

Frequency of Traumatic Events, Physical and Psychological Health among Maori

Paul Hirini, Ross Flett, & Nigel Long
Massey University, Palmerston North

Michelle Millar
Human Factors International, Canberra

We examined the lifetime prevalence of 12 traumatic experiences (combat, child sex abuse, sexual abuse as an adult, family violence, other physical assault, theft by force, vehicle accident, other accident, natural disaster, disaster precautions, traumatic death (secondary trauma) and the links between these experiences and physical and mental health, via a cross sectional survey of 502 community dwelling New Zealand Maori adults. We found that the overall frequency with which such events occur in this group to be relatively high. Males were significantly more likely than females to report experience of combat, physical assault, theft by force, vehicle accident and other forms of accident. Females were significantly more likely to report sexual abuse as a child or adult, violence at the hands of a family member, and a traumatic death of a loved one. Younger respondents and those living in urban areas also reported more traumatic experiences of various sorts. There were some significant linkages between traumatic experiences and mental health (specifically PTSD, and the well-being scale of the MHI) but the size of the effects were small. We argue, that despite methodological limitations, these data are instructive about the frequency and impact of traumatic events among this group.

Over the past twenty years an extensive literature has emerged relating to the psychological impact on the individual from exposure to traumatic events - events which are outside the realm of everyday human experience such as violence, combat, and criminal victimization. This research has more recently been via community-based survey studies. Exposure to traumatic events may be more widespread than once thought with estimates ranging from 39% to 84% of individuals being exposed to at least one traumatic event in their lifetime (Breslau, Davis, Andreski & Petersen, 1991; Fairbank, Schlenger, Saigh & Davidson, 1995; Norris, 1992; Vrana & Lauterbach, 1994). Traumatic

experiences are relatively common and are associated with negative health outcomes in a range of ethnically diverse populations (e.g. Holman, Silver & Waitzkin, 2000; Peltzer 1999).

The present study documents prevalence of a range of traumatic experiences in a community sample of New Zealand Maori.

The DSM-IV (1994) defines an extreme traumatic stressor as involving direct personal experience of an event that involves actual or threatened death or serious injury, or witnessing of an actual or threatened death or serious injury (p. 424). Green (1990) suggested that there are certain generic experiences which make any event traumatic. These experiences, or dimensions, are: threat

to one's life or bodily integrity; severe physical harm or injury; receipt of intentional injury or harm; exposure to the grotesque; violent and sudden loss of a loved one; witnessing or learning of violence to a loved one; learning of exposure to a noxious agent, and; causing death or severe harm to another. The present study will consider traumatic events defined by Green's criteria.

The first large scale community study to consider exposure rates to traumatic events in a general population found that 39% had been exposed to at least one traumatic event in their lives, and of those, 24% had PTSD as defined by DSM-II-R (Breslau et al., 1991). Norris (1992) examined the frequency and impact of various traumatic events amongst a diverse group of North American respondents living in the community. Participants lived in one of 12 neighbourhoods across four mid-sized south-eastern US cities and were sampled such that there was equal racial (50% African American, 50% European American), gender (50% male, 50% female) and age (33% young - 18-39 years, 33% middle-aged - 40-59 years, and 33% older - 60+ years) representation. Nine different types of traumatic events were investigated; robbery, physical assault, sexual assault, tragic death, motor vehicle crash, combat, fire, other disaster (including injury or property damage because of a natural or man-made disaster) and other hazard (e.g. forced to evacuate from home or

learned of an imminent hazard in the environment) and these were considered in terms of frequency of experiences, time frame (i.e. experienced within the preceding year and experienced at any time in their lives) and impact. Sixty nine percent of participants were found to have experienced one or more of any of the nine types of traumatic events at some stage in their lifetimes. Twenty-one percent had experienced a traumatic event in the previous year. The most commonly experienced traumatic event throughout their lifetimes was tragic death, with 30.2% losing a loved one by homicide, suicide, or accident. The least common was sexual assault at 4.4%. Significantly more males (73.6%) experienced a traumatic event at some stage in their life than females (64.8%), as did European Americans (76.8%) compared with African Americans (61.2%). However, when only traumatic events experienced in the previous year were considered, significant demographic differences were evident only within age groups, with 27% of the young group and 21% of the middle-aged group representing a significantly higher exposure rate than older adults (14.2%). In this US sample, exposure to recent traumatic events decreased with age.

