Alcohol Use and Meaning in Life Among Survivors of Hurricane Katrina

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To Hattiesburg

Hurricane Katrina Approximate Track
Monday August 29, 2005

Landfall 1, PLAQUEMINES PARISH LOUISIANA
140 MPH WINDS...CATEGORY 4...610 AM CDT

Landfall 2, LA/MS BORDER
125 MPH WINDS...CATEGORY 3...10 AM CDT

Click on for Before/After Images

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University of Southern Mississippi-Gulf Coast Campus

Entrance to Ocean Springs Research Labs
Sign from Gulf Coast Campus
Gulfport Campus
Ocean Springs Research Labs - Cars Floated Out of the Parking Lot
Hattiesburg, Mississippi
Welcome to Hattiesburg
Convenience Store in Hattiesburg
Gas Station in Hattiesburg
Homes in Hattiesburg
Clean Up in Hattiesburg
Relief Truck – Hattiesburg Area
Responses to Hurricanes and Other Natural Disasters

- **PTSD** (Caldera, Palma, Penayo, & Kullgreen, 2001; Norris, Perilla, & Murphy, 2001; Norris, Perilla, Riad, Krzysztoy, & Lavizzo, 1999)
- **Depression** (Bowler, Mergler, Huel, & Cone, 1994)
- **Alcohol consumption and drug abuse** (Aso, 1995; Noda, 1996; Shimizu, Aso, Noda, Ryukei, Kochi, & Yamamoto, 2000).
- **Suicidal ideation and suicides** (Krug, Kresnow, Peddicord, Dahlberg, Powell, Crosby, & Annest, 1998)
- **Anxiety** (American Red Cross, 1995; David, Mellman, Mendoza, Kulick-Bell, Ironson, & Schneiderman, 1996),
- **Acute stress disorder (ASD)** (Sattler, Preston, Kaiser, Olivera, Valdez, & Schlueter, 2002)
- **Relational problems** (i.e., divorce and domestic violence) (Norris & Uhl, 1993; Rubonis & Bickman, 1991)
- **Aggression** (Reijneveld, Crone, Verhulst, & Verloove-Vanhorick, 2003)
Previous Research

• Conservation of Resources Model of stress (Hobfoll, 1989, etc.)
  – People strive to obtain & retain resources
  – Stress defined in terms of loss of resources
  – Resources include objects, conditions, & personal characteristics

• Strengths
  – Well-studied in hurricane survivors
  – Marginalized or disadvantaged groups

• Limitations (?)
  – Downplays role of gains
  – Does not adequately address transformational experiences
Participants

- 632 students from two campuses of the University of Southern Mississippi
  - 78 % female
  - 62.5 % white; 37.5 % African American
  - Mean age = 22.29 years, SD = 5.12
  - Age range = 18-55 (72.5 % age 22 & under)
  - 82.3 % Single/Never Married; 10 % married
  - 14.9 % Are a parent
  - 55.9 % Currently Employed
Religious Affiliation

- Agnostic
- Atheist
- Baptist
- Catholic
- Methodist
- Other Christian
- Non-Christian
Year in School

- Freshman
- Sophomore
- Junior
- Senior
Measures – Hurricane Related

- Preparations for the hurricane
- Experiences during & after the hurricane
  - Loss of services
  - Interference with work or school
  - Feeling in Danger
  - Injury to self or family
  - Damage to home or residence
- Losses and gains of resources after the hurricane
- Types of help or assistance they received after the hurricane
- Types of help they provided to others
Measures – Dependent Variables (Outcomes)

- Physical Health
- Symptoms of Depression (CESD)
- PTSD Symptoms
- Alcohol use after the hurricane (past month QF, peak, binge frequency)
- Experiences of personal meaning and inner peace (FACIT-Sp Meaning & Peace subscale)
Measures – Past History & Potential Moderators

- Experiences of trauma prior to the hurricane
- Preparations for the hurricane
- Gains of resources after the hurricane
- Secular & religious coping with the hurricane
- Types of help or assistance they received after the hurricane
- Types of help they provided to others
- Alcohol use before the hurricane (past year QF, peak, binge frequency)
- Alcohol problems (past year)
- Religious practices and religious social support before and after the hurricane
- Experiences of personal meaning and inner peace
Coping Measures (From PCA)

