

Predisplacement and Postdisplacement Factors Associated With Mental Health of Refugees and Internally Displaced Persons

A Meta-analysis

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THE GLOBAL REFUGEE CRISIS HAS reached dire proportions. The world's population of people forced to abandon their homes and communities because of war, political violence, or related threats includes not only those displaced outside their country of residence but also internally displaced persons, asylum seekers, stateless persons, and recently returned refugees. Although estimates of the total numbers of these persons vary, data from several international agencies indicate that these groups comprise a population that exceeded 42 million at the end of 2004.¹⁻³ Severe and lasting psychological aftereffects have been extensively documented among them.⁴⁻⁶ Additionally, the United Nations High Commissioner for Refugees alone returned approximately 15 million refugees to their countries of origin as recently as 1994 through 2003.⁷ Including all former refugees, the number of people who have been directly affected by forced displacement is estimated to exceed 1% of the world's population.⁸ Analyses presented in this article specify relationships between subcategories of displaced persons and mental health outcomes. Because of important common-

Context The global refugee crisis requires that researchers, policymakers, and clinicians comprehend the magnitude of the psychological consequences of forced displacement and the factors that moderate them. To date, no empirical synthesis of research on these issues has been undertaken.

Objective To meta-analytically establish the extent of compromised mental health among refugees (including internally displaced persons, asylum seekers, and stateless persons) using a worldwide study sample. Potential moderators of mental health outcomes were examined, including enduring contextual variables (eg, postdisplacement accommodation and economic opportunity) and refugee characteristics.

Data Sources Published studies (1959-2002) were obtained using broad searches of computerized databases (PsycINFO and PILOTS), manual searches of reference lists, and interviews with prominent authors.

Study Selection Studies were selected if they investigated a refugee group and at least 1 nonrefugee comparison group and reported 1 or more quantitative group comparison on measures of psychopathology. Fifty-six reports met inclusion criteria (4.4% of identified reports), yielding 59 independent comparisons and including 67 294 participants (22 221 refugees and 45 073 nonrefugees).

Data Extraction Data on study and report characteristics, study participant characteristics, and statistical outcomes were extracted using a coding manual and subjected to blind recoding, which indicated high reliability. Methodological quality information was coded to assess potential sources of bias.

Data Synthesis Effect size estimates for the refugee-nonrefugee comparisons were averaged across psychopathology measures within studies and weighted by sample size. The weighted mean effect size was 0.41 (SD, 0.02; range, -1.36 to 2.91 [SE, 0.01]), indicating that refugees had moderately poorer outcomes. Postdisplacement conditions moderated mental health outcomes. Worse outcomes were observed for refugees living in institutional accommodation, experiencing restricted economic opportunity, displaced internally within their own country, repatriated to a country they had previously fled, or whose initiating conflict was unresolved. Refugees who were older, more educated, and female and who had higher predisplacement socioeconomic status and rural residence also had worse outcomes. Methodological differences between studies affected effect sizes.

Conclusions The sociopolitical context of the refugee experience is associated with refugee mental health. Humanitarian efforts that improve these conditions are likely to have positive impacts.

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alities, the various subcategories have herein been subsumed under the general term *refugee* for simplicity.

Research on refugee mental health has often proceeded from a life events model^{9,10} in which psychopathology is understood as a posttraumatic reaction to the acute stressor of war.¹¹ Research in this tradition has established high rates of psychological disturbance among persons exposed to traumas through war and disaster.¹²⁻¹⁴ Theorists have recently argued that this model fails to capture important dimensions of the refugee experience,^{15,16} which is characterized by multiple events occurring in multiple contexts that persist over time. In addition, refugees are vulnerable to multiple dimensions of psychopathology beyond those that are narrowly posttraumatic.¹⁶⁻¹⁸

Unlike survivors of most discrete traumatic events, refugees experience diverse stressors that accumulate over the preflight, flight, exile, and resettlement/repatriation periods.¹⁹ Despite the historical focus on the acute stressors of war, the enduring contextual postmigration stress that refugees face—including marginalization, socioeconomic disadvantage, acculturation difficulties, loss of social support, and “cultural bereavement”²⁰—must be recognized. Such persisting forms of adversity reflect the broader sociopolitical context of the refugee experience.^{15,21}

Research on refugee mental health is fraught with practical obstacles. Populations are often physically, linguistically, and culturally inaccessible to researchers,²² and humanitarian aid usually has higher priority than scientific investigation. Studies are often exploratory and methodologically compromised, and the specificity of local circumstances makes it difficult to draw generalized conclusions.²³ As a result, research synthesis is needed to establish the magnitude of the mental health consequences of forced displacement and the variables that moderate these consequences. We have previously reported a meta-analytic investigation of refugee mental health,²⁴ but it was restricted to the former Yugoslavian Re-

public. We therefore conducted a meta-analysis that comprehensively examined studies of populations displaced in conflicts distributed throughout the world and across 5 decades. The meta-analysis tested several potential moderators of refugee mental health, including contextual variables subsequent to the acute stress of war.

Six postdisplacement condition moderators were investigated. Type of accommodation was examined in view of evidence that long-term institutional housing promotes dependency and demoralization.^{25,26} Postdisplacement economic opportunity was studied as a factor expected to be associated with better refugee outcomes.²⁷ We predicted that greater cultural access (ie, the extent to which individuals are free to practice or engage in cultural, social, and religious customs and have access to the cultural institutions necessary for such practice), internal displacement (ie, being displaced within country of origin vs external displacement), and being repatriated would be associated with better outcomes because acculturative stress and cultural dislocation should have negative effects on mental health.^{20,24,28} We also predicted that the status of the conflict would be another contextual condition affecting refugees' mental health, with ongoing (vs resolved) conflicts being associated with worse outcomes.

