Relationships between Psychopathological and Demographic Variables and Posttraumatic Growth among Holocaust Survivors

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Abstract

The relationship between posttraumatic growth and PTSD symptoms, depression, anxiety and vulnerability, as well as demographic differences in posttraumatic growth was examined in a group of 23 Holocaust survivors. The posttraumatic growth aspect of spiritual change was found to correlate positively and significantly with the PTSD symptom clusters of intrusion, avoidance and hyperarousal. Numerous demographic variables were also found to relate to post-traumatic growth including survivors' age during the Holocaust, the nature of their Holocaust experiences and whether they were ever alone, without family, during their Holocaust experiences as well as survivor support group membership.

The Nazi Holocaust is one of the defining large-scale traumatic events of the twentieth century. Since the end of World War II in 1945, a large amount of research has been conducted into the psychological aftermath of the Holocaust for its survivors. However, very little attention has been focussed on the potential positive effects of surviving the Holocaust. This article seeks to redress this gap in the literature by examining the presence of posttraumatic growth amongst a group of Holocaust survivors.

Formulations regarding the impact of the Holocaust on the human psyche were being constructed even before survivors were liberated from their camps (Grubrich-Simitis, 1981; Levav, 1998). Eminent psychiatrists and psychologists such as Bruno Bettelheim and Victor Frankl found themselves in an unenviable bird's eye position while themselves interned in concentration camps. Literature regarding the negative effects of Holocaust trauma has been amassing since the first reports of symptoms emerged from the displaced persons camps in the late 1940s (for example Friedman, 1948; Friedman, 1949; Niremberski, 1946).

The main impetus for the growth of interest in the psychological well being of Holocaust survivors was the passing of a law by the West German government in 1956 granting restitution to victims of Nazi persecution (Berger, 1988; Blumenthal, 1981; Grubrich-Simitis, 1981; Hodgkins & Douglass, 1984; Jucovy, 1992; Krell, 1997; Last, 1989). As a result, a number of psychiatrists and psycho-analysts began publishing case studies of Holocaust survivors based on these compensation assessments (Grubrich-Simitis, 1981; Hodgkins & Douglass, 1984). As the emphasis was on finding evidence of impairment for compensation claims, the dominant theme arising from these early case studies and theoretical discourses was a negative one of severe debility. Non-clinical, community based survey studies, which began to appear from the 1970s onwards tended to paint a less bleak picture of survivor's post-war adjustment (Berger, 1988; Gross, 1988; Rustin, 1988) though higher symptom levels among survivors compared to control groups were apparent.

Clinicians soon noticed a pattern in the symptoms experienced by survivors and as a result literature referring to a "syndrome" suffered by survivors, whether it was termed the concentration camp syndrome as first described by Herman and Thyygesen in 1954 (Brom, Durst, & Aghassy, 2002), or KZ syndrome (Klein, Beersheba, Zellermayer,

& Shanan, 1963) or survivor syndrome (Niederland, 1981, 1988). The symptoms listed in this syndrome are what we would relate to today as depression, anxiety, paranoia (specifically with regards to fear of renewed persecution and safety of self and loved ones) PTSD symptoms and difficulties with trust and intimacy (related to their abrupt, traumatic separations from loved ones during the Holocaust).

Despite the large body of literature that exists in relation to the psychological impact of the Holocaust, there is very little that has focussed on the positive impacts of survivorship. The one exception is a study conducted by Lev-Wiesel and Amir (2003) which examined post-traumatic growth among a group of Holocaust child survivors. The relationship between posttraumatic growth and negative symptomatology is therefore worthy of further exploration within the context of Holocaust survival.

The concept of posttraumatic growth has been expounded for more than a decade (Tedeschi, 1999; Tedeschi & Calhoun, 1996). Tedeschi (1999, p. 321) defines posttraumatic growth as "important changes in perception of self, philosophy of life, and relationships with others in the aftermath of events that are considered traumatic in the extreme." Living through a traumatic event can lead to positive changes in a person's perception of their ability to deal with difficult circumstances. With the benefit of hindsight, the survivor reflects that they were quite capable in the way they coped with the traumatic experience which insight then leads to a more positive perception of their own abilities and may also positively influence they way they deal with later experiences (Tedeschi & Calhoun, 1996). In terms of philosophical changes, a survivor or victim of trauma may become more appreciative of life, vow to life live to the fullest and may (after a possible weakening of beliefs) be left with stronger spiritual and religious beliefs, related to the knowledge that they faced adversity and lived through it (Tedeschi & Calhoun, 1996). Finally in the area of relationships with others, Tedeschi and Calhoun (1996) contend that in their post-trauma life, survivors or victims may value their relationships more, and also develop deeper and more intimate relationships, partially as a result of sharing/discussing their traumatic experience with loved ones and friends.

Before the construct of posttraumatic growth was studied in any detail or depth it seemed intuitive to predict that posttraumatic growth would be inversely related to negative traumatic impacts (for example growth and symptomatology/pathological

outcomes are placed at opposing ends of a continuum in Green et al.'s (1985) trauma model) but the balance of research in this area tends to suggest that they can co-exist and should not be considered part of the same continuum. Both the study conducted with survivors (Lev-Wiesel & Amir, 2003) as well as others with other population groups such as carers of AIDS patients (Cadell, Regehr, & Hemsworth, 2003), Israeli adolescents exposed to terror incidents (Laufer & Solomon, 2006), brain-injury survivors (McGrath & Linley, 2006), survivors and bereaved family members of September 11 victims (Butler et al., 2005), cancer survivors (Carboon, Anderson, Pollard, Szer, & Seymour, 2005) and general population members who have suffered varying traumatic incidents (Morris, Shakespeare-Finch, Rieck, & Newbery, 2005) obtained positive relationships between negative symptomatology and posttraumatic growth. However some studies have also found negative (for example among elders following varying traumatic incidents (Park, Mills-Baxter, & Fenster, 2005) or null associations (for example among American WWII prisoners-of-war (Erbes et al., 2005)) with symptomatology and the suggestion that the relationship between symptoms and growth may differ depending on the specific trauma has been made, and also perhaps the cultural context (Linley & Joseph, 2004). Given the only study to examine posttraumatic growth within a Holocaust survivor population found a positive association between growth and symptomatology this study sought to determine if this positive association could be replicated within another Holocaust survivor sample.

