Loss, Trauma, and Human Resilience

George A. Bonanno, Ph.D.

Bad things happen

- obvious public health cost

1. Focus on psychopathology
   - chronic grief and depression (10%-15%)
   - Posttraumatic Stress Disorder (PTSD) (5%-10%)

2. Focus on impact of event:
   - Compare groups exposed vs. non-exposed
   - Compare average response across event

3. Mapping individual differences across events: some surprising findings
Disruptions in normal functioning  

- PTE  
- 1 year  
- 2 years  

Psychopathology

Average response

Bereavement literature:  
The absence of pronounced grief ("absent grief") is rare and pathological?

- denial or inhibition, generally maladaptive  
  (Middleton et al., 1993)
- disordered mourning  
  (Bowlby, 1980)
- personality pathology  
  (Osterweis et al., 1984)
- cold and unfeeling  
  (Bowlby, 1980; Rando, 1993)
- superficially attached  
  (Horowitz, 1990; Rando, 1988; Raphael, 1983)
Trauma literature:
The absence of trauma is rare and occurs in exceptionally healthy individuals

- unexpected resilience (Tucker, Pfefferbaum et al., 2002).
- exceptional emotional strength (e.g., Casella, & Motta, 1990)
- Unusual courage (Druss & Douglas, 1988).

Resilience to loss and trauma

1. The minimal response to a PTE is neither exceptional nor pathological; it is resilience
2. Resilience is typically the most common outcome
3. There are multiple and sometimes unexpected pathways to resilience

Bonanno (2005) Current Directions in Psychological Science
Disruptions in normal functioning

Chronic

1 year

2 years

Recovery

Delayed

Resilience

PTE

mild

moderate

severe

Delayed 0-15%

Recovery 15-25%

Resilience 35-60%

Chronic 5-30%
Chronic 5-30%

Disruptions in normal functioning
- mild
- moderate
- severe

Recovery 15-25%
Resilience 35-60%
Delayed 0-15%?
Resilience to Adversity

- **Resilience in children** (Garmezy, Rutter, Werner, Masten, Luthar, etc.)
  - *aversive and enduring* life circumstances
  - *protective factors* foster positive outcomes at *the end point* of the developmental period

- **Resilience in adults**
  - PTEs that are usually isolated events
  - … occurring *in otherwise normal circumstances*
  - *protective factors* foster *minimal response or rapid return to baseline*
Adult Resilience to Loss and Trauma

• **Transient stress reaction** *(dis-equilibrium):* brief period of fluctuations in levels of distress and well-being

• **But . . . . . a relatively stable trajectory of healthy functioning** *(STHF)*

• **Capacity for generative experiences (new tasks, new relationships), positive emotions** *(Fredrickson et al.) and laughter* *(Keltner & Bonanno, 1997)*

The Changing Lives of Older Couples (CLOC) study

• 1,532 married individuals from Detroit area
• 205 lost a spouse during the course of the study,
  – interviewed prior to bereavement (on average 3 years pre-loss),
  – Interviewed at least twice after bereavement (6 and 18 months post-loss).

![Graph showing depression levels over time](image)

**Depression (CESD)**

- Depressed
- Improved
- Chronic depression
- Chronic grief
- Recovery
- Resilience

3 yrs pre-loss, 6 mo. post-loss, 18 mo. post-loss

- Depression levels:
  - 9% for 3 yrs pre-loss
  - 17% for 6 mo. post-loss
  - 11% for 18 mo. post-loss

- Recovery levels:
  - 12% for 3 yrs pre-loss
  - 45% for 6 mo. post-loss
  - 9% for 18 mo. post-loss

**Chronic grief**

- 9%

**Chronic depression**

- 17%

**Recovery**

- 11%

**Resilience**

- 45%
Resilient individuals

- No evidence for delayed grief
- Not unhealthy on any pre-loss measures
  - normal quality marriage
  - Not rated as cold or social inept by interviewers
- Higher scores on pre-loss protective factors
  - Belief in just world
  - Acceptance of death
  - instrumental support

Depressed-improved Individuals

- Prior to the loss . . .
- Ill spouse
- Poorer quality marriages
- More introspective and emotionally unstable
- lowest levels of instrumental support,
- believed that the world was particularly unjust to them (“everyone gets the breaks but me”).


