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Life Outcomes Influenced by War-Related Experiences During the Gulf Crisis

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Abstract

This study examined the life outcomes of children exposed to the Gulf crisis in 1990 – 1991. We expected war-trauma exposure and psychological distress symptoms to predict poorer educational and occupational outcomes. Participants were 151 Kuwaiti citizens who were assessed during childhood (in 1993; *M* age = 10.6 years), and who were reassessed 10 years later in young adulthood (in 2003; *M* age = 21.2 years). Participants completed measures of intelligence, war-trauma exposure, posttraumatic stress symptoms, anxiety symptoms, depressive symptoms, intervening life events, and life outcomes. Results indicated that war-trauma exposure negatively impacted children's educational and occupational outcomes as young adults. Boys with higher levels of war-trauma exposure were less likely to attend University. Posttraumatic stress and anxiety symptoms also predicted poorer educational and occupational outcomes. However, this relationship was not significant when we accounted for children's intelligence. Depressive symptoms were not predictive of children's educational or occupational outcomes. Results suggest that war-trauma exposure may have life altering effects on children. Tailored, early interventions are needed for children exposed to war traumas.

Keywords

war; exposure; education; life outcomes; children

Understanding children's reactions to war is a crucial public health issue. Approximately one billion children, a sixth of the world's population, live in countries and territories affected by armed conflict (Office of the Special Representative of the Secretary-General for Children and Armed Conflict, and United Nations Children's Fund, 2009, p.19). War-trauma exposure in childhood is associated with psychological distress symptoms, including posttraumatic stress (PTS), anxiety, and depression (Hadi & Llabre, 1998; Hadi, Llabre, & Spitzer, 2006; Hussain, Allwood, & Bell, 2008; Llabre & Hadi, 1997; Macksoud & Nazer, 1993; Nader, et al., 1993; Thabet & Vostanis, 1999). War exposure may also impact children in other domains, including health and health behaviors (Lai, Hadi, & Llabre, in press; Llabre & Hadi, 1994, 2009).

One of the consequences of war is the collapse of many institutions that support the continued development of children. In post war situations, children's opportunities may be limited because of disruption in the educational system and job markets. To our knowledge, no study has examined this issue longitudinally. Information about life outcomes after war-trauma exposure is needed to provide a broader context for understanding the long-term effects of trauma on children and to extend our understanding of trauma "outcomes," an important research and clinical goal. The current study examined this issue by analyzing the educational and occupational outcomes of a cohort of children exposed to the 1990 – 1991 Gulf crisis. Participants were assessed during childhood (in 1993; described in Llabre & Hadi, 2009), and they were reassessed during young adulthood (in 2003).

For this study, we utilized a well-established conceptual model of risk that was developed to understand children's reactions to traumatic events such as natural disasters (La Greca, Lai, Llabre, Silverman, Vernberg, & Prinstein, in press; La Greca, Silverman, Vernberg, & Prinstein, 1996; Yelland et al., 2010). This conceptual model has linked trauma exposure to psychological distress symptoms (La Greca, Silverman, Lai, & Jaccard, 2010; Lai, La Greca, Auslander, & Short, 2013) and health behaviors (Lai, La Greca, & Llabre, in press). We chose this model because no study, to our knowledge, has examined the relationship between war-trauma exposure in childhood and long-term life outcomes.

In this conceptual model, children's *exposure* to traumatic events predicts children's reactions to traumatic events. Further, children's *proximal psychological distress* symptoms also predict children's reaction to traumatic events. Finally, *child characteristics* and *intervening life events* are additional risk factors to consider, as they also predict children's outcomes after exposure to traumatic events. The current study represents an important extension of this conceptual model towards understanding the life outcomes of children after war exposure. Key risk factors and hypotheses are discussed below.

War-Trauma Exposure

During wars, children may be exposed to a variety of war-related traumatic stressors (Braun-Lewensohn, Sagy, & Roth, 2010; Goldin, Levin, Persson, & Hagglof, 2003). The 1990 – 1991 Gulf crisis was no exception. Starting in August 1990, when Iraq invaded Kuwait, Kuwaiti children were exposed to numerous war-related traumatic stressors (e.g., deaths, arrests, disappearances of family members; Hadi & Llabre, 1998; Hadi et al., 2006; Llabre & Hadi, 1997; Macksoud & Nazer, 1993; Nader et al., 1993); approximately 1000 to 3500 civilians died during the Gulf crisis (Heidenrich, 1993; Kelly, 2003).

In line with the conceptual model, we hypothesized that war-trauma exposure would negatively impact children's educational attainment and occupational status in young adulthood. We expected war trauma exposure to predict poorer life outcomes for several reasons. First, the experiences of fathers during war may have significant consequences for families. For example, the loss of a parent during war in childhood is related to higher levels of mental and physical distress in young adulthood (Morina, von Lersner, & Prigerson, 2011). Further, unconfirmed loss during war (e.g., a husband was missing), when compared to confirmed loss (e.g., a husband was killed in war) is associated with higher levels of PTS and depressive symptoms in adults (Powell, Butelo, & Hagl, 2010). Also, loss of a family member is significantly associated with poor mental health outcomes in children (Ek i et al., 2007; Fan, Zhang, Yang, Mo, & Liu, 2011).