In addition to these contextual variables, several refugee characteristics were investigated as potential moderators. The association between age and severity of posttraumatic response has been controversial,^{13,29} with some evidence indicating worse outcomes for older people,³⁰⁻³³ some indicating greater vulnerability in children,^{17,34-37} and some mixed or null.³⁸⁻⁴⁰ Refugee sex was also examined,^{17,41} with some evidence suggesting worse mental health outcomes for female refugees^{38,42} and some indicating complex and culturally variable associations.²³ Predisplacement urban vs rural residence, region of origin (ie, Africa, Asia, Europe, Latin America, or Middle East), educational level, and predisplacement socioeconomic status were also investigated.

We also inquired about the moderating role of methodological characteristics of studies that might serve as confounders. We examined whether methodologically stronger studies⁴¹ and those whose control groups had greater exposure to adversity estimated less negative relative mental health outcomes for refugees. Finally, we assessed whether the time elapsed since displacement was associated with smaller effects, consistent with the decay of stress responses.⁴³⁻⁴⁶

METHODS

Selection of Primary Studies

A search of 2 databases was undertaken at the end of 2002 for all published English-language research reports that (1) investigated a refugee group (including all categories within UNHCR's population of concern¹) and at least 1 non-refugee comparison group and (2) reported 1 or more quantitative estimates of the relationship between forced displacement and indices of mental health (eg, symptom questionnaires, interview-based psychiatric diagnoses, maladaptive behavior checklists, neuropsychological tests, personality inventories, and self-esteem and well-being scales).

Searches were conducted using PsycINFO, a broad psychological database, and PILOTS, a comprehensive trauma-specific database maintained by the US Department of Veterans Affairs National Center for PTSD.⁴⁷ PILOTS was queried using a Boolean operator (refugee* OR displaced) and PsycINFO with narrower criteria: key word = {[refugee*] OR (displaced person*) OR (displaced people)] AND [(control*) OR (compar*) OR (“nonrefugees”) OR (“nonrefugee”) OR (non-refugee*) OR (“non-displaced”) OR (nondisplaced)]}. No restrictions were placed on the time period covered by the search, so all indexed literature from 1871-2002 for PILOTS and from 1840-2002 for PsycInfo was included.

The search of PILOTS produced 1010 citations, and PsycINFO yielded 273 additional nonoverlapping records. All abstracts were read and those that unambiguously failed to meet inclusion criteria

were eliminated. Full texts were obtained for the 141 remaining articles. Manual searches through reference lists of identified articles were conducted and

prominent authors were contacted informally but no additional published references were obtained. After eliminating all redundant research reports, 56

reports⁴⁸⁻¹⁰³ (published from 1959 through 2002; median year of publication, 1996) were identified as meeting inclusion criteria (TABLE 1 and TABLE 2).

Table 1. Descriptive Information for Studies Included in the Meta-analysis (A-K)

Author	No. of Participants	Sample Composition	Measures
Adams et al, ⁴⁸ 1980	201	Cuban refugee boys vs nonrefugee American black boys	Louisville Aggression Survey Schedule
Ahmad et al, ⁴⁹ 2000	64	Kurdish refugee children vs nonrefugee Swedish children	CBC Child Report, CBC Parent Report
Al-Eissa, ⁵⁰ 1995	226	Kuwaiti refugee children vs nonrefugee Saudi children	Symptom questionnaire, interview
Bauer et al, ⁵¹ 1994	168	East German refugees vs nonrefugee West Germans	Clinical interview
Bayard-Burfield et al, ⁵² 2001	644 1139 3198	Iranian refugees vs nonrefugee Turkish migrant laborers Chilean refugees vs nonrefugee Polish migrant laborers Kurdish refugees vs nonrefugee Swedes	Clinical interview Clinical interview Clinical interview
Beiser, ⁵³ 1987	1644	Southeast Asian refugees vs nonrefugee Canadians	Ad hoc questionnaire
Carballo et al, ⁵⁴ 1996	5242	Bosnian refugees vs nonrefugee Bosnians	Clinical interview
Cervantes et al, ⁵⁵ 1989	587	Central American refugees vs nonrefugee Central American immigrants vs nonrefugee Mexican immigrants vs nonrefugee US residents	Symptom questionnaire
Clark et al, ⁵⁶ 1996	472	Central American refugees vs nonrefugee Mexican immigrants	Minnesota Multiphasic Personality Inventory
Dube, ⁵⁷ 1968	29 468	Punjabi refugees vs nonrefugee Indians	Clinical interview
Dunnigan et al, ⁵⁸ 1993	1019	Hmong refugees vs nonrefugee US residents	Youth Development Study Questionnaire
Eitinger, ⁵⁹ 1959	3758	Central and Eastern European refugees vs nonrefugee Norwegians	Clinical interview and psychiatric history
El Habir et al, ⁶⁰ 1994	355	Lebanese refugee children vs nonrefugee Middle Eastern children vs nonrefugee US children	CBC Teacher Report
Fazel et al, ⁶¹ 1988	125	Tibetan refugees vs nonrefugee Indians	Quality of Life Scale
Folnegovic-Smalc et al, ⁶² 1997	1076	Croatian IDPs vs nonrefugee Croatians	Neuropsychological battery and clinical interview
Goenjian et al, ⁶³ 1994	150	Armenian refugees vs nonrefugee Armenians whose homes were destroyed by earthquake vs nonrefugee Armenians with intact homes	PTSD Reaction Index
Herceg et al, ⁶⁴ 1996	56	Croatian and Bosnian IDP children vs nonrefugee Croatian children	Life Orientation Test, IES
Hourani et al, ⁶⁵ 1986	5788	Lebanese IDPs in camps vs Lebanese IDPs in empty apartments vs Lebanese IDPs displaced 5 years earlier vs nonrefugee Lebanese under siege	Symptom questionnaire
Howard and Hodes, ⁶⁶ 2000	135	Refugees from diverse backgrounds vs nonrefugee matched immigrants vs nonrefugee British	Clinical interview
Jensen et al, ⁶⁷ 1989	93	Middle Eastern refugees vs nonrefugee Middle Eastern immigrants	Clinical interview
Klimidis et al, ⁶⁸ 1994	156 289	Vietnamese refugee boys vs nonrefugee immigrant boys vs nonrefugee Australian boys Vietnamese refugee girls vs nonrefugee immigrant girls vs nonrefugee Australian girls	Symptom questionnaire based on HSCL Symptom questionnaire based on HSCL
Kocijan-Hercigonja et al, ⁶⁹ 1996	321	Wounded Croatian IDP children vs wounded nonrefugee Croatian children	Clinical interview
Kocijan-Hercigonja et al, ⁷⁰ 1998	105	Bosnian refugee children vs Croatian IDP children vs nonrefugee Croatian children	Schoolagers' Coping Strategies Questionnaire, Questionnaire of Psychosomatic Symptoms, Anxiety Scale, Depression Scale, Psychosocial Adjustment Questionnaire
Kocijan-Hercigonja et al, ⁷¹ 1996	62	Croatian IDPs vs nonrefugee Croatians	Cornell Index
Kondic and Mavar, ⁷² 1992	142	Croatian IDPs vs nonrefugee Croatians	State-Trait Anxiety Inventory
Kuterovac et al, ⁷³ 1994	134	Croatian IDP children vs nonrefugee Croatian children	IES

