

# Loss, Trauma, and Human Resilience

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## 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



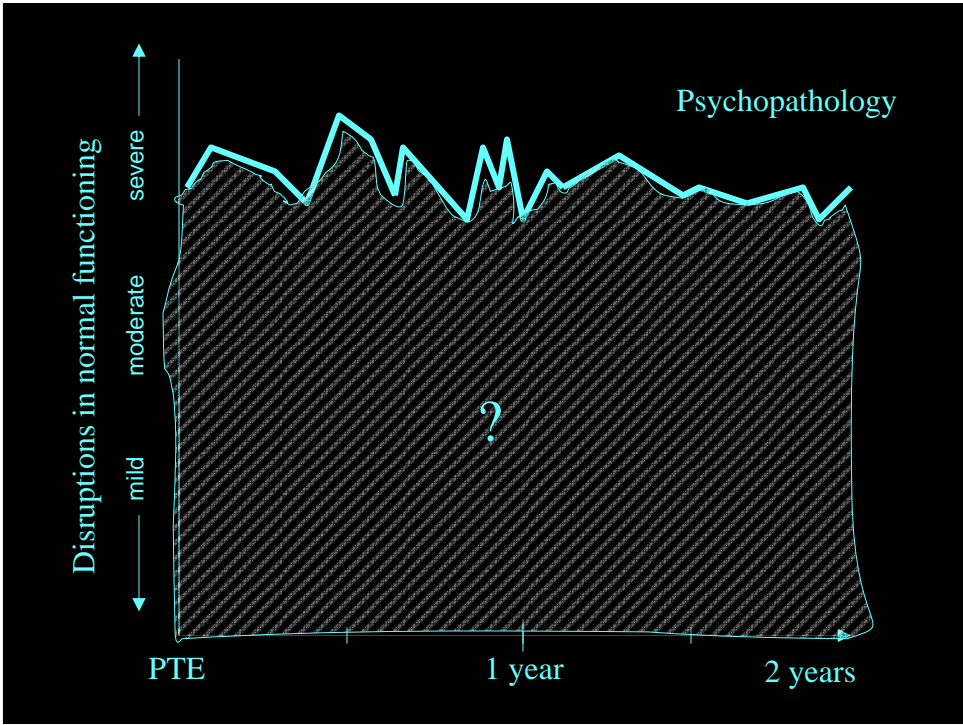
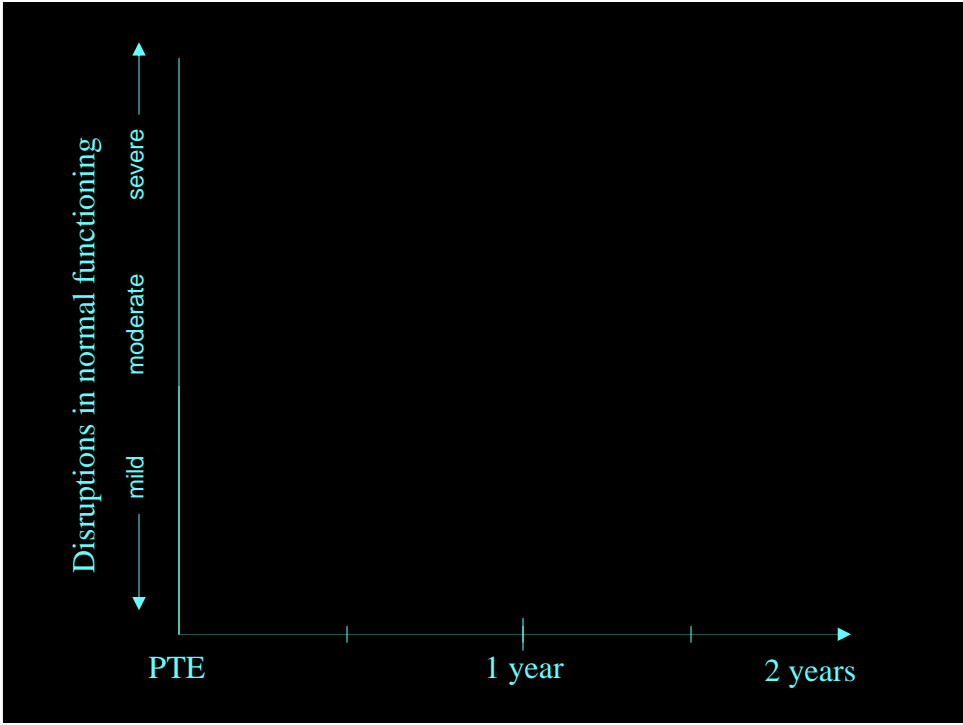


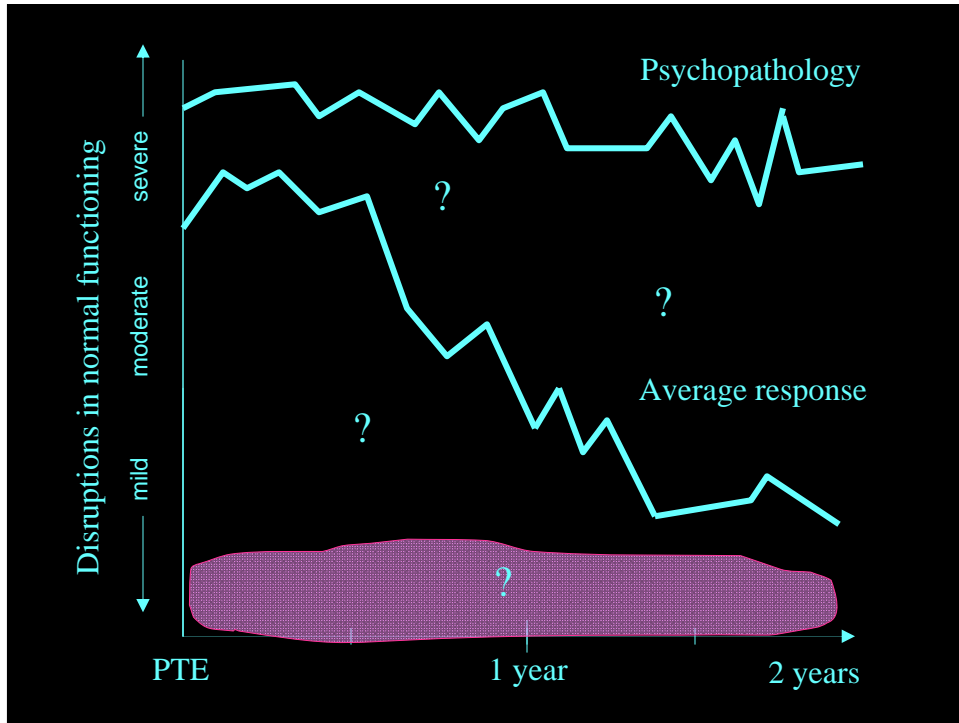












### Bereavement literature:

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).

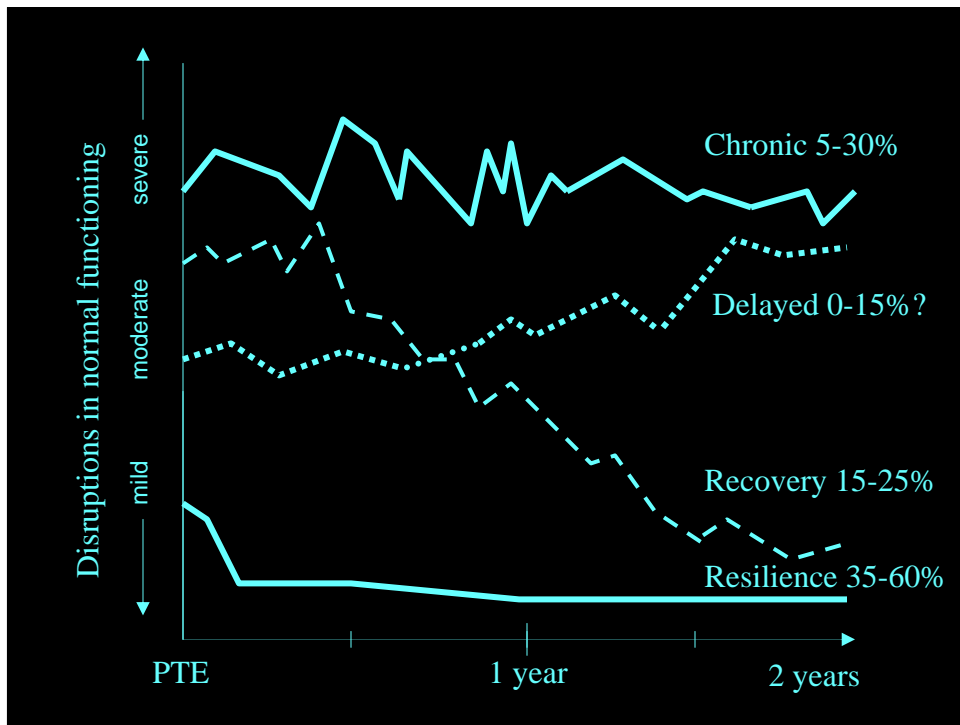
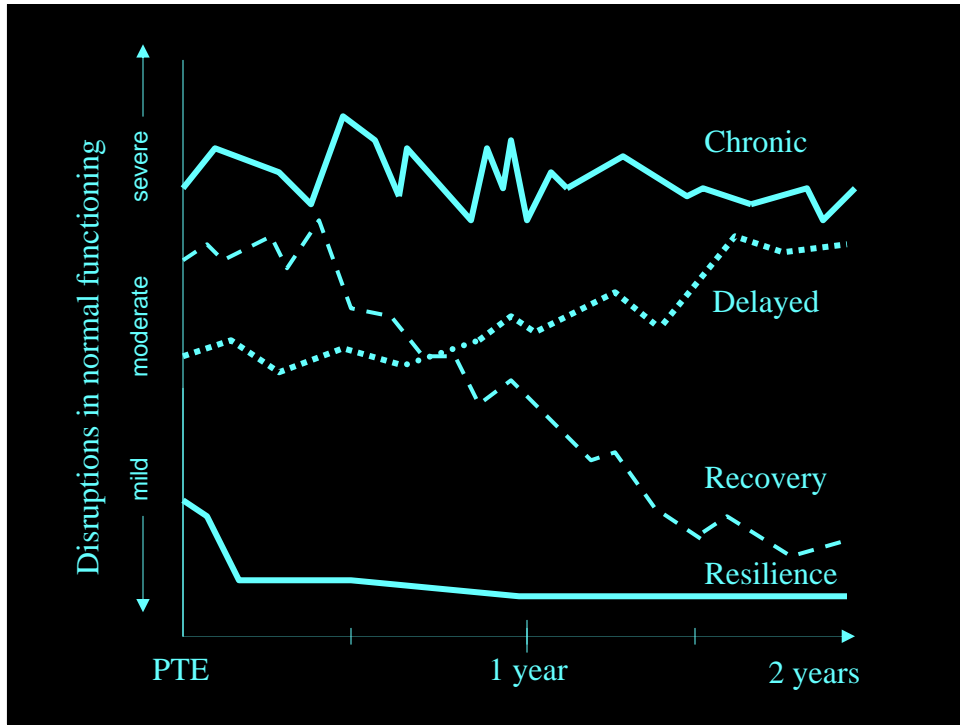
## Resilience to loss and trauma

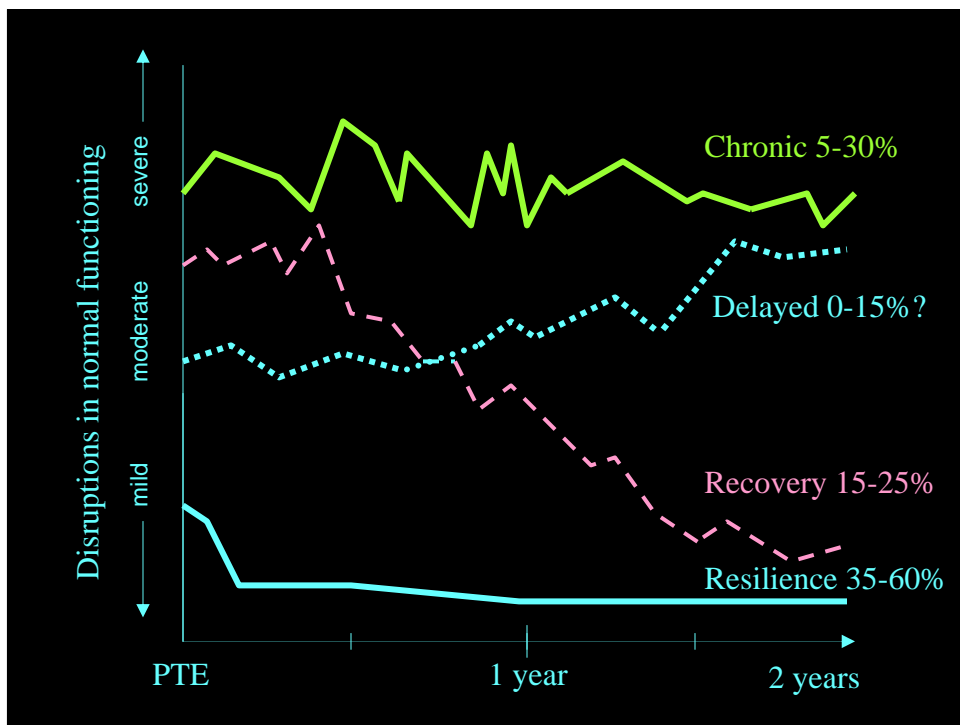
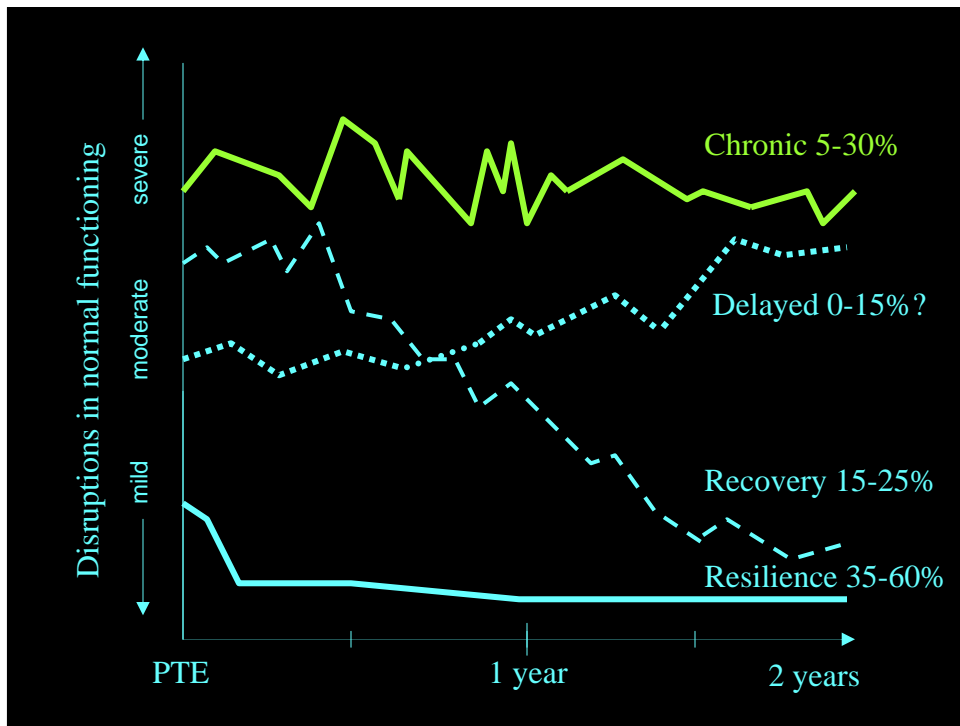
1. *The minimal response to a PTE is neither exceptional nor pathological; it is resilience*
2. *Resilience is typically the most common outcome*
3. *There are multiple and sometimes unexpected pathways to resilience*

