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Research report

The coherence and correlates of intermittent explosive disorder amongst West Papuan refugees displaced to Papua New Guinea

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ABSTRACT

Questions remain about the nosological status of intermittent explosive disorder (IED) as a universal diagnosis. Cross-cultural studies are needed to establish whether IED symptoms form a coherent pattern and are distinguishable from other related symptom constellations. A study amongst a refugee population also allows further inquiry of the relationship between exposure to potentially traumatic events (PTEs) and other adversities with the IED constellation. In the present study amongst West Papuan refugees residing in Port Moresby, Papua New Guinea, we apply culturally adapted interview modules to assess symptoms of IED, post-traumatic stress disorder (PTSD), and depression, as well as the potentially traumatic events (PTEs) of conflict and ongoing adversity in the post-migration environment. Latent class analysis yielded a PTSD class (23%), a posttraumatic depressive class (14%), an IED class (12%), and a low/no symptom class (49%). Compared to the low/no-symptom class, the PTSD class had high levels of exposure to all PTE domains including childhood-related adversities, witnessing murder, human rights trauma, and traumatic losses, as well as ongoing adversity relating to displacement and separation from families, safety concerns, and lack of access to basic needs and health care. The posttraumatic depression class had greater exposure to traumatic losses and childhood-related adversities, higher levels of stress relating to material loss and deprivation, as well as to displacement and separation from families. In contrast, the IED class was distinguished only by the ongoing stress of displacement and separation from families in the homeland. Our findings provide support for the phenomenological distinctiveness of IED symptoms in this transcultural setting. Although not exclusive to IED, conditions of long-term displacement and separation appear to be a source of ongoing anger and explosive aggression amongst this population.

1. Background

Intermittent explosive disorder (IED) is characterized in DSM-IV and DSM-5 by explosive aggression towards people, animals, or property (American Psychiatric Association, 1994, 2013). Questions remain, however, regarding the cohesiveness of the IED symptom cluster and its distinctiveness from other common mental disorders, particularly PTSD and depression. We investigate these issues amongst West Papuan refugees residing in Port Moresby, Papua New Guinea.

Several issues need clarification in relation to the universality of the IED pattern. Inconsistencies have emerged in the prevalence of IED across countries, with lifetime rates varying from 1.8% to 9% (Al-Hamzawi et al., 2012; Fincham et al., 2009; Karam et al., 2006; Yoshimasu and Kawakami, 2011). In addition, although most inquiries report a higher prevalence of IED amongst males (Fincham et al., 2009; Karam et al., 2008), a study in post-conflict Timor-Leste found that women had double the rate of the disorder (12%) of men (6%) (Rees et al., 2013).

The high level of comorbidity with other common disorders raises further questions about the nosological independence of IED. The association of IED with PTSD is of particular interest given that there is growing evidence that the former category is associated with exposure to potentially traumatic events (PTEs) (Fincham et al., 2009; Friedman et al., 1994; Rees et al., 2013). A further complexity is that the DSM-5 definition of PTSD, unlike that proposed for ICD-11,

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includes symptoms of anger and impulsive aggression (American Psychiatric Association, 2013). It would be expected therefore, that by definition DSM-5 PTSD would overlap with IED (Maercker et al., 2013; Maercker and Perkonigg, 2013).

Comorbidity of depression with IED also warrants consideration, given the high prevalence and association with PTE exposure of the former category amongst refugee populations (Steel et al., 2009). In general clinic populations, anger attacks are prevalent amongst patients with depressive disorders (Fava et al., 1990; Fava and Rosenbaum, 1999; Painuly et al., 2005, 2007).

Theory identifies differences in the antecedent experiences preceding the emotions of anger, fear and sadness/depression. Anger and aggression are considered to represent the quintessential human response to acts of injustice, particularly being exposed to intentional wrong-doing (Berkowitz and Harmon-Jones, 2004) and to having one's life goals arbitrarily thwarted (Averill, 1983). In contrast, PTSD is regarded as a distortion of the normative learned fear response, the key trigger being exposure to life threatening events (Brewin, 2001). Finally, although manifold models have been proposed to explain the origins of depression, the attachment theory of the disorder is particularly relevant to the refugee experience, given the high rates of personal, cultural, symbolic and material losses experienced by those populations (Bowlby, 1980; Eisenbruch, 1991).

The present study was conducted amongst West Papuan refugees residing in settlements surrounding Port Moresby, Papua New Guinea (PNG), a population of Melanesian background characterized by a strong collectivist culture. The older members of the community have been exposed to extensive PTEs related to mass conflict in the homeland. Since the Indonesian occupation of West Papua in 1963, repeated allegations have been made that the military authority has perpetrated extensive human rights abuses against the indigenous peoples. Reported abuses include extra-judicial arrests, torture, sexual violence, murder of family members, atrocities, including burning of whole villages, and mass displacement of populations from their traditional lands, resulting in extreme deprivations and major challenges in meeting basic survival needs (Brundige et al., 2004; Rees et al., 2008).