Further examination of the relationship between negative psychological symptoms and growth resulting from Holocaust trauma was not the sole aim of this study. A further aim of the study was to uncover demographic differences in posttraumatic growth among survivors. Significant differences in symptomatology among survivors relating to various demographic and situational variables including the nature of their Holocaust experiences, such as camp internment versus hiding (for example among the most recent research: Ben-Zur & Zimmerman, 2005; Cohen, Dekel, Solomon, & Lavie, 2003; Joffe, Brodaty, Luscombe, & Ehrlich, 2003; Kuch, Rector, & Szacun-Shimizu, 2005; Lev-Wiesel & Amir, 2000; Schreiber, Soskolne, Kozohovitch, & Deviri, 2004), loss of family (Brody, 1999), gender (Lurie-Beck, 2007: via meta-analysis and empirical research), age (Cohen et al., 2003; Lev-Wiesel & Amir, 2003; Lurie-Beck,

2007: via meta-analysis and empirical research; Schreiber et al., 2004), country of origin (Letzter-Pouw & Werner, 2005), post-war settlement location (Lurie-Beck, 2007: via meta-analysis and empirical research) and membership of survivor support groups or organisations (Lurie-Beck, 2007: via meta-analysis and empirical research) to cite but a few examples of research conducted/reported since the year 2000. Given that there is a wide variation in symptom levels experienced by survivors, it seems reasonable to suggest that there might be equal variation in the degree of posttraumatic growth experienced within this population. Lev-Wiesel and Amir (2003) did not explore the impact of any demographic variables on posttraumatic growth beyond gender and age in their sample of Holocaust child survivors. Clearly, given the number of demographic variables found to have an impact on symptom levels, there is an impetus to explore further demographic differences in posttraumatic growth within the Holocaust survivor population.

This study sought to further delineate demographic differences in posttraumatic growth among Holocaust survivors, in addition to those tested by Lev-Wiesel and Amir (2003). It was hypothesised that demographic subgroups of Holocaust survivors who have been found to evidence higher levels or greater severity of negative traumatic symptoms (e.g., camp survivors versus non-camp survivors as found by Ben-Zur & Zimmerman, 2005; Brody, 1999; Cohen et al., 2003; Joffe et al., 2003; Robinson, Rapaport-Bar-Sever, & Rapaport, 1994; Robinson et al., 1990) would also have higher levels of posttraumatic growth if the positive relationship between negative symptoms and growth holds true.

Therefore the two hypotheses for this study were:

- That posttraumatic growth will be positively associated to symptom levels among Holocaust survivors
- There will be significant differences between demographic sub-groups of Holocaust survivors in terms of the degree of posttraumatic growth.

Method

Participants

A total of 23 Jewish Holocaust survivors participated in the current study: 13 (57%) were male and 10 (44%) were female. Their average age at the time of participation was 75.13

years with a range of 62 to 94 years. Their average age during the Holocaust (as operationalised by their age in 1945) was 15.48 years with a range of 2 to 34 years. In terms of their current country of residence, 48% now live in Australia, 35% in America, 9% in England, 4% in Germany and 4% in Israel. There was a good range across country of birth, with 30% having been born in Austria, 17% in Hungary, 13% in Poland, 13% in Germany, 9% in the Netherlands, 9% in Belgium, and 9% in Lithuania. With regard to their experiences during the Holocaust, 39% spent time in either a concentration or labour camp. A number indicated that they had been in hiding either as a child (26%), or an adult (4%) with the help of false papers or under an assumed identity. A further 26% of the survivor sample managed to escape Nazi persecution before 1945 (by leaving continental Europe). While they did escape some of the more severe forms of traumatisation, they did endure the beginning stages of what has become known as the Holocaust and so can still be categorised as Holocaust survivors. While 13% of the survivor participants believed that they were the sole survivor of their family, 44% indicated that they were alone (without family members) during at least part of the Holocaust (Note that 17% did not answer this question).

All survivors in the sample were persecuted for being Jewish. Currently, 87% identify themselves as Jewish, 74% saying they actively practice their religion. Of the remainder, 4% identify as Christian and 9% as atheist. In terms of marital status, 61% are married, 26% widowed and 13% divorced or separated. There are equal proportions of high school and tertiary educated participants (48% each) with 4% reaching only a elementary or primary school education level.

Procedure

Participants were recruited worldwide and were members of survivor organisations or email groups, members of Jewish organisations, alumni of *March of the Living* or relatives or friends of participants or the research team. These organisations were approached by the first researcher in the hopes they would disseminate information about the study to their membership. In addition potential participants were made aware of the research via some media coverage in January and May 2005, which included an invitation to participate. This study was part of a larger study which included research with children and grandchildren of survivors. Of the 23 survivors who participated in the

study, 39% (9) were recruited via a survivor organisation while the remainder came to learn of the study via family members who participated in the larger study. Participants were quite hard to obtain and the sample obtained is the end result of over a year of data collection and canvassing for participants. The response rate (as a proportion of the total number of people potentially made aware of the study) was quite low, though an exact percentage for this cannot be calculated. However, the vast majority (90%) of survivors who were actually sent a questionnaire, returned it in completed form for inclusion in the research.