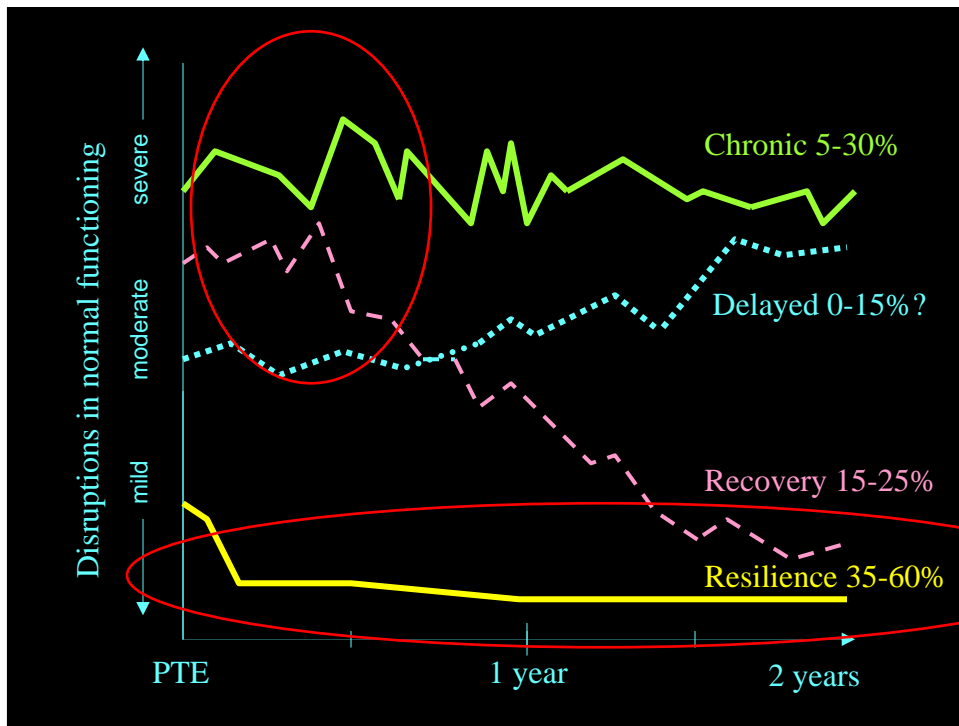
Bonanno (2004, 2005). *American Psychologist*

Bonanno (2005) *Current Directions in Psychological Science*

Bonanno & Mancini (2008) *Pediatrics*







## 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*

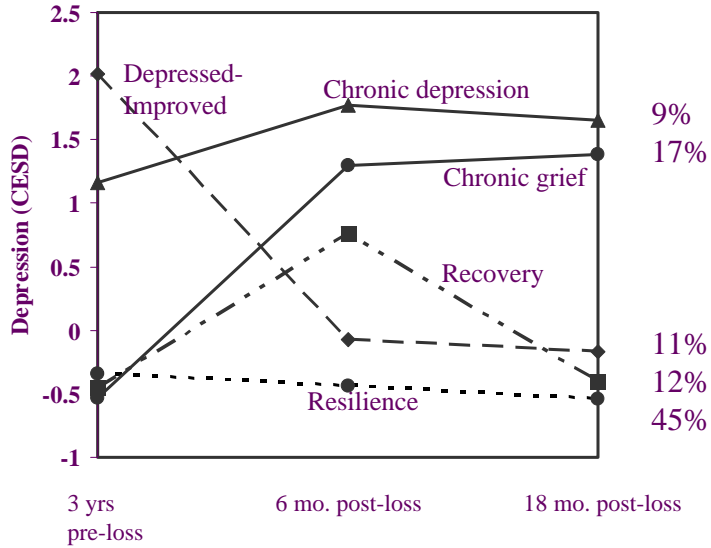
## ***Adult Resilience to Loss and Trauma***

- ***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)***

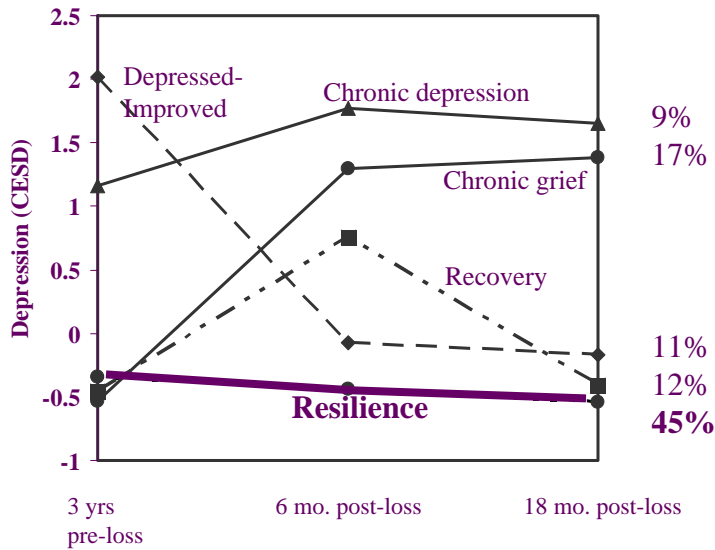
## **The Changing Lives of Older Couples (CLOC) study**

- 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).

Bonanno, Wortman, Lehman, Tweed, Haring, Sonnega, Carr & Neese (2002).  
*Journal of Personality and Social Psychology*



Bonanno, Wortman, Lehman, Tweed, Haring, Sonnega, Carr & Neese (2002).  
*Journal of Personality and Social Psychology*

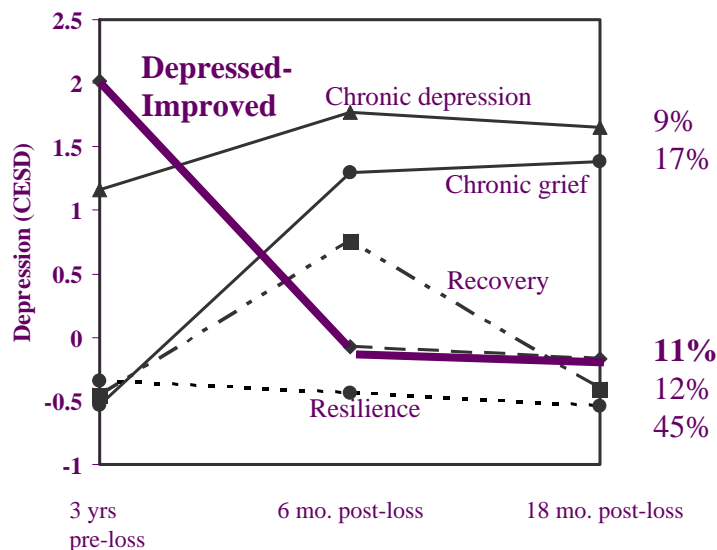




## Resilient individuals

- 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

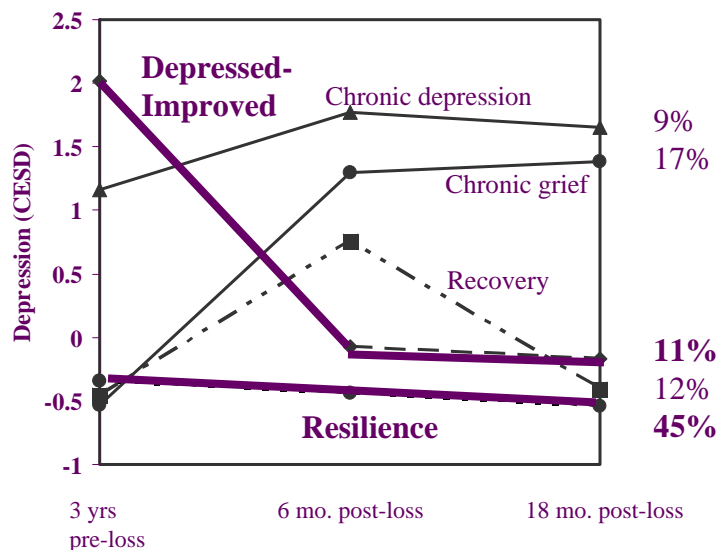
Bonanno, Wortman, Lehman, Tweed, Haring, Sonnega, Carr & Neese (2002).  
*Journal of Personality and Social Psychology*



## 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”).

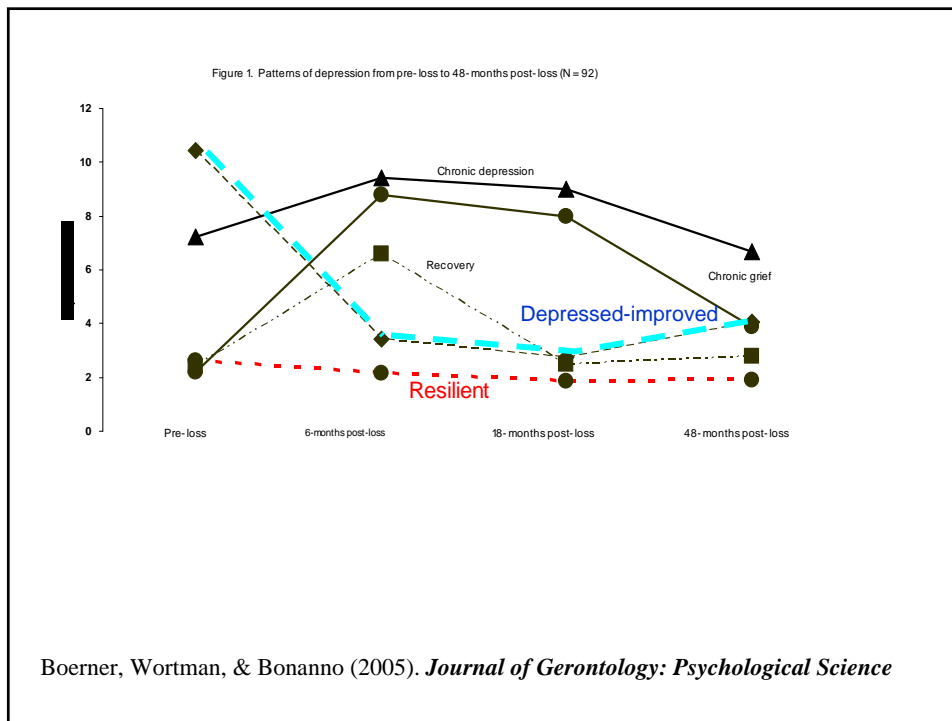
Bonanno, Wortman, Lehman, Tweed, Haring, Sonnega, Carr & Neese (2002).  
*Journal of Personality and Social Psychology*



## Resilient and depressed-improved evidence 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*



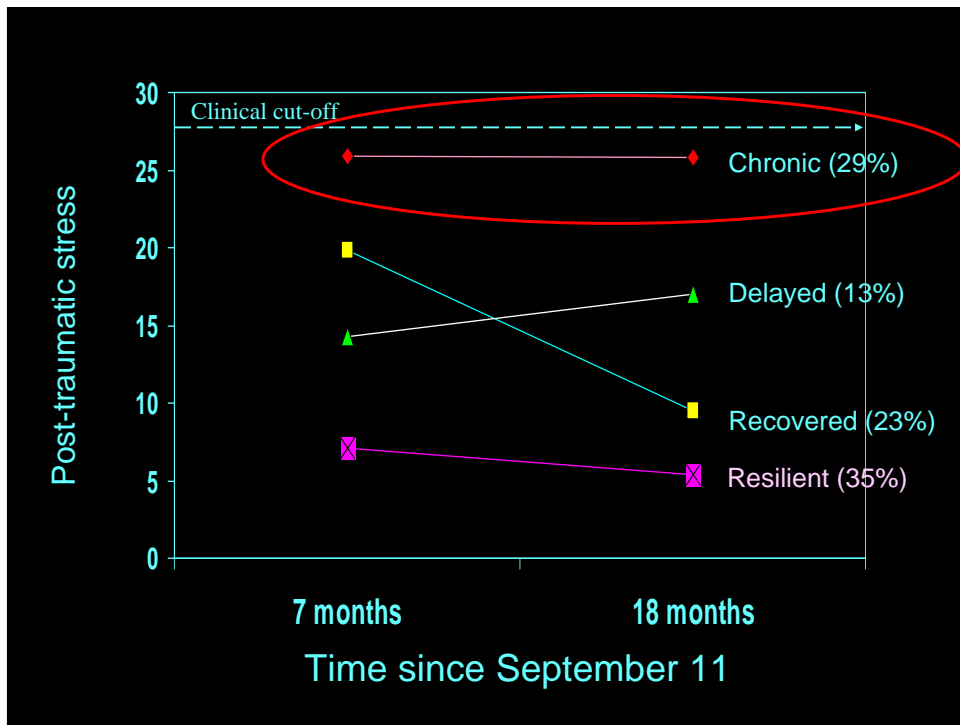
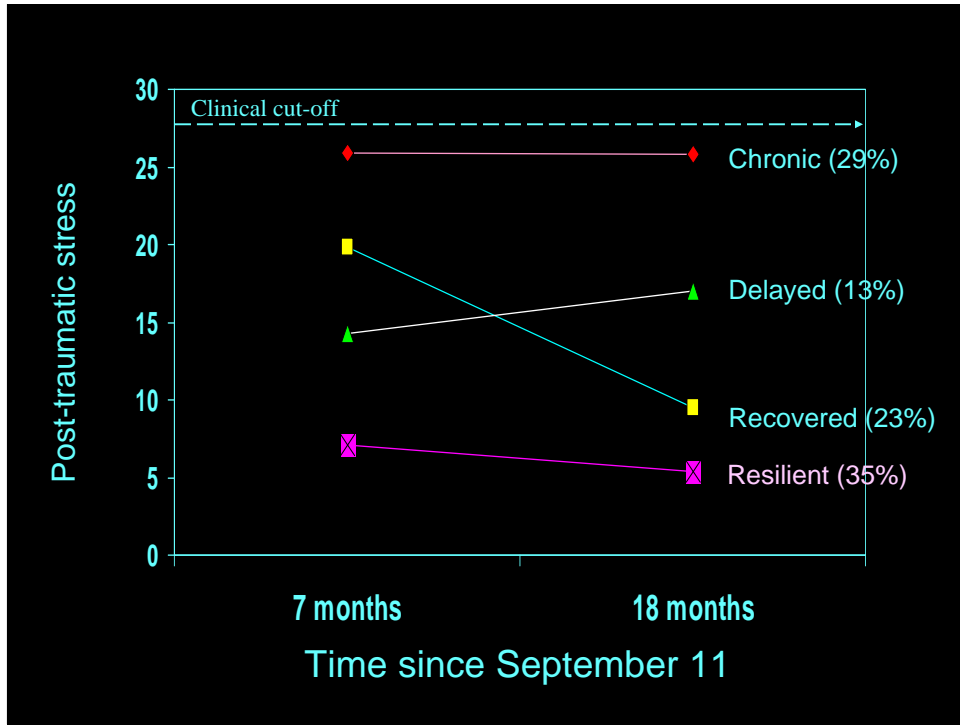
## Resilience to Trauma (violent or life-threatening events)

