Class 4)	1 (reference)	
Access to justice		
Complicated bereavement (Class 1)	1.22 (0.72–2.05)	0.463
Posttraumatic bereavement (Class 2)	0.68 (0.3801.23)	0.20
PTSD (Class 3)	0.77 (0.45–1.31)	0.335
Low symptom (Class 4)	1 (reference)	
Disruptions to role and identity		
Complicated bereavement (Class 1)	1.16 (0.62–2.17)	0.64
Posttraumatic bereavement (Class 2)	2.18*(1.11–4.27)	0.023*
PTSD (Class 3)	2.21 (1.16–4.22)	0.016*
Low symptom (Class 4)	1 (reference)	
Loss of meaning		
Complicated bereavement (Class 1)	0.87 (0.40–1.89)	0.72
Posttraumatic bereavement (Class 2)	0.55 (0.24–1.28)	0.164
PTSD (Class 3)	0.95 (0.43–2.10)	0.904
Low symptom (Class 4)	1 (reference)	

*p < 0.05; **p < 0.01.

is grounded in an agrarian, collectivist culture in which personal identity is strongly bound up with ties to the family, kinship group, and traditional lands. The longstanding campaign of repression pursued by the occupying military has led to major disruptions to this traditional way of life. Mass immigration into West Papua from other parts of Indonesia has added to the sense of threat to the national identity of the indigenous people (Zocca, 1995). In addition, the group participating in our study comprised a population displaced to a remote town across the border where they experienced ongoing deprivations, fear, and a sense of marginalization. Overall, the history of persecution appeared to be mirrored by the pattern of symptoms of grief, fear, and alienation represented by the symptoms of the posttraumatic bereavement class. It also is notable that there is a correspondence between the identified symptoms of identity confusion and alienation within the posttraumatic bereavement class and elements of complex traumatic stress disorder described amongst survivors of human rights violations and abuses in the western literature (Herman, 1992; Friedman *et al.*, 2011; Ford and Courtois, 2014; Palic and Elklit, 2014). Our findings build to efforts to bridge the gap between idiographic and nomothetic models of understanding of traumatic stress by demonstrating the connection between ecological factors, in this instance, politically motivated psychosocial disruptions, trauma and ongoing stressors, and a distinctive pattern of combined PTSD and complicated bereavement observed at the individual level. This approach helps to counter the tendency to regard mental health symptoms as solely serving the function of signifying the presence of pre-defined categories of mental disorder (Akram and Giordano, 2017; Clark *et al.*, 2017).

Our findings have important clinical implications. Although there is some evidence in support of the efficacy of cognitive behavioral interventions in treating complicated bereavement in non-refugee populations (Rosner *et al.*, 2014; Bryant *et al.*, 2017), no culturally adapted interventions of this type have been systematically trialled amongst refugees (Murray *et al.*, 2008; Bass *et al.*, 2016). Given that 20% of participants had heightened symptoms of complicated grief (if both relevant classes are counted), there is a pressing need to develop and test appropriate therapies for this reaction pattern amongst refugees. In addition, our findings challenge the prevailing tendency to focus on single diagnoses (usually PTSD) in the refugee field by demonstrating the relevance of comorbid presentations (Silove *et al.*, 2017) which may require more comprehensive psychological interventions (Tay and Silove, 2016). Specifically, in addition to the focus on issues of safety and traumatic loss, refugees with the posttraumatic bereavement pattern may require special attention to issues of identity confusion and alienation. Failure to focus on the latter issue may account in part for low levels of success reported in some studies treating socially isolated and alienated refugees with complex symptom presentations (Carlsson *et al.*, 2005; Buhmann *et al.*, 2016). There may be value, therefore, in formulating and trialing a specific approach to psychological intervention that focuses on elements of both complicated bereavement and PTSD for refugees that show the combined pattern.

Conclusions

We identified a combined class comprising complicated bereavement and PTSD amongst refugees, in which symptoms of identity confusion were prominent. That class reported a distinctive profile of exposure to past trauma, postmigration stressors, and

psychosocial disruptions. More generally, the study illustrates the value of investigating connections between comorbid patterns of mental health symptoms and distinctive profiles of trauma, postmigration stressors and longer-term psychosocial disruptions that refugees have experienced. Defining these relationships may assist in shaping and refining psychotherapeutic interventions to meet the specific needs of subpopulations of refugees.

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