Interested parties were invited to contact the first author to indicate their interest and/or willingness to participate in the study. The potential participants were either emailed or posted a questionnaire booklet. As well as the questionnaire booklet, potential participants were provided an with an informed consent information package which included details of the purpose of the study as well as assuring them of their anonymity, ability to withdraw or not participate and information about the ethical clearance of the research project. Four reminders were sent in monthly intervals to encourage the return of completed questionnaire booklets. The research methodology for this study obtained ethical clearance through the Queensland University of Technology's Ethics Committee. Data collection was conducted between December 2004 and January 2006.

Instruments

The questionnaire booklets contained the *Posttraumatic Growth Inventory*, the *Impact of Events Scale – Revised*, the *Depression Anxiety Stress Scales* and the *Posttraumatic Vulnerability Scale*. A detailed demographic questionnaire was also included

Posttraumatic Growth Inventory (PTGI)

Posttraumatic growth was measured with Tedeschi and Calhoun's (1996) frequently used Posttraumatic Growth Inventory (PTGI). This scale measures the degree to which numerous positive changes in attitude and life view are believed by the participant to be the result of some traumatic event. The subscales of the Posttraumatic Growth Inventory (PTGI) developed by Tedeschi and Calhoun (1996), encompass five areas of potential "growth" including spiritual (*Appreciation of Life, Spiritual Change*), self-perception (*Personal Strength*), interpersonal relationships (*Relating to Others*) and a re-evaluation of life path (*New Possibilities*). The reliabilities of these subscales are as follows: new

possibilities (α = 0.84), relating to others (0.85), personal strength (0.72), spiritual change (0.85), and appreciation of life (0.67). The total PTGI score has a reliability of 0.90 (Tedeschi & Calhoun, 1996).

Impact of Events Scale – Revised (IES-R)

The Impact of Events Scale – Revised or IES-R (Weiss & Marmar, 1997) was used to assess the three classes of Posttraumatic Stress Disorder (PTSD) symptoms (namely, intrusion, avoidance, and hyperarousal) as it is a well-established and recognised measure in the trauma field. Reliabilities for the three sub-scales range between 0.77 (hyperarousal) and 0.85 (intrusion and avoidance)(Weiss, 1996).

The IES-R scale is scored on a 5-point likert scale (0-4) and has 22 items in total. The intrusion and avoidance subscales have 7 items and the hyperarousal subscale has 6 items. Scores are derived by calculating the mean score of items therefore for subscales as well as the total overall score, scores can range from a minimum score of 0 to a maximum score of 4. The 5-point likert scale asks people to consider how distressing a number of "difficulties" had been for them from 0 "not at all", 1 "a little bit", 2 "moderately", 3 "quite a bit" to 4 "extremely". While Weiss and Marmar (1997) did not provide cut-off scores for the IES-R, Creamer, Bell and Failla (2003) calculated an optimal cut-off score of 1.50 which provided the high diagnostic accuracy/differentiation between participants diagnosed and not diagnosed with PTSD.

Depression Anxiety Stress Scales (DASS)

The Depression Anxiety Stress Scales or DASS (S. H. Lovibond & P. F. Lovibond, 1995) were chosen as the measure for anxiety and depression in the current study. The DASS is a 42 item, 4-point likert scale (0-3) measure with the three subscales of anxiety, depression and stress each containing 14 items. Thus, given the age of the participants of the study this scale was chosen because of its relative brevity in providing scores on three symptom dimensions. Subscale scores are derived by summing scores for each item that loads on the subscale, meaning that scores on each subscale can range from a minimum of 0 to a maximum of 42. The raw score cut-offs for the severity categories of depression are as follows: normal range 0-9, mild 10-13, moderate 14-20, severe 21-27, and extremely severe 28 and over. Severity category scores for the anxiety subscale are normal 0-7, mild 8-9, moderate 10 -14, severe 15-19 and extremely severe 20 and over.

The equivalent cut-offs for the stress subscale are normal 0-14, mild 15-18, moderate 19-25, severe 26-33 and extremely severe 34 and over.

The DASS has been found to have sound reliability and validity. The Cronbach's α for the anxiety subscale was found to be 0.84 (n = 2,914) during initial assessment of the scales, while the stress (0.90) and depression (0.91) subscale scored even more favourably (S. H. Lovibond & P. F. Lovibond, 1995, p. 27). Brown, Chorpita, Korotitsch and Barlow (1997) have cited equally high and higher reliabilities for the DASS in clinical samples. Convergent validity is evident via the high correlations between the DASS anxiety subscale and the Beck Anxiety Inventory (r = 0.81, n = 717) and the DASS depression subscale and the Beck Depression Inventory (r = 0.74) (P. F. Lovibond & S. H. Lovibond, 1995).

Post-Traumatic Vulnerability Scale (*PTV*)

The Post-Traumatic Vulnerability (PTV) Scale (Shillace, 1994) measures: "A perceived sense of defencelessness; a sense of insecurity and expectation that danger exists and harm will occur; overvigilance and caution to protect self and loved ones". This scale was used because on examination the items on the scale seemed to reflect the anecdotal descriptions of survivors' fears and anxieties in relation to the recurrence of a Holocaust-like event and/or the safety of their loved ones. This scale has been found to have relatively high reliability (α = 0.79) (Shillace, 1996). The PTV is a 24 item, true-false measure. Scores on the PTV can range between 0 and 24, with a score of 1 being given to any item that is scored in the direction that suggests post-traumatic vulnerability.

Results

The sample size derived for this study was quite small (n = 23) which may have translated to weakened power for the statistical analyses conducted. To remedy this to some degree, results that attained a probability level of 0.10 or less are reported in addition to those reaching the traditional 0.05 level. In addition it should be noted by the reader that a larger number of analyses have been performed on this relatively small data set than would be desired from a statistical perspective. However, they have been conducted in a spirit or exploratory analysis in an attempt to obtain maximum information from the valuable and rapidly diminishing data source. It was not possible to increase the sample size any further, because a quite exhaustive sample recruitment

process had already been conducted and the majority of survivors are now elderly or deceased.