Other community surveys have considered the traumatic experiences of women (e.g. Resnick, Kilpatrick, Dansky, Saunders and Best 1993), students (e.g. Vrana and Lauterbach 1994), and the importance of a more diverse set of traumas (e.g. Turner and Lloyd, 1995). Locally, the relationship between traumatic events and health problems of various kinds is well documented (e.g. Flett, Kazantzis, Long, MacDonald & Millar, 2004; Flett, Millar, Long & MacDonald, 1998).

Much of the focus of trauma research is at the individual level and there is a tendency to neglect the widespread impact on the community. Nowhere is this neglect more salient than in the consideration of the experiences of indigenous peoples and ethnic minority groups (e.g. Berberich, 1998; Morris, 1999; Robin, Chester & Rasmussen, 1998). Holman et al. (2000) points out that traumatic events are a common occurrence across ethnically diverse samples and that any form of mental

health assessment needs to involve screening for traumatic experiences. In a similar vein, Turner and Lloyd (1995) note that "...failure to take account of major life traumas has resulted in the systematic underestimation of the role of stress exposure in accounting for elevated levels of psychiatric disorder" (p.372).

Many studies which have considered the experiences of ethnic minority groups have focussed on the antecedents and consequences of traumatic events among youths and children (e.g. Cheever & Hardin, 1999; Feiring, Coates & Taska, 2001), African American women (e.g. Adriance, 1999; Curtis-Boles & Jenkins-Monroe, 2000; Wyatt, Axelrod, Chin, Carmone, & Loeb, 2000), Asian Americans and Vietnamese Americans (e.g. Bemak & Chung, 1998; Lee, Lei & Sue, 2001), Hispanic and Latino groups (e.g. Feiring et al.; Guthrie, 1999; Nejman-Muhlmeister, 2000; Schechter, Marshall, Salman, Goetz, Davies & Liebowitz, 2000), and Native Americans (e.g. Morris, 1999; Robin, Chester & Rasmussen, 1998).

Much of the research on traumatic experiences is prompted by an interest in understanding how traumatic stress is perceived within different cultures (Shalev, Yehuda & McFarlane, 2000). The relevance of Western conceptualisations of reactions to trauma have been questioned (e.g. Terheggen, Stroebe & Kleber, 2001). Some of the traumatic stress measurement strategies may work well in international comparative research (e.g. Asukai, et al., 2002) while other scales may function differently when translated away from English (e.g. Orlando & Marshall 2002). There is evidence of some culturally-sanctioned expressions of extreme distress associated with trauma, for example the Hispanic notion of *susto* (fright, equivalent to an elevated anxiety state), the Japanese and Chinese concepts of *amae* (a state of passive dependency) and *shenjing shuairuo* (somatic manifestation involving headaches, weakness, irritability, poor appetite and concentration difficulties) respectively (Young, 2001). While the symptoms are often similar to posttraumatic stress reactions, the manifestation of responses may differ significantly across cultures. Maori

cultural phenomena such as *whakama* or *hopo* may have similarities in terms of being culture-bound reactions to extreme stressors.

Traumatic events need to be understood within the social and cultural context in which they occur. Local writers have drawn attention to the potential empowering effects for Maori of maintaining a sense of cultural identity and active participation in the political context of Aotearoa (e.g., Durie, 1997a,b). At the same time they are over-represented in national statistics for injury, intentional harm, mental illness, and many negative physical and social indices of health and well-being (Hirini, 2004). With this in mind, and following on from the work of Norris (1992), the present study sought to (a) document the frequency with which traumatic events occur in a community dwelling sample of Maori, and (b) consider the relationship between these experiences and a range of health/mental health outcomes.

Method

Participants

The data reported here were collected as part of a larger study which has been described in detail elsewhere (Flett et al., 1998, Flett et al., 2004; Hirini, Flett, Kazantzis, Long, Millar & McDonald, 1999; Hirini, 2004).