Second, wars disrupt educational systems by destroying institutions, closing schools and interfering with school routines, which may impact student learning (Akbulut-Yuksel, 2009; Lai & Thyne, 2007). Also, war-trauma exposure is associated with short-term impacts on

children's functioning in schools. After war-trauma exposure, children report lower grades, engage in more aggressive behaviors, and engage in fewer prosocial behaviors (Catani et al., 2010; Farver & Frosch, 1996; Shaw, 2003), all of which contribute negatively to life outcomes. For example, Kerestes (2006) assessed young adolescents (grades 6 to 8) who had been exposed to war in Croatia during early childhood (preschool and early school years). War-trauma exposure was related to more aggression and lower prosocial behaviors. Finally, war-trauma exposure may impact educational and occupational outcomes through its influence on life choices, as exposure is associated with youth viewing their futures as more limited in scope (Lavi & Solomon, 2005).

Evidence outside the field of war research also suggests that childhood exposure to traumatic experiences (e.g., man-made disasters, cancer) influences life outcomes (Bolton, O'Ryan, Udwin, Boyle, & Yule, 2000). For example, 11 years after the Chernobyl catastrophe, exposed children reported lower perceived scholastic competence than controls (Bromet et al., 2000). Further, childhood cancer survivors have a lower likelihood of entering higher education and graduating from high school or college (Mitby et al. 2003; Boman & Bodegard, 2004).

In this study, we examined war trauma exposure based both on children's father status (whether a child's father was killed; missed; arrested; or neither killed, missing, nor arrested) as well as children's reports of their own traumatic exposure. We examined father status because the Gulf War targeted civilian men in Kuwait. In addition, Kuwait is a patriarchal society, and we expected that father status might affect the roles and later life outcomes of children. However, given that no research has been conducted in this area, we were not able to make directional hypotheses related to father status and educational and occupational outcomes. Regarding children's reports of their own traumatic exposure, we expected that traumatic exposure would be significantly related to worse educational and occupational outcomes.

Proximal Psychological Distress

We also hypothesized that psychological distress symptoms closer in time after exposure to war-traumas would be related to lower educational attainment and lower occupational status in young adulthood. Research utilizing the conceptual model has found that initial psychological distress predicts children's later outcomes (La Greca et al., 2010; Lai et al., 2013).

We expected that psychological distress symptoms closer in time to the exposure would also predict poor life outcomes, as ample evidence demonstrates that psychological distress symptoms have proximal effects on children's learning and functioning, which are likely to impact long-term educational and occupational outcomes. Psychological distress is related to poorer cognitive functioning among children. For example, elevated PTS symptoms among children are associated with slower and less effective learning (Samuelson, Krueger, Burnett, & Wilson, 2010), poorer attention (Hussain et al., 2008), and lower verbal performance (Saigh, Yasik, Oberfield, Halamandaris, & Bremner, 2006). Psychological distress is also associated with poor short-term academic functioning (Birmaher et al., 1996). Psychological distress may also impact children's achievement by affecting their sense of control and goals for the future (Lavi & Solomon, 2005).

Further, evidence from studies conducted with children after exposure to other traumatic stressors suggests that psychological distress is associated with poor life outcomes. Bolton and colleagues (2004) assessed survivors of the 1988 Jupiter sinking between five and eight years after exposure (mean age was 20.7 years). Compared to controls, survivors with a

diagnosable disorder showed poorer psychosocial functioning and poorer education and work outcomes.

Child Characteristics and Intervening Life Events

We hypothesized that relationships between war trauma exposure and psychological distress to life outcomes would remain significant, even when we controlled for intelligence and intervening life events. We deemed it important to control for intelligence and intervening life events in this study because both of these variables are significantly associated with life outcomes. Intelligence is positively associated with academic achievement and occupational prestige (Firkowska-Mankiewica, 2011). At the same time, intervening life events may potentially influence children's educational performance and occupational choices. Further, life events have been associated with youths' psychological and health outcomes after traumatic events (Lai, La Greca, Auslander, & Short, 2013; Lai, La Greca, & Llabre, in press; Self-Brown, Lai, Thompson, McGill, & Kelley, 2013).

Finally, we evaluated gender as a moderator of the relationships among educational and occupational outcomes, war trauma exposure, and psychological distress. We hypothesized that girls would report a stronger relationship between war trauma exposure and life outcomes. Female gender is associated with higher levels of psychological distress after traumatic events (Furr, Comer, Edmunds, & Kendall, 2010). Also, gender may moderate relationships between childhood experiences and life outcomes given that gender inequality in education is well documented, with boys reporting higher educational attainment (Feniger, 2011; Klasen, 2002). Further, gender influences occupation choices (Gadassi & Gati, 2009).

The Gulf crisis in Kuwait provided a unique context in which to study the effects of war-trauma exposure on children's life outcomes. Kuwait's infrastructure recovered quickly after the Gulf crisis (Hedges, 1994). Thus, we were able to examine the effect of war-trauma exposure on children's life outcomes, beyond factors attributable simply to damaged infrastructures. In addition, a large proportion (60%) of the Kuwaiti population was under 21 (Hedges, 1994) around the time of the Gulf War, and large numbers of Kuwaiti civilians were affected or killed during the Gulf War (Lewis, 1991), making Kuwait a good example of how war may generally affect civilian children.

