

# Crying as a Stimulus for Infant Abuse and Shaken Baby Syndrome

Marilyn Barr, Director, National Center on Shaken Baby Syndrome

Ronald G. Barr, Director, Center for Community Child Health Research

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# Shaken Baby Syndrome (SBS)

- Definition
- Incidence and why it is an underestimate
- Shaking
- How the damage comes about with shaking
- Myths: what does not cause SBS
- The shaking dynamic

# Shaken Baby Syndrome: Definition

- Shaken Baby Syndrome (SBS) is a form of *nonaccidental* head injury with or without impact, resulting from violent shaking, that presents with a unique set of injuries including acute encephalopathy with subdural hemorrhages, cerebral edema, retinal hemorrhages and fractures.

# Outcomes of Hospitalized Cases

- 20-35% die
- Of the survivors, 65-80% have significant longterm neurological and developmental abnormalities

# Case Load

- Incidence rate: 25-40/100,000 births a year (Barlow & Minns 2000; Keenan, Runyan et al 2003)
- USA: 1400-1600 cases annually: 350-400/year, or **1/day**, die [25%] (Alexander & Reese)
- SBS diagnosis is often missed, and results in repeat shakings (Jenny et al 1999; Alexander et al 1990)

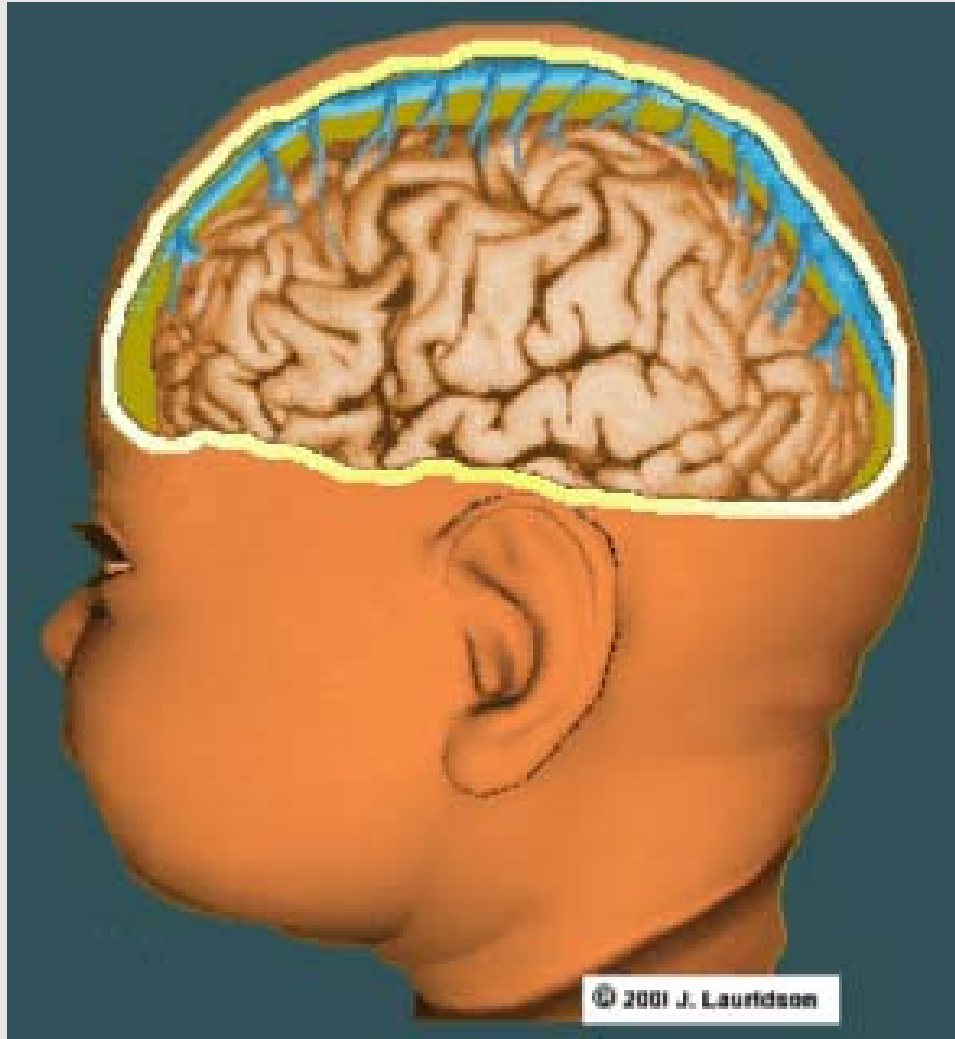
# The Shaking

- Weak Neck Muscles
- Normal Large Head to Body ratio
- ***Violent, sustained*** shaking