Breaches of the homogeneity of variance assumption for t-tests are remedied via the use and reporting of adjusted degrees of freedom (as provided by SPSS). Heterogeneity of variance affecting repeated measures ANOVA analysis is remedied via the use and reporting of degrees of freedom adjusted via the Greenhouse Geisser epsilon. These adjustments will be obvious to the reader via the reporting of fractional degrees of freedom as opposed to whole number degrees of freedom.

Descriptive Statistics for Study Variables

The survivor sample's means and standard deviations on the study variables are presented in Table 1 along with normative comparison data. As can be seen, the survivor sample scores higher than the norm on all three subscales of the DASS as well as the PTV. A smaller proportion of the survivor sample scores within the normal range of the DASS subscales as prescribed by the scale authors (S. H. Lovibond & P. F. Lovibond, 1995) than has been found in the general population. Using the optimal cut-off score of 1.50 for the IES-R as calculated by Creamer et al (2003), around a third of the sample appear to suffer from at least some of the PTSD symptoms with a severity great enough to lead to a likely PTSD diagnosis by a clinician. The samples' mean score for the IES-R total score is just under the 1.50 cut-off point.

Means and standard deviations are also provided for posttraumatic growth as measured by the PTGI. Comparatively, the overall growth level reported by this survivor sample is higher than that noted in the previous study of posttraumatic growth with Holocaust survivors (43.21, Lev-Wiesel & Amir, 2003), but lower than has been measured in numerous other traumatised populations (as reviewed by Linley & Joseph, 2004).

INSERT TABLE 1 HERE

Ranking of Post-traumatic Growth Aspects

After the average scores for each of the five PTGI sub-scales were derived, it was possible to determine which growth aspect was more strongly linked to the Holocaust by survivors. Holocaust survivors participating in the current study rated an *appreciation of life* (M = 3.41, SD = 1.66) as being the most associated with their Holocaust experience

of the five post-traumatic growth scales. The second highest rated growth effect was *personal strength* (M = 3.00, SD = 1.68). *Relating to others* (M = 2.64, SD = 1.43) and *new possibilities* (M = 2.40, SD = 1.69) took up the third and fourth places in the ranking. *Spiritual change* was the lowest ranked posttraumatic growth aspect (M = 1.37, SD = 1.85) which was rated significantly lower than the other four growth aspects (F (2.553, 53.622) = 8.619, $p < 0.001$, Greenhouse Geisser $\varepsilon = 0.638$). This ordering of scale ratings is identical to that obtained by Lev-Wiesel and Amir (2003).

Relationship between Posttraumatic growth and psychopathological variables

Correlations were conducted between the measures used in the study. The main focus of this exercise was to determine the relationships between the posttraumatic growth scales and the psychopathological variables. The intercorrelations between psychopathological variables and the intercorrelations between the posttraumatic growth subscales are not reported here, but were all positive and moderate to large in size (ranging between 0.4 and 0.8) as would be expected.

As can be seen in Table 2, only three correlations between posttraumatic growth scales and psychopathological scales reached statistical significance. These significant correlations suggest an increasing perception of spiritual change as a result of the Holocaust being associated with higher levels of the three PTSD symptom clusters of intrusion, avoidance and hyperarousal.

There were a number of small to moderate correlations in the matrix that narrowly missed out on significance (possibly because of the small sample size). Notable among the correlations that narrowly missed significance are the correlations between intrusion and appreciation of life (r = 0.41, p = 0.059) and intrusion and relating to others (r = 0.37, p = 0.083). The positive correlation between spiritual change and the anxiety subscale of the DASS was of a similar strength (r = 0.37, p = 0.091). While PTSD symptoms were positively related to posttraumatic growth dimensions, the one correlation with the depression subscale of the DASS that reached the $p < 0.10$ level was positive in nature. Specifically, there was a negative correlation between personal strength and depression (r = - 0.38, p = 0.089).

INSERT TABLE 2 HERE

Demographic differences in Posttraumatic growth among Holocaust survivors

Relationships between demographic variables and posttraumatic growth were examined via correlations, *t* tests and ANOVAs. Significant results were obtained for survivor age during the Holocaust, nature of Holocaust experiences, whether the survivor was ever alone during their Holocaust ordeal and survivor support group membership. No significant differences were found for gender, country of origin, time in Europe after the war, time in Israel or post-war settlement location.

A Holocaust survivors' age during the Holocaust (as operationalised by their age in 1945) was positively related to all the posttraumatic growth subscales, but only the appreciation of life subscale reached statistical significance ($r = 0.58$, $p < 0.01$). This result suggests that the older a survivor was during the Holocaust, the more they feel they have an increased appreciation of life as a result of their experience.

Scores on the appreciation of life subscale were found to significantly differ between Holocaust experience groups. Specifically, camp survivors were significantly (F (2, 19) = 6.93, $p < 0.01$, $\eta^2 = 0.42$) more likely to attribute an appreciation of life to their Holocaust experiences ($M = 14.00$, $SD = 1.73$, $n = 9$) than both escapees ($M = 8.17$, $SD = 4.92$, $n = 6$) and non-camp/hiding survivors ($M = 7.14$, $SD = 5.11$, $n = 7$). None of the remaining PTGI subscales significantly differed between these groups. However, there is also a significant relationship between survivor age during the Holocaust and the nature of their Holocaust experiences (F (2, 24) = 7.57, $p < 0.01$, $\eta^2 = 0.39$). The average age in 1945 of the survivor participants with non-camp experiences, such as living in hiding was 10.78 ($SD = 8.57$) years, for those who escaped prior to 1945 it was 15.67 years ($SD = 4.37$) and those who spent some time in a camp age it was 23.08 years ($SD = 7.29$). With this in mind, the ANOVA assessing the influence of Holocaust experience type on the appreciation of life scale of the PTGI was rerun as an ANCOVA, with survivor age in 1945 as a covariate. While age was not a significant covariate, it explained enough of the variance in appreciation of life scores to reduce the formerly significant difference related to nature of Holocaust experience to non-significance.