Abbreviations: CBC, Child Behavior Checklist; HSCL, Hopkins Symptom Check List; IDP, internally displaced person; IES, Impact of Event Scale; PTSD, posttraumatic stress disorder.

Table 2. Descriptive Information for Studies Included in the Meta-analysis (L-Z)

Author	No. of Participants	Sample Composition	Measures
Laor et al, ⁷⁴ 1996	454	Israeli IDP women and children vs nonrefugee Israeli women and children threatened by war events vs nonrefugee, nonexposed Israeli women and children	CBC, Symptom Checklist-90-R
Lopes Cardozo et al, ⁷⁵ 2000	1272	Kosovar IDP Albanians vs repatriated Albanian refugees vs nonrefugee Kosovar Albanians	General Health Questionnaire-28, Medical Outcomes Study Short-Form, HTQ
Loughry and Flourj, ⁷⁶ 2001	455	Repatriated Vietnamese refugees vs nonrefugee Vietnamese	Youth Self-Report, Perceived Self-Efficacy Scale
Macksoud and Aber, ⁷⁷ 1996	115	Lebanese IDP children vs repatriated Lebanese refugee children vs nonrefugee Lebanese children	Child Behavior Inventory, Post-Traumatic Stress Reaction Checklist
McCloskey et al, ⁷⁸ 1995	70	Central American refugee women vs nonrefugee Mexican immigrant women	PTSD symptom inventory
	70	Central American refugee children vs nonrefugee Mexican immigrant children	PTSD symptom inventory, CBC
Myers et al, ⁷⁹ 1987	88	Vietnamese refugees vs nonrefugee Chinese immigrants and US citizens	Adult Fear Schedule
Onwumere et al, ⁸⁰ 2002	112	African refugee women with human immunodeficiency virus infection vs nonrefugees with chronic illness	Short Form Health Survey
Paardekooper et al, ⁸¹ 1999	396	Sudanese refugee children vs nonrefugee Ugandan children	Kidcope, Reporting Questionnaire for Children-Parent Form, General Health Questionnaire, cartoon-based interview
Pernice and Brook, ⁸² 1994	186	Southeast Asian refugees vs nonrefugee Pacific Islander immigrants	HSCL-25
Punamaki, ⁸³ 1990	239	Palestinian refugee women vs nonrefugee Palestinian women in the Occupied Territories vs nonrefugee Palestinian women in Israel	Structured interview, Multiple Affect Adjective Checklist
Quta and El Sarraj, ⁸⁴ 1993	160	Palestinian refugees in camps vs resettled Palestinian refugees vs Palestinian town refugees vs nonrefugee Palestinians	Psychosomatic Symptoms Test, Taylor Manifest Anxiety Scale, Rigidity Test
Rasanen, ⁸⁵ 1989	523	Repatriated Finnish refugees vs nonrefugee Swedes	Symptom questionnaire
Rasekh et al, ⁸⁶ 1998	160	Afghan refugee women vs nonrefugee Afghan women under the Taliban	HSCL-25, symptom questionnaire
Reeler, ⁸⁷ 1994	208	Mozambican refugees vs nonrefugee Zimbabweans	Self-Reporting Questionnaire, clinical interview
Rioli et al, ⁸⁸ 2002	112	Kosovar Albanian refugees vs nonrefugee Albanian immigrants vs nonrefugee Albanians	BSI
Roglic et al, ⁸⁹ 1993	88	Croatian IDPs with diabetes vs nonrefugee Croatians with diabetes	Structured interview, BDI
Roncevic-Grzeta et al, ⁹⁰ 2001	109	Tortured Croatian IDP war veterans vs nontortured Croatian IDP war veterans vs nonrefugee, nontortured, noncombat Croatians	Symptom questionnaire, clinical interview, BDI, Hamilton Depression Inventory
Rousseau et al, ⁹¹ 2000	225	Cambodian adolescent refugees vs Central American adolescent refugees vs nonrefugee Canadian adolescents	CBC Parent Report, Youth Self-Report
Sabioncello et al, ⁹² 2000	34	Croatian IDP women vs nonrefugee Croatian women	Cornell Index
Silove et al, ⁹³ 1998	196	Asylum-seeking Tamil refugees vs permanently resettled Tamil refugees vs nonrefugee Tamil immigrants	HSCL-25, HTQ
Smither and Rodriguez-Giegling, ⁹⁴ 1979	89	Vietnamese refugees vs Laotian refugees vs nonrefugee US residents	Marginality Scale, State-Trait Anxiety Inventory
Sundelin-Wahlsten et al, ⁹⁵ 2001	85	Kurdish refugees vs nonrefugee Swedes	HTQ
Sundquist, ⁹⁶ 1993	1891	Latin American refugees vs nonrefugee European migrant laborers vs nonrefugee Swedes	Swedish Annual Level-of-Living Survey
Sundquist and Johansson, ⁹⁸ 1996	1219	Repatriated Latin American refugees vs nonrefugee Swedes	Swedish Annual Level-of-Living Survey
Thulesius and Hakansson, ⁹⁹ 1999	593	Bosnian refugees vs nonrefugee Swedes	Posttraumatic Symptom Scale
Tousignant et al, ¹⁰⁰ 1999	406	Adolescent refugees from 35 countries vs nonrefugee Canadian adolescents	Diagnostic Interview Schedule for Children, version 2.25
Wong-Rieger and Quintana, ¹⁰¹ 1987	164	Southeast Asian refugees vs nonrefugee Anglo-American US residents	Multicultural Acculturation Scale
Young and Evans, ¹⁰² 1997	120	Salvadorean refugees vs nonrefugee Canadians	BSI, Quality of Life Scale, Satisfaction With Life Scale
Zivicic, ¹⁰³ 1993	638	Croatian IDP children vs nonrefugee Croatian children vs prewar archival records of nonrefugee Croatian children	Emotion Scale Child Depression Inventory