- **Secular**
  - Active Coping
  - Defeat & Denial
  - Acceptance & Reframing
  - Using Drugs to Cope
  - Using Humor to Cope
  - Anger at Authorities

- **Sacred**
  - Positive Religious Coping
  - Anger at God
  - Seeking Spiritual Support
  - Feeling Punished by God
Previous Trauma (Past Year)

- Serious Accident
- Attacked
- Chemical or Radiation Exposure
- Forced Physical Contact
- Serious Injury or Illness
- Death in Family
- Divorce or Separation
Damage to Home

- No Damage: 121
- Minor Damage: 299
- Moderate Damage: 147
- Major Damage: 48
- Completely Destroyed: 32

Legend:
- No Damage
- Minor Damage
- Moderate Damage
- Major Damage
- Completely Destroyed
Experiences During the Hurricane

- 39% Felt like life was in danger during the hurricane.
- 3% You or a household member sustained an injury as a result of the hurricane.
Loss of Services Following the Hurricane

<table>
<thead>
<tr>
<th>Service</th>
<th>Never</th>
<th>Less than a week</th>
<th>1-2 weeks</th>
<th>More than 2 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Running Water</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telephone</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
How much school missed?

- None
- < 1 Week
- 2 Weeks
- 3 Weeks
- Month or >

Percentages:
- 0%
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
How Much Work Missed?

- None: 0.00%
- < 1 Week: 5.00%
- 1 Week: 10.00%
- 2 Weeks: 15.00%
- 3 Weeks: 20.00%
- 1 Month or >: 25.00%
- No Response: 30.00%
- 3 Weeks: 35.00%
Gain/Loss

• 58 Items – rate amount of loss or gain (from -4 to +4)

• Typically summed to give one value
  – Presumes all types of gains & losses equally important

• We created separate categories for different types of gains/losses
  – PCA – 11 Factors
## Gain/Loss Factors

<table>
<thead>
<tr>
<th>Factor</th>
<th>Items</th>
<th>Mean</th>
<th>(SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Support</td>
<td>6</td>
<td>.74</td>
<td>.88</td>
</tr>
<tr>
<td>Family Intimacy</td>
<td>5</td>
<td>.45</td>
<td>1.12</td>
</tr>
<tr>
<td>Achievement</td>
<td>5</td>
<td>.14</td>
<td>.52</td>
</tr>
<tr>
<td>Employment</td>
<td>2</td>
<td>.05</td>
<td>.74</td>
</tr>
<tr>
<td>Own &amp; Others Health</td>
<td>5</td>
<td>.04</td>
<td>.52</td>
</tr>
<tr>
<td>School Involvement</td>
<td>2</td>
<td>.03</td>
<td>.86</td>
</tr>
<tr>
<td>Children’s Needs</td>
<td>2</td>
<td>.02</td>
<td>.68</td>
</tr>
<tr>
<td>Home &amp; Possessions</td>
<td>7</td>
<td>-.31</td>
<td>.88</td>
</tr>
<tr>
<td>Financial Resources</td>
<td>7</td>
<td>-.42</td>
<td>1.03</td>
</tr>
<tr>
<td>Food &amp; Water</td>
<td>2</td>
<td>-.42</td>
<td>1.20</td>
</tr>
<tr>
<td>Time</td>
<td>3</td>
<td>-.60</td>
<td>1.53</td>
</tr>
</tbody>
</table>
Predicting Alcohol Use Post Hurricane

- **DV**s: drinks per week past month, past month frequency of binge drinking (& composite)
- **Predictors:**
  - Step 1: Gender, Age, Past Year use
  - Step 2: Feeling life was in danger, Injury to self or family, Loss of Services/work/school, Preparations for hurricane, Gain/Loss categories
  - Step 3: Help given to others, Help received, Meaning & peace
  - Step 4: Spiritual & Secular Coping factors
Predicting Drinks per Week