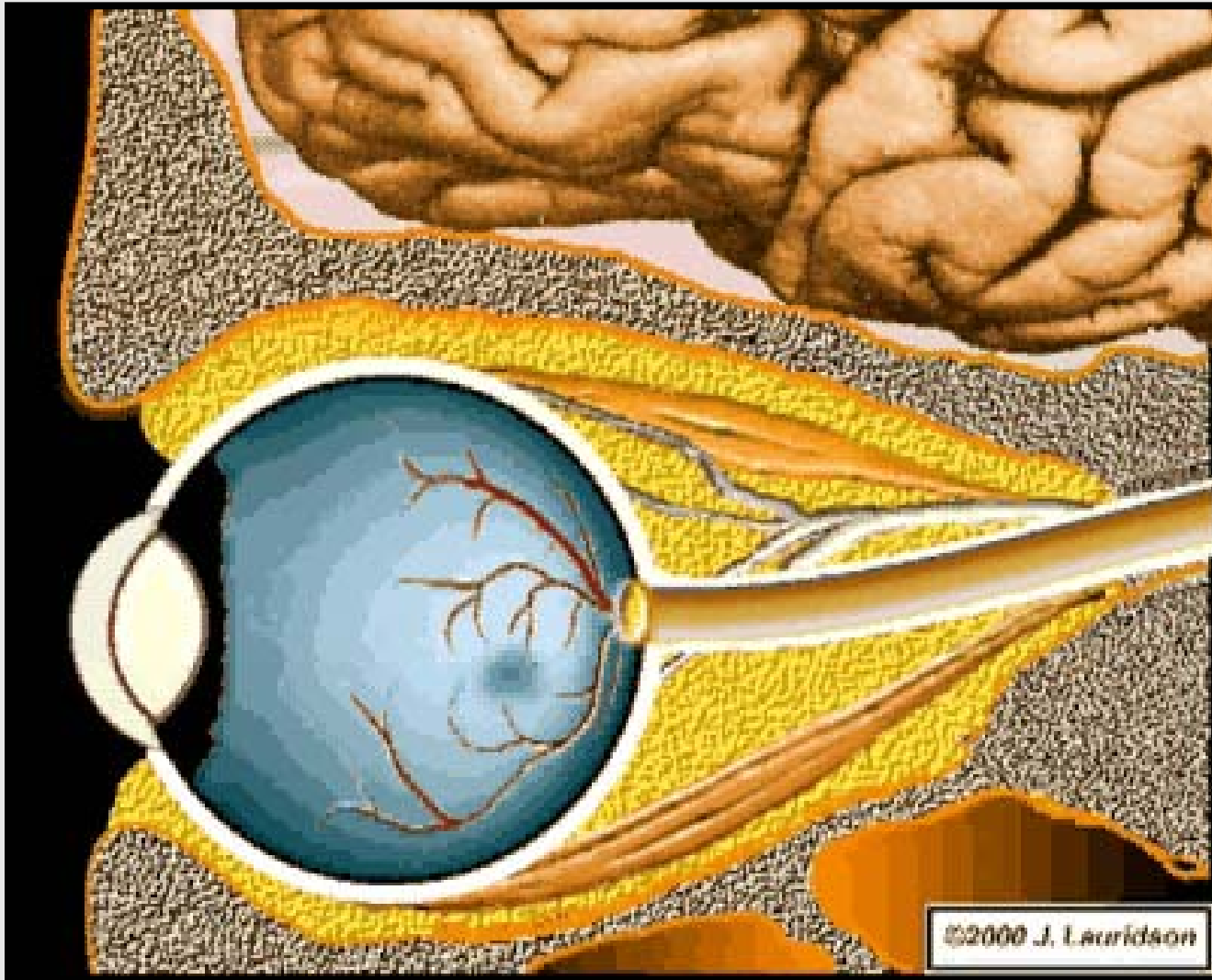




# Intracranial "Cascade" from Shaking



# Retinal Hemorrhages and Damage to the Eye



# Myths:

## What does not cause shaken baby syndrome

- Tossing a baby in the air
- Bouncing a baby on your knee
- Falling off a couch
- Jogging with a baby in your backpack
- Baby in a bicycle carrier
- Falling from a high chair or down stairs
- Sudden stops in a car seat

# The Dynamics of Shaken Baby Syndrome

**Crying is the number one stimulus that results in a baby being shaken, because crying:**

- Leads to frustration and anger that reaches a threshold
- Leads to feelings of inadequacy, guilt, helplessness
- Supports beliefs that something is wrong with the baby or that the baby is “bad”

# Evidence Base for a Community-based Educational Prevention Program

1. Early crying and “colic” is normal
  - The crying curve; unsoothable crying bouts
2. Crying is the primary stimulus for shaking and abuse: new evidence
3. The Period of PURPLE Crying
  - Incorporating the evidence into prevention materials
4. Working toward effective prevention: changing a nation’s cultural beliefs

