

How Dangerous are Baby Rattlesnakes? Origin and Prevalence of a Defanged Myth



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INTRODUCTION

The Myth

Baby rattlesnakes are more dangerous than adults.

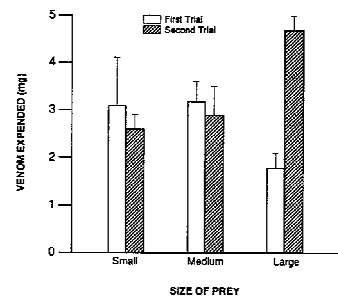
Myth Rationale

Baby rattlesnakes cannot control how much venom they inject and dispense all of their venom supply when biting, thereby delivering more venom than adults that can control venom expenditure.

A Myth Defanged

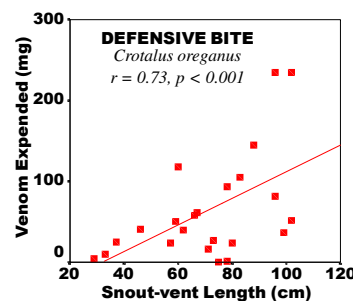
➤ **Baby rattlesnakes can control their venom** – with experience, they inject more venom into larger prey (Hayes, 1995).

- Mean (SE) mass of venom expended by juvenile *Crotalus v. viridis* feeding on three size classes of laboratory mice. For each mean, N=7.
- Snakes were considered 'naive' in the 1st trial and 'experienced' in the 2nd trial.
- There was a significant interaction between prey size and replication ($F_{2,12}=70.2$, $p<0.0001$).



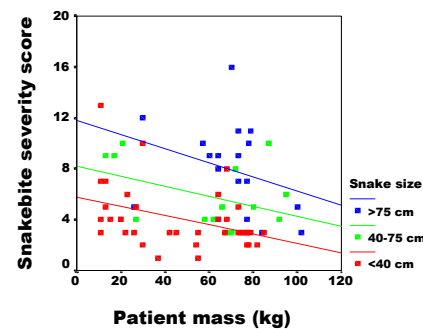
➤ **Baby rattlesnakes possess and inject less venom than adults** – including defense bites at saline-filled gloves (Hayes et al. 2002).

- The significant relationship between snake size (snout-vent length) and venom expenditure (mg) for defensive strikes at human limb models by 16 *Crotalus oreganus*.



➤ **Baby rattlesnakes cause less severe bites** – as indicated by snakebite severity in 100 snakebite cases (Hayes et al. 2005).

- Snakebite severity score (SSS) from 100 cases presenting at LLU Medical Center.
- SSS was positively associated with snake size (partial $\eta^2 = 0.41$; $p = 0.006$).
- SSS was negatively associated with patient mass (partial $\eta^2 = 0.33$; $p = 0.008$).
- Species of snake (5 from southern California), site of bite (distal digit, proximal digit, limb), and number of fang marks (1 to 4) were independent of SSS.



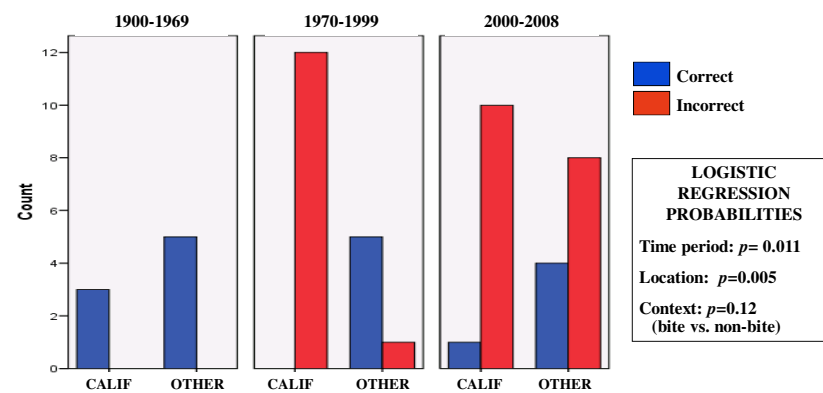
STUDY OBJECTIVES

- Explore the possible origin of this myth by examining newspaper stories.
- Determine how widespread and prevalent this myth is today by means of surveying college campus and medical professionals.