<table>
<thead>
<tr>
<th>Step</th>
<th>R²</th>
<th>R²Δ</th>
<th>Significant Predictors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>.659****</td>
<td>--</td>
<td>Past Year QF ((\beta = .79, p &lt; .0001))</td>
</tr>
<tr>
<td>Step 2</td>
<td>.676****</td>
<td>.017*</td>
<td>Gain/Loss Home ((\beta = -.06, p &lt; .02)); Gain/Loss Health ((\beta = -.09, p &lt; .001))</td>
</tr>
<tr>
<td>Step 3</td>
<td>.682****</td>
<td>.006*</td>
<td>Help Received ((\beta = .08, p &lt; .02)); Helped Others ((\beta = -.09, p &lt; .001))</td>
</tr>
<tr>
<td>Step 4</td>
<td>.707****</td>
<td>.025****</td>
<td>Defeat &amp; Denial ((\beta = -.07, p &lt; .04)); Using Drugs to Cope ((\beta = .14, p &lt; .0001))</td>
</tr>
</tbody>
</table>
# Predicting Binge Drinking

<table>
<thead>
<tr>
<th>Step</th>
<th>$R^2$</th>
<th>$R^2 \Delta$</th>
<th>Significant Predictors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>.613****</td>
<td>--</td>
<td>Past Year Binge Drinking ($\beta = .78$, $p &lt; .0001$)</td>
</tr>
<tr>
<td>Step 2</td>
<td>.625****</td>
<td>.012</td>
<td>None at $p &lt; .05$ [Gain/Loss Home ($\beta = -.05$, $p &lt; .07$); Gain/Loss Health ($\beta = -.05$, $p &lt; .06$) Loss of Services ($\beta = .05$, $p &lt; .08$)]</td>
</tr>
<tr>
<td>Step 3</td>
<td>.628****</td>
<td>.003</td>
<td>None at $p &lt; .10$</td>
</tr>
<tr>
<td>Step 4</td>
<td>.648****</td>
<td>.02**</td>
<td>Using Drugs to Cope ($\beta = .15$, $p &lt; .0001$)</td>
</tr>
</tbody>
</table>
### Predicting Past Month Peak Drinking

<table>
<thead>
<tr>
<th>Step</th>
<th>$R^2$</th>
<th>$R^2\Delta$</th>
<th>Significant Predictors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>.694****</td>
<td>--</td>
<td>Past Year Peak ($\beta = .83$, $p &lt; .0001$)</td>
</tr>
<tr>
<td>Step 2</td>
<td>.714****</td>
<td>.019*</td>
<td>Injury to self/family ($\beta = .06$, $p &lt; .01$); Gain/Loss Money ($\beta = .08$, $p &lt; .001$); Gain/Loss Social Support ($\beta = .06$, $p &lt; .01$)</td>
</tr>
<tr>
<td>Step 3</td>
<td>.715****</td>
<td>.001</td>
<td>None at $p &lt; .10$</td>
</tr>
<tr>
<td>Step 4</td>
<td>.730****</td>
<td>.016**</td>
<td>Anger at Authorities ($\beta = -.08$, $p &lt; .001$); Using Drugs to Cope ($\beta = .12$, $p &lt; .0001$)</td>
</tr>
</tbody>
</table>
Predictors of Alcohol Use Post Hurricane

- Fairly Small Effects for Gain/Loss
  - Greater loss (or less gain) of Home and Health predicted greater alcohol use
  - Greater gain (or less loss) of Social Support predicted lower peak drinking
- Helping others predicted less alcohol use
- Using drugs as a coping mechanism predicted greater use, more frequent binging, and higher peak drinking
Predicting Well-Being Post Hurricane

• DVs: PTSD Checklist, CESD Depression, Meaning & Peace, Health Self-Report (& composite)

• Predictors:
  – Step 1: Gender, Age, Past Year Trauma (& Religiousness for Predicting Meaning & Peace)
  – Step 2: Feeling life was in danger, Injury to self or family, Loss of Services/work/school, Preparations for hurricane, Gain/Loss categories
  – Step 3: Help given to others, Help received
  – Step 4: Spiritual & Secular Coping factors
## Predicting PTSD Symptoms