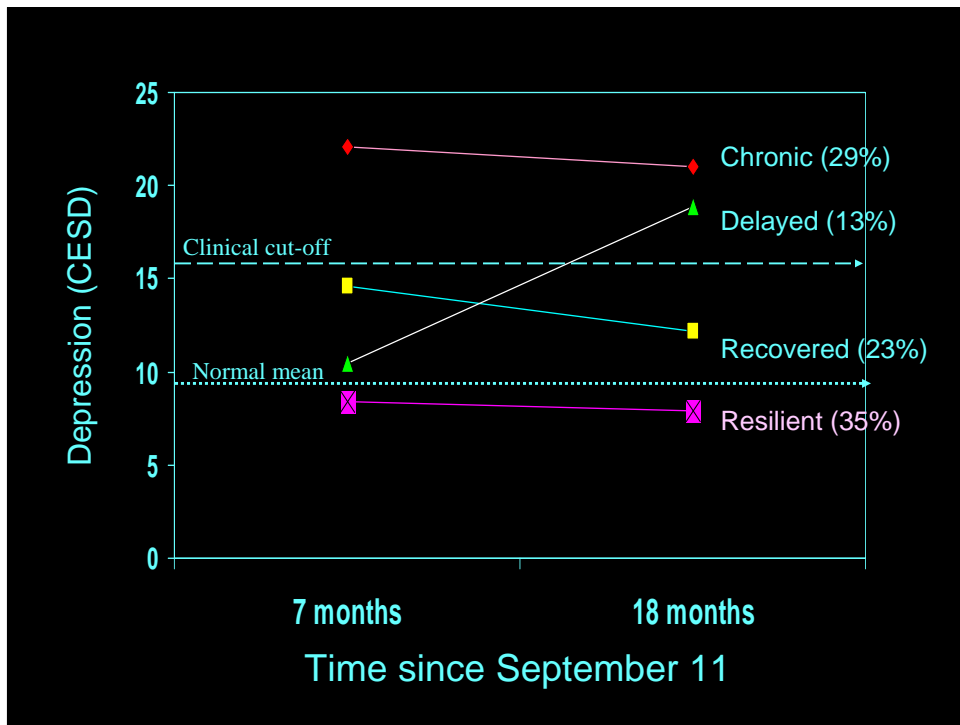
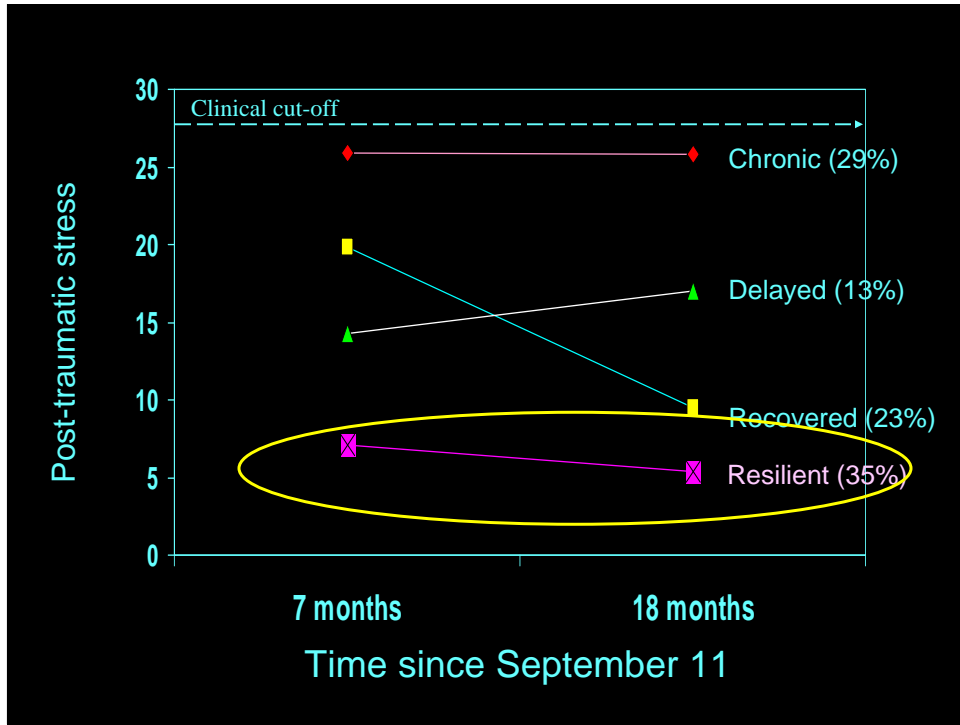
- *Air war and emotional stress*. Irving Janis (1951)
  - Hiroshima and Nagasaki
- *Fear and courage*. S. J. Rachman (1978)
  - WWII: British civilians during aerial bombardment
- Retrospective review of previously published studies
  - Not systematic
  - anecdotal
  - Studies not designed to measure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

## High-exposure WTC sample: In or near the WTC on September 11<sup>th</sup>

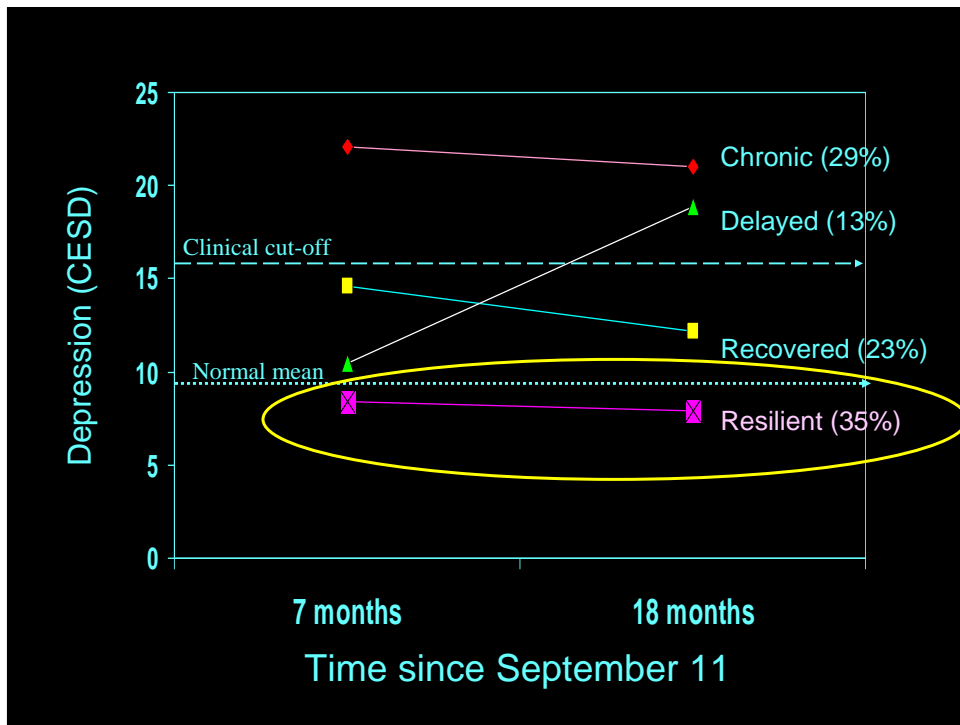
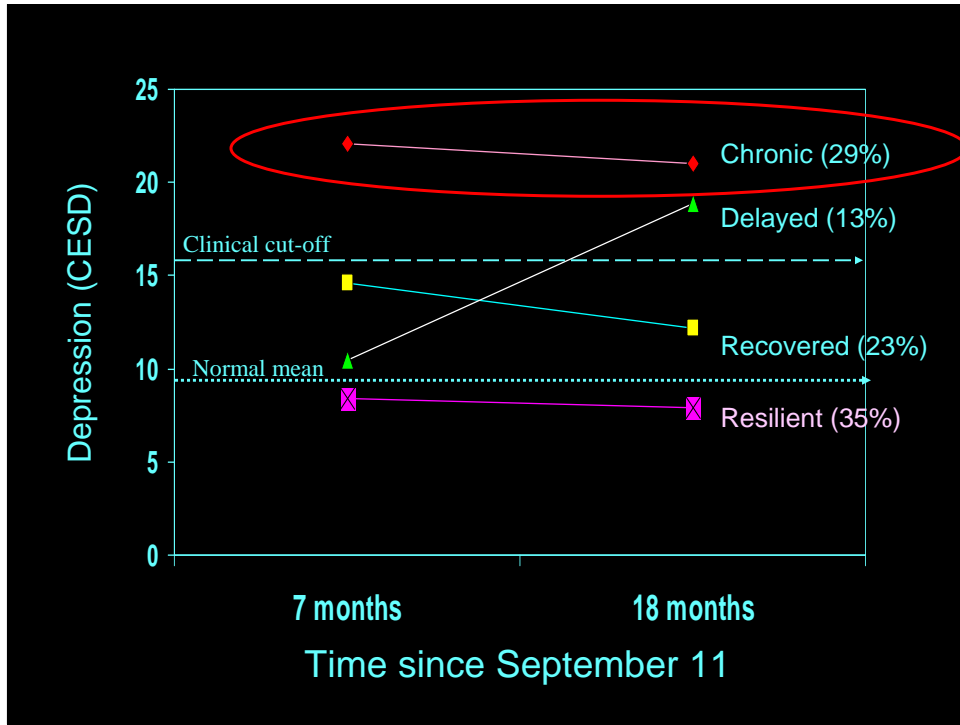
- N = 75; longitudinal analyses n = 55
- Small but rare sample
- Majority. . .
  - were exposed to life-threatening danger
  - witnessed death/serious injury to others

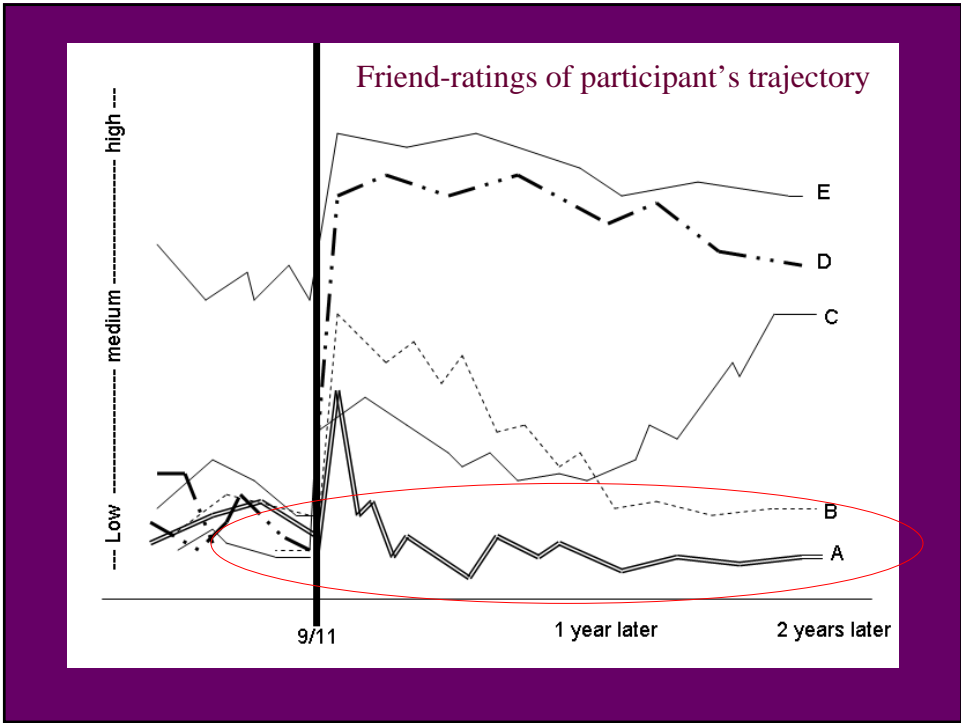
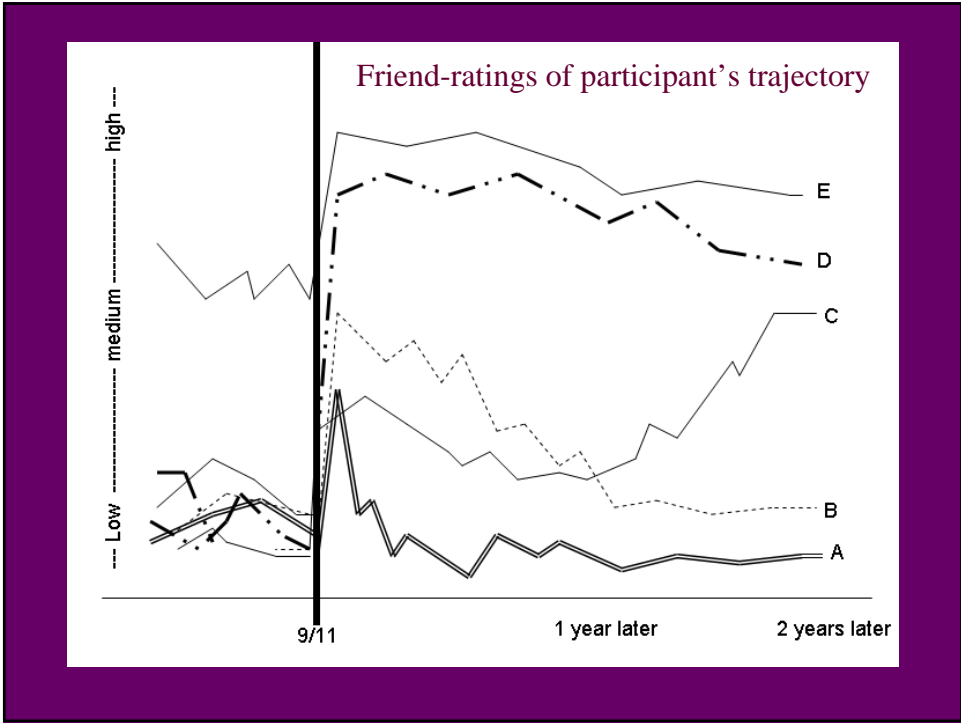
Bonanno, Rennicke, & Dekel (2005) *JPSP*