1. Early crying and “colic”  
is a manifestation of  
*normal* behavioral  
development.



# What is colic?

## Defining features

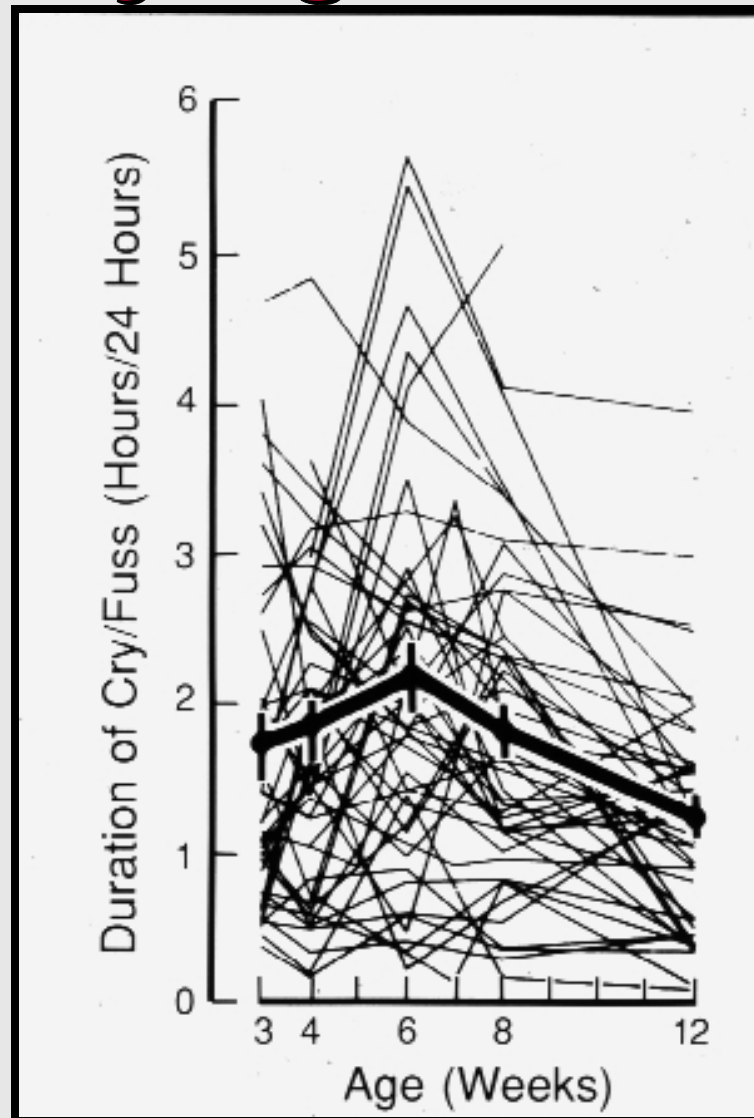
(Gormally & Barr, 1997)

1. Age-dependent crying patterns (peak during 2nd month). These are due to changes in the diurnal crying patterns (evening clustering)
2. Associated behaviors (prolonged cry bouts, **unsoothability**, "pain facies")
3. "Paroxysmal" (unpredictable)

# Three Main Arguments Against Pathology

- **Small %age of cases with pathology**
- **Good outcome**
- **Non-pathological mechanisms completely account for the primary features of early increased crying.**

# "Peak Pattern" of Early Crying Behavior



(Hunziker & Barr,  
Pediatrics 1986)

# Caregiving Contexts

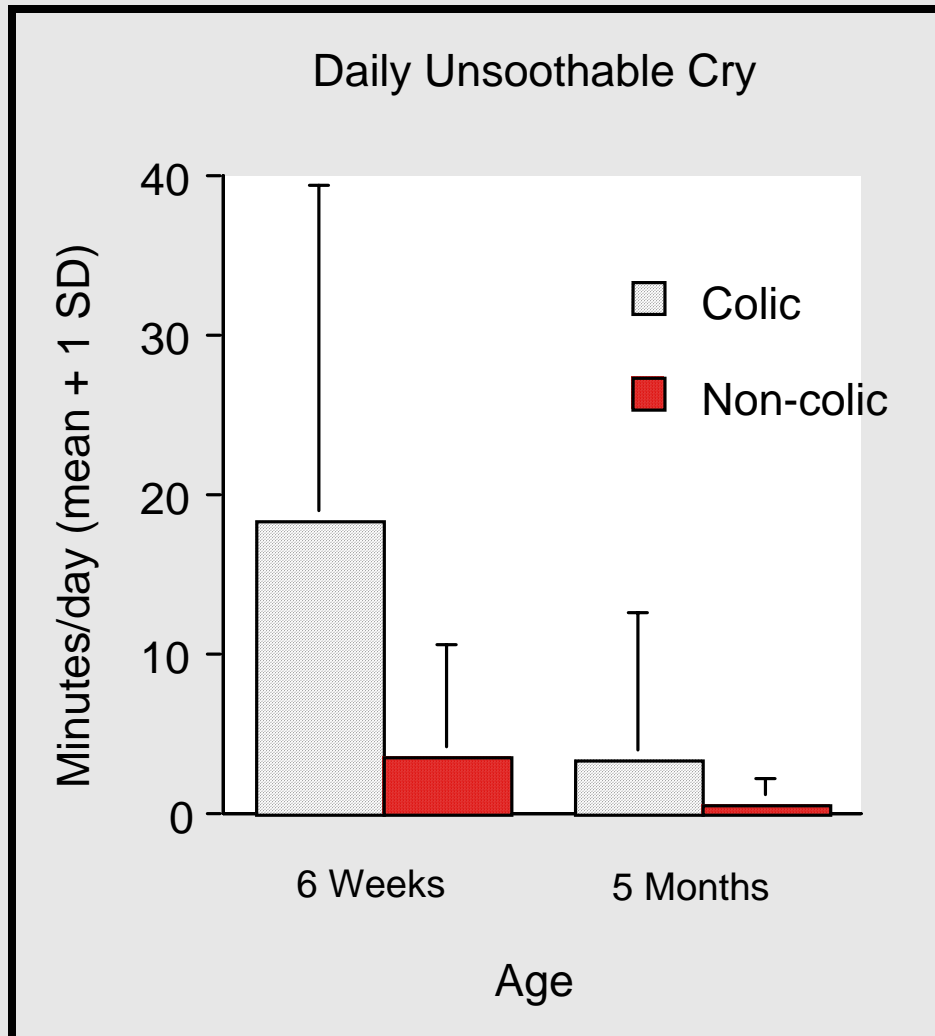
	<b>!Kung San</b>	<b>Western</b>
<b>Contact</b>	Constant	Intermittent
<b>Carry</b>	Constant	Response to cry
<b>Feeding</b>	"Continuous"	"Pulse"
<b>Posture</b>	Upright	Supine
<b>Responsivity</b>	Universal	Occ. Non-response

