

COPING STRATEGIES OF COMMUNITIES AFFECTED BY THE BOHOL EARTHQUAKE

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ABSTRACT

This article establishes existing knowledge on natural disasters and coping strategies employed in reducing the impacts caused by the 7.2 magnitude earthquake in Bohol, Philippines. The purpose of the study was to determine useful measures in terms of service options and for disaster risks management. More particularly, it aimed at assessing coping strategies employed in reducing the disaster risk and integrating knowledge of disasters and hazards. The study was carried out in the municipalities of Maribojoc and Loon which included recording people's perceptions, knowledge and attitudes towards earthquake. It employed focus group discussions and interviews in order to capture the actual situation relating to risk and vulnerability assessments by the community. The study revealed that the respondents were having a little knowledge regarding the secondary impacts of the earthquake, thus their houses are not designed against such a calamity. The study showed that the community's coping strategies consist in mainly relying on relief goods and assistance. The study further revealed that in order to prepare themselves for incoming disasters like that of an earthquake, a low cost service strategy option was chosen by the respondents. It is thus recommended that the respective LGUs of Loon and Maribojoc set up the chosen service option in their communities to inform and educate them about the hazards and devastating impacts of an earthquake and minimize if not avoid more damages.

Keywords: Bohol earthquake, Magnitude 7.2 earthquake, coping mechanisms, shocks, Philippine earthquake

INTRODUCTION

The 7.2 magnitude earthquake in Bohol left different types of losses (PHIVOLCS, GADM, and DSWD DRONIC, 2013). For Carr (2004), these losses have both temporary and/or permanent impacts. Nightmares, sadness and trauma are disturbances due to such a calamity (Math, *et.al.* 2006). Traumatic experiences take longer time to heal without viable coping mechanisms (Jones, *et.al.* 2001). Coping response reveals an individual's perceptions and efforts in mitigating the consequences of hazards (Paul and Routray, 2011). This study determines coping strategies and interventions for earthquake victims. Engagement in informal socialization is important for an individual and an organization following natural hazards as a mechanism to decrease

stress (McManus *et al.*, 2012; Smith 2007; Whitman *et al.*, 2013). Resiliency and coping (Baggerly and Exum, 2008) are protective factors of stress and adversity. However, in the absence of well-designed interventions (Ehrenreich, 2001), up to fifty per cent or more of the victims of an earthquake may develop lasting depression, pervasive anxiety, post-traumatic stress disorder, and other emotional disturbances.

Earlier studies dealing with household coping are narrowly focused on famine and food security (Watts 1983; Richards 1986; Rahmato 1987; Corbet 1988; Rocheleau *et al.*, 1995; de Waal 2004; Smucker and Wisner 2008). Little attention has been paid to coping with other types of natural disasters (Adams *et al.*, 1998). Thus, more research on disasters, displacement, personal losses, and the short and long term impacts on children and families are needed (Osofsky *et al.*, 2009).

Despite poverty and their proneness to multiple natural hazards (earthquake, storm surge and flooding, etc.), people make relentless efforts to cope with severe impacts through age-old indigenous knowledge and practices. Such indigenous knowledge systems and experiences are never formalized, either by the government or non-government organizations, in line with supporting livelihood activities. The communities are not fully aware of their strengths and capabilities to combat disasters. In this study, vulnerability to hazards is considered as the susceptibility of individuals to the negative impacts of earthquakes; and their ability to cope and recover from such a calamity.

THE CONCEPTUAL FRAMEWORK OF THE STUDY

This study is anchored on the theory which states that it takes a common tragedy to bind people together. A common tragedy like that of the 7.2 magnitude earthquake which struck Bohol and the central Visayas might have positive and negative impact on the victims. In the light of the concept of transference, this study assesses different coping strategies employed by the earthquake victims in reducing the negative impacts brought about by the calamity.