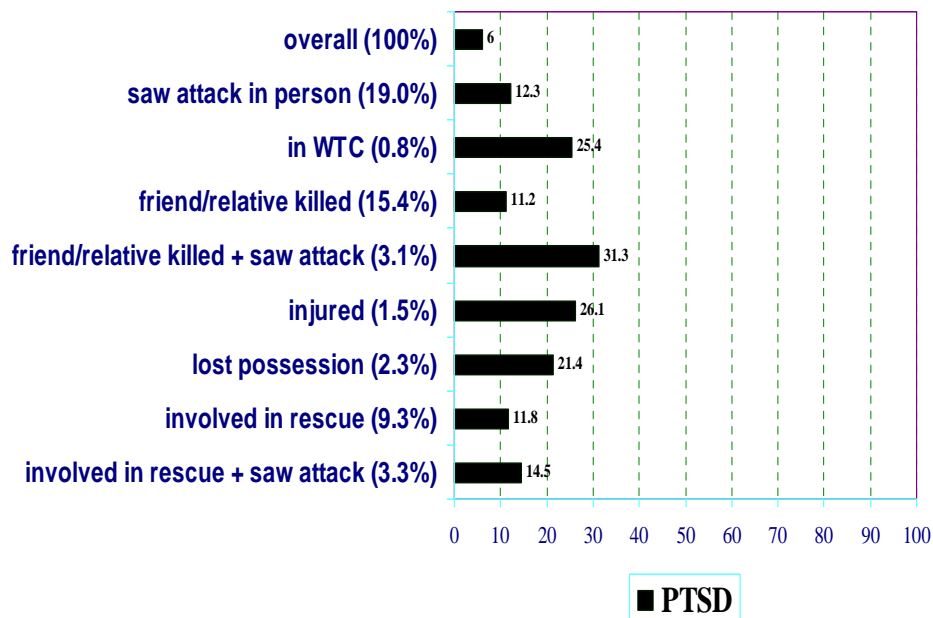


## Resilience and PTSD in NYC after 9/11

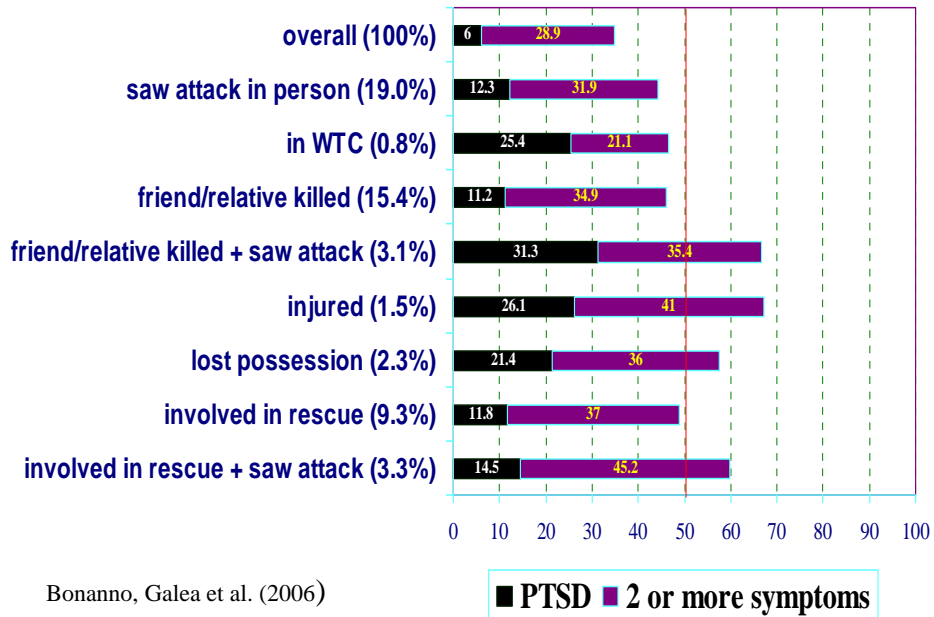
- Random digit dialing, probability sample of contiguous NYC area (N = 2752)
- Demographics comparable with 2000 census
- PTSD symptom estimates were high reliability when compared at 1, 4, and 6 months
- Cumulative PTSD at 6 months = 6.0%

Bonanno, Galea et al. (2006) *Psychological Science*

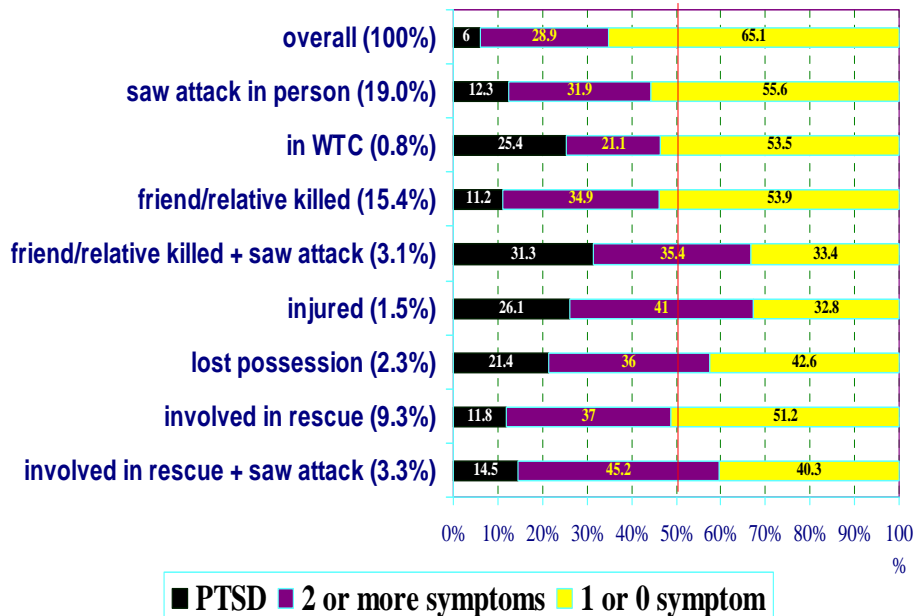
### New York area 6 months after 9/11 (N = 2752)



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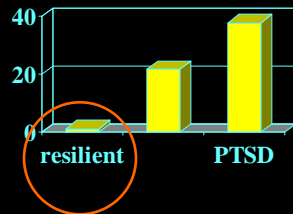


### New York area 6 months after 9/11 (N = 2752)

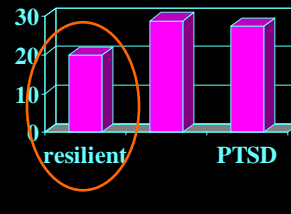


## Additional validity data

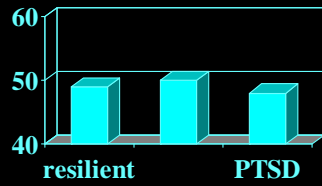
Depression



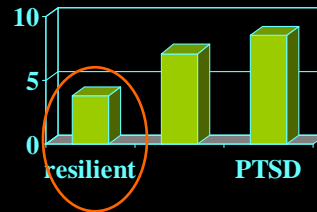
Cigarette use



Alcohol use



Marijuana use



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”*

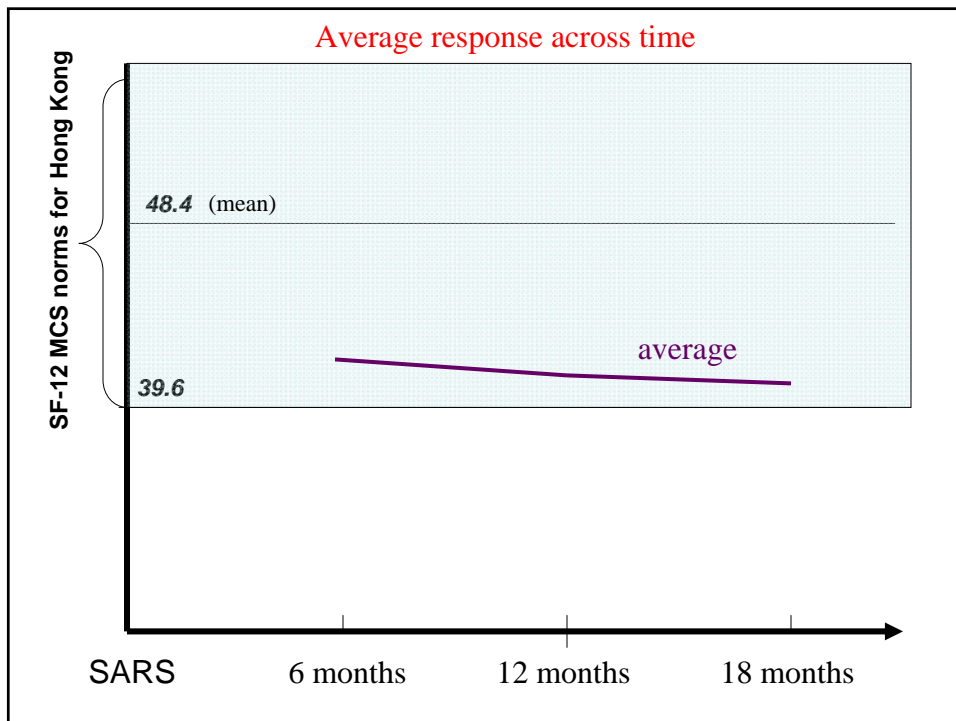
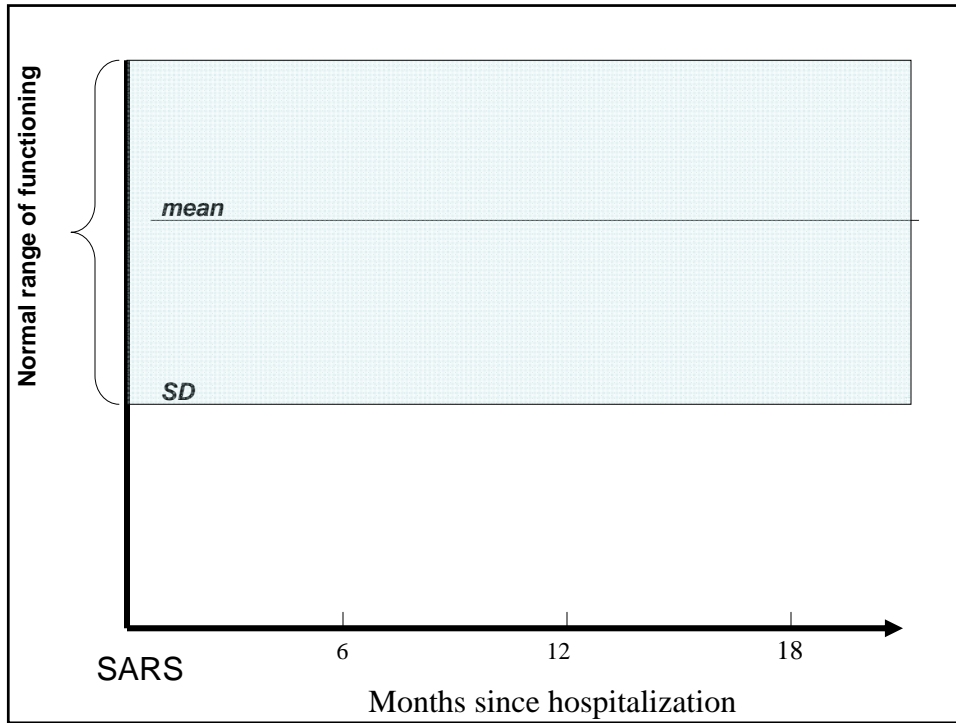
Deshields et al. *Psycho-oncology* (2006)

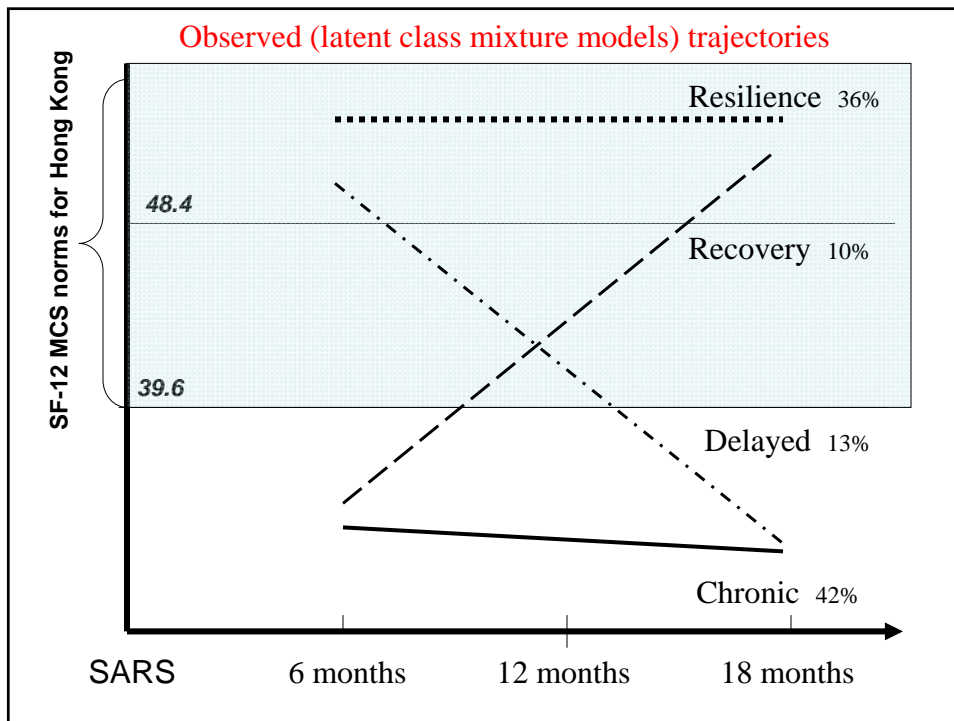
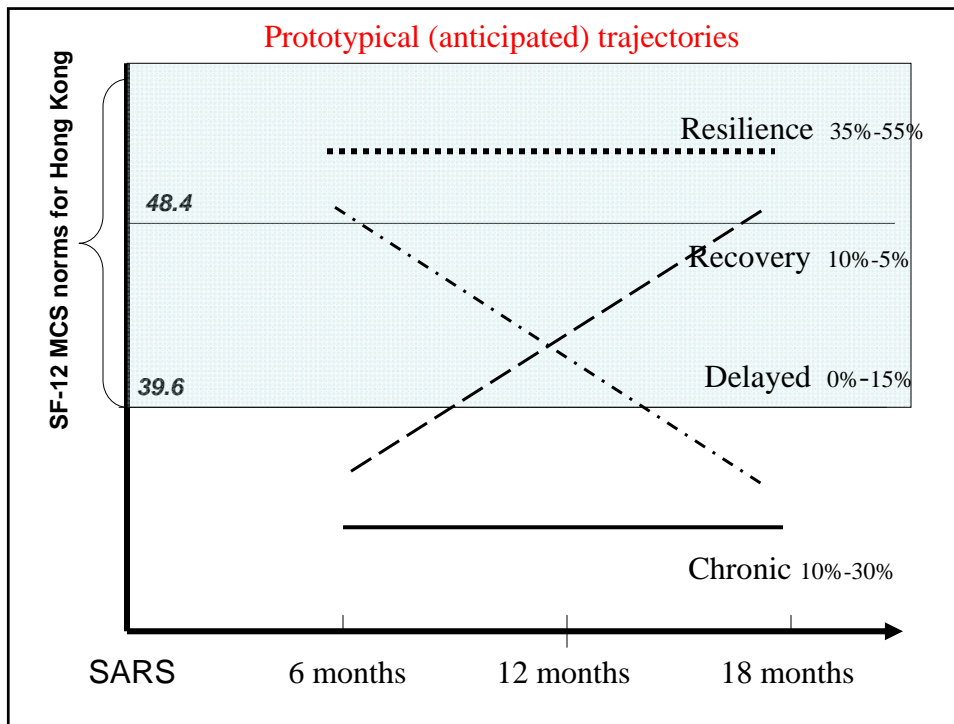
## Severe Acute Respiratory Syndrome (SARS)

