Using Video Games to Improve Health Behaviors

Presentation to the National Academies

Debra Lieberman, Ph.D.
UC Santa Barbara

November 2, 2005

The active user of interactive media

- Increasingly, we want to be able to do something with a screen, not simply watch it
- Children are especially active users
  - "A book can explain, but you have the experience in a video game."
- Adults are spending increasing amounts of time with interactive media
  - 1.5 hours per day playing interactive games

Why Nintendo video games?

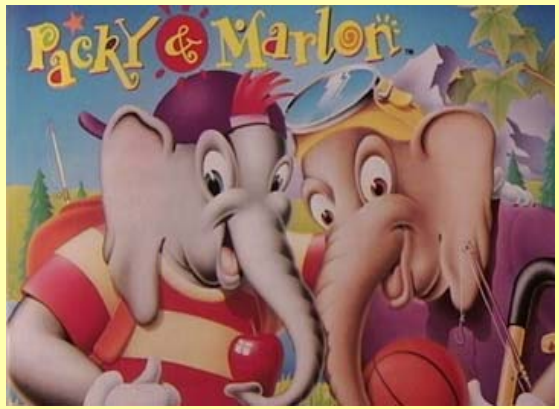
- Video games are popular; played during leisure time
- “Cool,” perceived as a kids’ medium
- Side-scrolling adventure – favorite genre
- Interactivity, role-playing, feedback, record-keeping

How can games improve knowledge and change behavior?

- Challenge to reach a goal – very involving
- Hands-on learning: apply knowledge and skills in the game
- Rehearsal of skills
- Feedback and help, record-keeping, progress reports
- Role modeling, observational learning
- Interactivity
- Networking
- Interpersonal and social dynamics
- Align the learning goals with the game goals

Interactive video games for health behavior change

Diabetes



Asthma

Smoking prevention

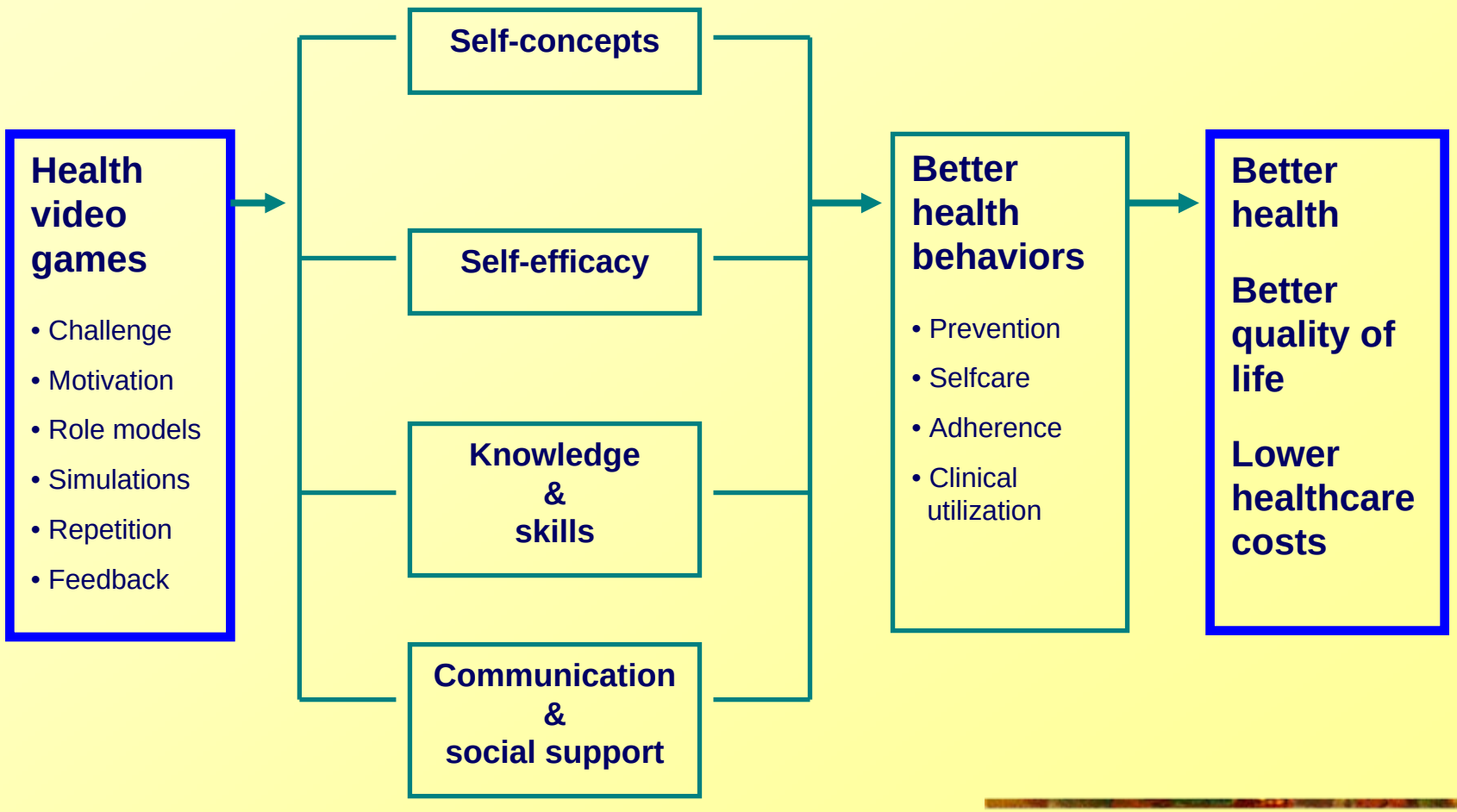
Algorithms

- Asthma peak flow level:
  balancing meds & asthma triggers
- Diabetes blood glucose level:
  balancing insulin & food