As a rational and a moral being, man regards life as the most precious gift one can have. Being exposed to some traumatic experiences, people find ways in order to cope and adapt useful mechanisms so as to recover as soon as possible. The victims, themselves, have realized they are in common situation. With this, it provided a scenario where they only have each other, thus they have to trust each other. This is goes with the concept of transference. Knowing each others' needs enables the victims to feel understood and accepted by others as well. This builds trust (Rathe, 2008). This trust to each other helps victims to become resilient to whatever traumatic experiences they may encounter.

Theoretical models of traumatic stress syndromes and the literature on PTSD have established that there is a wide range of outcomes in how persons cope with traumatic experiences (Bonnano, 2004; Wilson, 1995; Wilson and Drozdek, 2004; Wilson, Friedman, and Lindy, 2001; Wilson and Raphael, 1993; Zeidner and Endler, 1996). The models of traumatic stress (Wilson, 1989, 2004a; Wilson *et al.*, 2001; Wilson and Thomas,

2004) and adaptive coping processes (Folkman, 1997) are useful paradigms by which to examine the question of resiliency: How is it that persons recover and “spring back” from psychological trauma? What are the psychological factors that are associated with resiliency and effective coping?

This section reflects the central conceptual issues surrounding the concept of resilience; the paradigm of extreme stress, trauma, and resilient coping during and after exposure to powerful, life threatening stressors; and the need for a generic model of posttraumatic resilience, coping, and adaptation.

METHODOLOGY

In this study, resiliency, coping mechanisms and attainable interventions are the variable of interest.

Purposive selection of the study areas was based on the map of Bohol showing the extent of damage to housing and other infrastructures by PHIVOLCS, GADM, and DSWD DRONIC 2013). This study focused only on the towns of Loon and Maribojoc communities in Bohol which were heavily hit by the earthquake.

The study made use of randomly sampled 50 respondents who were interviewed to represent each town. Frequencies and percentages were generally used in presenting quantitative data. Focused group Discussions (FGDs) were also used with key officials pertaining to the coping mechanisms of affected communities and the factors that influence those mechanisms.

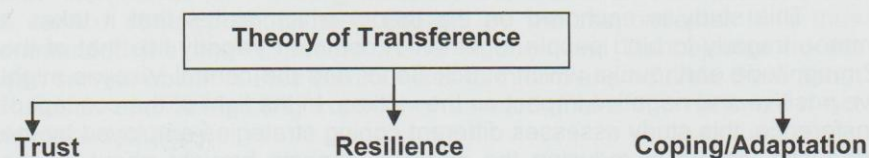


Figure 1. Conceptual Framework.

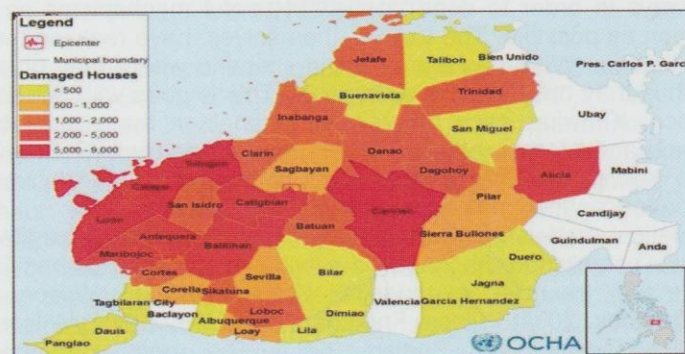


Figure 2. Location map of the study.

RESULTS AND DISCUSSION

Out of the total respondents, 76% are females and 24% are males. The average age of the respondents is 45 years in which 42% are secondary level or secondary graduate. Each household has 4 to 6 members in which 91 % of income per household ranges from 1,000-10,000 pesos.

Perceptions of the community to the earthquake

In terms of their awareness and preparedness, the respondents lacked on these aspects as 60 percent of their houses were made up of wood materials only which are not even good resistant to any calamity. This is due to the reason that the majority (85%) have never ever thought of being hit by an earthquake in their lifetime so building concrete houses designed against any calamity is not being considered.

