Psychological Aspects of Disaster Risk Management

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Outline

I: Psychological bases for mitigation and preparedness: Theoretical models and some empirical results

II: What are the psychological impacts of disasters?

III: Psycho-social interventions for disaster survivors
I: Psychological Aspects of Mitigation and Preparedness for Natural Disasters

What needs to be done for strengthening preparedness and mitigation behaviors:

• Facilitation of Community participation
• Modification of individual and community attitudes to risk and P/M

Capacity building: empowerment of local communities /community organizations and networks
• development of necessary skills for P/M
• Psychological services: Development & capacity building for psychological services: Materials; Training; Trauma Centers
COPING WITH DISASTERS (P/M)

• The importance of the participation/ownership of the local communities for the execution of successful disaster mitigation is well recognized.

• Involvement in decision making processes has been repeatedly stressed.

• BUT, unfortunately has not yet gained widespread implementation.
What is Citizen Response?
(Helsloot and Ruitenberg, 2004)

1. prepare for disasters (M/P) and major accidents
2. before, during and after disasters and major accidents;
3. with the intent to help themselves or others to limit the effects of the disaster or major accident.

“Citizen participation processes and methods are likely to be related to culture and it is important to note that results from western cultures may not generalize to other cultures”.
Different labels given for citizen response

• Self protective behaviors and precautionary adaptation (Grothmann and Reusswig, 2006)
• Responsible behaviors (Kasapoglu and Ecevit, 2003)
• Adaptive behavior or problem focused coping (Duval and Mulilis, 1999)
• Preparedness behaviors (Paton, Smith and Johnston, 2005).
• Coping behaviors (Karanci & Aksit, 2000)
Do individuals engage in preparedness behaviors?

- People living in areas prone to natural hazards often fail to act, or do very little, to lessen their risk of death, injury, or property damage (Peek and Miletí, 2002).

- Therefore, the task of facilitating community members to act is a challenging area.
Psychological variables related to the facilitation of protective behaviors

• risk/threat & vulnerability appraisals
• believing in the possibility of coping and knowing about methods of coping (having self-efficacy beliefs and coping skills)
• responsibility for taking action

Factors hindering responsible behavior:
• psychological factors like denial, fatalism and avoidance
Variables common to Psycho-Social Models explaining protective behaviors

1. Cognitive appraisals of:
   • risk (hazards and vulnerabilities) and coping
   • Coping skills

2. Resources

3. Responsibility
The Person Relative to Event model (PrE) (Duval and Mulilis, 1999)

- Based on Lazarus et al.,’s studies on stress, the cognitive appraisal of stress and coping
- Following threat perception appraisal process takes place: 1. Event appraisal: Appraisal of magnitude of threat and 2. Coping appraisal: Appraisal of personal resources
- Perception of risk and reduction > Resources = No coping
- Perception of threat =/< Resources = Coping
- Perceptions of responsibility moderates this relationship
Two major perceptual processes are important for explaining self-protective behavior.

1. Threat perception: involves the perceptions of probability and severity of the event and the fear evoked

2. Coping appraisal: involves the appraisals of protective response efficacy, self efficacy, and protective response costs
The Protection Motivation Theory

Threat Appraisal + fear

Coping appraisal

Non-protective Defensive Factors (denial, fatalism)

Protective motivation

Protective Behavior

resources

+ +
The Disaster Preparedness Model (DPM) (Paton, Smith, and Johnston, 2005)

- Critical awareness
- Risk: Threat perception
- Quake anx 1
- Quake anx 2
- Outcome expectancy
- Self-efficacy
- Responsibility
- Intention to prep
- Preparing for quakes
- Intention to seek info
- Action coping
- Preparing for quakes
Commonalities of the three models

- Cognitive processing of risk is important
- Appraisals of the coping abilities and resources
- Motivation for protective behaviors are only converted into action under certain circumstances, like the presence of self-efficacy beliefs, a moderate amount of anxiety, presence of resources
- There are certain hindering factors like denial and high anxiety which may interfere with adaptive behaviors
- Economical constraints-resources are also stressed
Selected Empirical Findings
Coping: Is There A Risk For Future Earthquakes?

- Majority of respondents say YES for an earthquake and believe that they are vulnerable.

(Turkey: Erzincan and Dinar samples (Karanci et al., 1995; 1999; İstanbul (Fişek et al, 2002))
Is It Possible To Take Action For Mitigation? (General Efficacy Beliefs)

- YES (Best predictor: Years of Education)
  Erzincan: % 82
  Dinar: % 71

- Can you do something for mitigation? (Self-Efficacy)
  Erzincan: % 47
  Dinar: % 47
### Whose Responsibility Is It To Take Actions For Mitigation?