<table>
<thead>
<tr>
<th>Step</th>
<th>$R^2$</th>
<th>$R^2\Delta$</th>
<th>Significant Predictors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>.074***</td>
<td>--</td>
<td>Past Year Trauma ($\beta = .24, p &lt; .0001$); Gender ($\beta = -.10, p &lt; .02$)</td>
</tr>
<tr>
<td>Step 2</td>
<td>.177***</td>
<td>.103***</td>
<td>Felt life was in danger ($\beta = .10, p &lt; .02$); Gain/Loss Home ($\beta = -.16, p &lt; .0001$); Gain/Loss Social Support ($\beta = .10, p &lt; .01$); Gain/Loss Money ($\beta = -.12, p &lt; .001$); Gain/Loss Time ($\beta = -.11, p &lt; .01$)</td>
</tr>
<tr>
<td>Step 3</td>
<td>.209***</td>
<td>.032***</td>
<td>Helped Others ($\beta = .15, p &lt; .01$)</td>
</tr>
<tr>
<td>Step 4</td>
<td>.379***</td>
<td>.170***</td>
<td>Seeking Spiritual Support ($\beta = -.11, p &lt; .05$); Feeling Punished by God ($\beta = .09, p &lt; .05$); Defeat &amp; Denial ($\beta = .34, p &lt; .0001$); Using Drugs to Cope ($\beta = .11, p &lt; .01$)</td>
</tr>
</tbody>
</table>
## Predicting Depression Symptoms

<table>
<thead>
<tr>
<th></th>
<th>$R^2$</th>
<th>$R^2\Delta$</th>
<th>Significant Predictors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>.066****</td>
<td>--</td>
<td>Past Year Trauma ($\beta = .21$, $p &lt; .0001$); Gender ($\beta = -.08$, $p &lt; .05$); Age ($\beta = .11$, $p &lt; .0001$)</td>
</tr>
<tr>
<td>Step 2</td>
<td>.164****</td>
<td>.098****</td>
<td>Felt life was in danger ($\beta = .09$, $p &lt; .05$); Gain/Loss Money ($\beta = -.11$, $p &lt; .01$); Gain/Loss Intimacy ($\beta = -.10$, $p &lt; .02$); Gain/Loss Achievement ($\beta = -.09$, $p &lt; .03$); Gain/Loss Time ($\beta = -.16$, $p &lt; .0001$)</td>
</tr>
<tr>
<td>Step 3</td>
<td>.181****</td>
<td>.017****</td>
<td>Helped Others ($\beta = .14$, $p &lt; .01$)</td>
</tr>
<tr>
<td>Step 4</td>
<td>.318****</td>
<td>.137****</td>
<td>Feeling Punished by God ($\beta = .12$, $p &lt; .01$); Defeat &amp; Denial ($\beta = .32$, $p &lt; .0001$); Using Drugs to Cope ($\beta = .10$, $p &lt; .02$)</td>
</tr>
</tbody>
</table>
## Predicting Meaning & Peace

<table>
<thead>
<tr>
<th>Step</th>
<th>$R^2$</th>
<th>$R^2\Delta$</th>
<th>Significant Predictors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>.079****</td>
<td>--</td>
<td>Past Year Trauma ($\beta = -0.20$, $p &lt; 0.0001$); Past Year Public Religiousness ($\beta = 0.15$, $p &lt; 0.01$)</td>
</tr>
<tr>
<td>Step 2</td>
<td>.149****</td>
<td>.070****</td>
<td>Gain/Loss Home ($\beta = 0.12$, $p &lt; 0.01$); Gain/Loss Intimacy ($\beta = 0.13$, $p &lt; 0.001$); Gain/Loss Time ($\beta = 0.08$, $p &lt; 0.05$); Gain/Loss Food &amp; Water ($\beta = -0.09$, $p &lt; 0.05$)</td>
</tr>
<tr>
<td>Step 3</td>
<td>.151****</td>
<td>.002</td>
<td>Helped Others ($\beta = 0.15$, $p &lt; 0.01$)</td>
</tr>
<tr>
<td>Step 4</td>
<td>.263****</td>
<td>.111****</td>
<td>Seeking Social Support ($\beta = 0.17$, $p &lt; 0.01$); Feeling Punished by God ($\beta = -0.11$, $p &lt; 0.01$); Defeat &amp; Denial ($\beta = -0.26$, $p &lt; 0.0001$); Using Drugs to Cope ($\beta = -0.11$, $p &lt; 0.02$)</td>
</tr>
</tbody>
</table>
## Predicting Self-Reported Health