# Evidence that the “Crying Curve” is a Behavioral Universal of Infancy

There is a similar pattern and timing in:

- 1. All samples of Western infants**
- 2. Cultures with radically different caregiving styles**
- 3. Prematures**
- 4. A wide variety of human infant biological & behavioral functions**
- 5. Non-human species**

# Uniqueness of *Unsoothable* Crying Bouts to Early Crying



By 5 months, the mean amount of unsoothable crying is 1-3 minutes/day in all infants.

Barr, Paterson et al, JDBP, 2005

## Summary:

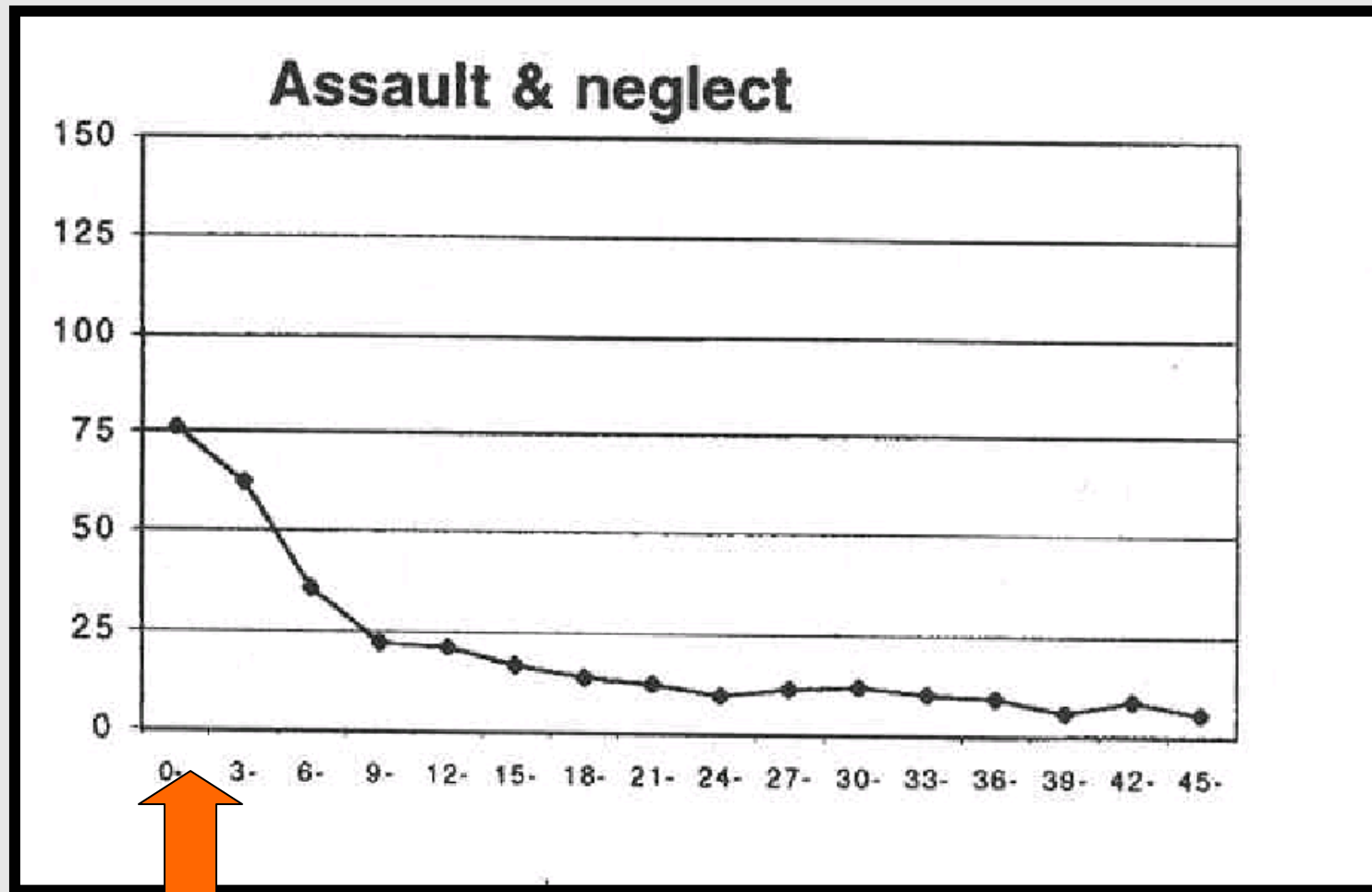
# Reconceptualization of Colic

All of the features of the crying definitive of excessive crying (or "colic") can be understood as manifestations of the upper end of a spectrum of crying behavior that is typical of **normally developing infants** rather than a distinct crying pattern indicative of underlying disease in the infant or psychopathology in the caregiver(s).