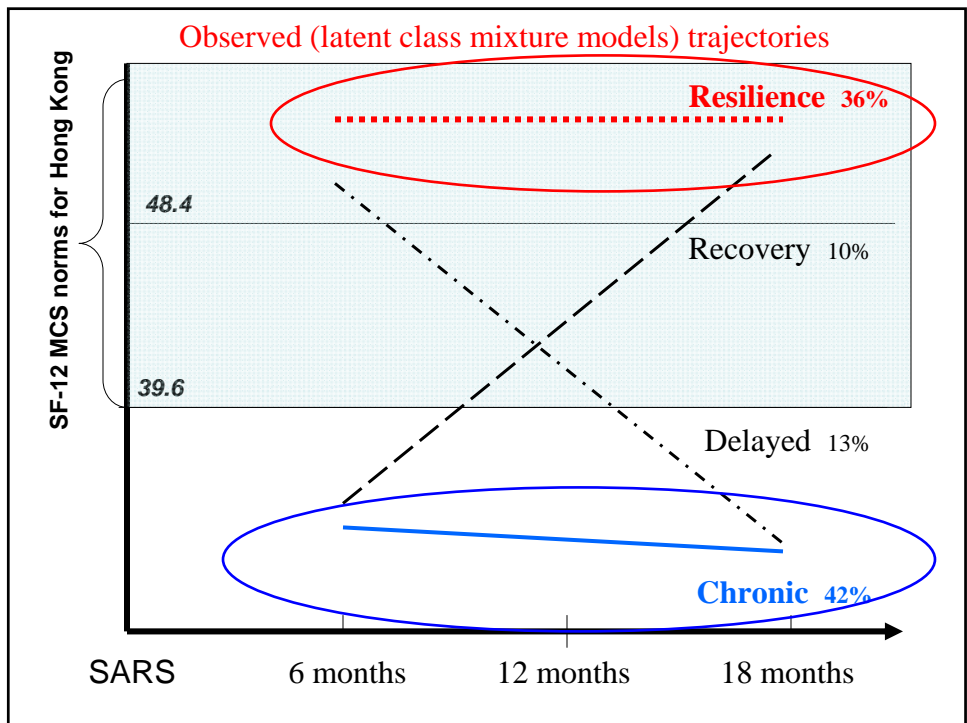
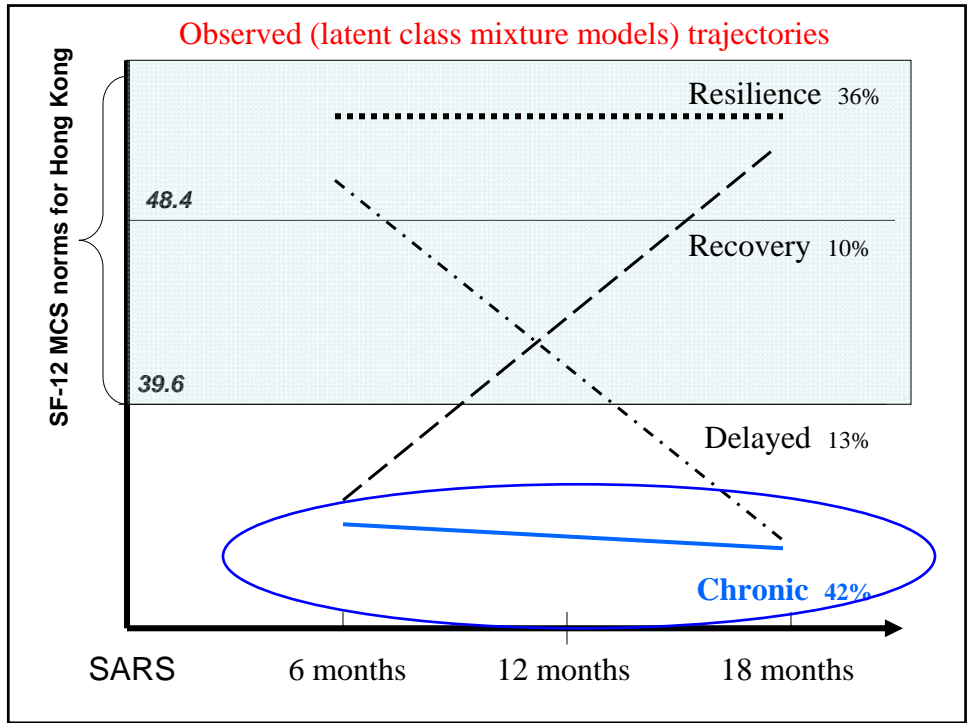
- Fall, 2002: reported in Guangdong Province, People’s Republic of China
- Spring 2003: spread to over 30 countries, over 8000 people infected
- Hong Kong hit hard: 1755 infected, 299 dead
- Origins and treatment poorly understood
- Fear of death, quarantine, abandonment
- Study of 997 hospitalized survivors

Bonanno, Ho et al. (2008) *Health Psychology*









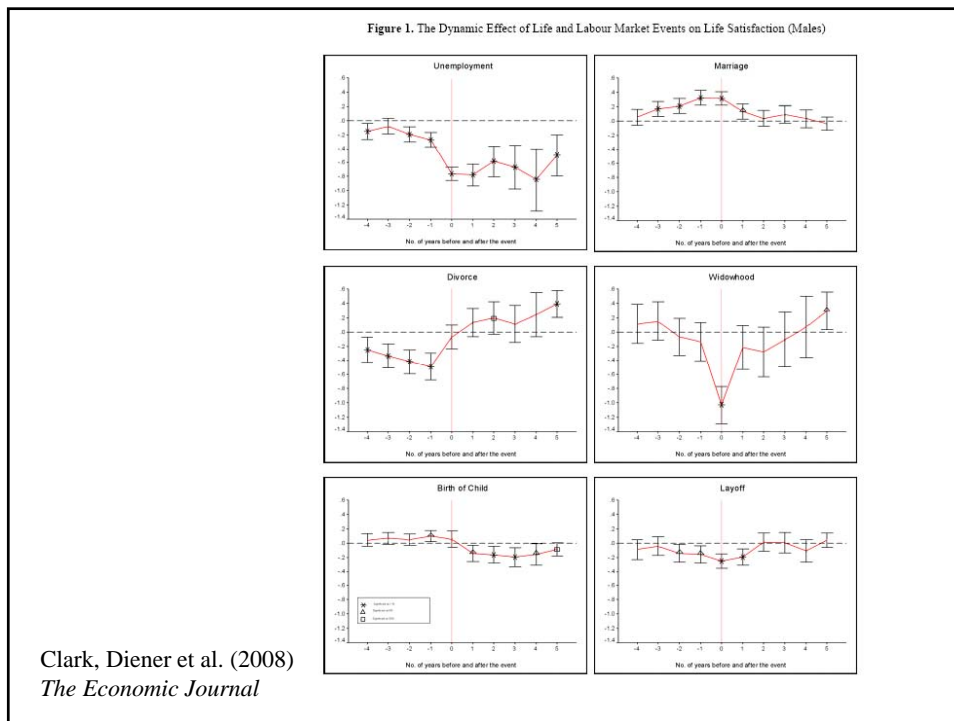
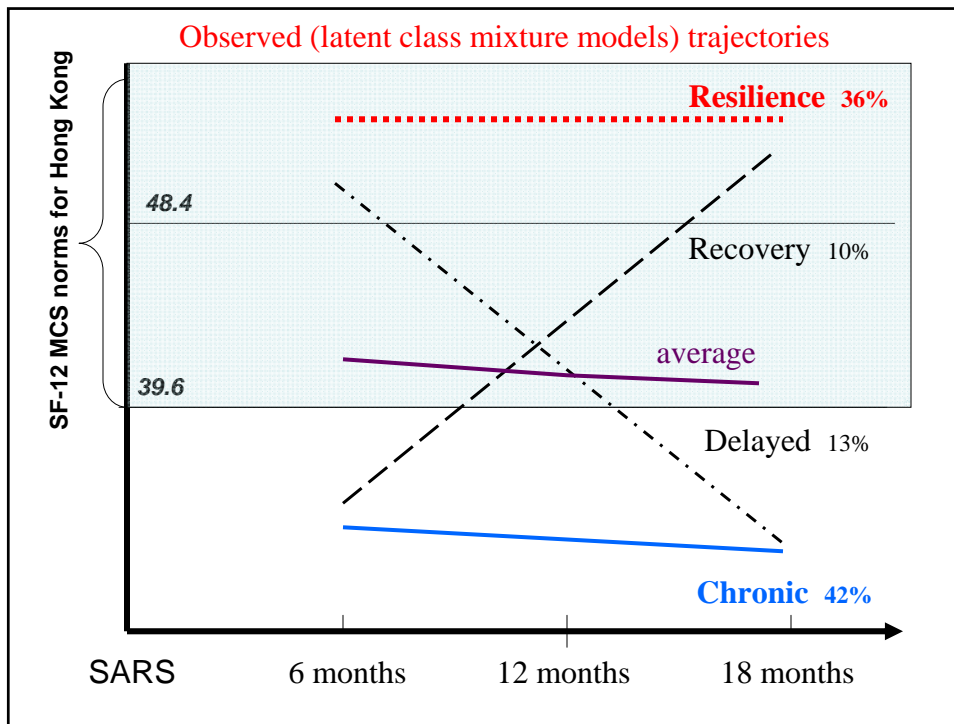
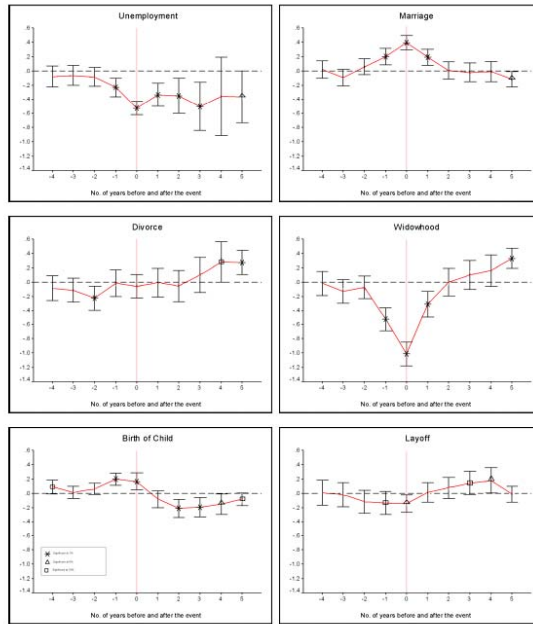
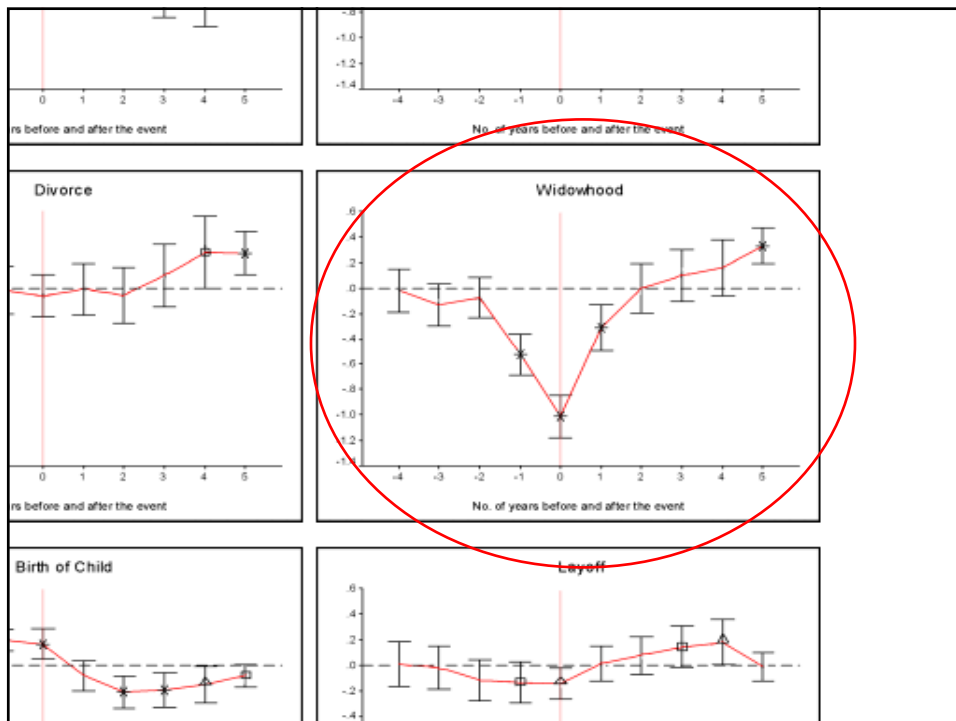
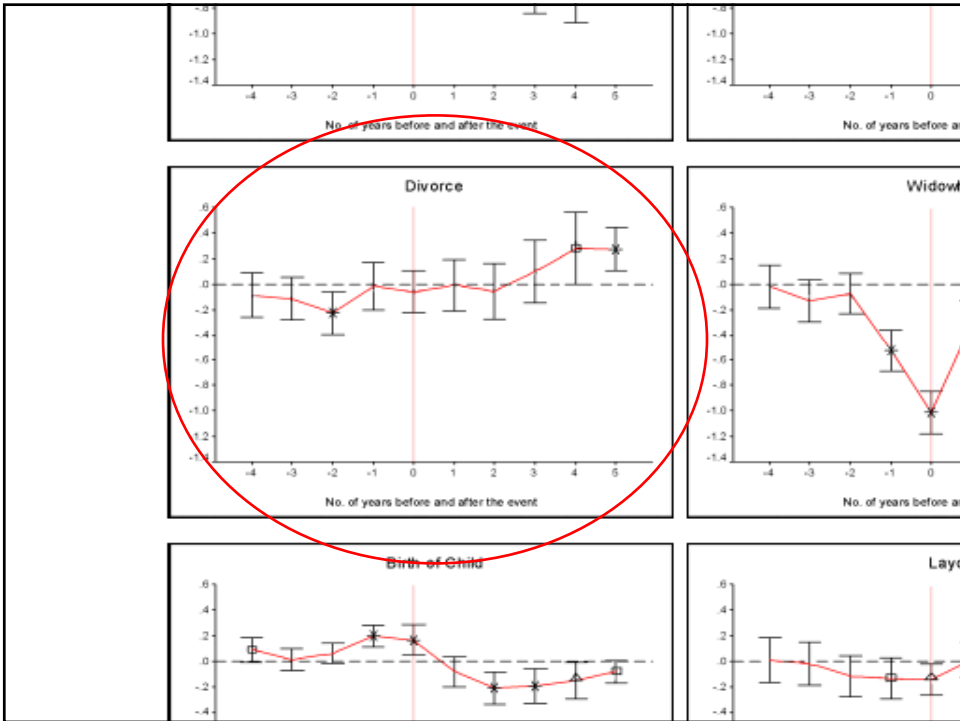
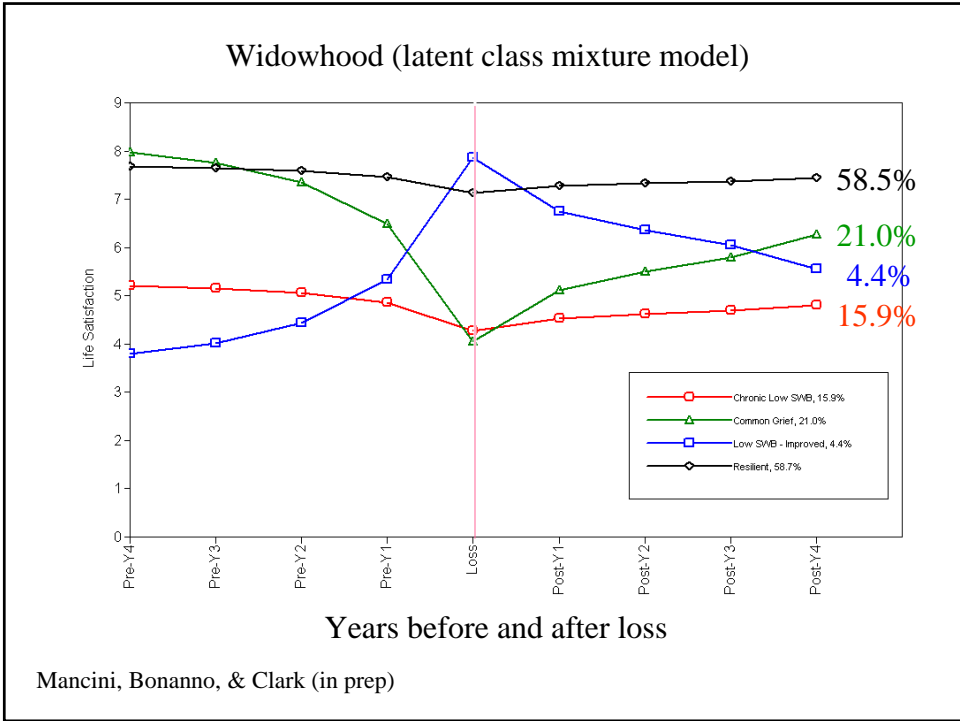