When the analyses were focussed on comparing survivors who spent the war with at least one family member by their side to those who spent at least part of the war alone, three PTGI subscales obtained significant results. *Sometimes unaccompanied survivors*

scored significantly higher than *accompanied survivors* on relating to others (t (18) = 2.19, $p < 0.05$, $\eta^2 = 0.21$; $M = 22.27$, $SD = 9.91$, $n = 11$ versus $M = 12.89$, $SD = 10.23$, $n = 9$), personal strength (t (17) = 3.57, $p < 0.01$, $\eta^2 = 0.43$, $M = 15.60$, $SD = 4.35$ versus $M = 7.00$, $SD = 6.08$) and new possibilities (t (14.59) = 2.40, $p < 0.05$, $\eta^2 = 0.25$, $M = 16.27$, $SD = 6.75$ versus $M = 7.56$, $SD = 9.00$). Survivor age during the Holocaust was not significantly related to whether the survivor spent part of the war alone, however as a precautionary measure the three significant t tests reported here were also rerun as ANCOVAs with age in 1945 as the covariate. All three results remained statistically significant with the influence of survivor age during the Holocaust partialled out.

Finally, potential differences in posttraumatic growth relating to Holocaust survivors' membership of survivor organisations were explored. Survivors who are members of survivor organisations scored significantly higher than non-members on the new possibilities (t (18.25) = 2.56, $p < 0.05$, $\eta^2 = 0.23$; $M = 15.90$, $SD = 5.30$, $n = 10$ versus $M = 8.00$, $SD = 8.95$, $n = 12$), personal strength (t (19) = 2.80, $p < 0.05$, $\eta^2 = 0.29$; $M = 15.89$, $SD = =4.65$ versus $M = 8.67$, $SD = 6.58$) and appreciation of life subscales (t (15.72) = 2.47, $p < 0.05$, $\eta^2 = 0.21$; $M = 12.56$, $SD = 2.40$ versus $M = 8.08$, $SD = 5.63$) with a similar difference on the relating to others scale below the 0.10 level (t (20) = 1.73, $p = 0.099$, $\eta^2 = 0.13$; $M = 22.20$, $SD = 8.16$ versus $M = 15.00$, $SD = 10.83$).

Discussion

Before discussing the results presented in this article it is timely to reassert the caution that the findings should be interpreted within the exploratory spirit with which they were derived. The analyses have been based on a small sample ($n = 23$), which while largely unavoidable due to the increasing difficulty in obtaining Holocaust survivors as participants and the rapidly diminishing population pool from which to draw them from, means that the analyses should be interpreted with caution and viewed as indicative only.

The first hypothesis that suggested a positive relationship between PTSD symptoms, depression and anxiety was answered by mixed results. The only significant correlations were between PTSD symptoms and the spiritual change growth aspect and these were positive as predicted. No other correlations were significant; however this is mostly due to the small sample size as a number of the correlations were of a reasonably

notable magnitude. It is noteworthy that a number of correlations with the depression subscale of the DASS were negative. Some of these correlations were approaching 0.40, but failed to reach significance.

There are many reasons why posttraumatic growth exists concurrently with negative posttraumatic reactions including PTSD symptoms. Cadell et al (2003) suggest that for posttraumatic growth to occur, it is necessary for the survivor to experience posttraumatic symptoms as well as the actual traumatic event. Perhaps it is the case that a trauma has to be severe enough to produce posttraumatic symptoms for it to be sufficient enough of a *watershed* to lead to the attitudinal and life view change that is characteristic of posttraumatic growth.

However, while PTSD symptoms were consistently positively related to posttraumatic growth, this study found a negative correlation between the growth aspect of personal strength and depression. While this result may seem counter-intuitive it is consistent with Linley and Joseph's (2004) review of the posttraumatic growth literature – that is a positive association with PTSD symptoms but a negative association with depression. They suggest the positive association with PTSD symptoms is a manifestation of the argument that rumination and analysis of the event is required for growth to occur. The cluster of symptoms associated with depression would not be "helpful" in this process.

The results obtained in this study are consistent with those reported by Lev-Wiesel and Amir (2003) in a number of areas. Both studies found that survivor age positively relates to posttraumatic growth. The posttraumatic growth aspects were also ranked in the same order by the participants in the two studies with an appreciation of life and personal strength seen as the two growth aspects most linked to Holocaust experience. In addition, both studies found PTSD symptoms, and in particular hyperarousal, to positively relate to posttraumatic growth dimensions.

The correlations found in the current study were not weaker than those found in Lev-Wiesel and Amir's (2003) study, and in fact in a number of cases they were stronger. The smaller number of statistically significant results found by this study can mostly be attributed to the smaller sample size (N = 23 compared to N = 97 in Lev-Wiesel and Amir's (2003) study). As sample size increases, the magnitude of a correlation required

to reach statistical significance is smaller. With a sample of 97, correlations of 0.2 or more reached significance in Lev-Wiesel and Amir's (2003) study, while in the current study, correlations needed to be more than 0.42 to reach significance. The relating to others and appreciation of life subscales both correlated with all three IES-R subscales more strongly in the current study than they did in Lev-Wiesel's (2003) study. The argument that it is more meaningful to look at the magnitude of the correlation co-efficient than its statistical significance could certainly be argued in this case. Certainly the strength of the relationship between variables (as indicated by co-efficient magnitude) is certainly a more accurate reflection of clinical and psychological importance than sample-size-dependent statistical significance. Despite their statistical significance status the results of this study support those of Lev-Wiesel and Amir (2003) quite convincingly.