Knowledge of the community on earthquake

The respondents' knowledge on how calamities can affect in their areas revealed that the earthquake could have a most devastating effect. The respondents (38%) claimed an earthquake can badly affect in different areas. Like an earthquake, they (37%) also claimed that a typhoon can also destroy when a place is directly hit by it.

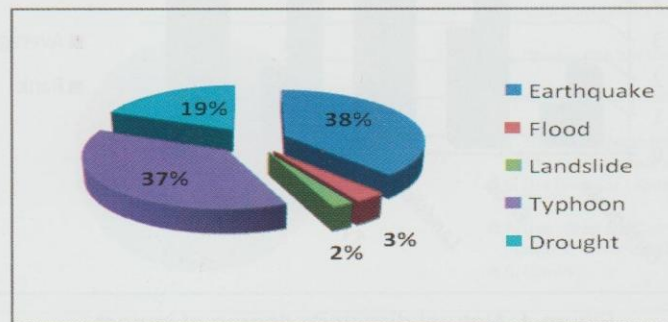


Figure 3. Knowledge on natural disasters.

Aside from earthquake and typhoon, they also believe that there are other environmental factors that can bring destructions. According to them, climate change, cutting of trees, flood, garbage and use of plastics, global warming, and illegal logging can cause the emergence of natural disasters. The factors such as air pollution, illegal logging, dynamite fishing, improper waste disposal, illegal fishing, mining, and bomb testing from other countries can also cause a natural calamity like an earthquake or a typhoon. Majority (66%) of the respondents knew places in their area that are prone to disaster and they know whom to call in time of emergencies. They said they got these information from the LGU and its officials like the Barangay Captains and its officials; though seminars, TV and radio, PAG-ASA, and through text messages. Through these sources of information, the respondents are able to know where to go when calamities like Earthquake occurs. It is also revealed in this study that the respondents knew some first aids. Many (60%) claimed that they knew first aid and they learned it from ancestors/ elders, BHW, CWTS, hospital, Red Cross,

school, TV, and books or magazines. With this, they claimed that they know what to do when disasters occur. However, in term of disaster preparedness, only 32% claimed they have some knowledge. This study shows that the respondents were having a little knowledge (24% among the respondents) regarding the secondary impacts that natural calamities like an earthquake could have.

Attitude of respondents toward the impact of the 7.2 magnitude earthquake

Knowing the impact that the different calamities could bring is a key to lessen the damage done if people could prepare ahead of time. As reflected in Figure 4, earthquake ranks first. It means that in term of impact, earthquake could bring the most serious damage. It is followed by typhoon, then, flood, and finally drought and landslide.

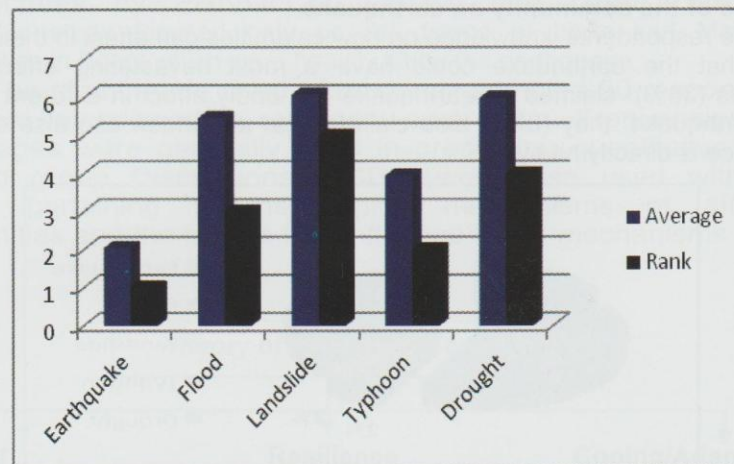


Figure 4. Natural disaster's degree of impact.