Figure 2. The Dynamic Effect of Life and Labour Market Events on Life Satisfaction (Females)

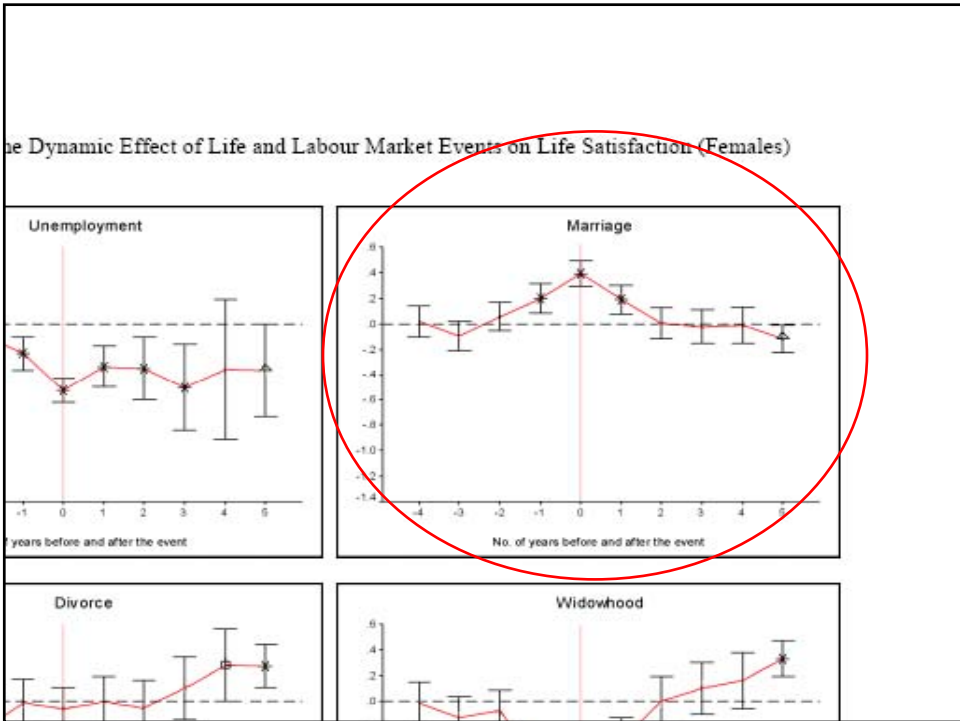
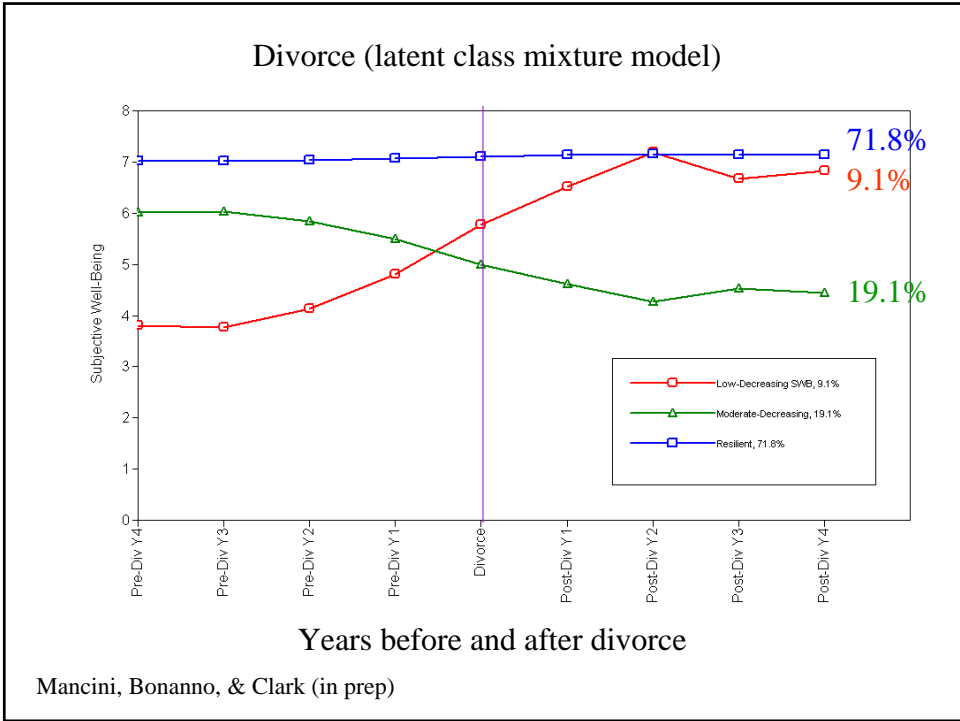


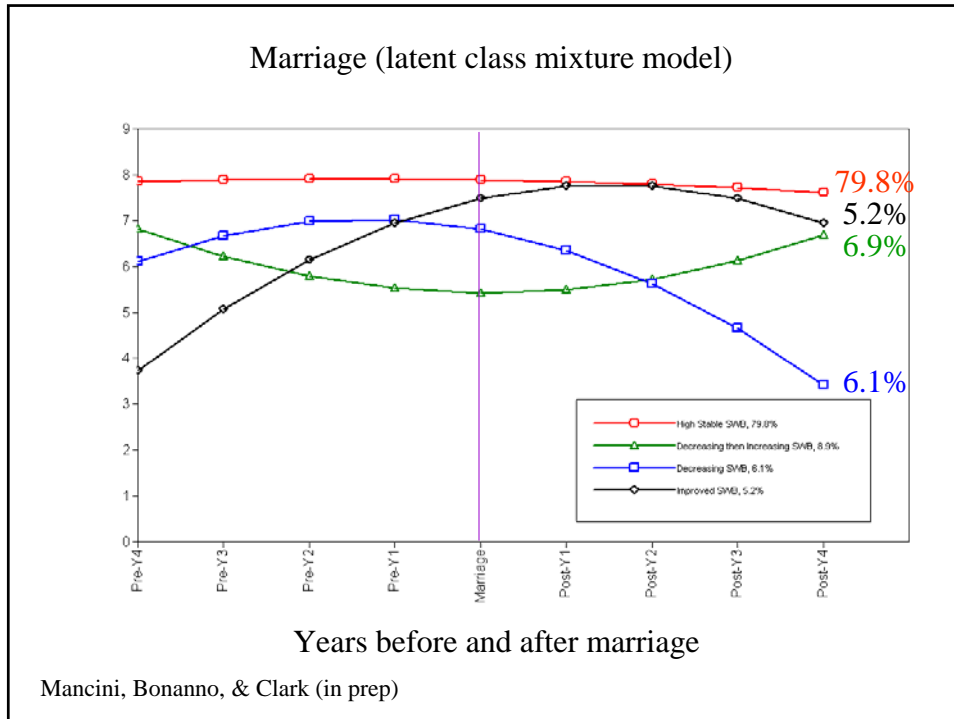
Clark, Diener et al. (2008)  
*The Economic Journal*











### Why are some adults resilient?

3. *There are multiple and sometimes unexpected pathways to resilience*

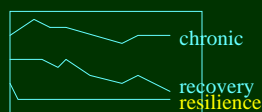
- resilience is a heterogeneous category
- no single way to be resilient

## 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/rumination
- 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, Rennie 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

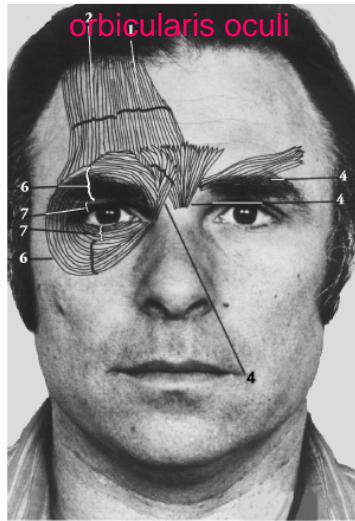
## What's so funny about loss and trauma?

### Laughter and Bereavement

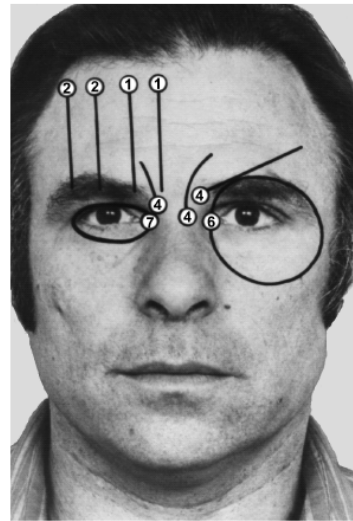
- **laughter as dissociation (breather)**
  - helps undo negative emotion (Fredrickson)
  - associated with distancing, reinterpreting, or reframing of negative events (akin to humor)
- **Social benefits of laughter**
  - laughter is pro-social, increases group cohesion
  - laughter is contagious and evokes positive responses in others

Bonanno, & Keltner (1997). *Journal of Abnormal Psychology*  
Keltner & Bonanno (1997). *Journal of Personality and Social Psychology*

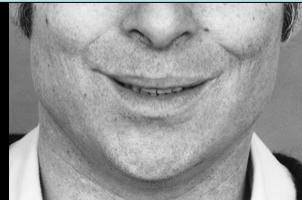
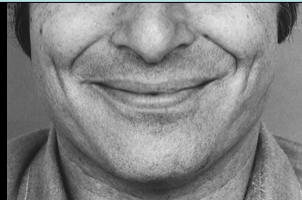
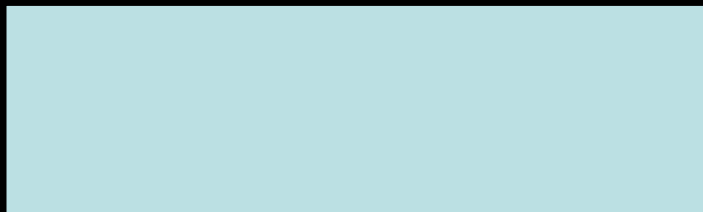
## Duchenne expressions