## 2. Crying is the primary stimulus for shaking and abuse: new evidence

# Annual Rate of Hospitalization and Death/100,000 in CA 1996-1998

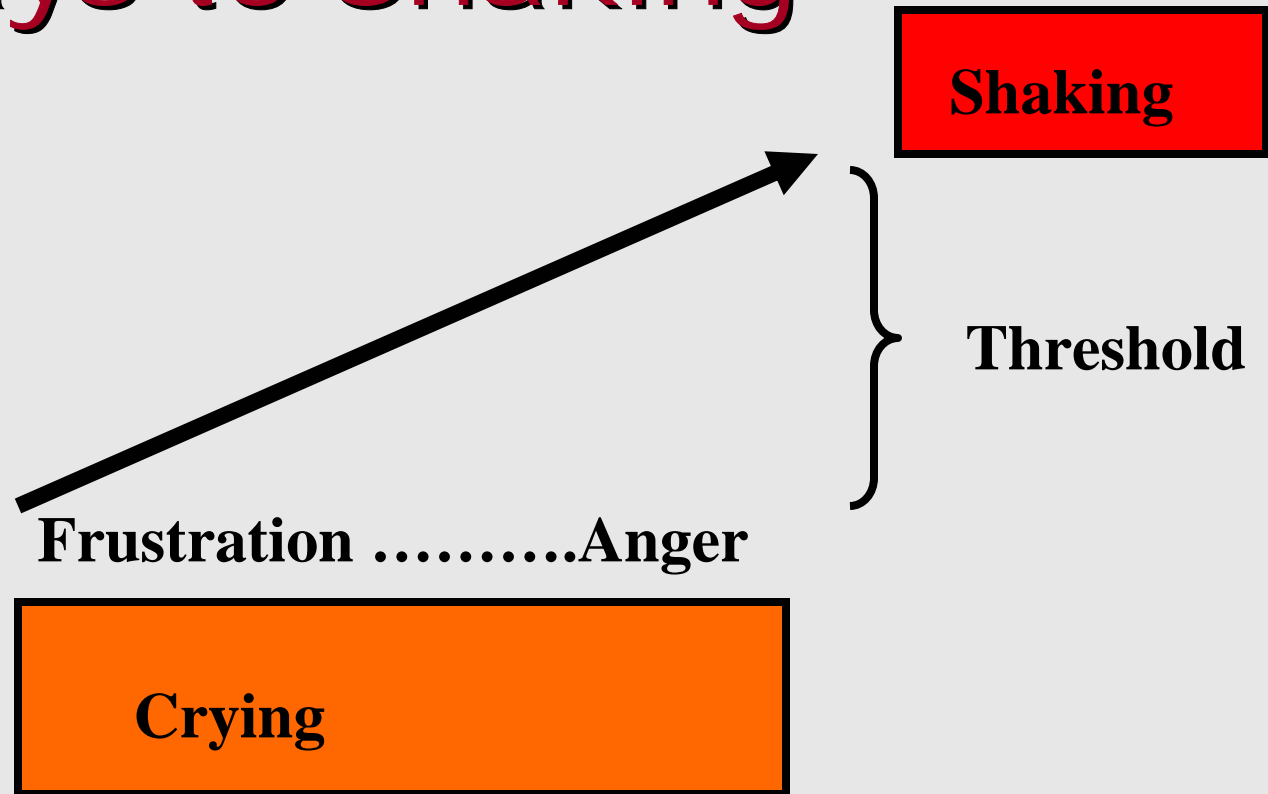
Agran et al, Peds 111, No. 6, 2003



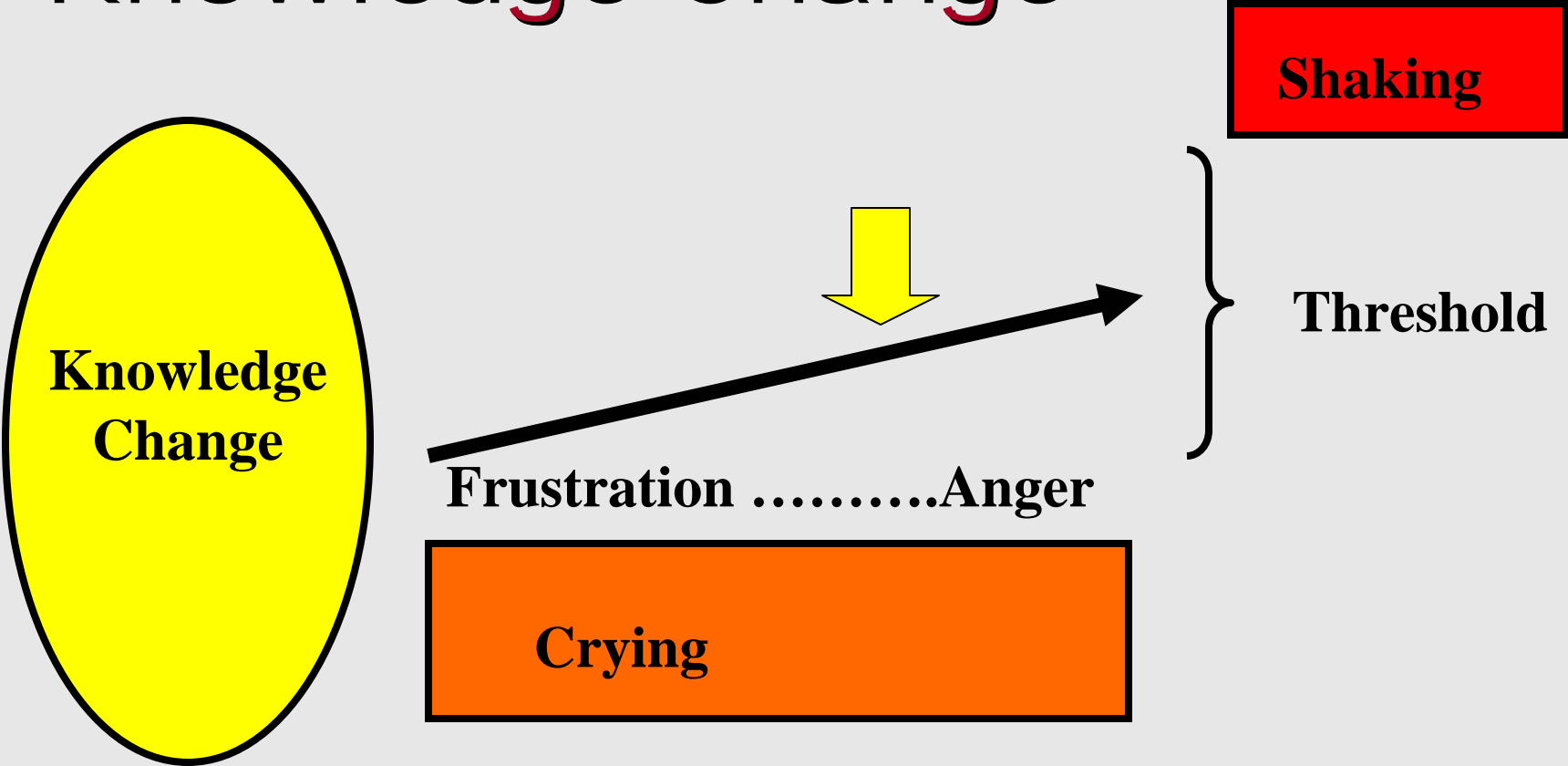