Respondents were 502 adult Maori recruited from throughout New Zealand. Data collection took place over a three month period by way of structured face-to-face interviews. The survey was ethnically and geographically stratified, employing a three stage cluster design. The overall study included both non-Maori and Maori.

The first stage involved the random selection of 150 census enumeration districts from the North and South islands. In order to reliably investigate the experience of Maori the sampling design allowed for the deliberate over-sampling of individuals with Maori ancestry. While this stratification does not reflect a household probability sampling methodology, it is similar to that used in prior New Zealand surveys (e.g., Hornblow, Bushnell, Wells, Joyce, Oakley-Browne, 1990).

The second stage of the sampling

strategy involved the random selection of a sample of dwellings from each of the enumeration districts. Households were contacted by trained National Research Bureau (NRB) staff on behalf of the Massey University research team, and up to three visits were made to each dwelling before substitution (in the event of non-contact). In total, 150 enumeration districts were sampled and 10 interviews conducted in each.

The third stage of the sampling strategy involved sampling an eligible participant from each household. If there was more than one eligible individual in a given household (i.e., over 18 years of age), then individuals were listed in descending order of age onto a sampling grid. The individual selected for an interview was the individual with the next birthday. Using this sampling strategy, 2,590 households were successfully contacted. Of this total, 1,090 refused to be interviewed yielding a sample of 1,500 (Maori and non-Maori), and a response rate of 58%.

Measures

Traumatic event measures

A modified version of the Traumatic Stress Schedule (TSS; Norris, 1990) was used to collect lifetime and past-year exposure to traumatic events. Since the TSS is restricted to a general assessment of traumatic events, three items were modified to distinguish between child and adult sexual assault, familial physical assault and other physical assault, and serious motor vehicle accident and other serious accidents. The definition for disaster was also expanded from a US focus on hurricane experience to include exposure to general experiences of natural disasters (i.e., including fire, flood, or earthquake). The final measure assessed lifetime incidence on 12 different traumatic events: combat, child sexual assault, adult sexual assault, domestic assault, other physical assault, robbery or holdup, motor vehicle accident, other accident resulting in injury, disaster experience, and being forced to leave home or take other precautions because of natural disaster.

Physical health measures

Two measures of physical health were used. Chronic symptoms were assessed by asking participants whether they had experienced any of a list of 17 chronic medical problems for a duration of six months or more using a modified version of the Checklist of Serious Medical Conditions (Belloc, Breslow, & Hochstim, 1971). For example, the interviewer first said: "We would like you to think about the long-term problems you may have. Long-term health problems are more severe health problems that you have had for six months or more, or something that is likely to last for at least six months." The respondents were then asked, for example, "Please answer 'yes' or 'no' to indicate if a doctor, nurse, or other health care worker has told you whether you have asthma". Additional questions were asked about several chronic medical conditions (e.g., diabetes, epilepsy, high blood pressure or hypertension, arthritis or rheumatism, heart trouble, cancer) using the same question format. A total number of chronic health conditions score was then calculated.

Respondents were asked to complete the Penebaker Inventory of Limbic Languidness (PILL; Penebaker, 1982). The PILL is a measure of current physical symptoms that has strong criterion-related validity with health-related work absences and more physician and health care center visits. Despite this, previous studies have demonstrated that a number of list items on the full 54-item version of the PILL are highly correlated and do not contribute independently to the physical symptom total (see MacDonald, Chamberlain, & Long, 1996). Highly correlated items were combined to form the 28-item version for use in the present study. For example, the original items "acne and pimples on face" and "acne and pimples other than face" were combined as a single item "acne or pimples". The resulting measure assessed a similar range of physical health problems as the full version, including relatively broad categories such as "eye problems", "numbness or tingling in any part of body", as well as specific categories such as "cold hands or feet even in hot

weather" and "twitching of eyelid". In this way, respondents were asked to indicate the experience of 28 physical symptoms and complaints over the past month, using a 5-point scale ranging from 1 (not at all) to 5 (extremely) to provide a total index of the severity of current physical health symptoms. The coefficient alpha for the present study was .89.

