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Fuaad Mohammed Freh

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PTSD, Depression, and Anxiety Among Young People in Iraq One Decade After the American Invasion

Fuaad Mohammed Frch
University of Anbar

No research, to date, has been conducted on psychological disorders among young adults in Iraq after the U.S. war. The aim of this study was to assess the prevalence of posttraumatic stress disorder (PTSD), anxiety disorder, and depression. The study also investigated the extent to which differences in the types of war trauma and social support accounted for variation in PTSD and psychiatric disorders among young adults from Iraq. The randomly selected participants ($n = 224$) ranged in age from 12 to 23 years. They were selected from 10 public school system in the highly war-exposed areas (Ramadi and Fallujah city). Questionnaires were administered in an interview format with participants at schools by 3 trained psychologists. Results showed that 55.8% reported symptoms consistent with a diagnosis of current PTSD related to the war, and 63.4% reported symptoms consistent with current depression. Results of multiple regression analysis indicated that perceived social support during and after the war was a significant predictor for PTSD and depression. These findings add support to the existing literature which has found that exposure to war experience tends to produce long-term substantial psychological disorders. It also underscores the importance of social support and immediate emotional response to trauma in predicting trauma-related psychopathology, and highlights the potential need for providing early care to exposed individuals exhibiting immediate and severe emotional responses.

Keywords: anxiety, depression, Iraq, PTSD, young adults

The invasion by the United States of America in 2003, which was designed to bring peace and democracy to Iraq, has amounted to a humanitarian, security, and political disaster. Approximately 225,789 were killed between the period of 2003 and 2014. This is considered the largest loss of life within a few years in the recent history of Iraq. It has also unleashed religious sectarian conflict and deterioration in economic and social stability for Iraq and its citizens (Freh, Dallos, & Chung, 2013). Moreover, a large percentage of its people have been growing up in chronically violent environment which caused high risk of psychological and emotional instability (Freh, Chung, & Dallos, 2013).

The posttrauma environment brought with it a great upsurge of interest, particularly among psychologists and psychiatrists, in studying the impact of war trauma. Studies investigating the psychological functioning of young adults exposed to war have consistently indicated that war circumstances have the ability to cause extensive and complex psychological disabilities more than any major disease (Smith, Perrin, Yule, & Rabe-Hesketh, 2001). Several past studies have also presented evidence that exposure, either direct or indirect, to war has a profound psychological impact (e.g., high levels of anxiety and depression) as well as a high incidence of PTSD on young adults (Amine et al., 2008; Nemeroff et al., 2006; Salmon & Bryant, 2002; Thabet, Abed, & Vostanis, 2004). However, to date, no research has yet been directly assessed the

psychological sequelae of exposure to the U.S. war among young adults in Iraq.

Although trauma exposure is the major risk factor for depression, anxiety, and PTSD in war-affected populations (Steel et al., 2009), other variables may prove important in addressing the psychological sequelae of war on young adults such as loss of family members. Loss of family members has an impact on young adults' mental health both directly as a source of stress and indirectly through reducing resources that may buffer the impact of traumatic events (Khamis, 2005). It has been reported that loss of family member and loved ones is the most potent postwar mediator of PTSD symptoms (Layne et al., 2010).

Other interpersonal resources are also essential in stress responses. Among these resources, social support has received significant attention in trauma and stress coping research (Haber, Cohen, Lucas, & Baltes, 2007). The extant literature suggests that social support mediates the links between stressful life events and psychological consequences, such as anxiety, depressive symptoms, and behavioral distress (Russell & Cutrona, 1991).

Severe lasting psychological effects are generally seen after war causing extensive loss of life, murder, property damage, and widespread financial strain and after disasters that are intentionally caused. These elements were all present after the invasion, suggesting that the psychological sequelae among Iraqis are substantial and will be long-lasting. This study was conducted to examine the prevalence of psychopathologic disorders among Iraqi citizens after more than 10 years of the American invasion and to identify predictors of these conditions. The study focused on posttraumatic stress disorder

Correspondence concerning this article should be addressed to Fuaad Mohammed Frch, Department of Psychology, College of Education for Humanities, University of Anbar, Ramadi, Al Anbar, Iraq. E-mail: fuaadfrch@yahoo.com

(PTSD), depression, and anxiety, the most commonly studied psychological sequelae of trauma and disasters.