Abbreviations: BDI, Beck Depression Inventory; BSI, Brief Symptom Inventory; CBC, Child Behavior Checklist; HSCL, Hopkins Symptom Check List; HTQ, Harvard Trauma Questionnaire; PTSD, posttraumatic stress disorder.

Two of these reports provided complementary information about the same comparison and 3 reported multiple independent comparisons, bringing the total meta-analytic sample to 59 independent comparisons (studies), detailed in Table 1 and Table 2. Of these, 20 used multiple comparison groups,

yielding 85 stochastically dependent comparisons from which subsets of statistically independent comparisons were selected for analysis. The studies contained 67 294 participants (22 221 refugees and 45 073 nonrefugees), with a range of 34 to 29 468 (median, 164) participants per study. Together, the stud-

ies yielded 190 effect sizes, using primarily self- and parent-report questionnaires (83.2%), including standard¹⁰⁴⁻¹⁰⁶ and ad hoc instruments and structured (3.7%) and unstructured (12.6%) interviews.

Study Coding

Coding of the studies (M.P.) was conducted in accordance with established procedures,^{107,108} encompassing report and study characteristics (eg, methods), participant characteristics (eg, attributes and circumstances of each independent sample), and statistical outcome information. Information pertaining to all study groups and mental health measures was coded. A coding manual was developed a priori and revised iteratively.¹⁰⁸ Coded variables of interest are presented in TABLE 3. After extensive spot checking, a randomly selected sample of 6 reports was blindly recoded (M.P.), yielding perfect coding agreement, indicating strong reliability.

Effect Size Computation and Statistical Analysis

Two layers of dependencies existed in the coded database. When multiple measures were used on a single sample, their effect sizes were averaged.^{107,108} When multiple comparison groups were used, only 1 effect size from each study was allowed in any given analysis, as described below.

All statistical analyses followed established procedures,^{107,108} with the parameter of interest, δ , quantifying the degree of overlap between refugee and nonrefugee distributions on mental health measures.¹⁰⁹ The δ was estimated by the Cohen *d*, the effect size equal to the difference between 2 group means divided by the pooled standard deviation. Direct effect size calculation from published means and standard deviations was possible only in roughly half of the studies. For the 24 studies (41%) reporting categorical data (eg, group differences in prevalence of a diagnosis), effect sizes were calculated as the difference between the probits, or cut points on the nor-