The Port Moresby West Papuan refugee community crossed the border into neighbouring Papua New Guinea (PNG) in waves commencing from the 1980s onwards, with most members settling in shanty towns ("settlements") where they live as stateless persons with no rights to citizenship, land tenure or ownership. PNG has not ratified the United Nations Refugee Convention (1951), limiting the capacity of international agencies to provide recognition and protection for Western Papuan refugees residing in the country (Glazebrook, 2001). Conditions in the settlements are marked by extreme poverty, lack of services and insecurity. West Papuans continue to experience difficulties accessing clean water and modern sanitation, access to food is limited, and there are few opportunities for employment or to pursue income-generating activities. Cost and transport make it difficult to access health care. Virtually no material assistance is received from the government or non-government sector. At the time of our study, West Papuan refugees had not been exposed to western notions of mental health and had had very little contact with formal psychiatric services.

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Our extensive contact with the community has brought to attention the sources of the core frustrations confronting the community, particularly arising from lack of formal recognition of West Papuans' refugee status, and more broadly, the failure of regional and international governments to acknowledge the right to achieve national independence for the homeland. We anticipated therefore that preoccupations with exile and displacement would be strongly associated with core symptoms of anger and aggression represented by the IED constellation.

The aims of the present study were to investigate (1) whether it was possible to identify a subpopulation of West Papuan refugees experiencing a coherent pattern of IED symptoms; (2) whether the IED subpopulation could be distinguished from those with predominant symptoms of PTSD and depression; and (3) whether the IED constellation would be associated with the stress of long-term displacement and separation from the homeland and family left behind.

2. Methods

2.1. Sample

The study sample comprised West Papuan refugees who participated in a community survey undertaken across six settlements in Port Moresby, Papua New Guinea (PNG). In the absence of census data identifying members of this minority community within the larger population of PNG nationals, a targeted sampling approach was applied. In the first instance, based on all available sources of information (community leaders, government officials, international organizations, local university staff, and the United Nations High Commissioner for Refugees), we identified localities in which West Papuan refugees were concentrated. The six settlements are known as Hohola, Rainbow, Six-Mile, Eight Mile, Nine-Mile, and Tokarara/Waigani, communities characterized by high density, makeshift housing, and few facilities. Triangulation of all information allowed us to estimate that 250 adults (90% of West Papuan refugees living in Port Moresby) resided in these settlements. In the second step, the study team mapped the location of the adult refugees within the settlements based on the information already gathered and a comprehensive survey involving door-to-door inquiries, a procedure coordinated by a West Papuan research assistant (MK) from Australia who had long-term contact with the community. Of the 250 eligible respondents, we were unable to contact 20 persons who had dispersed to other areas of Port Moresby or further afield, yielding a response rate from the identified pool of 92%.

2.2. Ethics statement

Written consent and in some instances, witnessed oral consent were obtained from all participants prior to the interviews. Interviews were conducted in a private location or within the home of the participant, depending on their preference. 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.

2.3. Measures

We applied the following measures to document: (1) exposure to potentially traumatic events (PTEs); (2) ongoing adversities (adapted from the Humanitarian Emergency Settings Perceived Needs Scale, HESPER; and (3) relevant DSM-IV and DSM-5 mental disorders.

2.3.1. Exposure to potentially traumatic events (PTEs)

Exposure to potentially traumatic events (PTEs) was assessed using an inventory of 23 items (rated as experienced or not experienced). Development of the item pool was based on an iterative process involving review of the historical and contemporary literature in the refugee field in general and in relation to West Papua in particular. The list was refined following extensive consultation with the West Papuan refugee community. Confirmatory factor analysis yielded a strong first order factor as well as a second-order five-factor latent structure of conflict-related trauma exposure which supported the construct validity of the measure, the domains identified being

conflict-related trauma, deaths and disappearances of family members, witnessing human rights abuses, childhood-related adversities, and lack of access to medical care in times of emergency (χ^2[2 2 0]= 241.87, P=0.149, CFI=1, TLI=1, RMSEA=0.021). The item pool demonstrated high internal consistency with a Cronbach alpha ranging from 0.73 to 0.95 for each subscale.

2.3.2. Ongoing adversities

Ongoing adversities were assessed using an adapted version of the Humanitarian Emergency Settings Perceived Needs (HESPER) scale developed by the World Health Organization (WHO) (Semrau et al., 2012). The scale comprises 26 items (each rated as a "no problem=0" or "serious problem=1") designed to assess the severity of stressors or adversities experienced. The measure has been applied and cross-validated in other conflict-affected populations with an inter-rater reliability (Cohen's K) ranging from 0.66 to 1.0 across countries (Semrau et al., 2012). The items demonstrated good internal consistency in the current population with a Cronbach α ranging from 0.70 to 0.92 (described hereunder). The concurrent validity of the measure was supported by high correlations between constituent items of the HESPER scale and comparable items of the WHO-Quality of Life-100 (WHOQOL-100) in Jordan ($r=-0.50$), Haiti ($r=-0.30$), and Nepal ($r=-0.28$), respectively (Semrau et al., 2012). In the present sample, CFA yielded a strong first order factor as well as a coherent second-order structure comprising four readily interpretable dimensions: basic survival needs, lack of access to health care, stress related to chronic displacement and separation from families, and stress concerning safety in the community (χ^2 [59]=64.21, P=0.29, CFI=1, TLI=1, RMSEA=0.020).