# 3. The Period of PURPLE Crying

Incorporating the Evidence into  
Prevention Materials

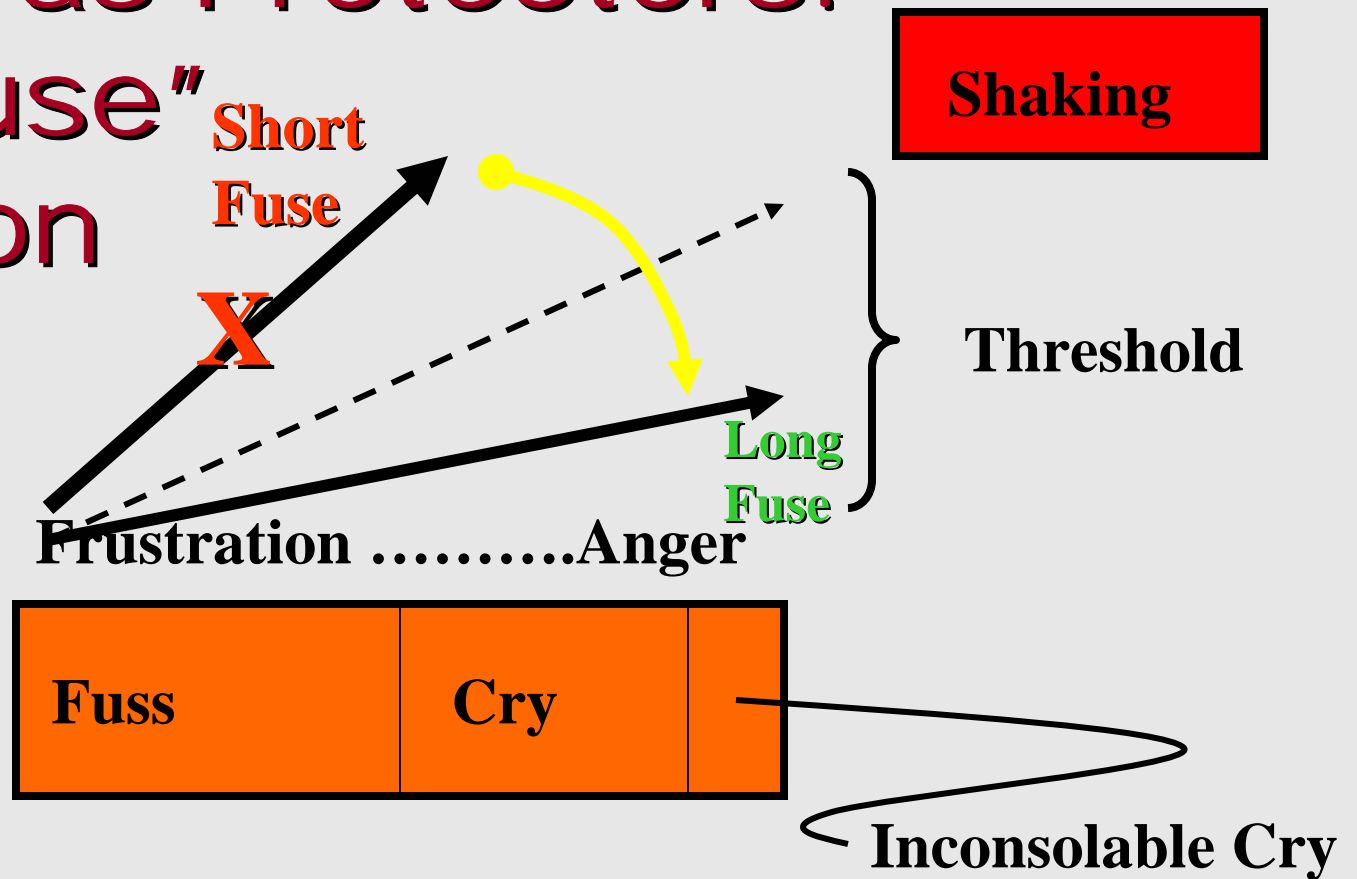
# Pathways to Shaking



# The Pathways to Prevention: Knowledge Change



# The Pathways to Prevention: Mothers as Protectors: "Short fuse" reduction



*Did you  
know your  