Depression (CESD)
Resilient and depressed-improved evidence for healthy adjustment during bereavement

- **Lowest in**
  - grief symptoms (e.g., yearning),
  - processing of the loss,
  - searching for meaning,
  - avoidance/distraction,

- **Highest in**
  - positive affect
  - Comfort from positive memories of deceased

Bonanno, Wortman & Nesse (2004). *Psychology and Aging*

Resilience to Trauma
(violent or life-threatening events)

- Air war and emotional stress. Irving Janis (1951)
  - Hiroshima and Nagasaki
- Fear and courage. S. J. Rachman (1978)
  - WWII: British civilians during aerial bombardment
- Retrospective review of previously published studies
  - Not systematic
  - anecdotal
  - Studies not designed to measure resilient outcomes

High-exposure WTC sample:
In or near the WTC on September 11th

- N = 75; longitudinal analyses n = 55
- Small but rare sample
- Majority...
  - were exposed to life-threatening danger
  - witnessed death/serious injury to others

Bonanno, Rennicke, & Dekel (2005) JPSP
Post-traumatic stress

Time since September 11

Resilient (35%)
Recovered (23%)
Delayed (13%)
Chronic (29%)

Clinical cut-off

Depression (CESD)

Time since September 11

Resilient (35%)
Recovered (23%)
Delayed (13%)
Chronic (29%)
Normal mean
Clinical cut-off
Friend-ratings of participant’s trajectory

9/11
1 year later
2 years later
Resilience and PTSD in NYC after 9/11

- Random digit dialing, probability sample of contiguous NYC area (N = 2752)
- Demographics comparable with 2000 census
- PTSD symptom estimates were high reliability when compared at 1, 4, and 6 months
- Cumulative PTSD at 6 months = 6.0%

Bonanno, Galea et al. (2006) Psychological Science

New York area 6 months after 9/11 (N = 2752)
New York area 6 months after 9/11 (N = 2752)

- Overall (100%)
  - Saw attack in person (19.0%)
  - In WTC (0.8%)
  - Friend/relative killed (15.4%)
  - Friend/relative killed + saw attack (3.1%)
  - Injured (1.5%)
  - Lost possession (2.3%)
  - Involved in rescue (9.3%)
  - Involved in rescue + saw attack (3.3%)

Bonanno, Galea et al. (2006)
Additional validity data

Bonanno, Galea et al. (2007)

“Well, yes, it's a routine procedure—if you routinely have someone slice open your body with sharp instruments and then fiddle with your insides.”
Treatment for Breast Cancer

- 84 women treated for breast cancer
- Assessed depression after radiation treatment and 3 and 6 months post-treatment
- 51 (61%) had very low levels of depression throughout the study
- “Our results support assertions . . . that resilience is the most common response to loss or trauma, specifically here the experience of breast cancer”


Severe Acute Respiratory Syndrome (SARS)

- Fall, 2002: reported in Guangdong Province, People’s Republic of China
- Spring 2003: spread to over 30 countries, over 8000 people infected
- Hong Kong hit hard: 1755 infected, 299 dead
- Origins and treatment poorly understood
- Fear of death, quarantine, abandonment
- Study of 997 hospitalized survivors

Bonanno, Ho et al. (2008) *Health Psychology*
Normal range of functioning

- mean
- SD

Months since hospitalization

SARS

Average response across time

SF-12 MCS norms for Hong Kong

- 48.4 (mean)
- 39.6

SARS

6 months 12 months 18 months
SF-12 MCS norms for Hong Kong

Prototypical (anticipated) trajectories

Resilience 35%-55%
Recovery 10%-5%
Delayed 0%-15%
Chronic 10%-30%

SARS 6 months 12 months 18 months

Observed (latent class mixture models) trajectories

Resilience 36%
Recovery 10%
Delayed 13%
Chronic 42%
Observed (latent class mixture models) trajectories

SF-12 MCS norms for Hong Kong

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SARS 6 months 12 months 18 months
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Clark et al. (2008)
Clark, Diener et al. (2008)
The Economic Journal

Figure 1: The Dynamic Effect of Life and Labour Market Events on Life Satisfaction (Miles)

Clark, Diener et al. (2008)
The Economic Journal
Clark, Diener et al. (2008)
*The Economic Journal*
Widowhood (latent class mixture model)

Mancini, Bonanno, & Clark (in prep)
Divorce (latent class mixture model)

Mancini, Bonanno, & Clark (in prep)
Why are some adults resilient?

3. There are multiple and sometimes unexpected pathways to resilience
   • resilience is a heterogeneous category
   • no single way to be resilient
Multiple, Unique Predictors of resilient outcomes

- Demographic factors (gender, age)
- Fewer past and current stressors
- Pre-event beliefs (e.g., acceptance of death, justice)
- Reduced search for meaning
- Reduced worry/rummination
- Capacity for positive emotion
- Social resources (support, broad network)
- Economic resources (employment, no loss of income)
- Health resources (good health, absence of disease)
- Genetic disposition (G X E – 5HTT)
- Personality
  - Pragmatic coping
  - Flexibility

Resilience to loss and trauma

1. **Minimal response to a PTE is resilience**
   - Transient variability (stress)
   - Stable trajectory of functioning
   - Positive emotion, flexibility

2. **Resilience is common**
   - 41%-53% (Bonanno et al., 1995-1999)
   - 45%-56% (Bonanno et al., 2002)
   - 50%-52% (Bonanno, Moskowitz et al., 2005)
   - 35% (Bonanno, Rennicke et al., 2005)
   - 61% (Deshields et al., 2006)
   - 36% (Bonanno, Ho et al., 2007)
   - 33%-56% (Bonanno, Galea et al., 2006)

3. **There are multiple and sometimes unexpected pathways to resilience**
   - Exposure, genes, social support, resources, demographics
   - Personality / coping habits, reduced search for meaning
     - Pragmatic coping
     - Flexible adaptation (most resilient people)
Laughter and smiling

What’s so funny about loss and trauma?