Psychological health measures

Post traumatic stress disorder (PTSD) symptoms were assessed with a short version of the Civilian Mississippi Scale (Keane, Caddell & Taylor, 1988). Initially, Keane and his colleagues developed the Mississippi Scale for Combat-Related PTSD (Keane et al, 1988), a 35-item, self-report questionnaire for use with US Vietnam War veterans. Widely used, the scale has been shown to be a reliable and valid instrument for the identification of combat-related PTSD symptoms in combat veterans (Watson, 1990; Watson, Plemel, DeMotts, Howard, Tuorila, Moog, Thomas & Anderson, 1994). Subsequent variants of this scale have included a shortened 11-item version (Fontana & Rosenheck, 1994), and a civilian version which utilised more appropriate, less combat-oriented item wording (Vreven, Gudanowski, King & King, 1995). The scale used in the current study included the 11 items from the short form of the Combat-related Mississippi Scale, with wording more appropriate to a general survey, as utilised in the Civilian Mississippi Scale. Fontana and Rosenheck (1994) reported high internal consistency for the shortened combat-related scale and high correlation with the full scale. For the full version of the civilian scale, Vreven et al. (1995) reported item-total correlations ranging from 0.10 to 0.53 and a mean of 0.39. The coefficient alpha was 0.86. In the current study, the individual item-total correlations for the 11 items ranged from 0.34 to 0.80 with a mean of 0.64. The coefficient alpha for the current study was 0.91.

The Mental Health Inventory (MHI, Veit & Ware, 1983) was included to provide an estimate of overall psychological distress and well-being. Using a seven-point response scale, respondents indicated how frequently they had experienced 38 conditions

over the last month. Both factors have been shown to have high internal consistency measures and high one-year stability (Veit & Ware, 1983). In the present study, the individual item-total correlations for the 14 items of the well-being subscale ranged from 0.45 to 0.69 and the standardised item alpha was 0.90. The individual item-total correlations for the 24 items of the psychological distress subscale ranged from 0.30 to 0.69 and the standardised item alpha was 0.90.

Procedure

Participants were given a detailed information sheet that described the nature of the study, their rights as participants and the responsibilities of the researchers (as specified in the New Zealand Psychological Society Code of Ethical Conduct in Research). Participants were informed that their responses would be kept anonymous and confidential, that they could skip or omit any of the interview questions, and that they could discontinue participation in the study at any time. Given the nature of the present study, involving sensitive issues about experiences of traumatic events, participants were interviewed in their homes. Procedures were outlined to participants through which they could access further

counselling or related assistance if required. All respondents were able to contact the researchers through a free phone number. All NRB staff were professional interviewers who had extensive experience with population interviews and surveys. After pilot testing, all interviewers spent seven hours practising for this project, with the help of a one-hour structured interview designed specifically for this study. Data collection was conducted over a three-month period in 1995.

Results

About a third of the participants (n=174, 35%) had never experienced any of the traumatic events. Thus, more than half of the participants (65%, n=328) had experienced one or more traumatic events during their lifetimes (M=1.5, SD=1.69).

The lifetime frequencies of traumatic events by gender, age group (younger = 18-39 years, middle aged = 40-59 years, older = 60+ years), and geographical area (urban vs rural) are presented in Table 1. The range of gender differences was striking, with statistically significant (Chi square) differences on all but three of the individual event categories.

The direction of these effects were such that male participants were

significantly more likely (p<.05) than females to report experience of combat, physical assault, theft by force, vehicle accident and other forms of accident. Female participants were significantly more likely (p<.05) than males to report experience of sexual abuse as a child or adult, violence at the hands of family members and a traumatic death of a loved one.

In terms of age, younger respondents were significantly more likely (p<.05) to report experience of; sexual abuse as a child or adult, physical assault, family violence, traumatic death and secondary trauma. Middle age adults were significantly more likely (p<.05) to report experience of disaster related events, while the older group reported more combat experience related trauma. Those living in urban areas reported significantly more (p<.05) family violence, vehicle accident and secondary trauma.

The impact of events on health and mental health was assessed by examining the mean levels of physical symptoms and psychological distress among those with and without experience of traumatic events. This analysis treats health/mental health as a continuum and assumes that all individuals, both with and without traumatic events, experience some

Table 1. Lifetime frequencies (percentages) of traumatic events by gender, age and residency area.