In this study, prevention on natural calamities is not taken seriously into consideration by the respondents. It is obvious from the way the constructed their houses and other infrastructures. Though, majority (85%) claimed that both the community and the government are responsible in finding solutions to the impacts due to natural calamities. In this line, 78% expressed their willingness to have further information and training about natural disaster. At present, the respondents have, in their respective places, a special unit responsible emergency response. They do have evacuation plans and system of coordination with the LGUs, but then again, how can all these preparations and coordination help prevent the impact due to calamities like that 7.2 magnitude earthquake occur?

Problems encountered and the coping mechanisms used

In disaster-prone localities, coping measures immediately before the hazard event start with the saving of human lives (Rasid and Paul 1987;

Thompson and Tod 1998). This study finds that a majority of the household members do not take shelter in their residences, but prefer to stay in the open areas or seek refuge in evacuation centers.

Right after the 7.2 magnitude earthquake, they have encountered varied problems. Lack of food, water, house/shelter, transportation, communication, livelihood/work, health/medicine, shock/trauma, family loss, and clothing supplies were the ten primary problems met by the respondents. Their houses, roads and bridges, establishments, farms and other infrastructures were also destroyed by the earthquake.

With this scenario, people immediately resort to some form of coping mechanisms. As soon as they realized what they lost, the respondents find ways to survive from the rubbles. They started asking assistance from relatives, asking neighbors for help; helping one another; majority (41%) rely on relief goods; staying in the plaza for safety; using lamps or candles for light; using tents for temporary shelter; and, using "deep well" or water pump for water supply. Mentioned were the top eight (8) coping mechanisms utilized by the respondents.

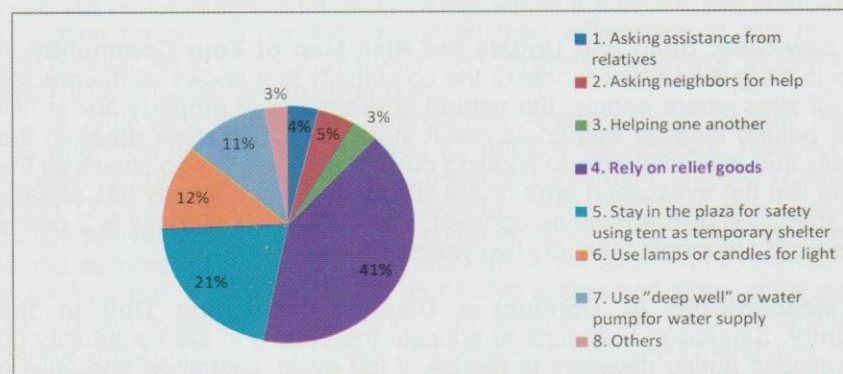


Figure 5. Coping strategies.

Relying on relief goods (41%) was the primary coping mechanism of respondents after the earthquake. The primary reason of using such a mechanism was for them to survive. Having no choice was another reason. The victims of the 7.2 magnitude earthquake slowly coped up through the assistance extended to them by both public and private institutions. This assistance is vital to these victims of calamities because, as in any case, as Ehrenreich (2001) postulated, victims of a disaster may develop lasting depression, pervasive anxiety, post-traumatic stress disorder, and other emotional disturbances if they are not being helped.

It was also found out that many respondents have deliberately damaged their houses with hopes of receiving more relief materials and new houses. Even 2 years after earthquake, people have strongly expressed their desire to receive further relief and support services for re-building livelihoods.

Therefore, based on the field survey and assessment, it was observed that it is necessary and more sensible to provide assistance to produce food that might enhance the coping ability of disaster victims (Devereux 2001).