baby would cry  
like this?*

The Period of  
**PURPLE**  
Crying



A New Way to Understand  
Your Baby's Crying

1. > 20 booklet  
revisions

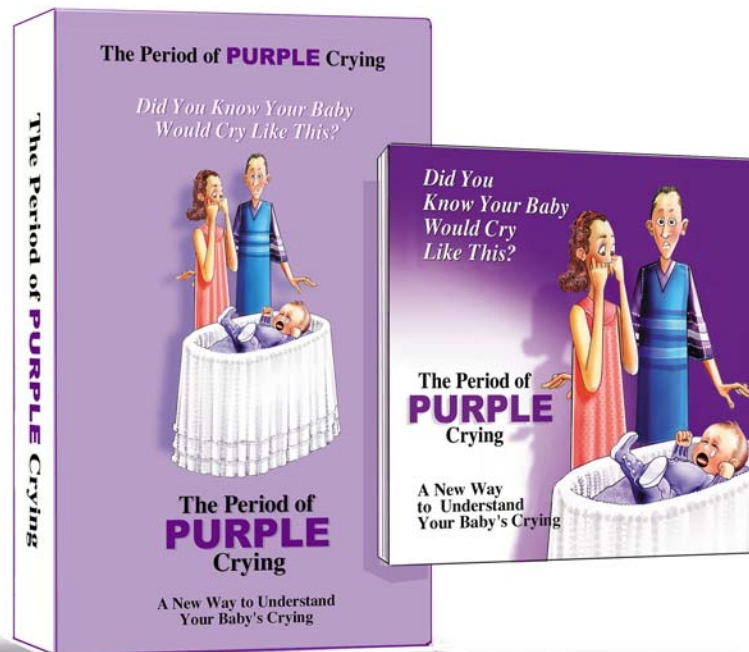
2. > 6 film  
revisions

3. 16 focus groups:

13 mother

2 father

1 Native  
American



4.