Table 3. Coding Categories for Tests of Moderator Variables

Variables	Measurement Level	Coding Categories
Postdisplacement conditions		
Accommodation	Ordinal	Institutional, private (temporary), private (permanent/semipermanent)
Cultural access	Ordinal	Freedom to practice culture or origin: highly restricted, moderately restricted, unrestricted
Economic opportunity	Ordinal	Highly restricted, moderately restricted, unrestricted (loss of status), unrestricted (no substantial loss of status)
Locus of displacement	Nominal-dichotomous	External or internal to refugee country of origin
Repatriation status	Nominal-dichotomous	Refugees repatriated or not repatriated
Stage of conflict	Nominal-dichotomous	Ongoing, postconflict
Refugee characteristics		
Age	Interval	Child/adolescent, adult, senior (≥ 65 y)
Sex	Interval	% Female
Community type	Nominal-dichotomous	Rural (including villages, small towns), urban
Region of origin	Nominal-polychotomous	Africa, Asia, Europe, Latin America, Middle East
Education	Ordinal	Mostly primary only, mostly secondary only, substantial postsecondary
Predisplacement socioeconomic status	Ordinal	Primarily lower/working class, primarily middle class
Methodological characteristics		
Time since displacement	Interval	Mean number of years between displacement and data collection
Nonrefugee displacement	Nominal-dichotomous	Nondisplaced nonrefugees, nonrefugee immigrants
Nonrefugee violence	Ordinal	No exposure to organized violence, some direct exposure, tortured
Nonrefugee war experience	Ordinal	No, past, or current war experience
Research setting	Nominal-dichotomous	Academic, nonacademic
Publication date	Ordinal	Decade of publication (1950s-2000s)
Effect size primacy	Nominal-dichotomous	Mental health differences between groups as primary or secondary research focus
Primary researcher profession	Nominal-polychotomous	Psychiatrist, psychologist, other mental health professional, student, layperson
Primary researcher qualification	Dichotomous	Professional researcher, student or layperson
Research setting	Dichotomous	Academic (university or university-affiliated hospital), nonacademic
Measure quality ¹⁶	Dichotomous	High, low
Sample randomization	Dichotomous	Randomized, not randomized
Study blinding	Dichotomous	Blind, not blind
Researcher ethnicity	Nominal-polychotomous	Same as refugees, same broad cultural category, different ethnicity, different broad cultural category

mal distribution below which the 2 proportions fell. For studies failing to report pertinent statistical data, *d* was calculated using the other standard procedures for effect size estimation.¹⁰⁸ Each independent effect size estimate was weighted with the inverse of its variance (roughly in proportion to its study's sample size).¹⁰⁷ Effect sizes derived from studies with less than 20 participants were corrected for small-sample bias according to a standard algorithm.¹¹⁰ Effect sizes were wind-sorized (artificially adjusted) to 2 SD units from the mean and inverse variance weights to the nearest cluster so that extreme outliers would not eclipse observed variance in the rest of the distribution.^{108,111}

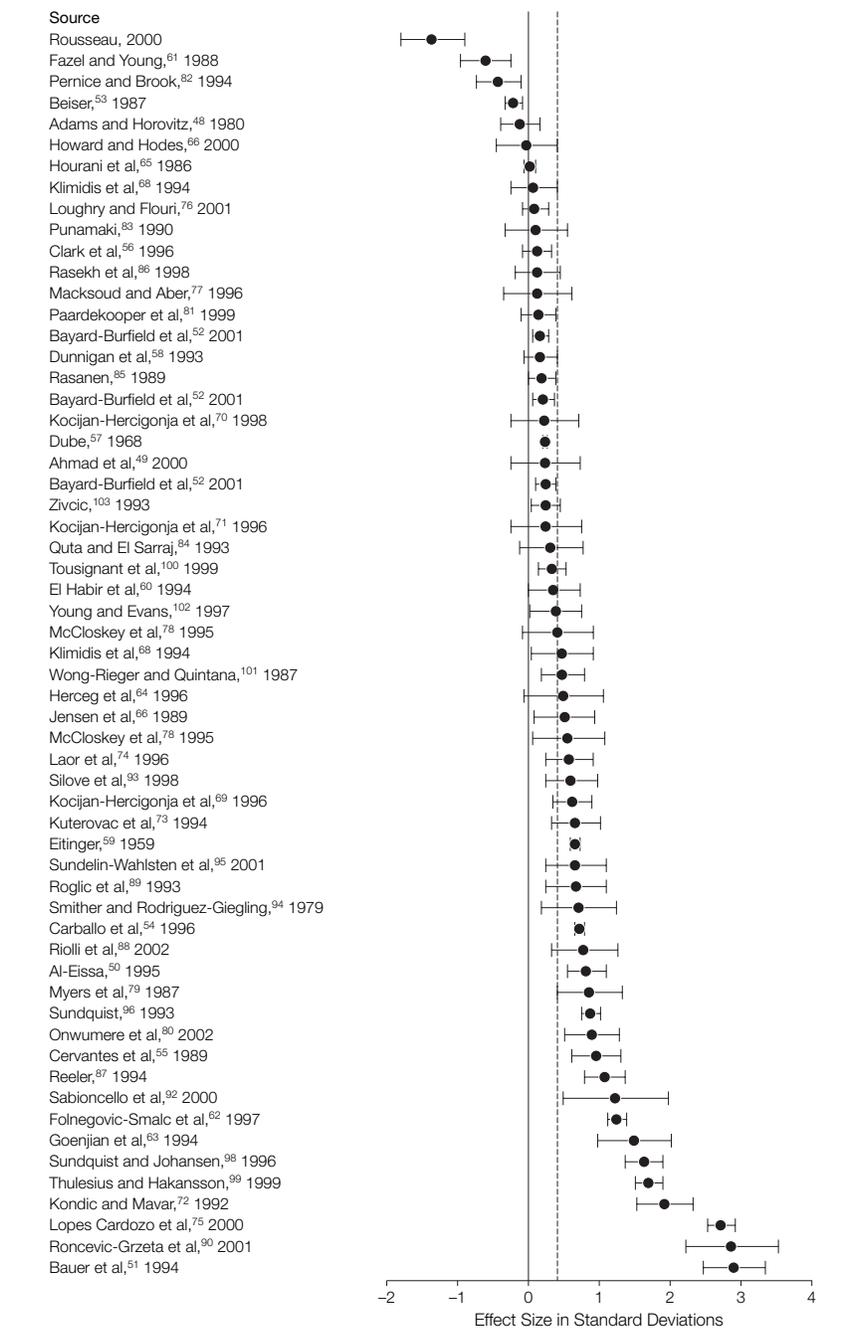
Homogeneity analysis using the *Q* statistic¹¹² was performed to determine if effect size variability exceeded that due to sampling error, implying the systematic effect of moderator variables. Analysis indicated significant variability ($Q_{total} = 1329.73$; $P < .001$): 96% of the variance in effect size point estimates was due to heterogeneity rather than sampling error ($I^2 = 0.96$).¹¹³ Proposed moderator variables were examined by testing the probability of their systematic association with observed variance in the effect size distribution. Variables differing only between studies were investigated by averaging effect sizes across multiple comparison groups within individual studies. Some variables also varied between groups within multiple comparison group studies. For analyses of these variables, data sets consisted of effect sizes from all codable single comparison group studies plus 1 effect size from each codable multiple comparison group study, selected using a standard algorithm to yield maximally equal representation of all levels of the grouping variable, a requirement to optimize statistical power.¹⁰⁸ When only 1 group from a multiple comparison group study contained the required level of the variable, its effect size was included in the analysis and the remaining groups were excluded. When more than 1 group from such a study