Laughter and Bereavement

• **laughter as dissociation (breather)**
  – helps undo negative emotion (Fredrickson)
  – associated with distancing, reinterpreting, or reframing of negative events (akin to humor)

• **Social benefits of laughter**
  – laughter is pro-social, increases group cohesion
  – laughter is contagious and evokes positive responses in others

Bonanno, & Keltner (1997). *Journal of Abnormal Psychology*
Duchenne expressions

orbicularis oculi

Muscular Anatomy

Muscular Action
Intentional non-Duchenne smile
Spontaneous Duchenne smile       Intentional non-Duchenne smile
Intentional non-Duchenne smile
Duchenne and non-Duchenne smiles

Intentional non-Duchenne smile  Spontaneous Duchenne smile
Positive Emotional Expression

• the orbicularis oculi muscles (surround the eye) contract *involuntarily* during positive emotional responding

• Duchenne and non-Duchenne expressions appear to be associated with different neural pathways

• non-Duchenne expressions are associated with social politeness; also concealment, deception

• Only “Duchenne” expressions are associated with genuine positive emotion, contagion

Are Positive Expressions Functional During Bereavement?

• Proportion of participants showing facial expressions in early months of bereavement

<table>
<thead>
<tr>
<th>Emotion</th>
<th>Duchenne smile</th>
<th>Duchenne laugh</th>
<th>Anger</th>
<th>Contempt</th>
<th>Disgust</th>
<th>Fear</th>
<th>Sadness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>60%</td>
<td>55%</td>
<td>60%</td>
<td>32%</td>
<td>32%</td>
<td>16%</td>
<td>32%</td>
</tr>
</tbody>
</table>

Duchenne expressions predicted better long-term adjustment

Duchenne expressions evoke positive response in untrained observers

Table 8
Correlations Between Measures of Laughter, Smiling Behavior, and Observers’ Responses

<table>
<thead>
<tr>
<th>Observer’s response</th>
<th>Duchenne laughter</th>
<th>Non-Duchenne laughter</th>
<th>Duchenne smile</th>
<th>Non-Duchenne smile</th>
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</thead>
<tbody>
<tr>
<td>Perceived suffering</td>
<td>-.35*</td>
<td>.08</td>
<td>-.25</td>
<td>.15</td>
</tr>
<tr>
<td>Perceived adjustment</td>
<td>.31*</td>
<td>.12</td>
<td>.32*</td>
<td>-.24</td>
</tr>
<tr>
<td>Comfort</td>
<td>-.24</td>
<td>-.08</td>
<td>-.20</td>
<td>-.33**</td>
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<tr>
<td>Avoidance</td>
<td>.00</td>
<td>-.22</td>
<td>-.26</td>
<td>.18</td>
</tr>
<tr>
<td>Compassion</td>
<td>.24</td>
<td>-.01</td>
<td>-.17</td>
<td>-.26*</td>
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<tr>
<td>Salience</td>
<td>.09</td>
<td>-.05</td>
<td>-.14</td>
<td>-.24</td>
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<td>Frustration</td>
<td>-.33*</td>
<td>-.16</td>
<td>-.22</td>
<td>.23</td>
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<tr>
<td>Amusement</td>
<td>-.30</td>
<td>-.03</td>
<td>.22</td>
<td>.14</td>
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<tr>
<td>Happiness</td>
<td>-.25</td>
<td>-.27</td>
<td>.43**</td>
<td>-.23</td>
</tr>
<tr>
<td>Positive emotion</td>
<td>-.38*</td>
<td>-.16</td>
<td>-.42**</td>
<td>.05</td>
</tr>
</tbody>
</table>

*p < .10 (marginally significant).  *p < .05.  **p < .01.

Keltner & Bonanno (1997). *JPSP*

Smiling in the face of adversity:
An experimental study

- NYC college students beginning college just before the September 11th terrorist attack.