Method

Data Collection and Sample

Data were collected through interviews with a random sample of Anbar residents. Anbar is Iraq's largest and westernmost province. It comprises 32% of the country's total land mass, nearly 53,208 square miles (137,810 km²), almost exactly the size of North Carolina in the United States and slightly larger than Greece. Geographically, it is isolated from most of Iraq, but is easy to access from Saudi Arabia, Jordan, and Syria. The population is approximately 1.2 million, with more than two thirds living in Fallujah and Ramadi.

We restricted the sample to residents of Fallujah city and parts of Ramadi city that are considered high-risk regions that were exposed to severe military actions. The participants were selected from 10 high schools (177, 79%) and 2 universities (47, 21%). These were considered representative, as they have the same socioeconomic characteristics as other areas in Anbar province.

A total of 300 individuals were initially identified. All of them were contacted and invited to participate in the study. Fifty-five did not wish to take part in the study, with no reason given, yielding a final number of 245 participants ($m = 132$, $f = 113$). Potential participants were informed about the time table of the data collection. The data were collected by the principal researcher and other three psychologists between December 2013 and February 2014.

Study Instruments

Demographics and trauma exposure. Participants were asked questions from a structured questionnaire in Arabic. They were asked to provide background information about themselves and their families. The participant variables included gender, age, grade level, income level, and geographic location during the war. Also they were provided with a 7-item yes/no checklist developed to assess the type of trauma experienced during their lifetime in a war; two exposures most frequently checked were used for analyses, namely having a family member killed and having a family member injured. The rationale for using only two of seven items from the trauma exposure checklist that was utilized is that studies suggest that people who have experienced a potentially trauma inducing event (direct victims) may show more symptoms than people who have indirectly exposed. A direct victim here means that the person is affected, usually by being physically present at the trauma site or by having a close family member killed or injured during the traumatic experience.

Posttraumatic stress disorder (PTSD). PTSD was assessed with the use of the self-report Posttraumatic Stress Disorder Symptom Scale (PDS; Foa, 1995). The PDS has a 17-item symptom severity scale as outlined in *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition (*DSM-IV*). A structured clinical interview was used to ensure coverage of all the relevant signs and symptoms of PTSD. The characteristic symptoms of PTSD resulting from the exposure to extreme trauma included at least one recurrent symptoms (e.g., intrusive memories or distressing

dreams; criterion B), three avoidance stimuli associated with the trauma and numbing of general responsiveness (e.g., efforts to avoid thoughts associated with the trauma or loss of interest in activities associated with it; criterion C), and two symptoms of increased arousal (e.g., difficulty falling asleep or concentrating; criterion D). The full symptoms must have persisted for more than one month or longer and the disturbance must cause clinically significant distress or impairment in social, occupational, or other important areas of functioning (APA, 2005). The full symptom picture must be present for more than one month and the disturbance must cause clinically significant distress or impairment in social, occupational, or other important areas of functioning (APA, 2005). The diagnostic criteria for assessment of PTSD was adapted for use with Iraqi samples (Freh et al., 2013).

Anxiety and depression. The Adult's Manifest Anxiety Scale-Adult version (AMAS-A; Lowe & Reynolds, 2004) was used for screening and evaluating the level of anxiety experienced. The AMAS-A is 36-item, self-report, multidimensional measure used to assess chronic, manifest anxiety among young adults. The AMAS-A consists of three anxiety subscales (i.e., Worry/Oversensitivity, Stress, and Physiological Anxiety) and represents an upward extension of the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1990). The AMAS-A's three-factor structure of anxiety is consistent with multidimensional theories of anxiety and lends support to the validity of the interpretation of the AMAS-A scores as reflecting anxiety in several dimensions. The psychometric properties of the AMAS-A scores were examined. In a sample of 76 young and middle aged adults, the test-retest reliability was found to be good to excellent over a 2- to 3-week interval (Lowe & Reynolds, 2004). In this sample, however, the coefficient alpha for the AMAS-A was 0.83.

The Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) was used to measure the severity of depression. The BDI is a 21-question multiple-choice self-report inventory. The questionnaire is designed for individuals aged 13 and over, and is composed of items relating to symptoms of depression such as hopelessness and irritability, cognitions such as guilt or feelings of being punished, as well as physical symptoms such as fatigue, weight loss, and lack of interest in sex (Beck, 1972). It is one of the most widely used instruments in research on responses to stressful events and has been linked to constructs theoretically associated with young adult depression. The BDI was adapted for use with Arab young adults (Abdel-Khalek, 1998; Khamis, 2008). The psychometric properties for the BDI were examined in the present study. The coefficient alpha was found to be 0.85.

Perceived social support. The Crisis Social Support (CSS; Andrews & Brown, 1988) was used for perceived social support. The CSS is a 7-item questionnaire that are asked twice, one following the disaster, which is in this case the war experience (T1), and at the present time (T2) on a 7-point Likert scale ranging from *never* (1) to *always* (7). High scores on CSS represent a high level of social support, whereas low scores indicate low level of support. For this study, we calculated an overall CSS score. This scale has been found to demonstrate high internal consistency in previous studies (e.g., Elklit, Schmidt Pedersen, & Jind, 2001; Joseph, Williams, & Yule, 1992).

Procedure

This sample was designed to represent young adults who were living in high-risk regions that were exposed to political violence during the invasion by the U.S., in particular Ramadi and Fallujah city. A random sample design was used to draw a sample of 300 school-aged adolescents and University students from both cities. They were recruited by means of advertisements in leisure clubs, community centers, shops, and a university campus. The design for sample selection was based on four primary variables: war zone areas (the most affected), schools/Universities (governmental), age (young adults), and gender. First, the most affected areas by war in Anbar province were identified by data from the Iraqi Central Bureau of Statistics. Eight schools and two universities were randomly selected from Ramadi city whereas the other 10 schools were selected from Fallujah city. Participants were then selected randomly from each school. Informed assent and consent were obtained from the participants. They were given a full explanation of the study and were assured of the anonymity and confidentiality of their responses. Ethics approval for the study was obtained from the University of Anbar.

Translation of the Inventories

Translation of the questionnaires was carried out. The questionnaires that had already been translated into the Arabic language and used in Arabic culture (e.g., PDS, BDI, CSS) were used in this study, whereas questionnaires which had not been translated into Arabic before (e.g., AMAS-A) were translated by the researcher and a professional interpreter. Back translation was conducted by two other interpreters whose first language was Arabic and who are also professionals in English. Both translators had lived in English speaking countries for several years and worked as professional interpreters. All items were then discussed, with more emphasis on items where discrepancies were noted, until a uniform interpretation or an example of a difficult word or question was agreed upon (or both).

Statistical Analysis

In our analysis, we examined the assumptions and diagnostics pertaining to multivariate analysis. Because of non-normality, some transformation procedures were carried out in which the variable of anxiety was subjected to a log-transformation. The variables of re-experiencing and avoidance were subjected to a square root transformation. Following exploration and transformation, assumptions relating to multivariate normality, linearity, and homoscedasticity were met. Descriptive statistics were then used to present the characteristics of the sample. The researcher also calculated both the overall prevalences of current PTSD, depression, anxiety, and the prevalences according to covariates of interest. *t* tests and chi-square analyses were employed to examine the differences in depression, anxiety, and PTSD and various independent variables, followed by a set of correlation coefficients analyses to give us an indication of the association between a range of confounding variables and PTSD, depression, and anxiety in the study. Separate hierarchical regression models were used to predict PTSD, depression, and anxiety. Three regression models were constructed for comparison. Model 1 included only number of traumatic stressors. Model 2 added trauma exposure pre-

dictors (i.e., having a family member killed, injured, and a house demolished). Model 3 added the variable of social support. No outliers (Mahalanobis ≥ 3 *SD*) were detected during the exploration of diagnostics. Data were analyzed using the SPSS version 19.0 for Windows.