Trauma	Total %	Gender			Age				Area		
		Male	Female		Younger	Middle-Aged	Older		Urban	Rural	
Combat	2.2	5.6	0.6	***	1.3	1.5	7.6	*	2.2	2.2	
Child sex abuse	13.0	3.8	17.3	***	18.3	7.5	0.0	***	16.2	10.3	
Adult sex abuse	7.0	0.6	10.0	***	9.4	4.4	1.5	*	9.1	5.2	
Domestic assault	19.6	11.3	23.5	**	24.7	17.3	1.5	***	23.9	16.0	*
Physical assault	14.6	20.0	12.0	*	19.3	9.7	3.0	***	16.9	12.6	
Theft by force	6.4	11.2	4.1	**	7.3	5.9	3.0		7.8	5.2	
Vehicle Accident	14.1	19.3	11.7	*	14.0	13.3	16.7		10.8	17.0	*
Other Accident	9.6	18.6	5.3	***	9.3	9.6	10.6		10.4	8.9	
Disaster	4.8	5.0	4.7		4.0	7.4	3.0		6.1	3.7	
Disaster precautions	6.2	8.7	5.0		4.7	11.1	3.0	*	5.2	7.0	
Traumatic death ¹	31.1	23.6	34.6	*	32.7	35.6	15.2	*	32.5	29.9	
Secondary trauma ²	21.5	18.0	23.2		25.0	20.0	9.1		26.4	17.3	*
Any event	66.7	64.6	67.7		72.3	65.2	45.5	***	68.4	65.3	

*p<.05 **p<.01 ***p<.001

1. Includes sporting, recreational and work-related accidents

2. Assault, or serious accident or injury of a loved one

variability in health states. This analysis thus provides a mechanism to assess the relative impact of these traumatic events. For this purpose a categorical variable was used where *any event* was scored 1= given lifetime occurrences of any of the events in the list, and 0= given no events. This corresponds to the *any event* entry in Table 1 where 67% reported experiencing at least one of the events in the list in their lifetime. There is some loss of precision in using an aggregate event measure of this type but the procedure assures that the number of respondents within each category is sufficient to provide reliable means and frequencies at the subgroup level.

Mean differences in physical and mental health (reported in Table 2) were tested using analysis of variance (ANOVA) with a 2 x 2 x 2 x 3 [Sex x Area (urban / rural) x Event x Age (younger / middle aged / older)] between-subjects factorial design. Given that gender, age and area were related to one another, these analyses provided an opportunity to assess the main and interactive effects of traumatic events on the measures of physical and mental health and the relative vulnerability of different demographic groups.

Considering PTSD, one of the factors (experience of any traumatic event) had main effects on this construct, $F(1, 475) = 6.8, p=.009$, partial eta squared = .015. The direction of this effect was such that, on average, higher PTSD was exhibited by those

having experienced traumatic events at some time in the past. The interaction of Age x Events was significant for PTSD, $F(2, 475) = 3.9, p = .02$, partial eta squared = .017, and PTSD was highest among the younger respondents reporting traumatic experiences. There were no significant main effects or interactions for psychological distress. For the MHI Well-being sub-scale the interaction of age-group x location (urban vs rural) x traumatic events was significant, $F(2.475) = 3.79, p<.05$. The negative impact of trauma was particularly noticeable among younger urban-dwelling respondents.

There was a significant main effect for age with chronic health problems, $F(2, 475) = 18.2, p<.001$, partial eta squared = .075. For physical symptoms there was a main effect for age, $F(2, 475) = 3., p=.04$, partial eta squared = .014. There were no other significant main effects or interactions for either chronic health problems or physical symptoms. The direction of these effects were such that, on average, older adults reported more physical symptoms and chronic health problems. These results need to be interpreted with caution given the skewness in the chronic health data and the small overall effect size.

Discussion

The overall frequencies with which traumatic events were reported by this sample of community-dwelling Maori adults were considerable. Of the 502 people in the sample, a total of 301, for

example, reported some form of violent encounter in their lifetimes. The rates of occurrence of some other forms of trauma were similarly high in relation to other research.