2.3.3. Symptom profiles for IED, PTSD and depression

Symptoms of IED, depression and PTSD were assessed using a mental disorder module designed to be readily applied by lay interviewers in the field. The validity of these constructs was examined using both community and expert informants, that is, via an iterative process of consultations with local psychiatrists and focus group interviews with West Papuan refugees. The data gathered provided support for the constructs insofar as they appeared to be broadly aligned with and relevant to locally understood mental health problems in the Melanesian context. In a double blinded design, criterion validity of the interview module was supported by the achievement of a high level of convergence of overall case assignment (any one or more current diagnoses) in which a psychologist applied a structured clinical interview and trained field workers used the field measure (AUC 0.93 [CI: 0.87–0.98]; sensitivity 0.98 [CI: 0.88–1.00]; specificity 0.97 [CI: 0.88–1.00].

All participants were asked to respond to all symptom items of the three categories (IED, PTSD, major depression) under study. All participants were asked to respond to all symptom items comprising these diagnostic groupings without inclusion of any skip rules. This procedure allows us to generate full symptom profiles for each domain for the whole sample. Given the phenomenological nature of the study, our focus is on symptom endorsements only, not on whether individuals met a full diagnosis for the disorder which requires additional information concerning the number of symptoms occurring concurrently as well as duration and disability criteria.

2.4. Field personnel training

Interviews were conducted by West Papuan refugees who received three weeks of intensive training under supervision of a bilingual clinical psychologist focusing on identification of mental health issues amongst trauma survivors, interviewing techniques, role-play, and administration of the assessment protocol. Interrater reliability was assessed by the psychologist and a PNG medical practitioner trainee in Psychiatry who independently re-interviewed five study participants who had been assessed by each field worker. There was a high level of interrater agreement in assigning individual diagnoses between field workers and professional personnel with an overall intraclass correlation coefficient (ICC) of 0.94.

2.5. Statistical analysis

Latent class analysis (LCA) was used to examine the extent to which subpopulations with symptom profiles of IED, depression, and PTSD could be distinguished. LCA models the relationship between latent variables and binary indicators (in this instance, the symptoms of all three disorders), classifying individuals into homogeneous subgroups based on their unique patterns of responses (McGCutcheon, 1987). We commenced the process by testing a one-class model, progressively increasing the number of classes while examining changes in the suite of indicators of model fit. In so doing, we increased the number of starting values and iterations to avoid local maxima, allowing for optimal solutions to be generated for estimated parameters.

We applied the following comparative fit indicators: Sample-Sized Adjusted Bayesian Information Criterion (SS-BIC), Bayesian Information Criteria (for sample size less than 500), the Akaike's Information Criterion (AIC), and entropy (degree of classification accuracy ranging from 0 to 1, with 1 indicating a perfect classification) (Collins et al., 1996). Lower values of the BIC and AIC and higher value of entropy indicate a better fit in comparing successive latent class models. In addition, we applied two indices of the Vuong–Lo–Mendell–Rubin adjusted likelihood ratio test which indicates whether there is a statistically significant improvement in fit when progressing from a solution with n classes to $n+1$ classes (Vuong, 1989). In reaching a final decision on the class solution to be adopted, we also took into consideration the principle of parsimony, the degree of class separation, homogeneity of responses (judged by conditional item-response probabilities) within classes and the interpretability of the symptom clusters yielded (Nylund et al., 2007).

Multinomial logistic regression analysis was used to examine predictors of class memberships based on the selected class model. The covariates included in the final retained model were age, gender, birthplace (West Papua, PNG), exposure to childhood related adversities, conflict-related PTE domains of witnessing murder, human rights abuses, family deaths and disappearances, and ongoing adversities associated with displacement and separation from family members, safety and law-and-order in the community, lack of access to basic survival needs, and experience of health problems without adequate access to health care. The analyses were performed in Mplus version 7 (Muthen and Muthen, 2014) and STATA version 13 (StataCorp, 2013).

3. Results

3.1. Sociodemographic characteristics and exposure to PTEs and ongoing adversities

The study sample comprised 230 West Papuan adults (men 137, 59.5%; women 93, 40.4%) with a mean age of 37 (sd=9.80) years. 107 (46.5%) participants originated from West Papua, with the remainder (123, 52.4%) being born in PNG. Participants born in West Papua had lived in PNG for a mean of 27 years (sd=10.28). Half of participants resided in two settlements: Hohola (65, 28.2%) and Rainbow (47, 20.4%). Table 1 presents the prevalence of exposure to conflict-related PTEs experienced in West Papua and ongoing adversities in the settlements.