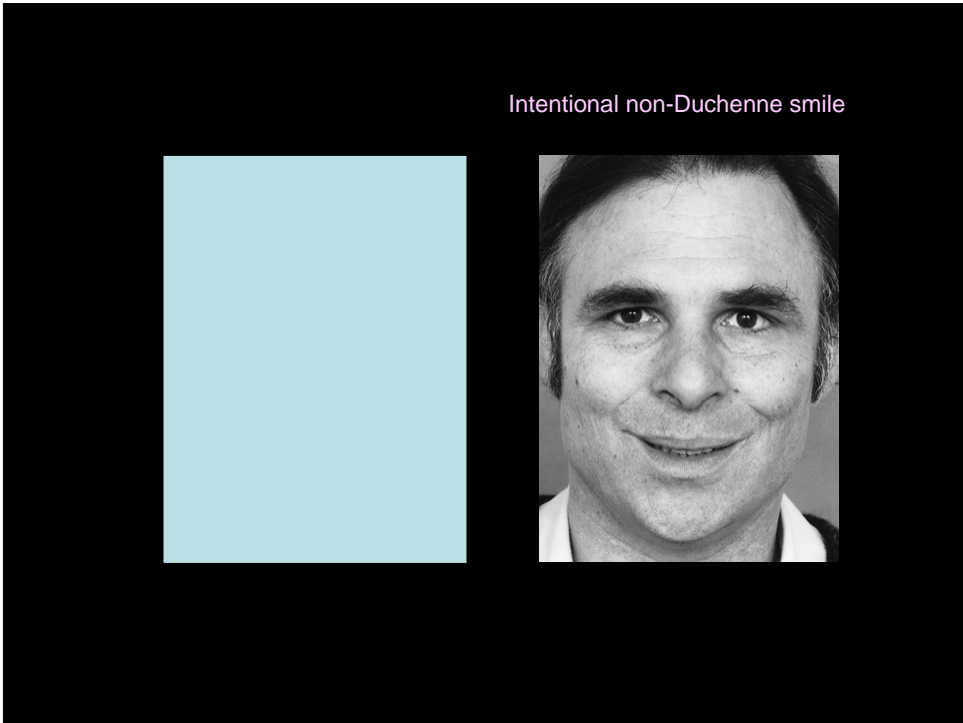
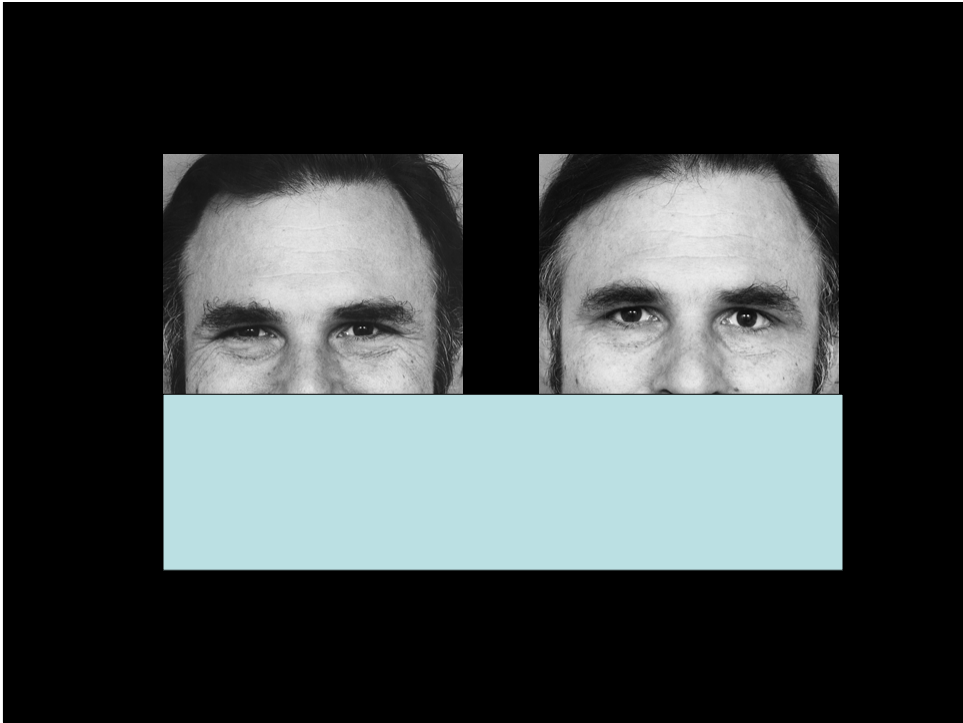


Muscular Anatomy

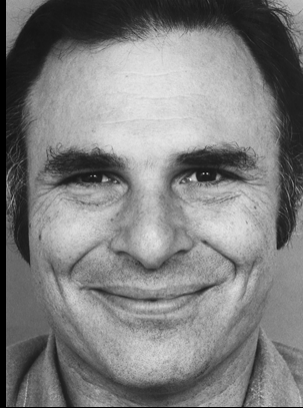


Muscular Action

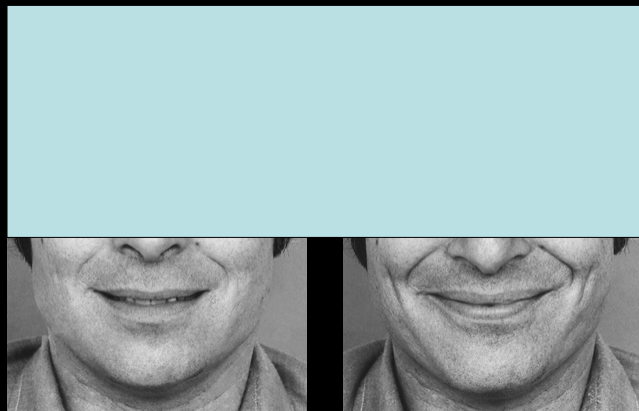
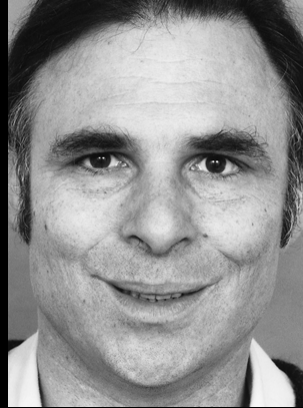


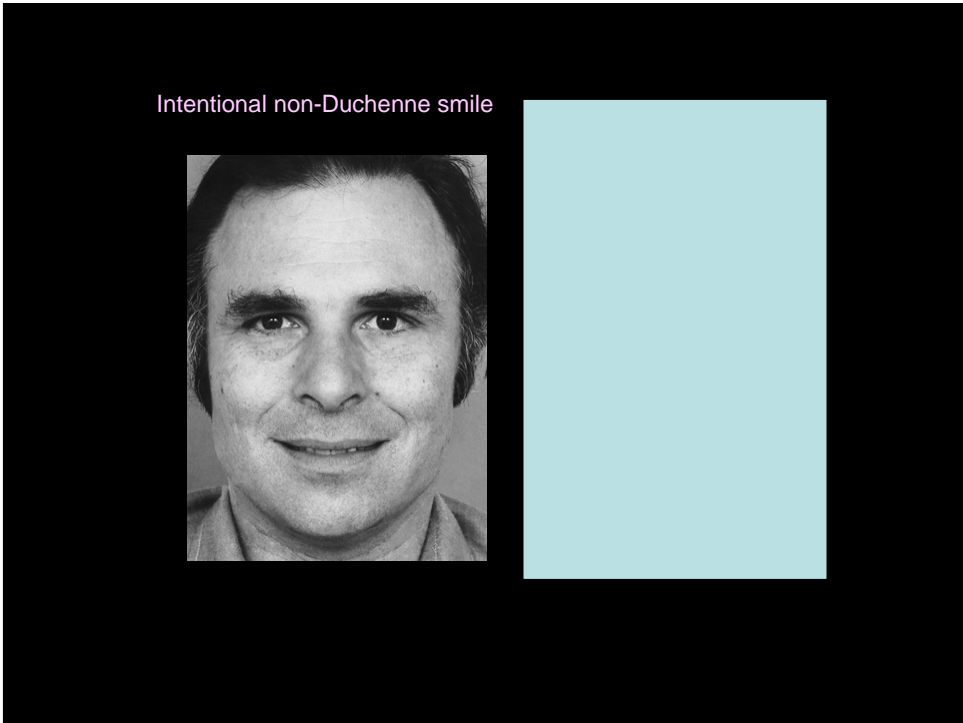


Spontaneous Duchenne smile



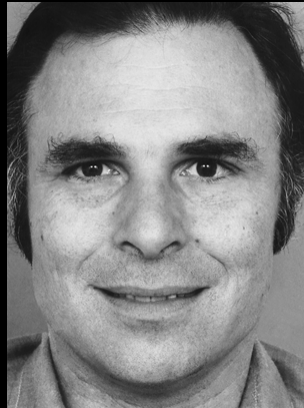
Intentional non-Duchenne smile



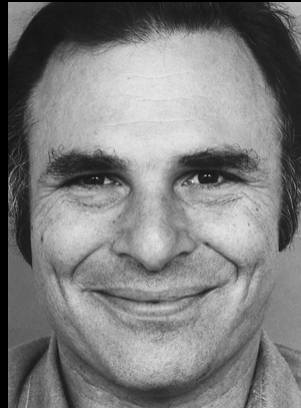




Intentional non-Duchenne smile



Spontaneous Duchenne smile



## Duchenne and nonDuchenne smiles



## 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
- nonDuchenne 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

• Duchenne smile	60%	Duchenne laugh	55%
• anger	60%	Contempt	32%
• Disgust	32%	Fear	16%
• Sadness	32%		

Duchenne expressions predicted better long-term adjustment

Bonanno, & Keltner (1997). *Journal of Abnormal Psychology*, 106, 126-137.

## Duchenne expressions evoke positive response in untrained observers

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

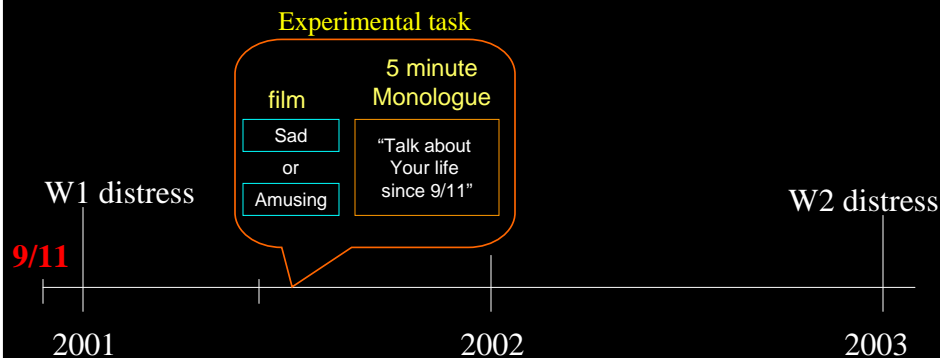
Observer's response	Duchenne laughter	Non-Duchenne laughter	Duchenne smile	Non-Duchenne smile
Perceived suffering	-.35*	.08	-.25	.15
Perceived adjustment	.31*	.12	.32*	-.24
Comfort	-.24	-.08	-.20	-.33**
Avoidance	.00	-.22	-.26	.18
Compassion	-.24	-.01	-.17	-.26 <sup>†</sup>
Sadness	-.09	-.05	-.14	-.24
Frustration	-.33*	-.16	-.22	.23
Amusement	.36*	-.03	.27 <sup>†</sup>	.14
Happiness	.29 <sup>†</sup>	-.27 <sup>†</sup>	.48**	-.23
Positive emotion	.38*	-.16	.42**	.05

<sup>†</sup>  $p < .10$  (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 11<sup>th</sup> terrorist attack.

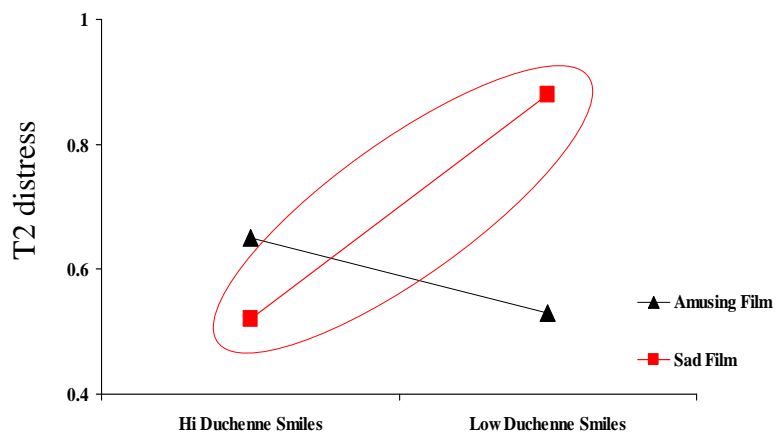


Papa & Bonanno, 2007, *Emotion*

## results

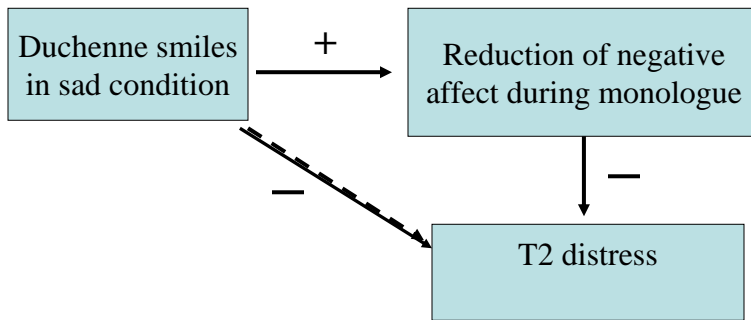
- Main effect
  - Duchenne smiles predicted reduced distress at W2 (controlling for W1 distress)
- Interaction effect
  - Smile X film context
- Mediating effects
  - Double mediated moderation

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

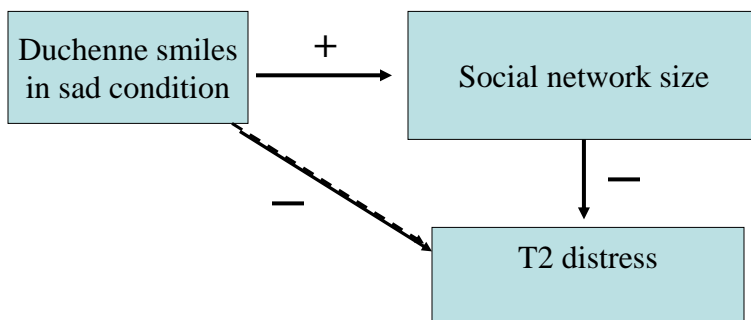


Papa & Bonanno, 2007, *Emotion*

## Undoing Mediates



## Social Network Size Mediates



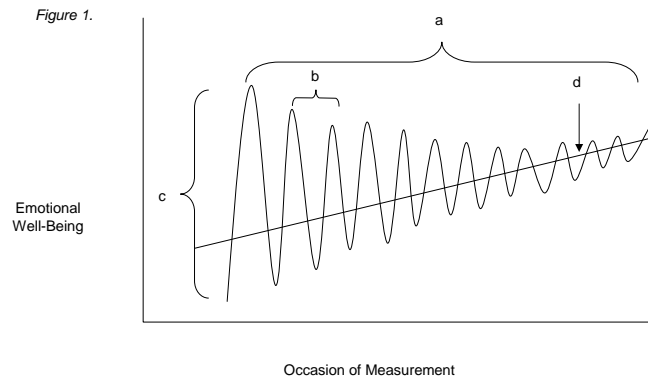
## Why do we have emotions?