Men were more likely to report experience of combat, assault, theft by force, and vehicle or other accidents than women who were more likely to report family violence and sexual abuse (as a child and as an adult). Similar event-specific gender differences in rates of exposure have been noted in other studies (e.g. Breslau, Davis, Andreski, & Peterson, 1991; Norris, 1992; Vrana & Lauterbach, 1994).

It is not clear from the available data how these findings ought to be interpreted. The socioeconomic disadvantage of some sectors of the Maori population in New Zealand is well documented (e.g. Hirini, 2004). Other studies have noted an association between a lower frequency of exposure to traumatic events and higher income (e.g. Breslau, et al., 1991), and social status often moderates the impact of stressful life events (e.g. Kessler & Cleary, 1980; Thoits, 1982). Moritsugu and Sue (1983) argue that minorities can encounter various forms of hostility and prejudice that may both increase the likelihood of trauma and exacerbate the effects of a crisis. Given such findings, an important task for future local research in this area is to gain more elaborate understanding of the New Zealand cultural context in which such traumatic events occur, and more specifically the cultural context for

Table 2. Mean physical and mental health by gender, age, area of residence and experience of traumatic events

Health measure	Gender		Age			Area		Any trauma	
	Male	Female	Younger	Middle-Aged	Older	Urban	Rural	yes	no
Physical symptoms	37.4 (9.7)	40.6 (12.8)	38.4 (10.9)	41.2 (13.9)	41.9 (12.2)	40.8 (12.5)	38.5 (11.5)	40.7 (12.3)	37.4 (11.1)
Chronic health problems	1.6 (1.9)	1.6 (2.5)	1.1 (2.1)	1.8 (2.0)	3.3 (1.9)	1.5 (2.0)	1.6 (2.3)	1.6 (2.3)	1.5 (1.9)
PTSD	22.4 (5.7)	23.5 (6.8)	23.6 (6.8)	23.1 (6.2)	21.6 (5.5)	23.5 (6.7)	22.8 (6.3)	24.5 (6.7)	20.3 (5.1)
Distress	54.2 (23.3)	60.7 (26.0)	61.0 (26.2)	58.2 (25.3)	49.0 (18.3)	61.2 (26.8)	55.8 (23.7)	62.6 (27.0)	50.7 (19.4)
Wellbeing	76.2 (14.7)	75.3 (15.5)	74.8 (14.8)	75.7 (17.2)	79.2 (12.5)	74.4 (16.0)	76.7 (14.5)	73.8 (15.6)	79.3 (13.8)

(Note: Standard deviations are given in parentheses)

Maori. Would personal or institutional prejudice and discrimination (e.g., Rangihau, 1986) be usefully included in future local research of this kind? While this may well be "... an exceedingly difficult task for epidemiological studies" (Norris, 1992, p.416), an understanding of the institutional, social and cultural parameters which influence the meaning of a traumatic experience may provide significant insights into the linkages between such trauma and subsequent health/mental health outcomes for Maori. Such considerations may be further investigated using qualitative research to explore these potential areas of inquiry.

Age differences in the present research were generally in the direction of lower frequencies of traumatic events among older respondents. This finding is consistent with the literature regarding age differences in both general life events (Hughes, Blazer & George, 1988) and traumatic events (Norris, 1992). Norris offers two explanations for this pattern - a cohort effect and a reporting effect. The cohort effects centres around the idea that, for example, "...if the young are more prone to violence, and if this is more true now than in previous decades, then older people would have lower exposure rates even though they have lived through more years" (p. 417). The reporting effect centres around the idea that the memories of traumatic events simply fade over time. There is some evidence however that traumatic events (unlike 'routine' life events) are more resistant to "being forgotten" (Funch & Marshall, 1984) and Vrana and Lauterbach (1994) argue that such events may produce a 'flashbulb' memory of unusual vividness and memorability. However, events may well be remembered but, with increasing age, simply judged too insignificant to mention. Which of these effects (the cohort versus the reporting effect) represents the best explanation of the decline in reports of trauma with increasing age is unclear from the available data.