This study also sought to delineate further demographic differences among Holocaust survivors in their posttraumatic growth than had been published in the literature to date. The findings in relation to survivor age during the Holocaust were quite interesting however. Not only did the current study find a positive relationship between survivor age and posttraumatic growth (specifically an appreciation of life) that was consistent with the only other published study assessing posttraumatic growth among Holocaust survivors (Lev-Wiesel & Amir, 2003), but results obtained suggest that survivor age is more of a determinant than the nature of the survivor's experiences during the Holocaust. While camp survivors were found to have a significantly higher appreciation of life than non-camp survivors, this relationship was no longer significant when survivor age was taken into account in the analysis. This is an important point as previous research that addressed the influence of the nature of a survivor's experiences rarely conducted analyses which partialled out the potentially confounding effects of age. However, it seems that the impact of being separated from family members during the Holocaust is a stronger determinant than the survivor's age/developmental stage.

The results comparing survivors, who had been alone during at least part of the Holocaust, to survivors who had always been with at least one family member are compelling. Survivors who were separated from all their family for at least part of the war were significantly more likely to credit their Holocaust experiences with an increased sense of personal strength, an improved ability to relate to others and an enhanced sense

of new possibilities. It is not such a large leap to suggest that these survivors had to become quite self-reliant and quick-witted to ensure their survival and upon reflection were impressed with the success of their self-preservation efforts.

The results pertaining to higher growth among survivor group members are interesting. One could speculate as to whether survivors with higher growth were drawn to such groups or whether participation in the groups led to increases in growth. Certainly involvement in survivor organisations leads to association with other survivors and a heightened recognition of the triumph of the human spirit over such horrific traumas. Specifically in relation to the dimensions measured in the PTGI, it is easy to see how being a member of such a group could be related to a recognition of personal strength, new possibilities and an appreciation of life. Survivor organisations are also often involved in positive meaningful contributions to the continuing emphasis on education and awareness of the Holocaust and other instances of persecution and intolerance around the world. Participation in such efforts may well serve to consolidate or increase perceptions of individual survivor's sense of contribution. While only significant at the more liberal 0.10 level, the fact that group members would score higher on the relating to others dimension on the PTGI is also unsurprising given such survivors are potentially more socially active than others who do not also have this additional circle of friends and comrades.

Even though there were no other significant relationships between posttraumatic growth and demographic variables, this does not necessarily imply they are not influential. Again, the reader is reminded that given the small sample obtained for this study, the thresholds for significance were quite high.

A further caveat needs to be placed on the interpretation of the results of this study and indeed the vast majority of research with Holocaust survivors. It must be noted that symptom levels, as well as growth levels, reported herein reflect the levels experienced by the survivor participants at the time of the study (between 2004 and 2006). It is impossible to know whether these symptom and growth levels have remained stable since the Holocaust or have fluctuated during the intervening years. Longitudinal research has largely been lacking with the Holocaust survivor population – a fact that has repercussions for our ability to truly understand the long term impacts of this trauma.

While there has been a large amount of research conducted with Holocaust survivors in the 60 years since the end of World War II, the assessment of positive changes as a result of Holocaust survival has been largely lacking. The current study is only the second study to consider posttraumatic growth among Holocaust survivors. Obviously, the opportunities to study this phenomenon among Holocaust survivors are dwindling every day because the age of the survivor population is now mostly over 70. With the aging of the survivor population, it is now very difficult to obtain Holocaust survivor samples of a sufficiently large enough size to overcome this relationship between small sample size and achieving statistical significance.

There is still much to learn about the relationship between types of trauma and also support networks available to survivors during community/state-based trauma and the amount of posttraumatic growth evident as a result of variations in these factors. The Holocaust survivor population would have been ideal to examine these issues further. While it is perhaps mostly too late to help Holocaust survivors in any large number, perhaps the lessons we learn from their experiences can inform clinicians and researchers considering the impacts of more recent state-based traumas. Researchers able to obtain a larger Holocaust survivor sample than that obtained for the current study are urged to investigate as many demographic differentials as their sample allows. Such analyses help to identify particularly vulnerable or effected subgroups of the survivor population and it is this type of information which will be particularly helpful for clinicians dealing with survivors of more recent traumas such as in the former Yugoslavia, Cambodia, Rwanda, Darfur, and civilians living in a conflict-ridden, war-torn society such as those living in Iraq, Afghanistan, Israel and Palestine.

Ben-Zur, H., & Zimmerman, M. (2005). Aging Holocaust survivors' well-being and adjustment: Associations with ambivalence over emotional expression. *Psychology and Aging, 20*(4), 710-713.

Berger, L. (1988). The long-term psychological consequences of the Holocaust on the survivors and their offspring. In R. L. Braham (Ed.), *The Psychological Perspectives of the Holocaust and of its Aftermath* (pp. 175-222). New York: Columbia University Press.

Blumenthal, N. N. (1981). Factors contributing to varying levels of adjustment among children of Holocaust survivors. *Dissertation Abstracts International, 42*(4), 1596B (UMI No. 8120876).

Brody, J. M. (1999). An assessment of Nazi concentration camp survivors for post traumatic stress disorder and neuropsychological concomitants. *Dissertation Abstracts International, 60*(2), 820B (UMI No. 9918500).

Brom, D., Durst, N., & Aghassy, G. (2002). The phenomenology of posttraumatic distress in older adult Holocaust survivors. *Journal of Clinical Geropsychology, 8*(3), 189-201.

Brown, T. A., Chorpita, B. F., Korotitsch, W., & Barlow, D. H. (1997). Psychometric properties of the depression anxiety stress scales (DASS) in clinical samples. *Behavioural Research and Therapy, 35*(1), 79-89.

Butler, L. D., Blasey, C. M., Garlan, R. W., McCaslin, S. E., Azarow, J., Chen, X.-H., et al. (2005). Posttraumatic growth following the terrorist attacks of September 11, 2001: Cognitive, coping, and trauma symptom predictors in an internet convenience sample. *Traumatology, 11*(4), 247-267.

Cadell, S., Regehr, C., & Hemsworth, D. (2003). Factors contributing to posttraumatic growth: A proposed structural equation model. *American Journal of Orthopsychiatry, 73*(3), 279-287.