- Emotions are functional (Ekman, 1992, 1993; Frijda, 1986; Lazarus, 1991; Tooby & Cosmides, 1990).
- 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

## Emotion and Adversity

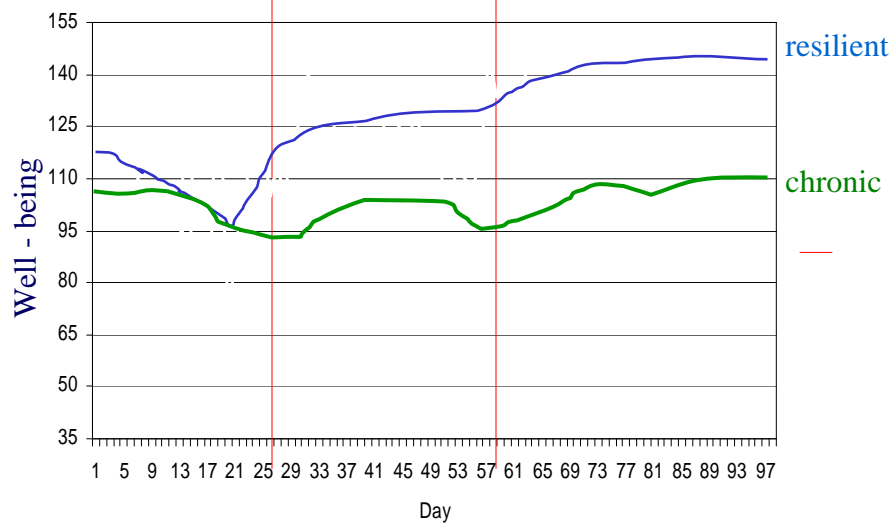
- Traditional theories emphasized unrestricted expression of negative emotions
  - The work of mourning (Freud, 1917)
  - psychological debriefing (Everly & Mitchell, 1999)
- Greater expression of negative emotion is often predictive of poor long-term functioning (Bonanno & Keltner, 1997; Seery et al., 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



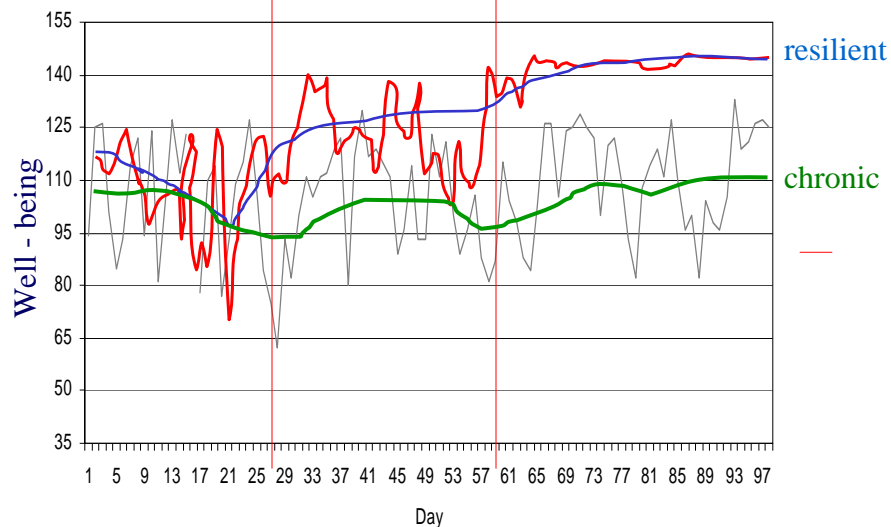
Bisconti, Bergeman, & Boker (2006)

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



Bisconti, Bergeman, & Boker (2006)

### Daily 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

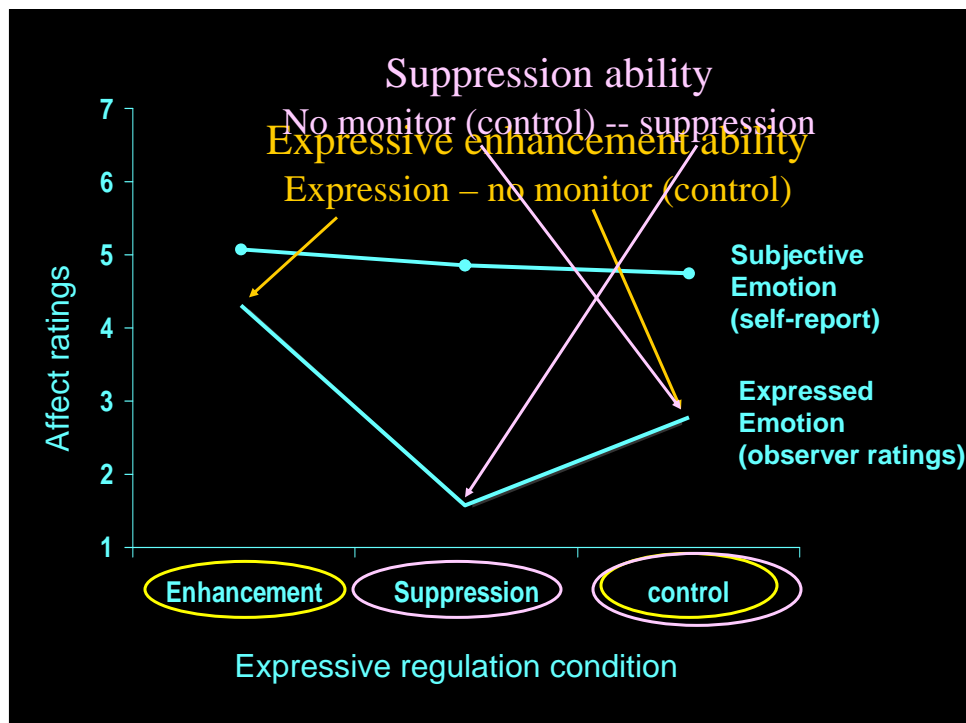
- *flexible application of coping strategies in a manner that corresponds with the nature of the stressor* (Cheng, 2001).
- “*whether one expresses or suppresses emotional expression is not as important for adjustment as is the ability to flexibly express or suppress as demanded by the situational context*” (Bonanno et al., 2004, *Psychological Science*)
- Expressive flexibility is trait-like (Seivert & Bonanno, 2008)

Thank you

## Expressive Flexibility Task

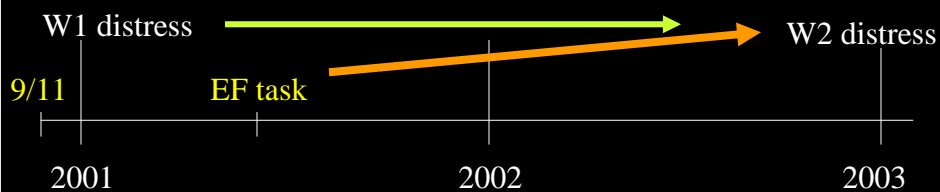
- View emotion-evoking photos
  - rate own affect
- Observed by another participant (on monitor)
  - Will “try to guess your emotion”
- Three within-subjects conditions
  - Enhancement of expression
  - Suppression of expression
  - Control – monitor turned off

Bonanno, Papa, Lalande, Westphal, & Coifman (2004) *Psychological Science*



## Expressive flexibility (EF) and adjustment

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



Bonanno, Papa, Lalande, Westphal, & Coifman (2004) *Psychological Science*

DV = W2 distress	Beta	R <sup>2</sup>	Model
W1 distress	.26*	.19	F(4,80)=4.24**
filler problems completed (cognitive resources)	-.03		
Expressive enhancement ability	-.24*		
Expression suppression ability	-.23*		
<b>DV = W2 distress</b>			
DV = W2 distress	Beta	R <sup>2</sup>	Model
T1 distress	.26*	.18	F(3,80)=5.73***
filler problems completed	-.03		
Flexibility (enhancement + suppression)	-.27*		

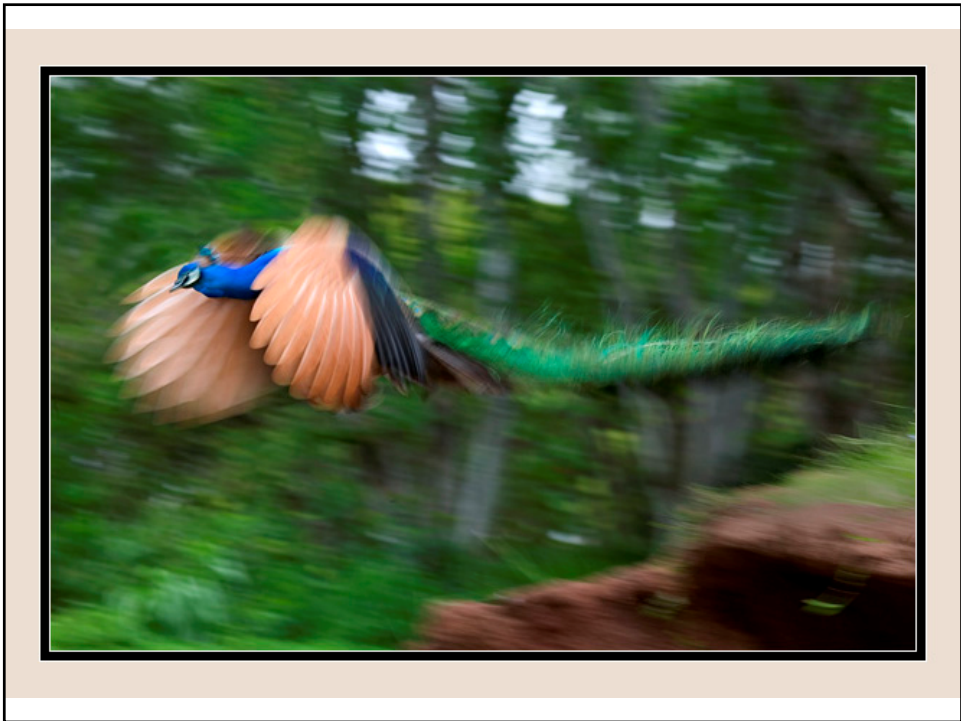
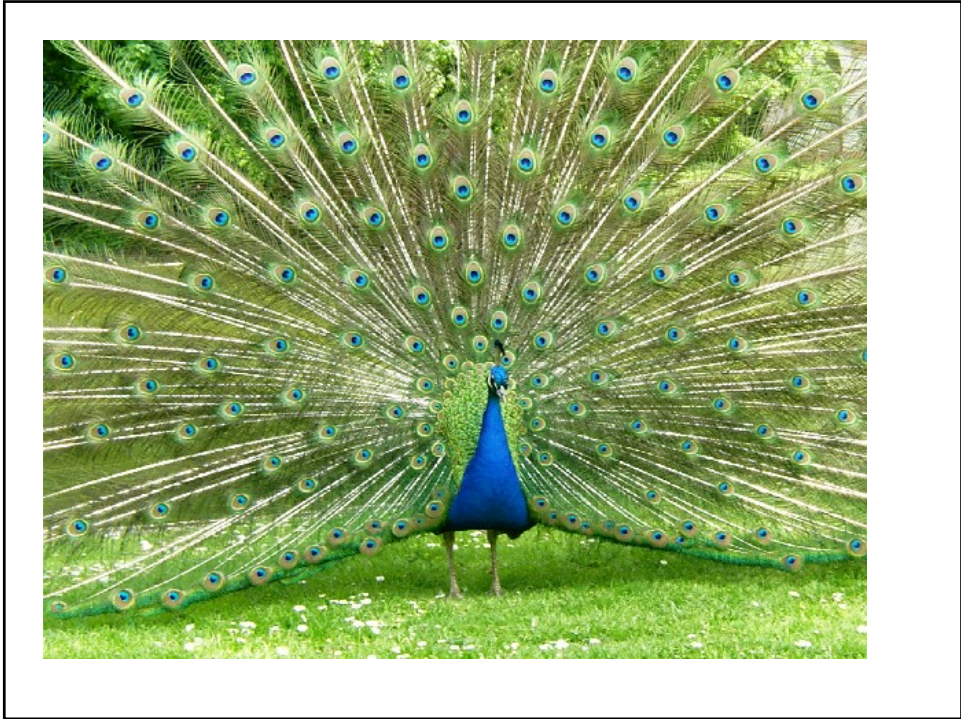
## Replication and extension

- 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

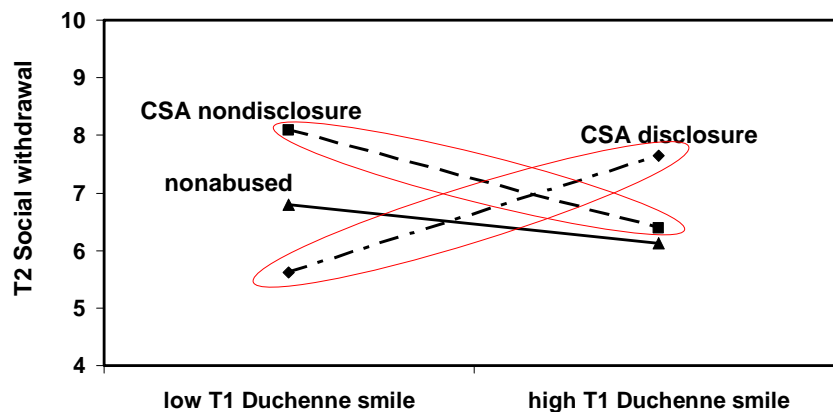
- Every adaptation has its cost
  - e.g. the peacock's tail



## Are positive emotions always adaptive?

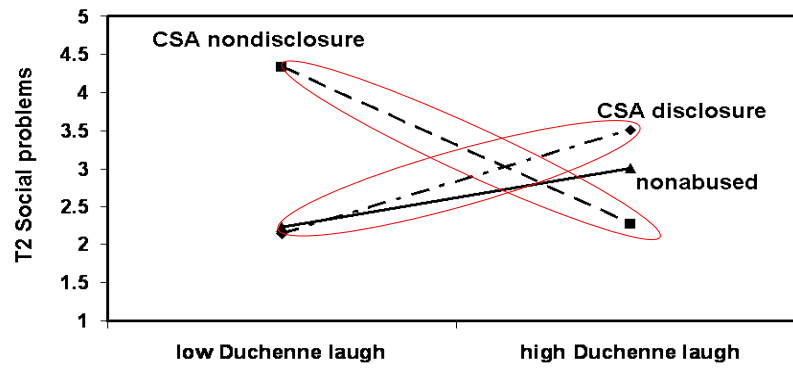
- Every adaptation has its cost
  - E.g. peacock's tail
    - Fosters sexual selection (adaptive)
    - Makes susceptible to predation (maladaptive)
- Duchenne laughter and smiling
  - Foster social affiliation (adaptive)
  - But ?? . . . (maladaptive?)
  - . . . Are there situations in which these signals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