Table 1
Exposure to potentially traumatic events (PTEs) and ongoing adversities.

	N (%)
Conflict-related trauma (≥ 1 event)	104 (45.22)
Forced to live in poor conditions due to ongoing violence	86 (37.4)
Direct experience of war for political reasons	84 (36.5)
Home intentionally destroyed	80 (34.8)
Lack of shelter because of conflict	79 (34.3)
Humiliated in front of other people	73 (31.7)
Forced to go into hiding during war	70 (30.4)
Involved in active combat as freedom fighters	68 (29.6)
Held captive or imprisoned	54 (23.5)
Torture	35 (15.2)
Abducted by members of other political groups	25 (10.9)
Witnessing murder and human rights violations (≥ 1 event)	108 (46.96)
Witnessing strangers tortured	78 (33.9)
Hearing about family members tortured and murdered	78 (33.9)
Witnessing rape and sexual abuse	38 (16.5)
Witnessing dead bodies	60 (26.1)
Childhood related adversities (≥ 1 event)	39 (16.96)
Witnessing violence at home	31 (13.5)
Physical abuse during childhood	26 (11.3)
Family deaths and disappearances (≥ 1 event)	94 (40.8)
Disappearances of family members	74 (32.2)
Separated from family members	71 (30.9)
Multiple deaths of family members	67 (29.1)
Forced to abandon family members during war	69 (30)
Not being able to perform cultural ceremonies for the dead	37 (16.1)
Ongoing adversities	
Displacement and separation from family members (≥ 1 type)	198 (13)
Being displaced from home	190 (82)
Separation from family members	168 (73)
Safety issues in community (≥ 1 type)	183 (79)
Safety or protection for women from violence in community	206 (89)
Law and justice in community	203 (88)
Support for vulnerable people in community	191 (83)
Lack of access to basic survival needs (≥ 1 type)	212 (92.1)
Lack of shelter/housing	196 (85.2)
Lack of access to toilets	196 (85.2)
Lack of access to clean water	191 (83)
Lack of food	182 (79.1)
Lack of hygiene	180 (78.2)
Lack of clothes and blankets	175 (76.1)
Lack of access to medical care and health-related problems (≥ 1 type)	166 (72.1)
Lack of access to health care	157 (67)
Physical health problems	150 (65.2)

3.2. Latent class analysis

Results for the goodness-of-fit indicators are presented in Table 2. The overall findings supported a four-class model based on lower values for indicators of the Loglikelihood, BIC, SS-BIC, and AIC. The BIC and SS-BIC indicated that, while there was progressive improvement across successive models (from 1-class to 4-classes), the addition of a fifth class yielded only a marginal improvement in fit, providing support for retaining the four-class model. In addition, entropy (the measure of classification accuracy) was very high for the four-class solution. Finally, the VLMR and LMR indicated statistical improvement in successive models until the four class solution was reached, the addition of a fifth class resulting in no statistical change.

The retained four class solution identified a PTSD class (23%), a posttraumatic depressive class (14%), an IED class (12%), and a class with few or no symptoms (low-symptom class) (49%). The prevalence of symptoms and associated conditional probabilities are presented in Table 3. The estimated item probabilities are also depicted diagrammatically in Fig. 1. In interpreting the results, we draw on the criteria of Brunstein et al. (2012) in evaluating conditional probabilities: a value of 0.60 or above indicates a high probability of endorsing a particular symptom; values falling between 0.59 and 0.15 indicate a moderate probability; and a value of 0.15 or less indicates a low probability.

In the PTSD class (class 1), virtually all intrusive symptoms (intrusive memories, nightmares, flashbacks, psychological or physiological reactions to reminders) and avoidance of triggers (avoidance of thoughts and activities associated with traumatic events, and avoidance of cues) fell into the upper level of the moderate range of probabilities. In contrast, symptoms of numbing (with the exception of foreshortened future) and hyper-arousal fell either in the lower range of moderate probabilities or in the low probability category. Depressive and IED symptoms were not represented in this class.

Class 2 (the posttraumatic depressive class, 14%) was characterized by very high item probabilities for the most general depressive symptoms (> 0.80 for both low mood and loss of interest) and high probabilities for most other constituent symptoms (> 0.70 for sleep difficulties, agitation, fatigue, poor concentration). In addition, this class also was characterized by intrusive symptoms in the higher range of moderate probabilities. Other PTSD domains (numbing, hyperarousal) were in the mid-range of moderate probabilities whereas IED symptoms were in the low range of moderate or in the low category of probabilities.

Class 3 (IED class, 12%) was strongly characterized by IED symptoms with the exception of endorsement of the item indicating that the reaction was disproportionate to triggering events. Highly endorsed symptoms included recurrent episodes of anger outbursts, loss of control, acts of physical and verbal aggression, and destruction of

Table 2
Goodness-of-fit statistics for class 1 to class 5 models.