Carboon, I., Anderson, V. A., Pollard, A., Szer, J., & Seymour, J. F. (2005). Posttraumatic growth following a cancer diagnosis: Do world assumptions contribute? *Traumatology, 11*(4), 269-283.

Cohen, E., Dekel, R., Solomon, Z., & Lavie, T. (2003). Posttraumatic stress symptoms and fear of intimacy among treated and non-treated survivors who were children during the Holocaust. *Social Psychiatry and Psychiatric Epidemiology, 38*(11), 611-617.

Crawford, J. R., & Henry, J. D. (2003). The depression anxiety stress scales (DASS): Normative data and latent structure in a large non-clinical sample. *British Journal of Clinical Psychology, 42*(2), 111-131.

Creamer, M., Bell, R., & Failla, S. (2003). Psychometric properties of the Impact of Events Scale - Revised. *Behaviour Research and Therapy, 41*(12), 1489-1496.

Erbes, C., Eberly, R., Dikel, T., Johnsen, E., Harris, I., & Engdahl, B. (2005). Posttraumatic growth among American former prisoners of war. *Traumatology, 11*(4), 285-295.

Friedman, P. (1948). The road back for the DPs: Healing the psychological scars of Nazism. *Commentary, 6*, 502-510.

Friedman, P. (1949). Some aspects of concentration camp psychology. *American Journal of Psychiatry, 105*, 601-605.

Green, B. L., Wilson, J. P., & Lindy, J. D. (1985). Conceptualizing post-traumatic stress disorder: A psychosocial framework. In C. R. Figley (Ed.), *Trauma and its Wake: The Study and Treatment of Post-traumatic Stress Disorder* (Vol. 1, pp. 53-69). New York: Brunner/Mazel.

Gross, S. (1988). The relationship of severity of the Holocaust condition to survivors' child-rearing abilities and their offsprings' mental health. *Family Therapy, 15*(3), 211-222.

Grubrich-Simitis, I. (1981). Extreme traumatization as cumulative trauma: Psychoanalytic investigations of the effects of concentration camp experiences on survivors and their children. *Psychoanalytic Study of the Child, 36*, 415-450.

Hodgkins, B. J., & Douglass, R. L. (1984). Research issues surrounding Holocaust survivors: Adaptability and aging. *Journal of Sociology and Social Welfare, 11*(4), 894-914.

Joffe, C., Brodaty, H., Luscombe, G., & Ehrlich, F. (2003). The Sydney Holocaust study: Posttraumatic stress disorder and other psychosocial morbidity in an aged community sample. *Journal of Traumatic Stress, 16*(1), 39-47.

Jucovy, M. E. (1992). Psychoanalytic contributions to Holocaust studies. *International Journal of Psycho-Analysis, 73*(2), 267-282.

Klein, H., Beersheba, I., Zellermayer, J., & Shanan, J. (1963). Former concentration camp inmates on a psychiatric ward: Observations. *Archives of General Psychiatry, 8*(4), 334-342.

Krell, R. (1997). Psychiatry and the Holocaust. In R. Krell & M. I. Sherman (Eds.), *Medical and Psychological Effects of Concentration Camps on Holocaust Survivors. Genocide: A Critical Bibliographic Review* (Vol. 4, pp. 3-22). New Brunswick: Transaction Publishers.

Kuch, K., Rector, N. A., & Szacun-Shimizu, K. (2005). Absent dose-response in the posttraumatic stress disorder symptoms of 350 Holocaust survivors. *Canadian Journal of Psychiatry, 50*(2), 125-126.

Last, U. (1989). The transgenerational impact of Holocaust trauma: Current state of the evidence. *International Journal of Mental Health, 17*(4), 72-89.

Laufer, A., & Solomon, Z. (2006). Posttraumatic symptoms and posttraumatic growth among Israeli youth exposed to terror incidents. *Journal of Social and Clinical Psychology, 25*(4), 429-447.

Letzter-Pouw, S., & Werner, P. (2005). Correlates of intrusive memories and avoidance of memories of the Holocaust. *Israel Journal of Psychiatry and Related Sciences, 42*(4), 271-277.

Lev-Wiesel, R., & Amir, M. (2000). Posttraumatic stress disorder symptoms, psychological distress, personal resources, and quality of life in four groups of Holocaust child survivors. *Family Process, 39*(4), 445-459.

Lev-Wiesel, R., & Amir, M. (2003). Posttraumatic growth among Holocaust child survivors. *Journal of Loss and Trauma, 8*(4), 229-237.

Levav, I. (1998). Individuals under conditions of maximum adversity: The Holocaust. In B. P. Dohrenwend (Ed.), *Adversity, Stress and Psychopathology* (pp. 13-33). New York: Oxford University Press.

Linley, P. A., & Joseph, S. (2004). Positive changes following trauma and adversity: A review. *Journal of Traumatic Stress, 17*(1), 11-21.

Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the depression anxiety stress scales (DASS) with the Beck depression and anxiety inventories. *Behavioural Research and Therapy, 33*(3), 335-343.

Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the Depression Anxiety Stress Scales*. Sydney: School of Psychology, University of New South Wales, Psychology Foundation Monograph.

Lurie-Beck, J. (2007). *The Differential Impact of Holocaust Trauma across Three Generations*. Unpublished doctoral thesis: Queensland University of Technology.

McGrath, J. C., & Linley, P. A. (2006). Post-traumatic growth in acquired brain injury: A preliminary small scale study. *Brain Injury, 20*(7), 767-773.

Morris, B. A., Shakespeare-Finch, J., Rieck, M., & Newbery, J. (2005). Multidimensional nature of posttraumatic growth in an Australian population. *Journal of Traumatic Stress, 18*(5), 575-585.

Niederland, W. G. (1981). The survivor syndrome: Further observations and dimensions. *Journal of the American Psychoanalytic Association, 29*(2), 413-425.