Method

Participants

Participants were assessed at two timepoints, 1993 and 2003 (i.e., Times 1 and 2). Participants were 151 Kuwaiti children (ages 9 to 12 years) at Time 1, and young adults (ages 19 to 22) at Time 2. At Time 1, all children were Kuwaiti citizens from middle to upper middle class families, enrolled in Kuwaiti schools and classified into four groups based on their father's experiences during the Gulf crisis: Group 1 consisted of 40 children whose fathers were killed, Group 2 consisted of 39 children whose fathers were missing, Group 3 consisted of 33 children whose fathers were arrested, and Group 4 consisted of a control group of 39 children whose fathers were neither missing, killed, nor arrested. The procedures used in this study have been described elsewhere (Llabre & Hadi, 2009).

Lists of potential 1993 participants for Groups 1, 2, and 3 were provided by the Martyr's Office in Kuwait, the Kuwait National Committee for Missing and Prisoners of War, and The Kuwait Association for Defending War Victims, respectively. These lists included names, schools, gender, and ages of potential participants. Lists were used to classify children into age/gender subgroups, and a stratified random sample of 20 boys and 20 girls

was selected from each list. Group 4 participants, who were comparable in age to the other Groups, were identified by local schools to serve as a control group. The stratified random samples of girls and boys were chosen to ensure homogeneity within the trauma groups and heterogeneity between trauma groups, while ensuring no between group age or gender differences.

Participants from 1993 were re-contacted in 2003 and asked to participate in a follow-up study. Eighty percent of the original participants (120 young adults) agreed to participate. Reasons for non-participation were as follows: 2 participants had died; 9 were studying abroad; 10 did not wish to participate; and 10 could not be located.

For the current study, only participants who were assessed at both times ($n=120$) were included (i.e., 33 participants from Group 1; 29 participants from Group 2; 23 participants from Group 3; 35 participants from Group 4). These participants did not differ from participants only participating at Time 1 on any key study variables (i.e., war exposure, psychological distress).

Procedures

At Time 1, families were contacted through letters asking families to participate in a study assessing the Gulf crisis and its psychological consequences. Approval was obtained from parents to contact children through their schools. Next, approval was obtained from the Ministry of Education to contact school principals and inform them of the current study's purpose. Children were assessed at their schools. Testing was conducted by one of 15 psychologists. Psychological scales were administered verbally in a fixed order.

At Time 2, the first author or a research assistant re-contacted participants. Telephone calls were made to each family to determine participants' current address and telephone numbers, and to obtain parental permission. The Kuwait Ministry of Communication also assisted with identifying initial study participants' current address and telephone numbers.

After participant consent, participants were interviewed at home ($n=40$, 36%) or in the offices of the Kuwait Society for the Advancement of Arab Children ($n=72$, 64%). A study author (AUTHOR) or one of two psychologists interviewed participants about life outcomes.

Measures

Measures were translated from English to Arabic and then back-translated. Items were adapted for Kuwaiti culture. Prior to their use in this study, all translated measures were pilot tested in an independent sample of 30 Kuwaiti children. For the current study, participants' characteristics, intelligence quotient (IQ), and psychological distress symptoms were measured at Time 1. Life outcomes were assessed at Time 2.

Child characteristics (Time 1), gender and IQ—Children's gender was assessed by interview. Children's IQ was assessed with twelve subscales of the Wechsler Intelligence Scales for Children–Revised (WISC-R; Wechsler, 1974). Bilingual educators within the Department of Psychological Services at the Ministry of Education translated and adapted the WISC-R for Kuwaiti culture (Hadi & Llabre, 1998). Some minor modifications were made to adapt questions to Kuwaiti culture. For example, one question pertained to similarities between wine and beer. As wine and beer are prohibited in Kuwaiti culture, this question was adapted to ask about similarities between tea and coffee. Back translation was then implemented. Internal consistencies for subscales ranged from .68 to .88. Additional information about the adaptation of these subscales is available in (Hadi, 1998). The Full

Scale IQ was used in the current study. This methodology has been used in studies with Kuwaiti children (Hadi & Llabre, 1998).

War Exposure (Time 1)

Father Status: The four child groups (father missing; father killed; father arrested; or father was neither missing, killed, nor arrested) were examined as a categorical indicator of children's exposure to war trauma.

Crisis Structure Interview (CSI): This continuous measure assessed children's exposure to war-related traumatic events during the Gulf Crisis (Llabre & Hadi, 1994). The CSI is a 16-item (yes/no) measure; children indicated their experiences, and those of their parents, siblings, other relatives, friends and acquaintances during war. Items also assessed children's witnessing of war-related traumatic events (e.g., in real life, on television, or through pictures). Items were summed, with higher scores indicating greater exposure to war-related traumatic events.

PTS symptoms (Time 1)—The *Posttraumatic Stress Disorder Symptom Scale* (PTSDS) was adapted from the Davidson Self-Rating Post Traumatic Stress Disorder Scale (Davidson, Smith, & Kudler, 1989). Participants rated 17-items in relation to events that occurred during the Gulf crisis, on a 5-point scale (0 = *none* to 4 = *everyday*). Items were derived from the three symptom categories for the DSM-III-R criteria for PTS disorder (American Psychiatric Association, 1987). Internal consistency reliability was .80.