- Health goals are aligned with game goals
- Staying in optimal zone helps win the game

From Interactive Games to Outcomes

Game playing → Improved mediating factors → Improved outcomes



Asthma:
Bronkie the Bronchiasaurus

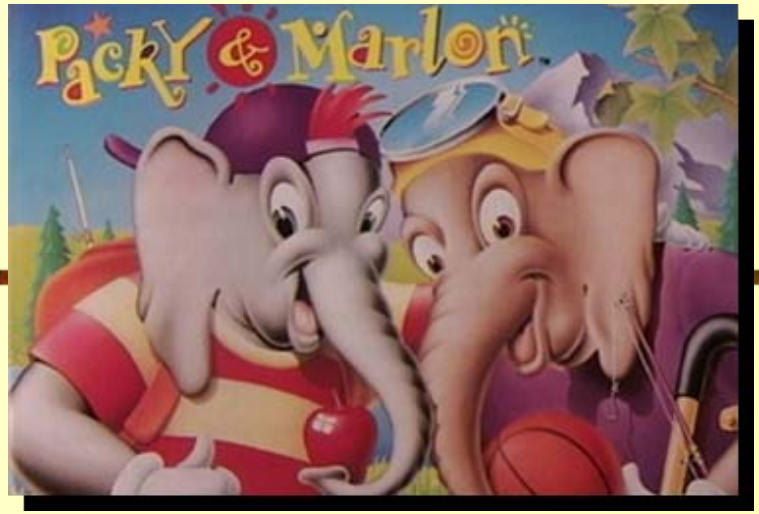
- Taking daily medicine
- Using inhaler correctly
- Avoiding asthma triggers
- Monitoring peak flow
- Using sick-day plan appropriately
- Using a logbook

Diabetes:
Packy & Marlon

- Testing blood glucose
- Taking insulin
- Balancing insulin & diet (4 simulated days)
- Preventing & handling emergencies
- Using a logbook

Smoking prevention: Rex Ronan

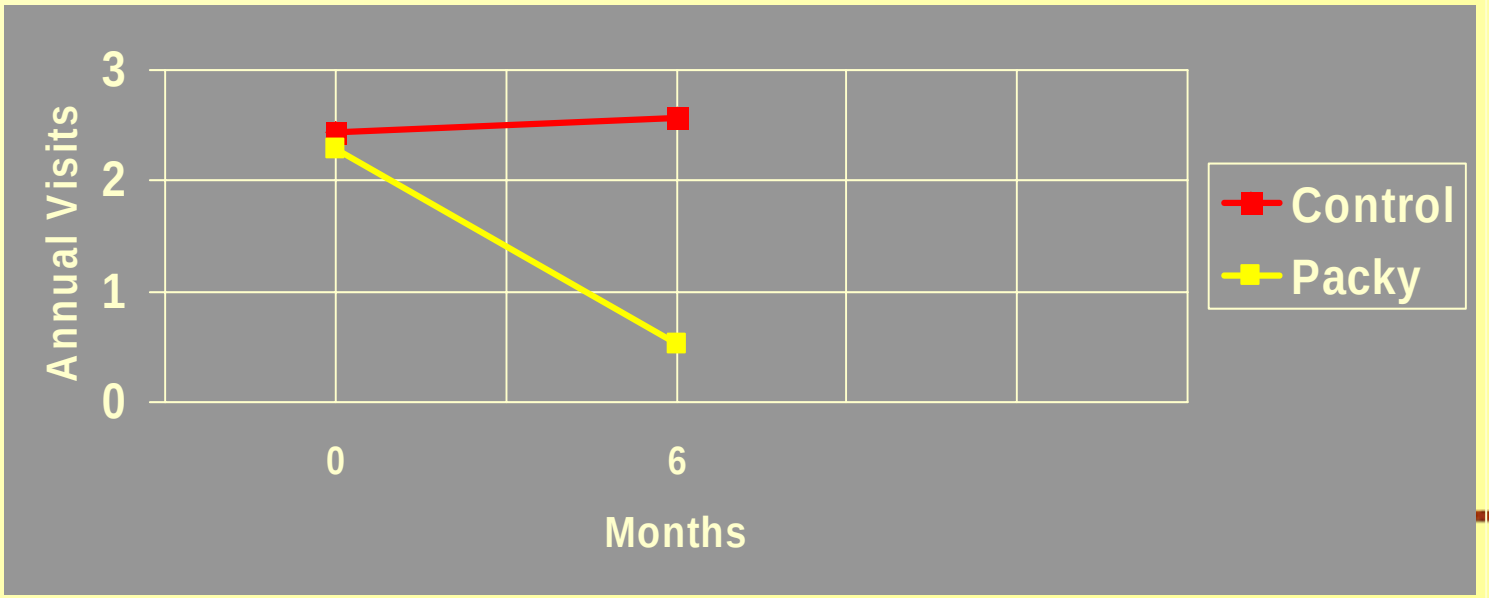
- Graphic journey through a smoker's deposit-clogged body
- See physiological effects of smoking – tar, phlegm, plaque, precancerous cells
- Feel disgusted by effects of smoking
- Strengthen intentions not to smoke
- Resist peer pressure to start smoking