The traditional form of relief operations (food, blankets etc.) seems less effective in the study locations; rather it should acknowledge the real needs raised by the victims such as agricultural inputs, and employment generation etc. Providing food relief and first aid are immediate needs to rescue the victims after an earthquake. Assistance should be given in a way that helps them to rebuild their livelihood and regain their pre-disaster status. Therefore, it is important to provide relief to those who experience greater losses and those at the bottom of the society who are unlikely to recover without external help. Moreover, if relief is made available immediately after an earthquake based on the victim's priority, it may help to save at least some of their assets or reaching the final stages of destitution.

Proposed Service Options

In this study, four (4) proposed service options were presented to inform and educate them about the hazards and devastating impacts of another possible earthquake and minimize if not avoid more damages. In each of these options, there is a corresponding cost. Households and establishments in their neighborhood were expected to pay for these services.

The four proposed service options are as follows:

Low-Cost. Build and Update the Risk Map of Your Community. A risk map is a big drawing or model of the community that shows all the precise location of sites where people, the natural environment or property are at risk due to a natural disaster that could result in death. It can show areas in the community that are vulnerable to flooding during typhoons. It also shows all the resources like the evacuation area or fire station. If the community has already this risk map, it should always be updated. The cost of this strategy is 2 pesos per household per month for every two years.

Medium-Cost A. Conduct a Disaster Simulation Drill in the Community. Simulation Drill aims to educate the people in the community on how to respond during disasters to reduce, if not avoid, casualties and build a Community Emergency Response Team in the Community. The cost of this strategy is 10 pesos per household per month per year.

Medium-Cost B. Set Up a Radio Station in the Community. Its role is to inform and educate the community about the hazards they are vulnerable during natural disasters to and the ways to avoid them. The cost of this strategy is 40 pesos per household per month per year.

High-Cost. Build Structures to Minimize Damage to Communities during Natural Disasters. Funding in structures like evacuation centers, seawalls, levee bank to reduce the impact of flooding; and build reservoir system for both flood and drought control. The cost of this strategy is 100 pesos per household per month per year.

As revealed in this study, 38 percent of the respondents chose Low Cost strategy which cost 2 pesos per household per month for every two years, while 35 percent chose Medium Cost B which cost 40 pesos per household per month per year. This showed that the respondents chose strategies which are cheaper than the other options.

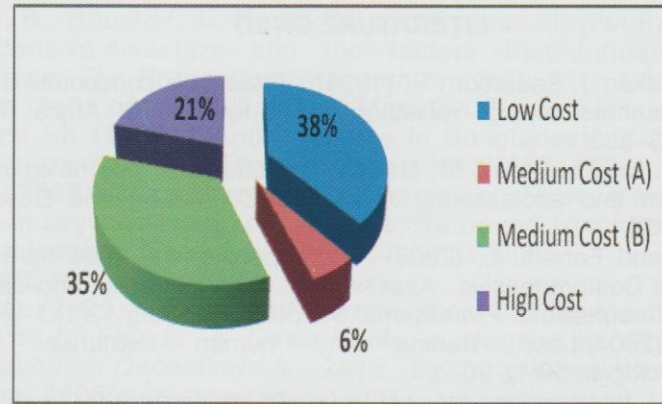


Figure 6 . Service Options.

This implied that in as much as they wanted safety for them and their families and properties, they could not afford to pay high cost strategies yet as they are still on the stage of recovery. When asked if they are willing to pay for their chosen option, 70 percent expressed their willingness to pay for their chosen options. As to whom they would like to provide the service 38 said LGU, 18 said NGO, while 35 said the Barangay.

A long term solution for communities affected by a calamity usually begins when the household is required to mobilize its assets to respond to a crisis; such as consumption of savings, asset disbursement, and etc. (Adams et al. 1998). Coping strategies may be successful if a household is able to allocate resources to overcome a crisis without compromising the long term objective of livelihood security. In contrast, coping may fail when all efforts to overcome a crisis are abortive, such as selling of productive assets and labor, consumption smoothing and collection of wild foods; and in worst case result in destitution (Devereux 1992). This study shows that people in Loon and Maribojoc, Bohol have developed their own coping strategies which are distinct in character.