Depressive symptoms (Time 1)—The *Children's Depression Inventory* (CDI; Kovacs & Beck, 1977) is a 27-item measure. Items were rated on a three-point scale (from 0 to 2); higher scores indicated higher depressive symptoms. Internal consistency reliability was .78.

Anxiety symptoms (Time 1)—The *Revised Children's Manifest Anxiety Scale* (RCMAS; Reynolds & Richmond, 1985) is a 37-item (rated yes/no) measure. Higher scores indicated higher anxiety symptoms. Internal consistency reliability was .86.

Life outcomes (Time 2)—Young adults reported their current education attainment status (i.e., completed Intermediate School, High School, Diploma, or enrolled in University) employment status (i.e., Employed, Student, or Neither), grade point average, and marital status (i.e., Single or Married).

Intervening life events—The *Life Events Checklist* (LEC; Johnson & McCutcheon, 1980) assessed whether 11 potentially stressful, objective events (personal loss, extended separations, break-ups) occurred between Times 1 and 2. The original LEC contains 46 items. The 11 items chosen in this study were based upon items from the LEC used in past research with youth exposed to traumatic stressors (La Greca et al., 1996). Past research has used items from the LEC to study youth exposed to traumatic stressors (La Greca et al., 1996, 2010).

Analytic Plan

We conducted preliminary analyses to characterize our sample and variables.

War trauma exposure—We hypothesized that war-trauma exposure (defined both by father status and by children's self-reported war-trauma exposure at Time 1) would predict poorer educational and occupational outcomes (Time 2). First, we conducted a chi-square test to examine whether life outcomes differed by father status. Next, we conducted

ANOVAs to examine whether trauma exposure (children's self-report) significantly differed among young adults with various life outcomes.

Finally, we expected that the relationship between war-trauma exposure and life outcomes would remain significant, even when we controlled for IQ and intervening life events. To test this, we conducted logistic regressions examining war-trauma exposure (children's self-report at Time 1) as a predictor of educational outcomes (i.e., University versus Intermediate/High School; Diploma versus Intermediate/High School) and occupational outcomes (i.e., Employed versus Neither; Student versus Neither) without controls (*Model 1*); controlling for IQ (*Model 2*); and controlling for IQ and intervening life events (*Model 3*)

Proximal psychological distress—We hypothesized that proximal psychological distress symptoms (Time 1) would predict poorer educational attainment and occupational outcomes (Time 2). Thus, we conducted ANOVAs to examine whether young adults with different life outcomes differed in their level of proximal psychological distress symptoms.

Next, we expected that the relationship between psychological distress and life outcomes would remain significant, even when we controlled for IQ and intervening life events. To address this, we conducted logistic regressions examining proximal psychological distress (Time 1) as a predictor of educational outcomes (i.e., University versus Intermediate/High School; Diploma versus Intermediate/High School) and occupational outcomes (i.e., Employed versus Neither; Student versus Neither) without controls (*Model 1*); controlling for IQ (*Model 2*); and controlling for IQ and intervening life events (*Model 3*).

Results

Preliminary Analyses

We examined means and frequencies for our continuous measure of war-trauma exposure and psychological distress in childhood (Time 1). All study participants reported experiencing at least one war-related traumatic event, $M=6.6$ ($SD=2.6$). Mean levels of PTS symptoms were $M=12.4$ ($SD=9.6$). Mean levels of anxiety symptoms were $M=9.5$ ($SD=5.9$), and mean levels of depressive symptoms were $M=8.7$ ($SD=5.0$).

Measures of internalizing symptoms were significantly correlated. PTS symptoms were correlated with anxiety and depressive symptoms, Pearson r 's = .52 ($p < .001$) and .48 ($p < .001$), respectively. Anxiety and depressive symptoms were also correlated, Pearson $r = .72$ ($p < .001$).

Child characteristics—Differences for our four Father Status groups were originally outlined in Llabre & Hadi, 1997. Mean scores for each Father Status group on self-reported traumatic events and psychological distress symptoms were: 1) children whose fathers were Killed ($n=33$): ($M=7.59$, $SD=2.42$) for traumatic events, ($M=11.72$, $SD=8.91$) for PTS, ($M=10.36$, $SD=5.66$) for anxiety, and ($M=10.91$, $SD=4.73$) for depression; 2) children whose fathers were Missing ($n=29$): ($M=7.08$, $SD=2.00$) for traumatic events, ($M=13.25$, $SD=9.08$) for PTS, ($M=10.55$, $SD=5.64$) for anxiety, and ($M=9.41$, $SD=5.87$) for depression; 3) children whose fathers were Arrested ($n=23$): ($M=8.26$, $SD=2.03$) for traumatic events ($M=16.65$, $SD=13.28$) for PTS, ($M=9.09$, $SD=6.03$) for anxiety, and ($M=8.52$, $SD=4.78$) for depression; 4) children who were Controls ($n=35$), ($M=4.31$, $SD=1.60$) for traumatic events, ($M=8.89$, $SD=7.95$) for PTS, ($M=7.61$, $SD=5.84$) for anxiety, and ($M=6.57$, $SD=4.27$) for depression.