Model	LRx^2	BIC	SSABIC	AIC	Entropy
1 Class	−2908.28	6001.45	5893.69	5884.56	–
2 Class	−2297.68	4970.6	4751.91	4733.37	0.95
3 Class	−1999.76	4565.08	4235.46	4207.52	0.99
4 Class	−1772.79	4301.47	3860.93	3823.58	0.99
5 Class	−1634.84	4215.92	3664.44	3617.69	0.99

Model	VLMR	P	LMR	P
1 Class	–	–	–	–
2 Class	1221.19	< 0.01	1214.80	< 0.01
3 Class	595.84	< 0.01	592.73	< 0.01
4 Class	453.94	< 0.01	451.57	< 0.01
5 Class	275.88	0.07	274.44	0.07

Abbreviations: 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 test.

property. The only other symptoms of relevance were the PTSD items for flashbacks and avoidance of triggers which fell in the low range of moderate probabilities (0.25–0.28).

Class 4 (low-symptom class, 49%) was associated with low probabilities for all the mental health symptoms assessed.

3.3. PTEs, ongoing adversity and class membership

Multivariate logistic regression analysis examined for associations between PTE domains, ongoing adversity and class membership using class 4 (the low symptom class) as the reference category (Table 4).

Individuals assigned to the PTSD class (class 1) reported greater exposure to all PTE domains including childhood-related adversities (OR=5.36, 2.19–13.06), exposure to conflict (OR=3.15, CI: 1.60–6.20), witnessing murder and human rights violations (OR=5.40, CI: 2.60–11.22), and family deaths and disappearances (OR=6.35, CI: 3.11–13.00). In relation to ongoing adversities, the PTSD class reported higher levels of stress relating to displacement and separation from families (OR=8.06, CI: 1.84–35.33); problems with safety and security in the community (OR=8.66, CI: 1.11–67.25); lack of access to basic survival needs (OR=5.21, CI: 2.06–13.19), and health-related problems/lack of access to health care (OR=7.41, CI: 1.02, 5.97). In addition to comprising more males (OR=0.40, CI=0.17, 0.93), the post-traumatic depressive class reported greater exposure to PTE domains of childhood-related adversities (OR=3.58, CI: 1.26–10.20) and deaths and losses of family members (OR=2.37, CI: 1.08–5.24). In relation to ongoing adversities, members of this class reported more stress related to being displaced and separated from families (OR=4.96, CI: 1.11–22.08) and lack of access to basic needs (OR=3.78, CI: 1.36–10.49). For those in the IED class, there was only one significant association, that is, with the contemporary adversity of displacement and separation from families (OR=8.37, CI: 1.08–6.57). Although the odds ratios for childhood-related adversities and traumatic losses were high, these associations with the IED class did not reach statistical significance.

4. Discussion

West Papuans in our study reported extensive exposure to a wide array of PTEs, including being in combat situation, exposure to traumatic losses, lack of access to medical care during conflict, witnessing murder and human rights trauma, and childhood-related adversities. In addition, refugees endorsed high levels of stress relating to prolonged displacement, lack of safety and security in the settlements, extreme deprivations, lack of access to health services, and health-related problems. Latent class analysis revealed a distinction between persons experiencing PTSD symptoms (23%), those with a combination of depression and post-traumatic stress symptoms (14%), and a relatively pure IED class (12%) with the largest group (group 4) showing low or no symptoms (49%). As predicted, the PTSD class was associated with extensive exposure to PTEs whereas the post-traumatic depressive class was characterized by losses and deprivations. The IED class was characterized by the stress of displacement and separation from family and homeland, consistent with the core grievances of the community.

Prior to examining the inferences that can be drawn from our findings, we consider the strengths and limitations of the study. Given the absence of census data identifying West Papuan refugees and the dispersal of this minority within a larger pool of PNG nationals, we used all available information sources to estimate the size of the target population and their location in the settlements in Port Moresby. There was a high response rate from the identified pool and the numbers we were unable to trace proved to be small.

We applied a set of psychometrically tested modules administered as part of a comprehensive assessment battery adapted to the context and culture of West Papuans. The use of the DSM classification system, however, precluded a detailed analysis of possible culture-specific idioms of distress that may overlap with the IED domain. The study is cross-sectional, cautioning against drawing causal inferences from the relationships we identified, for example, between PTEs and symptom domains. Given the specific experiences of the community in the settlements in Port Moresby, we cannot generalize the findings to West Papuan populations residing in the home country. In addition, although the constructs we measured are relevant to refugee groups in other settings, further studies will be needed to test the universality of our findings across cultures and contexts.

Caveats notwithstanding, our study indicated that it was possible to distinguish an IED constellation of symptoms from clusters representing PTSD and traumatic depression. Notably, with the exception of two PTSD symptoms (flashbacks and avoidance of triggers), the IED class was restricted to endorsement of symptoms that were core to that constellation, namely recurrent episodes of anger outbursts, loss of control, acts of physical and verbal aggression, and destruction of property. Importantly, these symptoms appeared to be distinguishable from the aggression/hyperarousal symptoms of PTSD. Overall, the LCA results provide considerable support for the coherence and distinctiveness of the symptoms of IED in this transcultural population, a finding that is particularly notable given the limited exposure of the community to western notions of mental disorder.