CONCLUSION

Knowledge on the nature of an earthquake or in any disaster and their devastating effects can help people prepare themselves so as to employ useful measures to reduce negative impacts. However, in a calamity like an earthquake that can caught its victims off guard, no certain amount of preparation can be said enough to lessen its damage. Like that of the 7.2 magnitude earthquake that hit Bohol, people were caught unaware of its coming leaving them totally unprepared. However, as soon as people realized their state of being helpless, this situation made them realized the need of one another. In this study, it is found out that it, indeed, takes a common tragedy to bind people together in order to survive. Thus, the concept of resiliency finds its new meaning in the very people themselves, the victims, who need each other and continue to live not just to survive for more but to realize what else life can offer after such a disaster.

LITERATURE CITED

- Adams AM, Cekan J, Sauerborn R. (1998) . Towards a conceptual framework of household coping: reflections from rural West Africa. *Africa* 68 (2):263–283.
- Armstrong, M., and Holaday, M. (1993). The effects of psychological trauma children and adolescents. *Journal of Counseling and Development*, 72:49-56.
- Baggerly, J., and Ferretti, L. (2008). The impact of the 2004 hurricanes on Florida Comprehensive Assessment Test Scores: Implications for school counselors. *Professional School Counseling* 12(1):1-9.
- Bonnano, G. A. (2004). Loss, trauma and human resilience. *American Psychologist*, 59(1), 20-28.
- Carr, A. (2004). Interventions for post-traumatic stress disorder in children and adolescents. *Pediatric Rehabilitation*, 7(4), 231-244.
- Darfield earthquake, New Zealand. *Natural Hazards*, 69(3), 1849–1875. (<http://doi.org/10.1007/s11069-013-0782-z>).
- Devereux S (1992) Household responses to food insecurity in north-eastern Ghana. Dissertation, University of Oxford
- Devereux S (2001) Livelihood security and social protection: a re-emerging issues in rural development. *Dev Policy Rev* 19(4):507–519
- Ehrenreich, John H. Ph.D. The American Health Empire: Power, Profits, and Politics. New York, (2001).
- Flory, K., Kloos, B., Hankin, B., & Cheely, C. (2008). Clinical research after catastrophic disasters: Lessons learned from Hurricane Katrina. *Professional Psychology: Research and Practice*, 39(1), 107-112.
- Jones, R., Frary, R., Cunningham, P., Weddle, J., & Kaiser, L. (2001). The psychological effects of Hurricane Andrew on ethnic minority and causation children and adolescents: A case study. *Cultural Diversity and Ethnic Minority Psychology*, 7(1), 103-108.
- Madrid, P., and Grant, R. (2008). Meeting mental health needs following a natural disaster: Lessons from Hurricane Katrina. *Professional Psychology: Research and Practice* 39 (1), 86-92.
- Math, S., Girimaji, S., Benegal, V., Kumar, G., Hamza, A., & Nagaraja, D. (2006). Tsunami: Psychosocial aspects of Andaman and Nicobar islands. Assessments and intervention in the early phase. *International Review of Psychiatry*, 18(3), 233-239.
- NDRRMC, Online, accessed at: <http://www.ndrrmc.gov.ph/attachments/article/1108NDRRMC20Update20SitRep20no.203520re20Effects20of20M7.2Bohol20EQ,203N> (2013).
- Osofsky, H., Osofsky, J., Kronenberg, M., Brennan, A., and Hansel, T. (2009). Posttraumatic stress symptoms in children after Hurricane Katrina: Predicting the need for mental health services. *American Journal of Orthopsychiatry* (79), 2, 212-220.
- Paul, S. K., and Routray, J. K. (2011). Household response to cyclone and induced surge in coastal Bangladesh: coping strategies and explanatory variables. *Natural Hazards*, 57(2), 477–499. <http://doi.org/10.1007/s11069-010-9631-5>.