We examined whether IQ and gender were significantly related to study variables. IQ was not significantly correlated with our continuous measure of war-trauma exposure (Pearson

$r = -.12, p = .16$), symptoms of anxiety (Pearson $r = -.06, p = .47$), or depression (Pearson $r = .04, p = .64$). IQ was significantly correlated with PTS symptoms (Pearson $r = -.16, p = .04$). Young adults who had attained different levels of education differed in their mean levels of IQ, $F(3, 114) = 9.53, p < .001$. IQ scores of young adults who only completed Intermediate school ($M = 83.25, SD = 9.99$) were significantly different from those who received a Diploma ($M = 99.04, SD = 13.39$) or attended University ($M = 105.81, SD = 15.97$). Young adults who completed High School had lower mean IQ scores ($M = 95.35, SD = 11.74$) than those who attended University. No other significant pairwise difference was found. Young adults with different occupational status also differed in terms of their mean IQ levels, $F(2, 115) = 4.44, p = .01$. However, posthoc analysis did not reveal significant pairwise differences in IQ levels.

There was no gender difference in war-trauma exposure or psychological distress symptoms. Educational attainment and occupational status did not vary as a function of gender (see Table 1), $\chi^2(3) = 3.91, p = .27$, and $\chi^2(2) = 4.06, p = .13$, respectively.

War-Trauma Exposure

Father status and life outcomes—The Father Status groups differed in their levels of educational attainment (see Table 1), $\chi^2(9) = 43.26, p < .001$. Most participants in the control group (80%) were enrolled at the University, compared to 18%, 55%, and 44% of those whose fathers were either killed, missing, or arrested, respectively. The child trauma groups also differed in their occupational status, $\chi^2(6) = 18.76, p < .01$. Most participants in the control group were Students (86%) or Employed (14%). For trauma groups, the percentage of participants who were Students was lower: 46% of participants whose fathers were killed, 69% whose fathers were missing, and 57% of those whose fathers were arrested. In these trauma groups, a small percentage was Neither Employed nor a Student (range 9–17%).

Children's self-reported war-trauma exposure and life outcomes—When we examined children's self-reported war-trauma exposure, war-trauma exposure was associated with young adults' educational attainment (see Table 2), [$F(3, 109) = 5.29, p < .01$]. Those who had only completed Intermediate school reported the highest levels of war exposure, and this was significantly different from young adults who completed a Diploma degree or who were enrolled in University. War-trauma exposure was also associated with occupational status, [$F(2, 110) = 6.99, p = .001$]. Young adults who were Neither Employed or a Student reported the highest levels of war-trauma exposure in childhood, and this was significantly different from war-trauma exposure experiences of those who were Students.

Controlling for intelligence and intervening life events—We examined children's self-reported war-trauma exposure (Time 1) as a predictor of life outcomes (Time 2). Young adults with higher levels of war-trauma exposure (Time 1) were significantly less likely to attend University (see Table 3; Model 1). This relationship held when we controlled for IQ (Model 2) and when we controlled for both IQ and intervening life events (Model 3). As a follow-up analysis we examined gender as a moderator of the relationship between war-trauma exposure and attending University, when controlling for IQ and intervening life events. Gender was a moderator (Figure 1), [OR for Gender by War-trauma Exposure = 2.20, 95% CI = 1.15 – 4.20, $p = .02$]. Boys were far less likely to attend University if they had high levels of war-trauma exposure; for girls, levels of war-trauma exposure did not predict odds of attending University. War-trauma exposure did not significantly predict likelihood of obtaining a Diploma (Models 1–3). Regarding occupational outcomes, war-trauma exposure significantly predicted likelihood of being a Student, although this relationship was not significant when IQ and intervening life events were controlled. War-trauma exposure was

not significantly related to likelihood of being Employed, regardless of whether IQ and intervening life events were controlled.

Proximal Psychological Distress

Proximal psychological distress and life outcomes—PTS symptoms and anxiety were significantly related to educational outcomes (see Table 2), [$F(3, 116) = 4.07, p = .009$; $F(3, 114) = 2.86, p = .04$, respectively]. Those who had only completed Intermediate school reported the highest levels of PTS symptoms and anxiety symptoms; their PTS symptoms were significantly higher than the symptoms of those who were enrolled in University. Anxiety symptom levels of those who had only completed Intermediate school were significantly higher than the symptoms of those who completed High School or whom were attending University. PTS and anxiety symptoms were also associated with occupational outcomes, [$F(2, 117) = 3.31, p = .04$; $F(2, 115) = 3.02, p = .05$, respectively]. Young adults who were Neither Employed or a Student reported the highest levels of PTS symptoms and anxiety symptoms. PTS symptoms of those who were Neither a Student or Employed were significantly higher than those of young adults who were Employed or a Student. Anxiety symptoms of those who were Neither Employed or a Student did not differ from the other occupational groups. Finally, depressive symptoms were not associated with educational attainment or occupational status.

Controlling for intelligence and intervening life events—Based on nonsignificant ANOVA results for depressive symptoms, we only conducted logistic regression analyses for PTS and anxiety symptoms (Time 1) as predictors of life outcomes (Time 2). Those with higher PTS symptoms levels were significantly less likely to attend University (Table 3; Model 1), although this relationship was nonsignificant when we controlled for IQ (Model 2), or when we controlled for IQ and intervening life events (Model 3). PTS symptoms did not predict likelihood of obtaining a Diploma. Anxiety symptoms did not predict likelihood of attending University or of obtaining a Diploma, regardless of whether or not we controlled for IQ.