The effects of urbanisation on physical and mental health has been the focus of extensive research, especially in the Maori population. The extent to which urban versus rural living differentially affects the prevalence

and type of health problems is widely debated (e.g. Webb, 1984). The present study noted relatively few urban-rural differences in the reports of traumatic experiences. Domestic assault and secondary trauma were reported at higher rates by urban respondents than by their rural counterparts, while vehicle accident was reported more often by those living in rural settings.

There were some significant relationships between the experience of trauma (and to a lesser extent age and area of residence) and psychological distress (PTSD and the well-being subscale of the MHI). The size of these effects were relatively small and ought to be interpreted with a degree of caution. In a statistically significant sense, trauma appears to have some impact on outcomes but in terms of the overall size of the effect then, as Norris (1992) emphasises, "...these events appear to be only one of many sources of stress in people's lives"(p.416). Clearly then, methodological issues are an important factor here. The present research was a limited cross-sectional 'snapshot' of the experiences of the respondents and links were explored between physical/mental health variables and traumatic experiences that were, in many instances, quite temporally remote from the respondent's current situation. Notwithstanding these methodological concerns, the demonstration of a linkage between traumatic experiences and psychological 'ill-being' remains an important finding. Turner and Lloyd's (1995) results demonstrate clear relationships between accumulated lifetime trauma experience and both psychological distress and psychiatric disorder. They argue that there is a need within health research for "...careful and comprehensive attention to the structural contexts of people's lives "...stressful occurrences and circumstances are among those experiences and resources that are rooted in these contexts..."{there is} "...the need for such experiences to be routinely considered within efforts to identify the social determinants and contingencies of mental health" (p.372).

Maori respondents were over-sampled in order to be able to document their experiences with a greater degree of statistical reliability than would otherwise

be the case had their proportions in the study sample reflected their proportions in the population of Aotearoa as a whole. Some researchers argue for the importance of re-weighting such over-sampled strata before making projections onto the underlying population and report a number of weighting strategies (e.g. Helzer, Robins, & McEvoy, 1987; Shore, Vollmer, & Tatum, 1989; Winfield, George, Swartz, & Blazer, 1990). The present report confines its discussion to the sample at hand and avoids making population projections, hence un-weighted data are reported here. Clearly, re-weighting and other mechanisms for statistical 'fine-tuning' are important in large scale complex survey designs. Kessler, Sonnega, Bromet, Hughes, and Nelson, (1995) provide a technically sophisticated example of how such techniques can be applied to their stratified, multistage, area probability sample.

Despite the issues noted above we would argue that the study reported herein should be judged relative to the 'state of the art'. Our sample is heterogenous in terms of age, gender and residency, we have gone beyond the narrow focus on methodologically sophisticated estimates of PTSD prevalence, we have collected data across a range of types of traumatic experiences (rather than focus on specific trauma), and have presented some tentative analyses of how the experience of trauma might be related to demographic variables. Therefore we would maintain that our data provides a baseline for future research, and may further be instructive about the frequency and impact of traumatic events in a New Zealand Maori community sample.

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Notes

1. Geographic distribution of enumeration districts (N = 150) were as follows: Northland (n = 16); Auckland (n = 23); Waikato (n = 19); Bay of Plenty (n = 28); Gisborne (n = 16); Hawkes Bay (n = 7); Taranaki (n = 5); Manawatu-Wanganui (n = 8); Wellington (n = 10); Nelson-Marlborough (n = 2); West Coast (n = 2); Canterbury (n = 7); Otago (n = 4); Southland (n = 3).
2. A complete copy of the interview questions and administration procedure is available upon request from the senior author.

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Author Notes

Paul Hirini (Ngati Huia ki Poroutawhao; Mauapoko), School of Psychology, Te Kura Hinengaro Tangata, Massey University, Palmerston North
 Ross Flett, School of Psychology, Te Kura Hinengaro Tangata, Massey University, Palmerston North
 Nigel Long, Assistant Vice-Chancellor, Research and External Relations, Massey University, Palmerston North
 Michelle Millar, Human Factors International, Canberra, Australia

Address for correspondence:

Paul Hirini
 School of Psychology, Te Kura Hinengaro Tangata
 Massey University
 Private Bag 11-222
 Palmerston North, NZ
 Ph. (06) 3569 099 ext 2052
 Email: p.r.hirini@massey.ac.nz

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Hirini PR

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