contained the required level of the variable, effect sizes from those groups were combined in a weighted average.

Once the appropriate data sets were constructed, effect sizes were grouped according to the levels of each variable. Variability within and between lev-

els was analyzed with homogeneity tests. *Q* statistics were calculated for each level and were summed for Q_{within} . The difference between Q_{within} and Q_{total} tests the significance of a potential moderator variable's effect on the overall variance of effect sizes.

Figure 1. Effect Sizes of Primary Studies



Error bars indicate 95% confidence intervals; dashed line, overall weighted mean effect size.

Publication bias in the meta-analytic sample was assessed as a potential threat to validity¹¹⁴ using funnel plots.^{115,116} Publication bias implies that studies with less statistical power are less likely to be published than larger, more powerful studies and, hence, may be underrepre-

sented. Smaller samples should yield more variable estimates of the population parameter than larger studies, and if publication bias exists, their estimates should also tend to be larger. Funnel plots indicated that a relatively large number of small studies were published and revealed no relationship between effect size and sample size. The Begg test^{117,118} revealed no association between effect size estimates and their variances ($\rho=0.19$; $P>.05$), indicating that there was no significant publication bias.

RESULTS

The weighted mean effect size *d* across the 59 studies was 0.41 (range, -1.36 to 2.91; SE, 0.01) (FIGURE 1). Across studies, despite large variations in effect sizes, refugees scored 0.41 SDs lower on indices of mental health than nonrefugees.

Systematic associations between the proposed moderator variables and effect size variance were investigated and are presented separately for postdisplacement conditions, refugee characteristics, and study methodological characteristics.

Postdisplacement Conditions

Effect size variation as a function of postdisplacement conditions is summarized in TABLE 4, which demonstrates several significant moderators of the mental health of refugees relative to nonrefugees. As expected, postdisplacement accommodation was asso-

ciated with mental health ($Q=86.82$; $P<.001$; $R^2=0.06$) (FIGURE 2), with refugees resettled in permanent, private accommodations having significantly better mental health than those resettled in institutional and temporary private accommodations. Economic opportunity (right to work, access to employment, maintenance of socioeconomic status) had a linear relationship with better mental health ($Q=217.96$; $P<.001$; $R^2=0.13$) (Figure 2). Access to cultural practices was not associated with mental health ($Q=1.45$; $P=.23$; $R^2=0.00$).

The position of refugees vis-à-vis their initiating conflicts was also significantly associated with mental health. Internally displaced persons scored lower on mental health indices than externally displaced refugees ($Q=65.47$; $P<.001$; $R^2=0.05$) (Figure 2). Repatriated refugees scored lower than those in exile, many of whom had been permanently resettled ($Q=52.79$; $P<.001$; $R^2=0.04$). Refugees from conflicts that remained ongoing scored lower than those from conflicts that had been resolved ($Q=92.00$; $P<.001$; $R^2=0.07$).

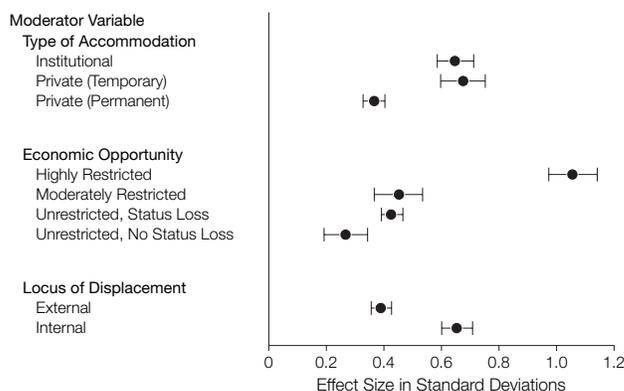
Predisplacement Refugee Characteristics

All of the coded refugee characteristics were significantly associated with the mental health of refugees relative to nonrefugees (TABLE 5). Age had a strong association ($Q=227.28$; $P<.001$; $R^2=0.13$). Child and adolescent refugees had better relative outcomes than adults. Those aged 65 years or older scored lower on mental health than adults younger than 65 years, although only 2 studies assessed this population. Refugee sex also had a weak but significant moderator effect ($\beta=0.15$; $R^2=0.02$; $P<.001$). Studies containing a higher proportion of female refugees indicated poorer mental health outcomes. Refugees displaced from rural areas had poorer outcomes than those from urban areas ($Q=17.64$; $P<.001$; $R^2=0.03$). Region of origin was also significantly associated with mental health ($Q=505.96$; $P<.001$) and was probably confounded by comparison group region of origin. Refugees from