Regarding occupational outcomes, PTS symptoms predicted a lower likelihood of being a Student (Model 1), although this relationship was nonsignificant when we controlled for IQ (Model 2) and when we also controlled for IQ and intervening life events (Model 3). Similarly, anxiety symptoms predicted a lower likelihood of being a Student (Model 1). However, this relationship was nonsignificant when we controlled for IQ (Model 2) and when we controlled for IQ and intervening life events (Model 3). PTS and anxiety symptoms did not predict likelihood of being Employed, regardless of whether we controlled for IQ and intervening life events.

Follow-up Analyses: Grade Point Average and Marital Status

The average grade point average reported by participants was examined as a function of trauma group. Results indicated no difference in GPA across groups [$F(3, 68) = .97, p = .72$]. However, only 72 participants reported their GPA. Clearly, we did not have sufficient power to detect the small effect suggested by the means which were $M = 2.4$ ($SD = .90$) for those whose fathers were killed, $M = 2.5$ ($SD = .68$) for those whose fathers were missing, $M = 2.5$ ($SD = .88$) for those whose fathers were arrested, and $M = 2.8$ ($SD = .61$) for controls.

Marital status—Although these analyses were exploratory, we expected that females in homes where the father was gone (i.e., killed or missing) might be expected to marry sooner. Overall, 30% of females were married as opposed to 10% of the males, a significant difference [$\chi^2(1) = 7.78, p = .01$]. Given this gender difference, the comparison of marital status across the trauma groups was done by gender. Table 4 shows the percent of male and

female participants who were married from each trauma group. While there does not appear to be a difference across groups in the male participants, a greater proportion of females were married among participants whose fathers were killed or missing, relative to those whose fathers were arrested or controls. We reanalyzed the data combining the groups whose fathers were still at home (arrested and control) and those whose fathers were gone (killed and missing). For the males, the proportion married did not vary significantly as a function of the presence of the father [Fisher's exact test $p = .68$], but for the females, the proportion married was higher if the father was absent (45%) than if the father was present (16%) [Fisher's exact test $p = .02$].

Discussion

The current study is, to our knowledge, the first to examine educational and occupational outcomes of children exposed to war-trauma. War-trauma exposure was negatively associated with children's educational and occupational outcomes as young adults. Children with higher levels of war-trauma exposure were less likely to attend University, and this relationship held even when we considered participants' IQ and intervening life events. Gender moderated this relationship such that war-trauma exposure predicted lower likelihood of attendance at University for boys, not girls. Further, girls with higher levels of war-trauma exposure were more likely to marry. Psychological distress symptoms of PTSD and anxiety predicted poorer educational and occupational outcomes. However, this relationship dissipated when we accounted for IQ. Depressive symptoms were not associated with children's educational or occupational outcomes. We discuss these key issues below.

The most significant finding from our current study was that war-trauma exposure was significantly associated with poorer educational and occupational outcomes, regardless of how we examined war-trauma exposure (i.e., categorically with father status or continuously with self-report). The relationship to education outcomes was robust, and did not change when we controlled for IQ and intervening life events. This finding is further strengthened by the fact that our study was conducted in Kuwait, which rebuilt quickly after the Gulf crisis. Thus, war-damaged infrastructures (e.g., schools, homes) do not explain our findings. Further, children in our study who had the most war exposure (i.e., the group recruited from the Martyrs Office) were provided with extra tangible support (i.e., money) from the government.

Our findings highlight that children with high levels of war-exposure may be at risk for a variety of poor long-term outcomes that extend beyond psychological distress. This is important because most studies examining the effects of war-trauma exposure on children focus on internalized distress symptoms (e.g., Goldin et al., 2003; Smith, Perrin, Yule, & Rabe-Hesketh, 2002). More research is needed examining the life outcomes of children exposed to war. Future research should examine mechanisms linking war-trauma exposure to poorer life outcomes. A potential candidate mechanism is the proximal impact of war-trauma exposure on children's academic functioning (Akbulut-Yuksel, 2009; Catani et al., 2010; Farver & Frosch, 1996; Hussain et al., 2008; Shaw, 2003). Whenever possible, future studies should also collect information about children's pre-trauma academic functioning.

Further, war-trauma exposure was associated with different life outcomes for boys and girls in the current study. Boys with high levels of war-trauma exposure were less likely to attend University than girls. Girls with high levels of war-trauma exposure were more likely to marry than boys. Thus, the loss or absence of a father (as represented by our child trauma groups) may have significantly limited opportunities or choices available to children as young adults. These findings are aligned with research linking family structures and young

adult outcomes (Carlson & Corcoran, 2001). Generally, children from single parent homes are less likely to attend college (Astone & McLanahan, 1991). Boys may have had to be breadwinners, while girls married early to gain the protection of male figures. Kuwait is a strongly patriarchal society, and traditional gender roles are reinforced by both Arab customs and religion (Metcalf, 2006; Read, 2003). The absence of fathers may have influenced the salience of gender roles in families. In Kuwaiti culture, fathers traditionally take responsibility for children's life outcomes. Mothers in our study from families where the fathers were gone reported high levels of stress that they attributed to the absence of a father. As fathers were gone in these families, the mothers reported feeling that they were taking on new responsibilities, and they reported that they would feel more at ease if their daughters married and if their sons took jobs.