Clinical Trial Results
***Medical Informatics*, 22(1), 1997**

- Stanford and Kaiser outpatients
- 59 diabetic children, ages 8 - 16
- Randomized, controlled
- 6-month trial
- Voluntary, at-home use
- 34 hours of play per child

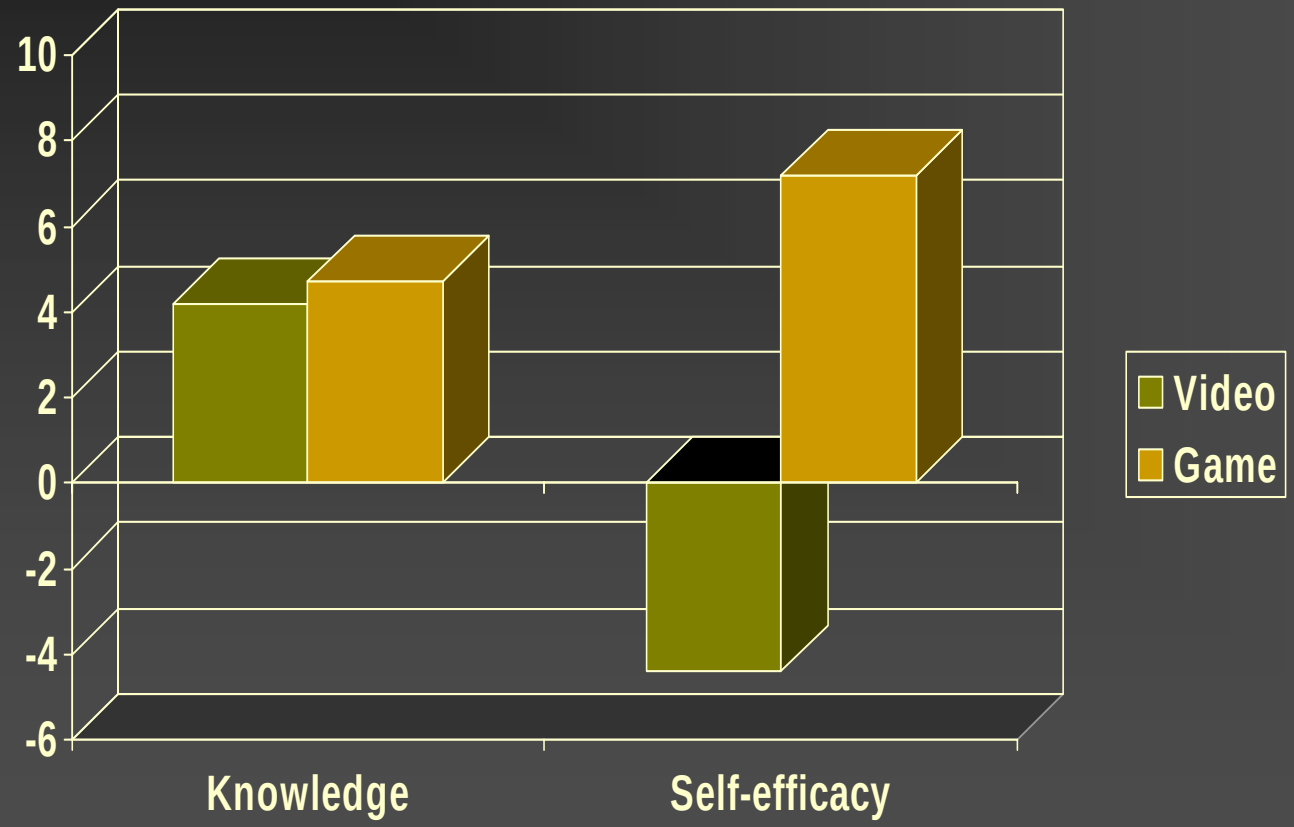
77% reduction in urgent care and ER visits



Media comparison study

- Asthma video vs. video game (1/2 hour each)
- Hypotheses:
  - Video and video game will increase asthma knowledge
  - Only the video game will increase perceived self-efficacy for asthma self-care
- Random assignment, children with asthma ages 8-13

Self-efficacy decreased after viewing video



Concluding thoughts about "serious" games

- Model the player
- Clear learning and behavioral goals
- Game design based on theories of learning, behavior change, HCI
- Team: game producers, and game design experts, and content experts
- Formative and summative research