Results

Demographics

Of the 245 young adults surveyed, 21 were excluded from the analysis because of missing weight variables. Overall, the sample consisted of 120 (53.6%) male and 104 (46.4%) female with a mean age of 15.8 years (range 12–23). The participants distributed almost equally from the both cities with 47.8% from Ramadi and 52.2% from Fallujah. The majority of the respondents (177, 79%) were students from the public school system in the middle school intermediate grade level and the rest from the University (47, 21%). More than half (126, 56.3%) had a monthly family income of US\$500, 72 family (32.1%) earning less than US\$500, and the minority (26, 11.6%) having an income above \$1,000.

Prevalence of Traumatic Events

Approximately 74.6% of the participants ($n = 167$) reported having experienced at least one high-magnitude traumatic event in their lifetime as a result of the invasion. Of the total sample, 96 (57.4%) involved a family member being killed, 48 (28.7%) a family member being injured, and 23 (13.7%) had had their house demolished.

PTSD, Depression, and Anxiety

The prevalence of PTSD found among participants was 55.8% ($n = 124$). It should be noted that according to the current nosology expressed in the *DSM-IV* for an individual to be diagnosed as having PTSD the following criteria must be met:

1. Exposure to a sudden and unexpected traumatic event and the response to this trauma must be intense fear, helplessness, or horror (Criterion A).
2. The core features of PTSD comprise a stressor criterion that defines the etiologic event and a configuration of symptoms, drawn from 3 groups, that defines the characteristic PTSD syndrome. The 3 symptom groups that constitute PTSD syndrome are as follows:
 - Reexperiencing this trauma persistently in different ways by dreams of the event, persistently feeling that the trauma is occurring again, unpleasant emotions, psychological and physiological distress (Criterion B).
 - Numbing of affect and avoidance of thoughts, feelings, activities, people, images that symbolize the trauma, talk and places associated with the trauma (Criterion C).
 - Excessive arousal symptoms (Criterion D) like troubles falling or staying sleep, irritable or having fits of anger, trouble in concentrating, and overly alert.

Also, the level of depression found in these young adults was markedly high (63.4%, 142). The mean score on the depression

scale for the entire sample was 16.95 ($SD = 8.58$). This mean is close to the cut-off score of 19 for severe depression suggested by Kovacs (1981). On the other hand, the mean score on the anxiety scale in this sample ($M = 12.57$; $SD = 4.55$) was very similar to the mean ($M = 13.84$; $SD = 5.79$) reported by Reynolds and Richmond (1990). The results also showed that types of trauma had a different significant level on PTSD, depression, and anxiety in that participants who reported having a family member killed were noted to have lower levels of depression and anxiety comparing with the participants who reported having a family member injured, whereas participants who reported having a family member killed were noted to have higher level of PTSD than participants who had a family member injured (see Table 1).

Traumas, Stressors, Mediators, and Outcome Measures

Pearson correlation results indicated that the number of traumatic stressors in the last 12 months was positively related to depression, anxiety, and PTSD. A higher level of social support was, however, associated with less PTSD, anxiety, and depression. Having a family member killed/injured during or soon after the military actions was also found to be significantly related to the indices of young adult outcome (i.e., PTSD, depression, and anxiety). On the other hand, gender, income level, and residence during the invasion were all not related to PTSD, depression, and anxiety (see Table 2).

Predictors of PTSD, Depression, and Anxiety

The prediction of PTSD was improved significantly in the third model when social support, having a family member killed, and number of stressors were added (see Table 3). When the final model was examined, the beta weights for having a family member killed and number of stressors showed a positive association with PTSD, whereas getting social support attenuated the chances of having a current PTSD diagnosis (see Table 3). Similar findings emerged from the analysis of depression where participants who had experienced having a family member killed and number of stressors exacerbated depression while social support attenuated it. A similar regression analysis was computed to find out the predictors of anxiety. The results indicated that neither Model 1 nor Model 2 and 3 improved prediction of anxiety. The only significant predictor was found to be having a family injured during or soon after the invasion.