Experimental task

- Film
- Sad or Amusing
- 5 minute Monologue
  - “Talk about Your life since 9/11”

W1 distress

9/11

2001 2002 2003

W2 distress

Papa & Bonanno, 2007, Emotion
results

- **Main effect**
  - Duchenne smiles predicted reduced distress at W2 (controlling for W1 distress)

- **Interaction effect**
  - Smile X film context

- **Mediating effects**
  - Double mediated moderation

Duchenne smiling after a sad film predicted less long-term distress

Papa & Bonanno, 2007, *Emotion*
Undoing Mediates

Duchenne smiles in sad condition → + → Reduction of negative affect during monologue → − → T2 distress

Social Network Size Mediates

Duchenne smiles in sad condition → + → Social network size → − → T2 distress
Why do we have emotions?


• **The experience of affect**
  – Clarifies the kind of response that may be needed
  – motivates

• **The expression of emotion**
  – communicates information
  – influences and regulates the behavior of others

• **Physiological systems** are recruited
  – prepares us to respond

• Negative and positive emotions

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Emotion and Adversity

• Traditional theories emphasized unrestricted expression of negative emotions
  – The work of mourning (Freud, 1917)
  – psychological debriefing (Everly & Mitchell, 1999)

• Greater expression of negative emotion is often predictive of poor long-term functioning (Bonanno & Keltner, 1997; Seery et al., 2007)

• Emotions are useful **but also efficient**; ephemeral, serve their adaptive functions quickly (Bonanno, Goorin, & Coifman, 2008)

• When prolonged, emotions are maladaptive (e.g., prolonged sadness leads to withdrawal, undermines support)

• positive emotions help to regulate (undo) negative states, bolster social support

• **Oscillation** (Schut & Stroebe 1999; Bisconti et al., 2004; 2006)
Stress reactivity: a pendulum with friction

Bisconti, Bergeman, & Boker (2006)

Average fluctuations in well-being following the death of a spouse

Bisconti, Bergeman, & Boker (2006)
Adaptive flexibility

Most resilient individuals are generally healthy people

- **Ego-resiliency** (Block & Block, 1980)
- **Hardiness** (Bartone, 1999; Kobasa, 1979)
- **Secure attachment style** (Fraley & Shaver, 1998; Fraley, Fazzari, Bonanno, & Dekel, 2006; Mikulincer & Shaver, 2004)

- **beliefs** that foster flexibility in coping
  - Believe they can influence the outcome of events
  - View (reframe) stressful life events as challenges

- **Capacity for positive emotion** helps regulate distress, fosters social support from others

- **Flexible repertoire** of coping and emotion regulation behaviors
Expressive Flexibility

• *flexible application of coping strategies in a manner that corresponds with the nature of the stressor* (Cheng, 2001).

• “whether one expresses or suppresses emotional expression is not as important for adjustment as is the ability to flexibly express or suppress as demanded by the situational context” (Bonanno et al., 2004, *Psychological Science*)

• Expressive flexibility is trait-like (Seivert & Bonanno, 2008)

Thank you
Expressive Flexibility Task

- View emotion-evoking photos
  - rate own affect
- Observed by another participant (on monitor)
  - Will “try to guess your emotion”
- Three within-subjects conditions
  - Enhancement of expression
  - Suppression of expression
  - Control – monitor turned off

Expressive flexibility (EF) and adjustment

- NYC college students who had begun college just days before the September 11th terrorist attack.

|---------|--------------------------------------------------------------------------|

- Flexibility enhancement + suppression: -.27* Flexibility (enhancement + suppression): -.03

- Filler problems completed (cognitive resources)

- Expression suppression ability: -.24*

- Expression suppression ability: -.23*

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<th>DV = W2 distress</th>
<th>Beta</th>
<th>R²</th>
<th>Model</th>
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<tr>
<td>W1 distress</td>
<td>.26*</td>
<td>.19</td>
<td>F(4,80)=4.24**</td>
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<td>filler problems completed (cognitive resources)</td>
<td>-.03</td>
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<td>T1 distress</td>
<td>.26*</td>
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<td>filler problems completed</td>
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Replication and extension

• Repeating *same task in same participants* 3 years later (n = 101)
• *A stable ability: Test-retest = .62*
• Enhanced expression and suppression each predict anonymous friend ratings of participants’ adjustment
• flexibility moderated the relationship of acute life events and adjustment

Seivert & Bonanno (2008)

Flexibility in the expression of positive emotion

• Every adaptation has its cost
  – e.g. the peacock’s tail
Are positive emotions always adaptive?

- Every adaptation has its cost
  - E.g. peacock’s tail
    - Fosters sexual selection (adaptive)
    - Makes susceptible to predation (maladaptive)
- Duchenne laughter and smiling
  - Foster social affiliation (adaptive)
  - But ?? . . . (maladaptive?)
  - . . . Are there situations in which these signals are confusing or inappropriate?

Context matters:
Positive expressions are not always adaptive

Bonanno, Colek et al. (2007) Emotion
Context matters:
Positive expressions are not always adaptive

Bonanno, Colek et al. (2007) *Emotion*