<table>
<thead>
<tr>
<th></th>
<th>Erzincan, 96 %</th>
<th>Dinar, 96 %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>State</strong></td>
<td>49</td>
<td>46</td>
</tr>
<tr>
<td><strong>Municipality</strong></td>
<td>31</td>
<td>39</td>
</tr>
<tr>
<td><strong>Citizens</strong></td>
<td>33</td>
<td>26</td>
</tr>
<tr>
<td><strong>Governors</strong></td>
<td>23</td>
<td>7</td>
</tr>
<tr>
<td><strong>Constructors</strong> / <strong>Engineers</strong></td>
<td>14</td>
<td>6</td>
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</table>
Have You Engaged In Any Kind Of Preparation?

- **Erzincan, 1993**: % 30
- **Dinar, 1996**: % 13
- **İstanbul 2002**: %2-%30 (Fisek et al)

Tents, moving house, strengthening house, stabilizing furniture; supplies; buying a car, food-clothing; insurance

**Predictors of preparedness** (Erzincan, 93; İstanbul, 2002)

- **Fear /Anxiety**
- **Perception of control**
- **Education**
- **Income**
# Reasons for not engaging in any kind of Mitigation/preparedness (Fişek et al, 2002, İstanbul; N=254)

<table>
<thead>
<tr>
<th>Reasons</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>We trust our building</td>
<td>57</td>
</tr>
<tr>
<td>Too expensive</td>
<td>54</td>
</tr>
<tr>
<td>It is God’s will, what I do</td>
<td>41</td>
</tr>
<tr>
<td>won’t matter</td>
<td></td>
</tr>
<tr>
<td>No use</td>
<td>33</td>
</tr>
<tr>
<td>None of my relatives,friends did something</td>
<td>30</td>
</tr>
<tr>
<td>Don’t have time</td>
<td>29</td>
</tr>
<tr>
<td>Don’t know what to do</td>
<td>25</td>
</tr>
<tr>
<td>I am at rent</td>
<td>25</td>
</tr>
<tr>
<td>No need, won’t happen soon</td>
<td>10</td>
</tr>
<tr>
<td>Neighbors could not agree</td>
<td>9</td>
</tr>
<tr>
<td>Insurance will take care of it</td>
<td>8</td>
</tr>
<tr>
<td>Do not think to stay at this house for a long while</td>
<td>7</td>
</tr>
</tbody>
</table>
Duval and Mulilis (1999), Earthquake preparedness among homeowners living in Long Beach, California

- earthquake preparedness behaviors increased for persons who were given communications portraying high personal resources for dealing with quake threat in comparison to the magnitude of their threat perceptions (i.e.; the severity and probability of an earthquake) supporting the PrE model.

- perceptions of responsibility for mitigation had a moderating effect for preparedness behaviors, even when personal resources were viewed as sufficient, which showed the importance of taking responsibility for preparedness.
From Turkey; Earthquake preparedness

- Anxiety about future quakes and perceived control were positively related to preparedness behaviors among the survivors of the Erzincan, Turkey earthquake (Rustemli and Karanci, 1999)
- Education, employment, social security and knowledge were important predictors of preparedness for future earthquakes among the survivors of the 1999 Marmara earthquake (Kasapoglu and Ecevit, 2003)
Flood Preparedness in Germany (Grotthmann and Reusswig, 2006),

- Perceptual variables are important determinants of protective behaviors (such as purchase of flood protection devices and engaging in structural measures),
- Threat and coping appraisals and house ownership appeared as significant predictors for protective behaviors for floods,
- Non-protective variables (such as denial) were negatively related to protective behaviors
Earthquake Preparedness, 600 randomly selected homes in New Zealand. (Paton et al., 2005)

- Risk perception, critical awareness and earthquake anxiety motivated preparedness and were directly linked to outcome expectancy.
- The results showed that intentions were grouped into two, intention to seek information and intention to prepare.
- Only intention to prepare related to earthquake preparedness actions.
- Those expecting an earthquake within the next 12 months (time) and those that had trust in administrative agencies information sources were more likely to engage in preparedness.
Importance of the degree of hazard faced:

- Degree of hazard faced influences how risk information is received.
- Crozier, McClure, Vercoe and Wilson (2005), in their study on earthquake preparedness in New Zealand, found that in low hazard zones, hazard information leads to the view that causes are manageable, whereas in high hazard zones information may induce a degree of fatalism.
Window Of Opportunity

✓ Increase in Awareness in the Post-disaster Period

✓ Preparedness (Risk/vulnerability awareness; Fear/anxiety; Belief in Control; Resources and skills)
Community Disaster Awareness Training Program in Turkey: Does it Influence Hazard Related Cognitions and Preparedness Behaviors (Çankırı) : A Case example (Karanci et al., 2005)

- Community disaster training program, 2002
- Earthquakes, floods and landslides;
- Covered mitigation, preparedness and response aspects
- Four thousand community members participated in the training program delivered by ninety-five local trainers
- One year after the program, four hundred randomly selected participants of the training program (participants) and a comparable sample of four hundred community members who did not participate in any disaster training program (non-participants) were compared
- Survey focusing on attitudes, worry, expectations of disasters and preparedness behaviors administered
Some results

- The results showed that participants of the training program had more disaster expectation, worry and loss estimation and more preparedness behaviors.