Members of the PTSD class endorsed the majority of intrusive (flashbacks, nightmares, reactions to triggers) and avoidance symptoms (avoidance of thoughts and activities associated with traumatic

Table 3
Conditional item response probabilities for PTSD, posttraumatic depressive, IED symptoms for 4-class solution.

	Symptom frequency		PTSD (Class 1, 23%)		Posttraumatic depressive (Class 2, 14%)		IED (Class 3, 12%)		Low-symptom (Class 4, 49%)	
PTSD symptoms	N	%	P	SE	P	SE	P	SE	P	SE
Re-experiencing										
Intrusive memories	54	23.5	0.54	0.07	0.50	0.08	0.17	0.07	0.02	0.01
Nightmares	57	24.8	0.55	0.07	0.58	0.08	0.17	0.07	0.02	0.01
Flashbacks	73	31.7	0.59	0.07	0.73	0.07	0.25	0.08	0.08	0.03
Psychological/physiological response to reminders	57	24.8	0.49	0.07	0.67	0.08	0.17	0.07	0.02	0.01
Avoidance										
Avoid thoughts	81	35.2	0.90	0.04	0.73	0.07	0.25	0.08	0.00	0.01
Avoid activities	79	34.3	0.89	0.06	0.67	0.08	0.28	0.08	0.00	0.00
Numbing										
Amnesia	18	7.8	0.18	0.05	0.17	0.06	0.07	0.04	0.00	0.00
Loss of interest	21	9.1	0.11	0.04	0.44	0.08	0.00	0.00	0.00	0.00
Feeling detached	24	10.4	0.14	0.05	0.47	0.08	0.00	0.00	0.00	0.00
Restricted affect	18	7.8	0.07	0.03	0.38	0.08	0.00	0.00	0.00	0.00
Foreshortened future	42	18.3	0.46	0.07	0.35	0.08	0.14	0.04	0.00	0.00
Hyperarousal										
Irritability	16	7.0	0.11	0.04	0.23	0.07	0.07	0.04	0.00	0.00
Startle response	14	6.1	0.09	0.04	0.26	0.07	0.00	0.00	0.00	0.00
Hypervigilance	25	10.9	0.18	0.05	0.38	0.08	0.07	0.04	0.00	0.00
Concentration difficulties	17	7.4	0.09	0.04	0.35	0.08	0.00	0.00	0.00	0.00
Insomnia	18	7.8	0.09	0.04	0.38	0.08	0.00	0.00	0.00	0.00
Depressive symptoms										
Low mood	44	19.1	0.01	0.01	0.91	0.04	0.14	0.06	0.07	0.02
Loss of interest	36	15.7	0.00	0.00	0.82	0.06	0.10	0.05	0.04	0.01
loss of appetite	19	8.3	0.00	0.00	0.52	0.08	0.00	0.00	0.00	0.00
Insomnia	28	12.2	0.00	0.00	0.73	0.07	0.03	0.03	0.01	0.01
Psychomotor agitation	27	11.7	0.00	0.00	0.70	0.07	0.03	0.03	0.01	0.01
Fatigue	28	12.2	0.00	0.00	0.76	0.07	0.00	0.00	0.00	0.00
Guilt	17	7.4	0.00	0.00	0.47	0.08	0.00	0.00	0.00	0.00
Worthlessness	11	4.8	0.00	0.00	0.32	0.08	0.00	0.00	0.00	0.00
Concentration difficulties	24	10.4	0.00	0.00	0.70	0.07	0.00	0.00	0.00	0.00
Suicidal ideation	5	2.2	0.00	0.00	0.14	0.06	0.00	0.00	0.00	0.00
IED symptoms										
Anger outbursts	39	17.0	0.00	0.00	0.26	0.07	1.00	0.00	0.01	0.01
Loss of control	32	13.9	0.00	0.00	0.23	0.07	0.85	0.06	0.00	0.00
Physical assaults	29	12.6	0.00	0.00	0.23	0.07	0.75	0.08	0.00	0.00
Verbal abuse	35	15.2	0.00	0.00	0.23	0.07	0.96	0.03	0.00	0.00
Destruction of property	21	9.1	0.00	0.00	0.11	0.07	0.60	0.09	0.00	0.00
Excessive anger response	24	10.4	0.00	0.00	0.14	0.06	0.67	0.08	0.00	0.00
Out of proportion response to trigger	15	6.5	0.00	0.00	0.08	0.04	0.42	0.09	0.00	0.00