Table 4. Moderating Role of Postdisplacement Conditions on Refugee Mental Health

Moderator Variables	No. of Studies	Effect Size (95% Confidence Interval)
Accommodation		
Institutional	13	0.65 (0.58-0.71)
Private, temporary	9	0.67 (0.60-0.75)
Private, permanent	27	0.37 (0.33-0.40)
Cultural access		
Moderately restricted	27	0.50 (0.45-0.54)
Unrestricted	32	0.46 (0.42-0.50)
Economic opportunity		
Highly restricted	8	1.06 (0.97-1.14)
Moderately restricted	13	0.45 (0.37-0.53)
Unrestricted, status loss	32	0.43 (0.39-0.46)
Unrestricted, no status loss	6	0.27 (0.19-0.34)
Locus of displacement		
External	44	0.39 (0.35-0.42)
Internal	15	0.65 (0.60-0.71)
Repatriation status		
Not repatriated	54	0.44 (0.41-0.47)
Repatriated	5	0.82 (0.73-0.92)
Stage of conflict		
Ongoing	41	0.60 (0.56-0.64)
Postconflict	15	0.32 (0.28-0.36)

Figure 2. Effect Size Means Associated With Type of Accommodation, Degree of Economic Opportunity, and Locus of Displacement at the Time of Measurement



Error bars indicate 95% confidence intervals.

Europe (most often compared with non-refugee residents of peaceful European countries) had the poorest relative outcomes, and those from Asia and the Middle East had mental health outcomes that were the least different from their comparison groups, which were most often nonrefugee residents of the respective regions, often developing countries with histories of civil unrest. More-educated refugees scored lower on mental health indices than less-educated refugees ($Q=319.68$; $P<.001$; $R^2=0.28$), as did those with higher pre-displacement socioeconomic status ($Q=177.71$; $P<.001$; $R^2=0.16$).

Methodological Characteristics

Several study characteristics were associated with effect size (TABLE 6). Greater time between date of study and time of displacement was associated with better mental health for refugees relative to nonrefugees ($\beta = -0.28$; $P<.001$; $R^2=0.08$), although durations were often short (median, 2 years; range, 1 month to 41 years after displacement) and more research is needed on long-term effects. Refugees had less negative outcomes compared with nonrefugees who had undergone displacement (ie, immigrants) vs nonrefugees who had not been displaced ($Q=23.14$; $P<.001$; $R^2=0.01$). This expected effect also held true for nonrefugee exposure to violence ($Q=106.82$; $P<.001$; $R^2=0.03$) and nonrefugee war experience ($Q=14.24$; $P<.001$; $R^2=0.02$). For these variables, the highest levels of contamination in the comparison groups were clearly associated with smaller effect sizes. Refugees showed mental health comparable with nonrefugees who were tortured or living in active war zones.

As expected, higher methodological quality was associated with slightly smaller effect sizes.⁴¹ An index based on the sum of 5 dichotomously coded indicators of quality: study, blindness, sample randomization, researcher qualifications (psychiatrist, psychologist, or other mental health professional vs student or layperson), type of setting (academic [universities or university-affiliated hospitals] vs nonacademic), and

quality of study measurement instruments (surveys and scales)¹⁶ revealed a weak negative association between methodological quality and effect size ($\beta = -0.10$; $P<.001$; $R^2=0.01$).

Publication decade was weakly associated with effect sizes ($Q=302.31$; $P<.001$; $R^2=0.01$) but lacked a discernible pattern. Studies for which comparing mental health in refugees and nonrefugees was not a primary focus yielded larger effect sizes ($Q=12.98$; $P<.001$; $R^2=0.01$), providing additional evidence against the influence of publication bias in the meta-analytic sample.¹⁰⁷ Proximity of researcher ethnicity to refugee ethnicity was not significantly associated with effect size ($Q=5.3718$; $P=.07$; $R^2=0.00$), although the data demonstrated a marginal trend toward researchers finding larger effects when examining refugees of ethnicities dissimilar to their own.

Given the collinearity of some coded variables in the meta-analysis, the 10 substantive variables (ie, postdisplacement conditions and refugee characteristics) measured dichotomously or ordinally were factor analyzed to yield statistically independent predictors of effect size. Three factors emerged: material welfare (postdisplacement private accom-

modation and economic opportunity, high predisplacement socioeconomic status, conflict resolved), predisplacement cultural capital (greater education and age, predisplacement urban residence), and distance from original conflict (external displacement, not being repatriated, greater cultural freedom). All 3 factors independently predicted effect size in a least-squares regression analysis ($\beta = -0.16$, 0.22, and -0.14 , respectively; all $P<.05$; $R^2=0.33$). Better relative mental health among refugees was associated with greater material welfare, lesser predisplacement cultural capital, and greater distance from the original conflict.

COMMENT

This meta-analysis of refugee mental health clarifies the magnitude and determinants of the psychological consequences of the refugee experience. The magnitude of these consequences, relative to those experienced by control populations, is within the range considered medium-sized.¹¹⁹ It remains substantial even when the comparison group has been displaced or directly exposed to war and violence, attesting to the depth of adversity that refugees experience.