**Predictors of preparedness:** Regression, in the final step:

- gender (male) ($\beta = .09$, $t = 2.02$, $p < .05$),
- years of education ($\beta = .15$, $t = 3.07$, $p < .01$),
- house ownership ($\beta = .10$, $t = 2.13$, $p < .05$),
- participation in awareness training ($\beta = .15$, $t = 3.37$, $p < .001$) and worry about future disasters ($\beta = .14$, $t = 2.53$, $p < .01$) were significant variables.
Suggestions for community disaster awareness programs

- Initially developing and increasing an **awareness** of risks, hazards and vulnerabilities (Awareness programmes/Various methods, use of the media)
- Recognize hindering factors, like denial, fatalism etc.
- To empower community members with relevant **skills to cope** with the event (Skills training)
- Giving support and information on resources that can be activated,
- so that the person evaluates his/her resources relative to the threats posed by the event, as sufficient to deal with them.
- to facilitate self responsibility for managing threat, thus give ownership to citizens, non-governmental organizations etc..
- Sustainability
II: Psychological impact of disasters
Psychosocial Stressors Following Natural Disasters

- Drastically altered physical environments
- Economic losses
- Disruption of daily and social activities
- Homelessness
- Emotional trauma (witnessing loss of lives, injury and property loss)
- Anxiety for future occurrences
- Collapse of basic assumptions on predictability and safety
What is shattered? : Basic Assumptions

- **INVULNERABILITY**: Life is safe and secure..won’t happen to me!
  
  An awareness that we aren’t invulnerable

- **MEANING AND PURPOSE**: Casts doubt on the meaning and purpose of our lives..but the traumatic event doesn’t fit in..injustice of life; no meaning in life

- **SELF-RESPECT**: question our worth..self-blame
Who are affected?

Almost Everyone

- The Survivors
- Their relatives and friends
- Rescue workers, all emergency workers, including the media
- Volunteers
- Those who witness the event (secondary traumatization)
<table>
<thead>
<tr>
<th>Pre-disaster</th>
<th>Within-disaster</th>
<th>Post-disaster</th>
<th>Mental-Health outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographics</strong>&lt;br&gt;(children;elderly; poor; women)</td>
<td>Intensity of disaster exposure&lt;br&gt;(sudden;threat to life; intentional harm; sights)</td>
<td>Basic needs</td>
<td>Depression</td>
</tr>
<tr>
<td><strong>Mental health history (anx)</strong></td>
<td>Initial distress level; Conditioned ERs</td>
<td></td>
<td>Anxiety</td>
</tr>
<tr>
<td><strong>High magnitude life events</strong></td>
<td>Cognitive appraisal of dis.: low control</td>
<td>Stressful life events&lt;br&gt;(acute &amp; chronic)</td>
<td>Somatic complaints Substance abuse</td>
</tr>
<tr>
<td><strong>Low magnitude life events</strong></td>
<td>low predictability&lt;br&gt;High life threat</td>
<td>Resource loss&lt;br&gt;(object; condition; energy)&lt;br&gt;Coping beh.&amp; Social support</td>
<td>Positive experiences (Growth)</td>
</tr>
</tbody>
</table>
Factors related to adjustment
(Parkinson, 2000)

Adjustment is a process

- Person-background
  - Personality
  - Prior traumatic events
  - Coping resources
- Event
  - Exposure
  - Severity
  - Loss
- Social support
- Post-event
- Reactions: PTSD
  - Re-experience
  - Avoidance
  - Arousal
Psychological Effects of Disasters
I: Psychological Shock Stage
(First 24 hours or longer)

- Physiological arousal
- Difficulty in logical and rational thinking
- Everything seems unreal-dissociation
- Absence of any emotion
- Absence of the sensation of pain
- Shock
Shock Stage
cont..