Table 1
Screening of PTSD, Depression, and Anxiety According to the Types of Trauma

Variable	Family member killed				Family member injured			
	Yes		No		Yes		No	
	N	%	N	%	N	%	N	%
PTSD	88	39.2	16	7.1	87	38.8	33	14.7
Depression	30	13.3	69	30.8	58	25.8	67	29.9
Anxiety	12	5.3	87	38.8	25	11.1	100	44.6

Discussion

The substantial prevalence of PTSD observed in this study is consistent with other studies of young adults in war zones (Freh et al., 2013; Khamis, 2008; Thabet et al., 2004) and highlights the long-lasting mental health effects of war. This finding was consistent with those found in other studies (Acierno et al., 2007; Al-Rasheed, 2004; Blank, 1993; Freh et al., 2013; Khamis, 2008). On the other hand, the prevalence of PTSD indicated in this study was substantially higher and not within the range reported in similar researches. Using outcome measures that were similar to ours, Muldoon and Downes (2007) reported that the overall prevalence of PTSD was 10% among 3000 people during the Northern Ireland civil disturbances. Similarly, in a sample of 2509 Mexican adults who had experienced war, Baker et al. (2005) found that 11.5% met *DSM-IV* criteria for PTSD. In the same vein, a study conducted among Lebanon's civilian population found that 29% met the screening criteria for PTSD symptoms after exposure to different war traumas (Farhood, Dimassi, & Lehtinen, 2006). The occurrence of a higher prevalence of PTSD documented here compared with other extant postwar studies is predicted by the severity of the war. The present study has shown that most participants experienced a family member being killed and/or injured, which might be considered as a serious life threat for them. It has been well documented that perceived life threat is a robust factor for the development of postdisaster PTSD (Galea et al., 2002; Page, Kaplan, Erdogan, & Guler, 2009). So, it is possible that awareness of threat to life is a driver of high risk for PTSD (DiGrande, Neria, Brackbill, Pulliam, & Galea, 2011).

Consistent with previous research (Amane-P'Olak, Ovuga, Croudace, Jones, & Abbott, 2014; Booth-Kewley, Highfill-McRoy, Larson, Garland, & Gaskin, 2012; Neria, Besser, Kiper, & Westphal, 2010; Karam et al., 2014; Kashdan, Morina, & Priebe, 2009) the results indicated that young adults who were under war pressure were at a high risk for psychological distress including depression and anxiety. However, the prevalence of depression and anxiety was higher than what has been confirmed in various studies looking at different types of traumatic events. Wagner, Heinrichs, and Ehler (1998) in a study of prevalence of psychological distress among professional firefighters in Germany who involved in bombing experiences, estimated that 27% of the participants had psychiatric impairments. Neither was the prevalence comparable to the reported aftermath of the Oklahoma City bombing in 1995 (North et al., 1999), the Madrid train bombings in March 11, 2004 (Miguel-Tobal et al., 2006), or to what had been reported after natural disasters (Ginexi, Weihs, Simmens, & Hoyt, 2000). The possible explanation of this finding could be lie in the combination of exposure to direct dangerous potential trauma (war experience) and other indirect dangerous life events. Thus, it is not only the war, but other contributing factors such as exposure to daily dangerous life events which increased the risk of mental health problems. Another potential explanation may be life circumstances in Iraq. Iraqis are living in an area of severe conflict and danger. These unsettled circumstances could affect the psychological well-being of the general population to the same degree that the invasion does. The ongoing stressful life that Iraqi people live in might have provided a convenient and appropriate environment for the emergence of such disorders and posed a considerable risk for psychological disturbance.

Table 2
Intercorrelations of Predictor Variables and Outcome Measures

Variables	1	2	3	4	5	6	7	8	9	M	SD
PTSD	—									21.58	8.60
Depression	.70**	—								16.95	8.58
Anxiety	.45**	.47**	—							12.57	4.55
Gender	.01	.01	.04	—							
Income level	.02	.04	-.02	-.16*	—					1.79	.63
Residence during the invasion	.04	.03	-.05	.02	-.01	—					
Number of stressors	.59**	.47**	.22**	-.03	.02	.09	—			1.98	.64
Level of social support	-.74**	-.53**	-.35**	-.03	-.07	.02	-.44**	—		19.92	5.21
Family member killed	.80**	.61**	.43**	-.05	.01	.08	.49**	-.57**	—		
Family member injured	.61**	.42**	.42**	.04	.01	.04	.40**	-.43**	.72**		

* $p < .05$. ** $p < .01$.