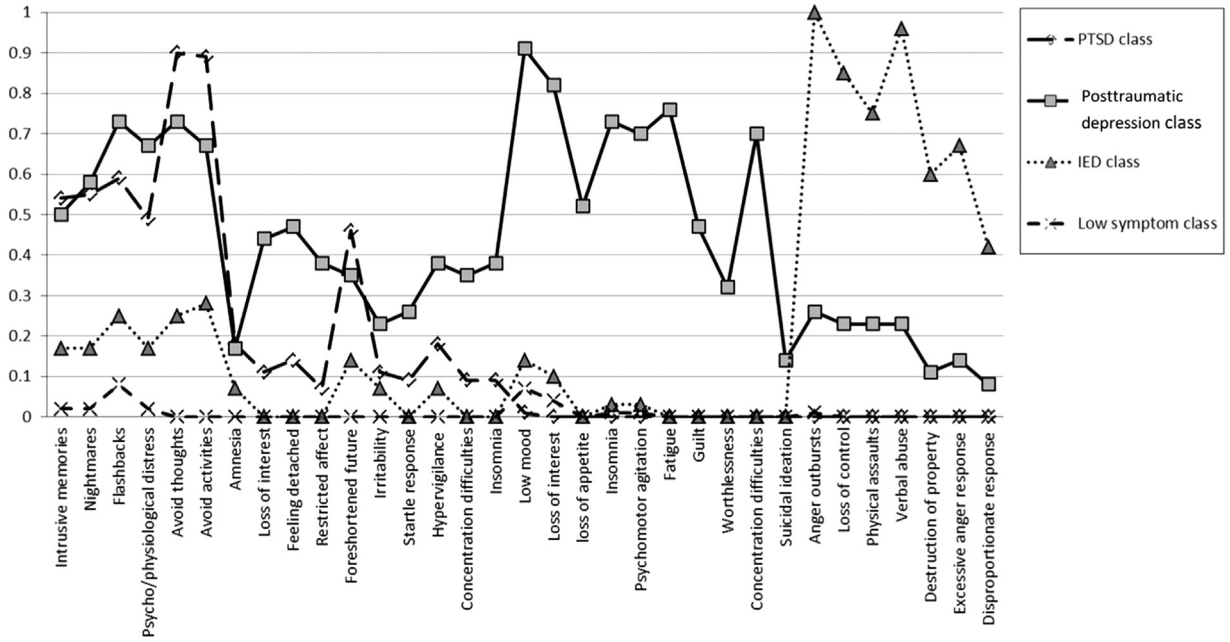

Fig. 1. Conditional probabilities for PTSD, posttraumatic depression, and IED symptoms for four-class solution.

Table 4
Multinomial logistic regressions examining predictors of latent class memberships.

	OR	CI (95%)	P
Class 1 (PTSD) (Ref: Class 4)			
Age	1.28	0.81–2.03	0.28
Gender	0.52	0.25–1.08	0.08
Birthplace (West Papua/Papua New Guinea)	0.51	0.18–1.42	0.20
PTEs			
Exposure to conflict-related trauma	3.15	1.60–6.20	< 0.001
Exposure to childhood adversities	5.36	2.19–13.06	< 0.001
Witnessing murder and human rights violations	5.40	2.60–11.22	< 0.001
Family deaths and disappearances	6.35	3.11–13.00	< 0.001
Ongoing adversities			
Displacement and separation from family members	8.06	1.84–35.33	< 0.01
Safety and law-and-order in the community	8.66	1.11–67.25	< 0.05
Lack of access to basic survival needs	5.21	2.06–13.19	< 0.001
Lack of access to health care and health-related problems	7.41	1.02–5.97	< 0.05
Class 2 (Posttraumatic depressive) (Ref: Class 4)			
Age	1.22	0.73–2.04	0.44
Gender	0.40	0.17–0.93	< 0.05
Birthplace (West Papua/Papua New Guinea)	1.55	0.48–4.97	0.45
PTEs			
Exposure to conflict-related trauma	1.71	0.79–3.71	0.17
Exposure to childhood adversities	3.58	1.26–10.20	< 0.01
Witnessing murders and human rights violations	1.35	0.62–2.94	0.44
Family deaths and disappearances	2.37	1.08–5.24	< 0.05
Ongoing adversities			
Displacement and separation from family members	4.96	1.11–22.08	< 0.01
Safety and law-and-order in the community	1.23	0.02–0.40	0.99
Lack of access to basic survival needs	3.78	1.36–10.49	< 0.01
Lack of access to health care and health-related problems	4.62	0.58–36.48	0.14
Class 3 (IED) (Ref: Class 4)			
Age	0.79	0.45–1.38	0.42
Gender	0.43	0.17–1.05	0.42
Birthplace (West Papua/Papua New Guinea)	0.80	0.22–2.86	0.74
PTEs			
Exposure to conflict-related trauma	0.95	0.40–2.25	0.91
Exposure to childhood adversities	2.53	0.77–8.27	0.12
Witnessing murder and human rights violations	0.95	0.40–2.25	0.91
Family deaths and disappearances	1.26	0.51–3.10	0.60
Ongoing adversities			
Displacement and separation from family members	8.37	1.08–6.57	< 0.05
Safety and law-and-order in the community	1.23	0.01–0.50	0.99
Lack of access to basic survival needs	1.63	0.66–4.01	0.28
Lack of access to health care and health-related problems	1.82	0.38–8.51	0.44

events) but not the hyperarousal domain, a finding that is consistent with past studies undertaken in other transcultural, post-conflict populations (Hinton and Lewis-Fernández, 2011). Our findings support arguments to restrict PTSD to the intrusive and avoidance phenomena, symptoms thought to reflect the core learned fear response (Friedman et al., 2011a, 2011b; Spitzer et al., 2007).