- Memory and concentration problems
- Inability to make decisions
- Some panic (20%)
- Some freeze
Psychological first-aid (shock stage)

- Creating a safe, secure, tranquil environment
- Showing empathy, calm presence, touching if culturally acceptable
- Listening, let the survivor talk
- Don’t try to talk, don’t console, don’t give empty promises or divert his/her attention
- Just be there with the survivor
- Show respect
II: REACTION PHASE (approx. 2-6 days)

- Emotional chaos: anxiety, fear, anger, irritability, despair, helplessness, sadness, guilt, shame, distrust, Feeling alienated and lonely
- Somatic reactions: trembling, nausea, cardiac symptoms, muscle pains, dizziness, fatigue, restlessness; sleep problems, change in appetite
- Sleeping pills, sedatives, smoking/alcohol
- Avoidance of the reminders of stimuli that resemble the disaster situation
- Repetitive thoughts and images related to the disaster
- Frightening dreams and nightmares
- All these reactions are frightening and the survivor fears that they are going to get mad. (PSYCHOEDUCATION)
III: The Working Through and Processing Stage

- Does not want to talk about it any more
- Grieving for the loss
- Processing takes place internally
- Strong emotions may erupt, like sadness, longing, etc
- Difficulties in memory and attention
- Problems in interpersonal relationships, irritability and conflicts, displaying rage to external sources
- Wanting to be left alone
IV: RECOVERY PHASE

- The intensity of reactions get less
- The survivor starts to display interest in daily life events
- Plans for the future
- Starting to feel emotionally better
- The trauma/disaster event becomes a part of the survivor, comes to mind but does not preoccupy it.
Children’s reactions

- Depends on the age (pre-school; adolescence)
- Affected by reactions of parents and adults
- Avoidance
- Fear of reminders, being left alone
- Guilt, anxiety about future
- Irritability, acting out, aggression, loosing trust in adults
- Problems in concentration; speech
- Change in character
- Somatic problems and Sleep problems
- Become more active and may have difficulty in controlling their own behavior
- May regress –enuresis, thumb sucking
2. **Avoidance & Numbing:** Persistent avoidance or numbing of general responsiveness in at least 3 of the following

- Efforts to avoid thoughts, feelings, or conversations associated with the trauma
- Efforts to avoid activities, places, or people that arouse recollections
- Inability to recall an important aspect of the trauma
- Diminished interest or participation in significant activities
- Feeling of detachment or estrangement from others
- Restricted range of affect
- Sense of foreshortened future

3. **Arousal:** Persistent arousal as shown by at least 2 of the following

- Difficulty falling or staying asleep
- Irritability or outbursts of anger
- Difficulty concentrating
- Hypervigilence
- Exaggerated startle response
ERZİNCAN 1993: Psychological Reactions

- % 95 have been psychologically disturbed
- Fear/Anxiety; Somatic Complaints; Irritability and nervousness; memory problems; problems in family relations

**Predictors:** Being female; evaluating home as unsafe
DİNAR, 1995: Psychological Reactions

WHICH FACTORS INCREASE PSYCHOLOGICAL DISTRESS?

• Being female
• Threat perception during the quake
• Helplessness coping
• Lack of belief in control
• Negative life events since the quake
• Problem-focused coping decreases distress
POSTTRAUMATIC GROWTH
Tedeschi, Park & Calhoun

PTG as process and outcome

Traumatic Event
(Psychol. Seismic event)

Cognitive processing

PTG
(cognitive & emotional)
“stress-related growth”

distress
Post-traumatic Growth

- Processing of and coping with trauma
- Initial high distress: the foundations of existing beliefs shaken
- Positive changes in the perceptions of self, others and the world
Who experiences Post-Traumatic Growth?

1. High initial distress
2. High social support/social integration
3. Helping others/Volunteer work
4. Use of active coping skills
Principles of Psycho-Social Interventions

- Survivors need to be involved
- the management of the post-disaster environment and services is also very important
- First attend to safety and basic needs
- Empowerment: resource loss
- Return to normalcy, facilitate social activities
- Normalization of psychological reactions: Psychoeducation; Psychological first-aid
- Screen for PTSD, depression etc and refer
Psycho-Social Support:

- Crisis Centers
- Telephone hot-lines
- Psychoeducation
- Debriefing
- Written material on reactions and ways of coping
More specific psychological interventions:

1. Psychological debriefing
2. Relaxation
3. Imaginal exposure
4. In-vivo exposure
5. Cognitive restructuring
6. Eye movement desensitization and reprocessing
General Conclusions

- Community participation throughout all phases (pre-post) needs to be strengthened
- Reaching out for all segments (Women’s outreach)
- Focussing on and changing attitudes and beliefs in risk perception, mitigation and preparedness
- Empowerment/ Resilient communities: Coping skills and sense of control : combat helplessness
• Facilitate problem focussed coping
• Training in disaster management skills
• Facilitation of volunteer organisations
• Internalization of responsibility and ownership
• Sustainable training programs targeted at adults, children and NGO members and professionals, like emergency workers, psychologists and members of the media
• These long-term interventions are likely to decrease psychological distress in future disasters
Thank You
Questions and Comments?