HISTORICAL ORIGIN

➤ Number of correct/incorrect news stories (N = 49) that mentioned relative danger and/or venom expenditure of baby versus adult rattlesnakes during three eras between 1900 and 2008, suggesting California origin of myth.

- Results from searches of Google, Google News, and newspaper archives from 1900-1908.
- All stories were factually correct prior to 1969 regardless of location.
- Factually incorrect statements first appeared in California during the period 1970-1999.
- Factually incorrect statements prevailed throughout the U.S. after 2000.

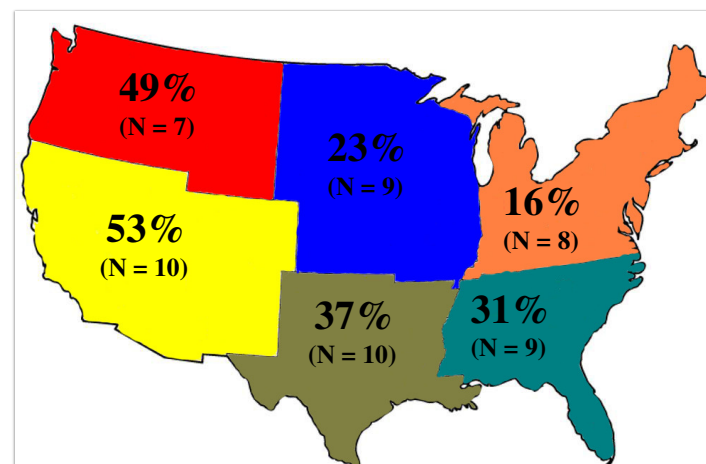


LOGISTIC REGRESSION PROBABILITIES
Time period: $p = 0.011$
Location: $p = 0.005$
Context: $p = 0.12$ (bite vs. non-bite)

CURRENT PREVALENCE

➤ Exceptional student familiarity (%) with the myth, determined by surveys at 52 colleges and 1 high school in 29 states (N number of institutions surveyed within each region). A total of 3,692 students participated.

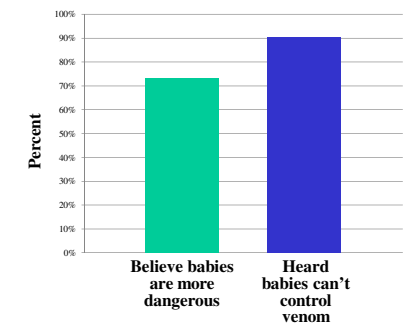
- Students were asked: "Have you heard that baby rattlesnakes are more dangerous than adults because they have not learned to control the amount of venom they inject when biting, and therefore inject more?"
- Familiarity was greatest in the southwestern U.S. and least in the Northeastern U.S., consistent with a California origin of the myth.



HEALTH PROFESSIONALS

➤ The majority of southern California health professionals surveyed believe that baby rattlesnakes are more dangerous (71.8%) and have heard that they can't control their venom expulsion (91.0%).

- Health care professionals (75 EMTs, paramedics, and nurses) were surveyed during a Riverside County EMS continuing education program.
- Fewer believed babies were more dangerous than had heard of lack of venom control (McNemar test, $p=0.007$).
- There was strong concordance between belief and familiarity with myth (64.1%), but 7.7% believed babies were more dangerous without having heard the myth.



CONCLUSIONS

- The myth likely originated in California sometime during or prior to the 1970s.
- The myth is now widely believed by millions throughout the US, with familiarity greatest in the southwest and least in the northeast.
- Southern California health professionals indicated similar or higher familiarity with the myth than that observed in college students. There was strong concordance between familiarity and belief.
- Belief in this myth can lead to negative consequences, including misinformed risk-taking by those encountering snakes, unwarranted fear among snakebite victims, and inappropriate care delivered by medical professionals.

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