In relation to the PTSD class, it is noteworthy that the ORs for ongoing adversities were higher than for PTEs, a finding that is consistent with the growing body of literature supporting the importance of post-migration conditions in shaping mental disorders amongst refugees (Jordans et al., 2012; Laban et al., 2004; Miller et al., 2006; Porter and Haslam, 2005; Silove et al., 1998; Steel et al., 1999). We note, however, the wide confidence intervals for some of the indices of adversity, possibly reflecting constraints in sample size. Further studies are required therefore to assess for differential effects of PTEs and ongoing adversities in relation to mental health outcomes amongst West Papuan refugees.

Individuals assigned to the posttraumatic depressive class reported predominantly depressive symptoms with moderate levels of endorsement of selective PTSD phenomena, particularly drawn from the intrusive and avoidance domains. Our findings are in accord with past studies that have identified a post-traumatic depressive reaction related to losses amongst refugees and other conflict-affected populations (Jordans et al., 2012; Momartin et al., 2004; Morina et al., 2009; Silove et al., 1997; Steel et al., 1999).

Notably, the stress of chronic displacement and separation from families in the homeland constituted the only form of adversity associated with IED. These concerns are consistent with the prolonged period of exile experienced by the community, the ongoing conditions of threat and deprivations experienced by family and kinship groups left behind, and the lack of success West Papuans have had in advocating for the independence of their homeland.(Rees and Silove, 2011). Being in exile, West Papuans confront the continuing stress of forced separation from their families, clans and homeland, a major challenge for a community with a strong collectivist tradition. In addition, it is common for West Papuan refugees to receive news that their close ones have been subjected to further human rights violations which may be attributable in part to the political activities of their relatives living in PNG. Finally, there is a strong sense of frustration amongst the political active members of refugee community about the lack of progress in achieving the goal of national independence for their homeland. We note however, that the domain of displacement and separation as an ongoing adversity was not selectively associated with IED, being strongly related to both PTSD

and post-traumatic depression. We also note that exposure to childhood-related adversities and traumatic losses showed a trend for an association with IED, the failure to reach statistical significance possibly being related to constraints in statistical power. Overall, however, our findings are consistent with theory in suggesting that being subjected to intentional wrong-doing (in this instance, the failure to have refugee claims and the rights they bestow acknowledged) and feeling chronically thwarted in one's aspirations (in achieving independence for the homeland), play important roles in the pathogenesis of extreme forms of anger, represented here by the IED symptom constellation.

Our findings may assist in guiding psychosocial and mental health programs for refugees. The presence of a subpopulation with overt symptoms of explosive anger and aggression in a densely populated shanty town may pose special challenges to tight-knit groups such as the West Papuan refugee community. In general, there is a risk of the perpetuation of a cycle of violence in which anger and explosiveness caused by legitimate frustrations is misdirected either in the home (as domestic violence) or in the community (as inappropriate aggression towards neighbours or others in response to minor provocation) (Rees et al., 2013; Silove, 2013). These unintentional acts of aggression may aggravate conditions of insecurity in the community, resulting in further trauma exposure (and consequent mental disorder) in those who are the recipients of the violence. Addressing the sources of frustration amongst refugee populations may assist in reducing risk of internal violence and achieve a degree of communal harmony and safety. Ultimately, amongst West Papuans in particular, advancing claims for refugee status and resolving the causes of the ongoing conflict in the homeland will be critical to overcoming persisting feelings of anger in the community. Given the complex nature of the geopolitical issues surrounding the status of West Papua, it seems likely that progress in addressing these concerns will be slow.

From a clinical perspective, our identification of a subpopulation with the IED constellation of symptoms highlights further the need to widen the focus of mental health assessments and interventions for refugees beyond the usual confines of PTSD and depression. Failure to assess for IED symptoms risks overlooking a key reaction pattern (anger and aggression) that may impact adversely not only on the individual but potentially on the family and the community as a whole. Although recent studies have begun to test interventions for IED in western societies (Fuller et al., 2010; McCloskey et al., 2008), much further work is needed to establish models of treatment that may be effective in addressing anger and aggression in the transcultural field.

5. Conclusions

Our findings provide support for the phenomenological distinctiveness of a cluster of IED symptoms in this transcultural setting. Although not exclusive to IED, conditions of long-term displacement and separation experienced by West Papuan refugees, a core source of chronic frustration in this community, appear to be strongly linked to ongoing anger and explosive aggression. Future studies needed to elucidate further the phenomenology, correlates, and pathogenesis of IED amongst displaced conflict-affected populations in other cultural settings.

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Conflict of interest

Conflicts of interest: none

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