Niederland, W. G. (1988). The clinical aftereffects of the Holocaust in survivors and their offspring. In R. L. Braham (Ed.), *The Psychological Perspectives of the Holocaust and of its Aftermath* (pp. 45-52). New York: Columbia University Press.

Niremberski, M. (1946). Psychological investigation of a group of internees at Belsen camp. *Journal of Mental Science, 92*, 60-74.

Park, C. L., Mills-Baxter, M. A., & Fenster, J. R. (2005). Post-traumatic growth from life's most traumatic event: Influences on elder's current coping and adjustment. *Traumatology, 11*(4), 297-306.

Robinson, S., Rapaport-Bar-Sever, M., & Rapaport, J. (1994). The present state of people who survived the Holocaust as children. *Acta Psychiatrica Scandinavica, 89*(4), 242-245.

Robinson, S., Rapaport, J., Durst, R., Rappaport, M., Rosca, P., Metzer, S., et al. (1990). The late effects of Nazi persecution among elderly Holocaust survivors. *Acta Psychiatrica Scandinavica, 82*(4), 311-315.

Rustin, S. L. (1988). A psychological examination of the survivors of the Holocaust and the generation after. In R. L. Braham (Ed.), *The Psychological Perspectives of the Holocaust and of its Aftermath* (pp. 161-174). New York: Columbia University Press.

Schreiber, S., Soskolne, V., Kozohovitch, H., & Deviri, E. (2004). Holocaust survivors coping with open heart surgery decades later: Posttraumatic symptoms and quality of life. *General Hospital Psychiatry, 26*(6), 443-452.

Shillace, R. (1994). *A cross-sectional study of loss, trauma and vulnerability: Reactions during the adolescent through adult life-span.* Paper presented at the Conference of Grief and Bereavement in Contemporary Society, Stockholm, Sweden.

Shillace, R. (1996). Psychometric review of Shillace Post-Traumatic Vulnerability Scale. In B. H. Stamm (Ed.), *Measurement of Stress, Trauma and Adaptation* (pp. 270-272). Lutherville, MD: Sidran Press.

Tedeschi, R. G. (1999). Violence transformed: Posttraumatic growth in survivors and their societies. *Aggression and Violent Behavior, 4*(3), 319-341.

Tedeschi, R. G., & Calhoun, L. G. (1996). The posttraumatic growth inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress, 9*(3), 455-471.

Weiss, D. S. (1996). Psychometric review of the Impact of Events Scale - Revised. In B. H. Stamm (Ed.), *Measurement of Stress, Trauma and Adaptation* (pp. 186-187). Lutherville, MD: Sidran Press.

Weiss, D. S., & Marmar, C. R. (1997). The impact of events scale - revised. In J. P. Wilson & W. M. Terence (Eds.), *Assessing Psychological Trauma and PTSD* (pp. 399-411). New York: Guilford Press.

Table 1.

Descriptive and comparison statistics for study variables among Holocaust survivors

Variables	Survivor Sample Means and Standard Deviations	Top Score in Normal Range	Maximum Score	Normative Data	Percentage in Normal Range	Normative Percentage in Normal Range
Psychopathological Variables						
DASS Depression	6.13 (6.32)	9.00	42.00	5.55	70%	82%
DASS Anxiety	4.87 (6.04)	7.00	42.00	3.56	78%	94%
DASS Stress	10.22 (7.39)	14.00	42.00	9.27	74%	80%
PTV Scale	10.83 (4.28)		24.00	8.69		
IES-R Intrusion	1.26 (0.95)	1.50	4.00			
IES-R Avoidance	1.11 (1.08)	1.50	4.00			
IES-R Hyperarousal	0.85 (1.01)	1.50	4.00			
IES-R Total Score	1.07 (0.93)	1.50	4.00		67%	
Posttraumatic Growth Inventory Factors						
Relating to Others	18.48 (9.99)		31.00			
New Possibilities	12.00 (8.42)		25.00			
Personal Strength	12.00 (6.70)		20.00			
Spiritual Change	2.74 (3.72)		10.00			
Appreciation of Life	10.23 (4.99)		15.00			
Total Growth Score	56.09 (27.94)		94.00			

Notes. DASS = Depression, Anxiety, and Stress scales, PTV = Post Traumatic Vulnerability Scale, IES-R = Impact of Events Scale - Revised.

Normative data for DASS based on a sample of 1,771 members of the general adult population (Crawford & Henry, 2003). Normative data for the PTV scale based on a convenience sample of 686 undergraduate students and adults from the general population (Shillace, 1994). The cut-off score of 1.50 for probable PTSD diagnosis based on the IES-R is derived from the research of Creamer et al (2003) with 274 Vietnam veterans.

Table 2.

Correlations between Psychopathological Variables and Posttraumatic growth among Holocaust survivors

	Posttraumatic Growth Inventory Factors					
Psychopathological Variables	Relating to others	New possibilities	Personal Strength	Spiritual Change	Appreciation of Life	Total Growth
DASS Depression	- 0.33	- 0.07	- 0.38 #	0.13	- 0.36	- 0.30
DASS Anxiety	0.01	0.26	- 0.03	0.37 #	- 0.01	0.11
DASS Stress	- 0.20	0.23	- 0.08	0.27	- 0.05	0.01
PTV	- 0.19	- 0.10	0.02	0.15	0.20	- 0.06
IES-R Intrusion	0.37	0.02	0.25	0.53 *	0.41 #	0.32
IES-R Avoidance	0.23	- 0.06	0.06	0.46 *	0.29	0.17
IES-R Hyperarousal	0.27	0.15	0.23	0.54 **	0.32	0.31

Notes. DASS = Depression, Anxiety, and Stress scales, PTV = Post Traumatic Vulnerability Scale, IES-R = Impact of Events Scale - Revised.

* $p < 0.05$, ** $p < 0.01$, # $p < 0.10$