Table 5. Moderating Role of Refugee Characteristics on Refugee Mental Health

Moderator Variables	No. of Studies	Effect Size (95% Confidence Interval)
Age		
Children/adolescents	17	0.28 (0.21-0.35)
Adults	35	0.53 (0.49-0.57)
Seniors (≥ 65 y)	2	1.21 (1.08-1.33)
Community type		
Rural	39	0.50 (0.47-0.54)
Urban	10	0.32 (0.25-0.40)
Region of origin		
Africa	3	0.61 (0.44-0.78)
Latin America	10	0.46 (0.39-0.53)
Middle East	12	0.18 (0.12-0.24)
Asia	14	0.17 (0.12-0.21)
Europe	18	0.82 (0.78-0.86)
Education		
Mostly primary only	20	0.25 (0.19-0.31)
Mostly secondary only	11	0.34 (0.27-0.42)
Substantial postsecondary	15	0.87 (0.82-0.92)
Predisplacement socioeconomic status		
Primarily working class	26	0.34 (0.30-0.38)
Primarily middle class	13	0.91 (0.83-0.99)

As predicted, postdisplacement conditions were associated with mental health outcomes. Materially secure conditions, indexed by economic opportunities and permanent private accommodation, were associated with superior outcomes. By implication, psychopathology among refugees is not an inevi-

table posttraumatic consequence of acute wartime stress but reflects contextual factors that can be significantly remediated by generous material support on the part of governments and agencies. Similarly, the status of the initiating conflict appears to be a significant feature of the sociopolitical context, because

refugees had much better outcomes when the conflict that displaced them had been resolved.

Other postdisplacement conditions had unexpected effects. Acculturative stress, cultural dislocation, and bereavement^{20,24,28} were predicted to yield better outcomes for refugees who had unrestricted cultural access and were internally displaced and repatriated, but none of these predictions were supported. Externally displaced and unrepatriated refugees had relatively positive mental health outcomes, a finding that runs counter to the emphasis on repatriation in the humanitarian aid community. Repatriation, internal displacement, and cultural continuity are likely to have positive implications, but these may be overshadowed by the harmful effects of unstable political and economic circumstances within the nation of origin.

Refugee characteristics also moderated mental health outcomes. Consistent with some past work on posttraumatic responses,^{38,42} female refugees had slightly worse mental health outcomes than male refugees. The apparently greater resilience of younger refugees supports previous findings,³⁰⁻³³ implying that children and adolescents are less affected by the enduring stresses of displacement.²⁹ However, higher levels of education and socioeconomic status before displacement, considered by some to have buffering functions,¹⁹ were associated with worse mental health outcomes in the analysis. Greater predisplacement intellectual and economic resources may imply a greater subsequent loss of status rather than a protective effect on refugees against their predicament. Refugee mental health outcomes were associated with region of origin, although no predictions were tested. European refugees had the poorest relative outcomes, perhaps in part because their comparison groups tended to be residents of peaceful and economically privileged countries. Refugee outcomes were also relatively poor in Africa, but because only 2% of the meta-analytic sample was drawn from Africa compared with 23.6% of the UNHCR's

Table 6. Moderating Role of Methodological Characteristics

Moderator Variables	No. of Studies	Effect Size (95% Confidence Interval)
Nonrefugee displacement		
Nondisplaced	42	0.50 (0.47 to 0.53)
Displaced	16	0.33 (0.26 to 0.39)
Nonrefugee violence		
No direct exposure	45	0.52 (0.49 to 0.55)
Some direct exposure	12	0.62 (0.53 to 0.72)
Tortured	1	0.01 (-0.09 to 0.10)
Nonrefugee war experience		
None	31	0.43 (0.39 to 0.48)
Past	22	0.61 (0.56 to 0.65)
Current	6	0.11 (0.02 to 0.19)
Research setting		
Academic	44	0.35 (0.31 to 0.38)
Nonacademic	15	0.80 (0.74 to 0.85)
Publication decade		
1950s	1	0.67 (0.60 to 0.73)
1960s	1	0.23 (0.18 to 0.29)
1970s	1	0.72 (0.19 to 10.24)
1980s	8	0.05 (-0.01 to 0.11)
1990s	35	0.71 (0.67 to 0.74)
2000s	13	0.41 (0.35 to 0.47)
Effect size primacy		
Primary focus	46	0.45 (0.42 to 0.48)
Secondary focus	13	0.58 (0.52 to 0.64)
Researcher profession		
Psychiatrist	25	0.53 (0.50 to 0.56)
Psychologist	14	0.43 (0.33 to 0.54)
Mental health professional	12	0.40 (0.36 to 0.45)
Student	4	0.00 (-0.09 to 0.10)
Layperson	2	1.44 (1.27 to 1.62)
Researcher qualification		
Professional researcher	50	0.49 (0.46 to 0.52)
Student or layperson	9	0.35 (0.28 to 0.42)
Research setting		
Academic	44	0.35 (0.31 to 0.38)
Nonacademic	15	0.80 (0.74 to 0.85)
Sample randomization		
Randomized	30	0.52 (0.46 to 0.57)
Not randomized	29	0.46 (0.43 to 0.48)
Study blinding		
Blind	57	0.49 (0.46 to 0.52)
Not blind	2	-0.33 (-0.62 to 0.05)
Measure quality ¹⁶		
High	27	0.66 (0.59 to 0.72)
Low	32	0.44 (0.41 to 0.46)
Researcher ethnicity		
Same as refugees	18	0.46 (0.40 to 0.51)
Close to refugees	7	0.43 (0.39 to 0.47)
Dissimilar to refugees	34	0.50 (0.46 to 0.53)

population of concern,¹ the continent's refugee crises demand more investigation. At present, the global distribution of refugees is not adequately represented in the mental health literature.

In sum, this study supports the role of enduring contextual factors before and after displacement as moderators of mental health among the world's refugees. The psychological aftereffects of displacement by war cannot be understood simply as the product of an acute and discrete stressor, but depend crucially on the economic, social, and cultural conditions from which refugees are displaced and in which refugees are placed.^{15,22}

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Acquisition of data: Porter.

Analysis and interpretation of data: Porter, Haslam.

Drafting of the manuscript: Porter, Haslam.

Critical revision of the manuscript for important intellectual content: Porter, Haslam.

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