- Pfefferbaum, B., Houston, J., North, C., and Regens, J. (2008). Youth's reactions to disasters and the factors that influence their response. *The Prevention Researcher*, 15(3), 3-6.
- Phivolcs, Active faults of the Philippines, Map (2000).
- Rasid H, Paul BK (1987) Flood problems in Bangladesh: is there an indigenous solution? *Environ Manag* 11(2):155–173.
- Rathe, E. L. (2008). Transference and counter transference from a modern psychoanalytic perspective. Retrieved from <http://www.nacsw.org/Publications/Proceedings2008/RatheETransference.pdf>.
- Reganit, Mafe (2005). Analysis of Community's Coping Mechanism in Relation to Floods: A Case Study in Naga City, Philippines, Retrieved on December 8, 2013 at (http://www.itc.nl/library/papers_2005/msc/ereg/reganit.pdf).
- Reganit, Mafe (2005). Analysis of Community's Coping Mechanism in Relation to Floods: A Case Study in Naga City, Philippines, Retrieved on December 8, 2013 at (http://www.itc.nl/library/papers_2005/msc/ereg/reganit.pdf).
- Thompson P, Tod I (1998) Mitigating flood losses in the active floodplains of Bangladesh. *Disaster PrevManag* 7(2):113–123.
- Weisler, R., Barbee, J., and Townsend, M. (2006). Mental health and recovery in the GulfCoast after Hurricanes Katrina and Rita. *Journal of the American Medical Association*, 296(5), 585-588.
- Whitman, Z. R., Wilson, T. M., Seville, E., Vargo, J., Stevenson, J. R., Kachali, H., and Cole, J. (2013). Rural organizational impacts, mitigation strategies, and resilience to the 2010 Darfield earthquake, New Zealand. *Natural Hazards*, 69(3), 1849–1875. <http://doi.org/10.1007/s11069-013-0782-z>.
- Wilson, J. P., and Drozdek, B. (Eds.). (2004). *Broken spirits: The treatment of traumatized asylum seekers, refugees and war and torture victims*. New York: Brunner/ Routledge.
- Wilson, J. P., Friedman, M. J., and Lindy, J. D. (2001). An overview of clinical consideration and principles in the treatment of PTSD. In J.P.Wilson, M.J. Friedman, and J. D. Lindy (Eds.), *Treating psychological trauma and PTSD* (pp. 59-94). New York: Guilford.
- Wilson, J. P. (1995). Traumatic events and PTSD prevention. In B. Raphael & E. D. Barrows (Eds.), *The handbook of preventative psychiatry* (pp. 281-296). Amsterdam, the Netherlands: Elsevier North-Holland.
- Wilson, J. P., and Raphael, B. (1993). *The international handbook of traumatic stress syndromes*. New York: Plenum.
- Wisner B, Blaikie P, Cannon T, Davis I (2014) *At risk*, 2ndedn. Routledge, London
- Zeidner, M., and Endler, N. S. (1996). *Handbook of coping*. New York: John Wiley.

- Wilson, J. P., and Drozdek, B. (Eds.). (2004). *Broken spirits: The treatment of traumatized asylum seekers, refugees and war and torture victims*. New York: Brunner/Routledge.
- Wilson, J. P., Friedman, M. J., and Lindy, J. D. (2001). An overview of clinical consideration and principles in the treatment of PTSD. In J.P. Wilson, M.J. Friedman, and J. D. Lindy (Eds.), *Treating psychological trauma and PTSD* (pp. 59-94). New York: Guilford.
- Wilson, J. P. (1995). Traumatic events and PTSD prevention. In B. Raphael and E. D. Barrows (Eds.), *The handbook of preventative psychiatry* (pp.281-296). Amsterdam, the Netherlands: Elsevier North-Holland.
- Wilson, J. P., and Raphael, B. (1993). *The international handbook of traumatic stress syndromes*. New York: Plenum.