Our findings also suggest that intervention programs for children exposed to war may need to address academic functioning. Further, interventions should include family components that discuss how family structures (e.g., the absence of a father) may have created new roles for children and new responsibilities. Most post-war treatments do not consider these factors; instead, they focus on mental health symptoms (for a systematic review, see Jordans, Tol, Komproe, & de Jong, 2009). In addition, it may be particularly important to consider *shifts* in family structure from before the war to after the war.

When we examined psychological distress symptoms, PTS and anxiety were associated with poorer educational and occupational outcomes, but this relationship was not significant when we considered IQ as a factor. This finding is surprising. Internalizing symptoms have proximal, negative effects on learning (Birmaher et al., 1996; Samuelson, Krueger, Burnett, & Wilson, 2010) and academic functioning (Birmaher et al., 1996), and initial psychological distress symptoms among children after trauma exposure are associated with poorer psychological functioning (La Greca et al., 2010; Lai et al., 2013). Thus, we expected that we would see long-term effects of psychological distress symptoms on children's life outcomes. However, in this study, as we were not able to assess psychological functioning prior to war exposure, it is unclear whether children may have had preexisting psychological distress symptoms. Future studies should assess for pre-war difficulties among children.

Our findings suggest that IQ may be a protective factor for children with psychological distress symptoms after war-exposure. This finding is in line with research supporting the strong relationship between IQ and educational and occupational outcomes (Fergusson, Horwood, & Ridder, 2005). Fergusson, Horwood, & Ridder (2005) followed a sample of children (8–9 years old) for 25 years. Children's IQ predicted children's educational and occupational outcomes as adults, even after adjusting for early behavior problems and family background. Surprisingly, the majority of the literature on children and war exposure has not considered the role of IQ (Smith et al., 2002; Thabet, Ibraheem, Shivram, Winter, & Vostanis, 2009). Another potential explanation for our findings related to IQ could be that IQ is a proxy for socio-economic status. Children with higher IQ may have had access to more resources and supports. However, this explanation is less likely in the context of Kuwait. Most Kuwaiti families are upper middle class families, and secondary and University education are free to all children.

Conversely, study findings also imply that after war exposure, children with low IQs may be those most at risk for poor educational and occupational outcomes. Many current interventions children exposed to traumatic events are cognitively demanding. For example, the School Mediation Intervention for children exposed to armed conflict (Peltonen, Quota, El Sarraj, & Punamaki, 2012) requires problem solving, conflict resolution, and dialogue skills. Adding cue cards and simplifying psychoeducational components may be two possible adjustments that could be included in interventions.

In contrast to our hypotheses, depressive symptoms were not associated with educational or occupational outcomes. In the general literature, depressive symptoms predict poor academic outcomes and interfere with functioning (Birmaher et al., 1996; Horowitz & Garber, 2006). In addition, early depressive symptoms place youth at risk for adult depressive symptoms (Jacobs, Reinecki, Gollan, & Kane, 2007), and depressive symptoms are highly comorbid with PTS symptoms (Lai et al., 2013) and anxiety (Axelson & Birmaher, 2001). One potential explanation for our surprising finding is that for children in our study, their symptoms of depression may have been targeted directly for intervention. For example, one intervention that was utilized with children in the current study was Mona Macksoud's manual for Helping Children Cope with the Stresses of War (Macksoud, 1993). This intervention provides direct advice for parents and teachers for helping children's depressive symptoms. Further, children in our study were likely to be identified for grief symptoms, as many children were recruited through the Martyrs Office and through the National Committee for Missing and Prisoner's of War. Finally, we did not assess children's pre-war depressive symptoms. Thus, our measure of proximal depressive symptoms may not help us distinguish between children who experienced depressive reactions to war from those who may have had more chronic depressive symptoms.

When interpreting our results, several limitations should be considered. First, we did not have information on participants' functioning prior to the Gulf crisis, as is common in the literature on traumatic stressors. Thus, we are not able to comment on participants' preexisting difficulties. Second, no normative data exist for these translated Arabic measures. Thus, it is difficult to compare our sample to other samples. In addition, Kuwait is a wealthy country that rebuilt quickly after the Gulf crisis. Although this is a strength of our study, findings may not generalize to other samples. Further, other studies should consider socioeconomic status as a control variable, as socioeconomic status may have more relevance with other samples. Finally, we did not have information on whether participants sought psychological treatment. Thus, we are not able to comment on the effect that treatment-seeking may have had on our participants.

In conclusion, our study represents crucial information about children's life outcomes after war-trauma exposure. After war-trauma exposure, it may be important to assess for children with higher levels of war-trauma exposure and symptoms of PTS and anxiety, and lower IQ, as these factors were related to poorer educational and occupational outcomes. Further, these youth may need tailored interventions that will directly address children's academic functioning and view of life choices.

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Figure 1.

Gender as a moderator of the relationship between war-trauma exposure as a predictor of the probability of attending University, controlling for IQ and intervening life events.

Count and percentage of participants at each level of educational attainment and occupational status by Father Status group and gender.