**Working toward effective  
prevention: changing a  
nation's cultural beliefs**

# Working toward effective prevention

1. Content and design of intervention materials (NCSBS)
2. Consultations with parents & professionals
  - Center for Community Wellness Team, Univ. California at Berkeley
  - Pediatric practices
  - SBS/Child Abuse specialists
  - Public Health Nurses
  - Parents/parent advocates

# Working toward effective prevention (cont'd)

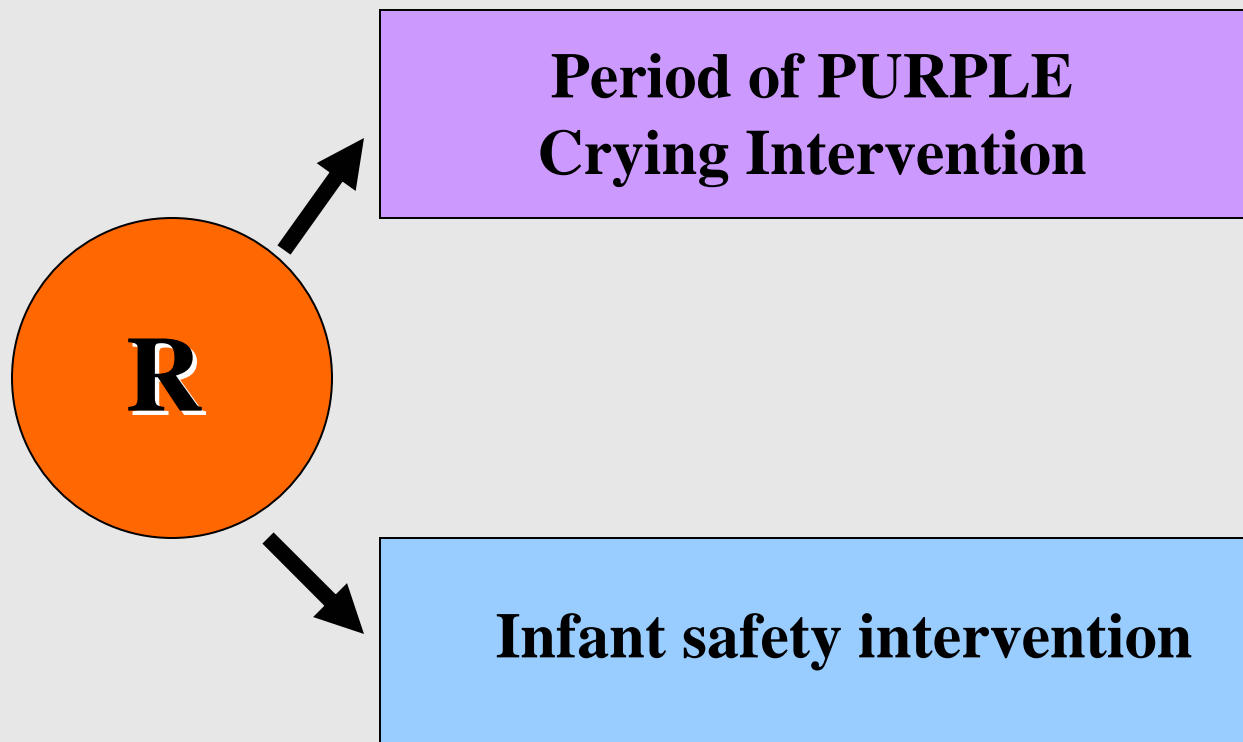
## 3. Parent Focus Groups

- 16 mothers; 2 fathers; 1 Native American
- Two countries
- Professional focus group leaders

## 4. Empirical Testing of Ability to Change Knowledge, Attitudes **and Behavior**

- Parents Helping Infants Study

# Randomized Controlled Trial



# Period of PURPLE Crying Program: Overcoming Challenges to “Penetration”

- Educational, not ‘threat’
- Clear, memorable, salient, meaningful, attractive, **positive** message
- Grade 3 level language
- Multicultural
- Valuable for **all** parents
- Acceptable to Public Health Nurses
  - no bottles, blankets, bumpers, etc.)
- Economical (estimated \$2/person)
- Stand alone if necessary (each parent has copy)

# Changing a nation's cultural beliefs

- Changing a Nation's Cultural Beliefs:
  - Early increased crying (and "colic") is part of normal behavioral development
  - Mothers, fathers, health care workers, neighbours, advice magazines...
- Phase 2: Reducing SBS and Infant Abuse:
  - Prerequisite: Surveillance systems
  - Partnerships

# The Pyramid of Prevention