The study also suggested the various types of trauma had a differential significant effect on mental health. In particular, participants who reported having a family member injured were noted to have higher levels of depression and anxiety than comparable participants who had a family member killed (see Table 1). This is consistent with previous research in other dangerous contexts (Khamis, 2012). The possible explanation for this finding could be discussed according to the Islamic view toward people who are killed in war. In Islam, a person killed by a "disbeliever army" is martyred, thus permitting a

particular positive way of cognitive coping (Cook, 2007). In addition, the effects of injured family members among Iraqi young adults can be far-reaching, restrictive, and disruptive, and they may be social and emotional in nature. Although a wide variety of traumatic events may evoke symptoms of PTSD (APA, 2005), results from the present study indicate that having a family member killed was a consistently significant predictor of PTSD. Factors associated with grief (e.g., loss of a family member) increased the likelihood of PTSD, a finding that is consistent with the results of previous studies.

Table 3
Regression Weights for Hierarchical Models Predicting Depression and Anxiety

Outcome variables/predictor variables	Standardized β $n = 224$			Unstandardized β	SE
	Model 1	Model 2	Model 3		
PTSD					
Block 1					
Number of stressors	.63**	.30**	.22**	.13	.02
Block 2					
Family member killed		.60**	.43**	.43	.05
Family member injured		.05	.04	.04	.04
Block 3					
Social support			-.37**	-.23	.02
R^2	.405	.709	.800		
F	151.42	115.11	98.37		
Depression					
Block 1					
Number of stressors	.52**	.28**	.24**	.13	.03
Block 2					
Family member killed		.05	.07	.38	.07
Family member injured		.49**	.39**	-.04	.06
Block 3					
Social support			-.22**	-.13	.03
R^2	.278	.435	.467		
F	85.34	30.55	13.25		
Anxiety					
Block 1					
Number of stressors	.32**	.11	.09	.05	.04
Block 2					
Family member killed		.21*	.16	.15	.09
Family member injured		.22*	.22*	.21	.08
Block 3					
Social support			-.12	-.07	.04
R^2	.103	.228	.238		
F	25.59	17.75	2.80		

* $p < .05$. ** $p < .01$.

The analysis of the results emphasized the positive role of social support on mental health outcomes among Iraqi young adults. The results of this study found that social support played an important role in predicting PTSD symptoms and depression, but not anxiety. Higher levels of social support evidenced the lowest levels of depression and anxiety. The magnitude of this finding is in line with a considerable amount of literature (e.g., Ankrí, Bachar, & Shalev, 2010; Páez, Basabe, Ubillos, & González-Castro 2007; Tucker, Pfefferbaum, Nixon, & Dickson, 2000) confirming that supportive social network to be linked with greater well being and could alleviate PTSD and depression symptoms. Studies (e.g., Brewin, Andrews, & Valentine, 2000; Fullerton, Ursano, Kao, & Bharitya, 1999; Madakasira & O'Brien, 1987) have also suggested that low levels of social support have been shown to be related to PTSD and depressive symptoms. The primary explanation that has emerged for this is that social support is a primary interpersonal resource that is critical for coping with stress and has been associated with psychological well-being in times of stress (Norris & Kaniasty, 1996). A great amount of literature suggests that higher levels of perceived social support have also been linked to resilience and recovery with respect to PTSD (e.g., King, King, Foy, Keane, & Fairbank, 1999) and depression (Russell & Cutrona, 1991). Results in the literature also have suggested that a person's perception of the availability of others as a resource, rather than actual support received, serves a protective role by enhancing adoptive coping behaviors and rebuilds positive personal emotions (Dolbier & Steinhardt, 2000). Perceived social support is generally considered to be a protective factor for individuals who have experienced a war trauma (Norris, Friedman, & Watson, 2002). Individuals who maintain supportive social relationships are more resilient in the face of life-threatening conditions (Galea et al., 2002; Norris & Kaniasty, 1996; Shalev, Tuval-Mashiach, & Hadar, 2004).

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