Table 1

	Educational Attainment (Time 2)				Occupational Status (Time 2)		
	n (%)				n (%)		
	Intermediate	High School	Diploma	University	Neither	Employed	Student
Father Status Group (Time 1)							
Killed (n = 33)	6 (18%)	5 (15%)	16 (49%)	6 (18%)	3 (9%)	15 (46%)	15 (46%)
Missing (n = 29)	4 (14%)	4 (14%)	5 (17%)	16 (55%)	3 (10%)	6 (21%)	20 (69%)
Arrested (n = 23)	2 (9%)	9 (39%)	2 (9%)	10 (44%)	4 (17%)	6 (21%)	13 (57%)
Control (n = 35)	0 (0%)	3 (9%)	4 (11%)	28 (80%)	0 (0%)	5 (14%)	30 (86%)
Gender							
Male (n = 60)	7 (12%)	14 (23%)	11 (18%)	28 (47%)	7 (12%)	19 (32%)	34 (57%)
Female (n = 60)	5 (8%)	7 (12%)	16 (27%)	32 (53%)	3 (5%)	13 (22%)	44 (73%)

Table 2
Means for war-trauma exposure and psychological distress by levels of educational attainment and occupational status.

Factors (Time 1)	Educational Attainment (Time 2)				Occupational Status (Time 2)		
	<i>M (SD)</i>				<i>M (SD)</i>		
	Intermediate	High School	Diploma	University	Neither	Employed	Student
War-Trauma Exposure	8.50 (2.58) ^a	7.11 (2.56) ^{a,b}	7.31 (2.51) ^{a, b}	5.86 (2.25) ^b	8.80 (2.53) ^a	7.41 (2.15) ^{a,b}	6.14 (2.47) ^b
PTS Symptoms	19.01 (10.58) ^a	13.01 (9.81) ^{a, b}	14.44 (10.46) ^{a, b}	9.57 (8.87) ^b	18.00 (12.82) ^a	14.11 (9.03) ^{a, b}	10.69 (9.62) ^b
Anxiety Symptoms	13.67 (5.93) ^a	8.81 (5.95) ^b	9.85 (5.10) ^{a, b}	8.50 (5.82) ^b	12.60 (7.79) ^a	10.47 (5.97) ^a	8.51 (5.33) ^a
Depressive Symptoms	11.58 (5.60) ^a	9.19 (5.52) ^a	9.04 (4.62) ^a	8.05 (5.03) ^a	10.40 (7.89) ^a	9.97 (4.86) ^a	8.15 (4.75) ^a

Note. Superscripts within rows are different when means within the row are significantly different from one another ($p < .05$).

Table 3
War-trauma a exposure and psychological distress as predictors of educational attainment and occupational status.

	Life Outcomes (Time 2)	Time 1 Factors		
		War Trauma Exposure Odds Ratio (95% CI)	PTS Symptoms Odds Ratio (95% CI)	Anxiety Symptoms Odds Ratio (95% CI)
Model 1: No Control Variables	Attending University	.73** (.60 – .90)	.94** (.90 – .99)	.95 (.88 – 1.02)
	Obtained Diploma	.95 (.77 – 1.17)	.99 (.94 – 1.04)	.98 (.89 – 1.07)
	Employed	.75 (.52 – 1.07)	.96 (.90 – 1.03)	.95 (.85 – 1.06)
	Student	.68** (.52 – .89)	.95* (.90 – 1.00)	.89* (.80 – 1.00)
Model 2: Controlling for IQ	Attending University	.76* (.60 – .95)	.95 (.90 – 1.01)	.95 (.88 – 1.04)
	Obtained Diploma	.98 (.79 – 1.22)	1.02 (.96 – 1.08)	.99 (.90 – 1.08)
	Employed	.79 (.54 – 1.16)	.98 (.91 – 1.06)	.98 (.86 – 1.11)
	Student	.75 (.56 – 1.01)	.97 (.91 – 1.03)	.89 (.78 – 1.01)
Model 3: Controlling for IQ and Intervening Life Events	Attending University	.73* (.57 – .94)	.95 (.89 – 1.01)	.96 (.88 – 1.04)
	Obtained Diploma	1.03 (.81 – 1.29)	1.03 (.97 – 1.10)	1.03 (.92 – 1.14)
	Employed	.83 (.54 – 1.29)	1.02 (.92 – 1.12)	1.01 (.88 – 1.17)
	Student	.78 (.58 – 1.06)	.99 (.92 – 1.06)	.91 (.79 – 1.04)

Note.

*
p .05,

**
p .01,

p .001.

Table 4

Count and percentage for marital status by child trauma group, reported separately for males and females.

	Child Trauma Group (Time 1)	Single <i>n</i> (%)	Married <i>n</i> (%)
Males Only	Killed (<i>n</i> = 16)	14 (88%)	2 (13%)
	Missing (<i>n</i> = 17)	15 (88%)	2 (12%)
	Arrested (<i>n</i> = 11)	11 (100%)	0 (0%)
	Control (<i>n</i> = 16)	14 (88%)	2 (13%)
Females Only	Killed (<i>n</i> = 17)	9 (53%)	8 (47%)
	Missing (<i>n</i> = 12)	7 (58%)	5 (42%)
	Arrested (<i>n</i> = 12)	9 (75%)	3 (25%)
	Control (<i>n</i> = 19)	17 (90%)	2 (11%)