<table>
<thead>
<tr>
<th>Step</th>
<th>$R^2$</th>
<th>$R^2\Delta$</th>
<th>Significant Predictors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>.133****</td>
<td>--</td>
<td>Past Year Trauma ($\beta = -.29, p &lt; .0001$); Gender ($\beta = .13, p &lt; .001$); Age ($\beta = -.18, p &lt; .0001$);</td>
</tr>
<tr>
<td>Step 2</td>
<td>.225****</td>
<td>.092****</td>
<td>Preparations ($\beta = .11, p &lt; .01$); Gain/Loss Money ($\beta = .12, p &lt; .01$); Gain/Loss Home ($\beta = .09, p &lt; .05$); Gain/Loss Intimacy ($\beta = .08, p &lt; .05$); Gain/Loss Time ($\beta = .15, p &lt; .0001$); Gain/Loss Health ($\beta = .12, p &lt; .01$);</td>
</tr>
<tr>
<td>Step 3</td>
<td>.227****</td>
<td>.002</td>
<td>None at $p &lt; .10$</td>
</tr>
<tr>
<td>Step 4</td>
<td>.329****</td>
<td>.102****</td>
<td>Anger at God ($\beta = .10, p &lt; .05$); Defeat &amp; Denial ($\beta = -.28, p &lt; .0001$); Using Drugs to Cope ($\beta = -.16, p &lt; .001$);</td>
</tr>
</tbody>
</table>
Predictors of Well-Being

• Gain/Loss moderately strong predictors
  – Greater gains in Family Intimacy predicted greater Meaning & Peace and less Depression
  – Loss of Time, Money, & Home generally had negative effects on well-being

• Helping
  – Greater involvement in helping others predicted higher levels of PTSD and Depression symptoms, BUT ALSO predicted higher levels of Meaning & Peace
Predictors of Well-Being

• Religious Coping
  – Seeking Spiritual Support predicted fewer PTSD symptoms
  – Feeling Punished by God predicted more PTSD & Depression and less Meaning & Peace
  – Anger at God predicted lower health

• Secular Coping
  – Using Drugs to Cope and Defeat & Denial predicted lower well-being
What might reduce the impact of Loss?

• Examined Helping Others and Religious & Secular Coping as moderators of the effect of Loss and Exposure to the effects of the Hurricane

• Hierarchical Regression (Baron & Kenney)

• Simple Slopes Analysis (Aiken & West)

• Positive Secular Coping Strategies
  – Low use of Secular Coping, no relationship between loss/exposure and Well-Being
  – For those high on use of Secular Coping, greater loss/exposure predicted LOWER well-being
Positive Religious Coping

• Did not moderate effect of loss/exposure on well-being

• Did moderate effect of loss/exposure on Post Hurricane Alcohol Use
  – In people using low levels of positive religious coping, greater loss/exposure predicted greater alcohol use
  – In people using higher levels of positive religious coping, there was no relationship between loss/exposure and alcohol use
Helping Others

• Helping others did not moderate effect of loss/exposure on well-being
• Helping others did moderate effect of loss/exposure on alcohol use
  – In people who reported little helping, greater loss/exposure predicted greater alcohol use
  – In people reporting high levels of helping others, there was a much smaller relationship between loss/exposure and alcohol use
Summary

- Not all resources equally important
- Resource Loss may have had a bigger impact than resource gain
- Gain/Loss stronger predictor of Well-Being than of alcohol use
- Positive Secular Coping associated with greater negative response to loss
- Positive Religious Coping moderated effect of loss/exposure on alcohol use
- Helping Others may have had both costs (PTSD & Depression) and benefits (Alcohol Use, Meaning & Peace)
- In some analyses Coping efforts had as big or bigger effects than resource gain or loss