

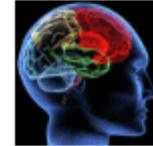
**enriching learning potential
through revolutionary games**



Assessment Integration Research

the AIR approach ...

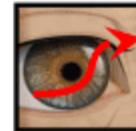
scientific: grounded in basic and applied research, integrated with gaming psychology



social: personal avatar, socially networked, building on familiar social games



dynamic: game tracks player – adjusts game personality & difficulty



data analysis: in-game encouragement for player, post-game analysis for clinical staff

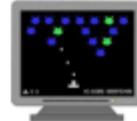


the **AIR** science approach ...

- target **core cognitive components of learning**



- computer-based games for **assessment** and **enrichment**



- **psychologically grounded architecture:**

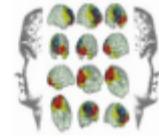
- **engages** all ages
- improves **academic performance** & **general decision making**



core cognitive components of learning that support all content areas, as well as study habits.

our competitive edge ...

- **unique** synthesis of the **sciences of mind, brain & behavior**



- games that are **psychological, quantitative** and **adaptive**



- target **root causes** of learning and behavioral problems

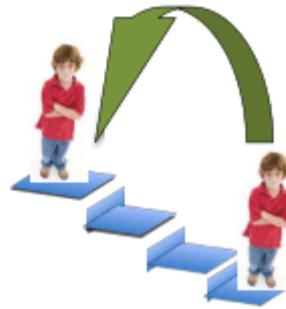


our target market ...

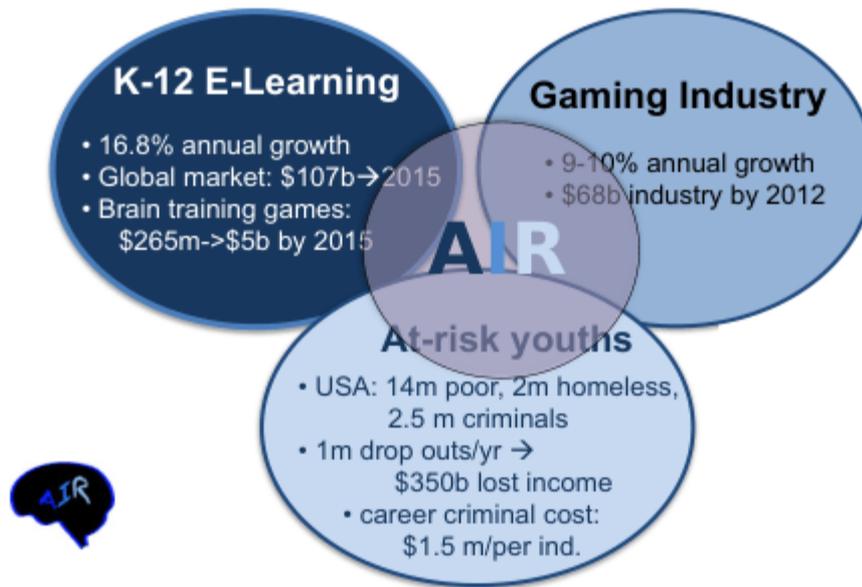
- **accelerating** student achievement



- **remediation** of at-risk students



a unique financial intersection ...



example: training self-control ...

- **root cause of poor study habits**, reasoning, behavior, academic performance



- **root cause of at-risk populations**: substance abuse, aggression, school attendance

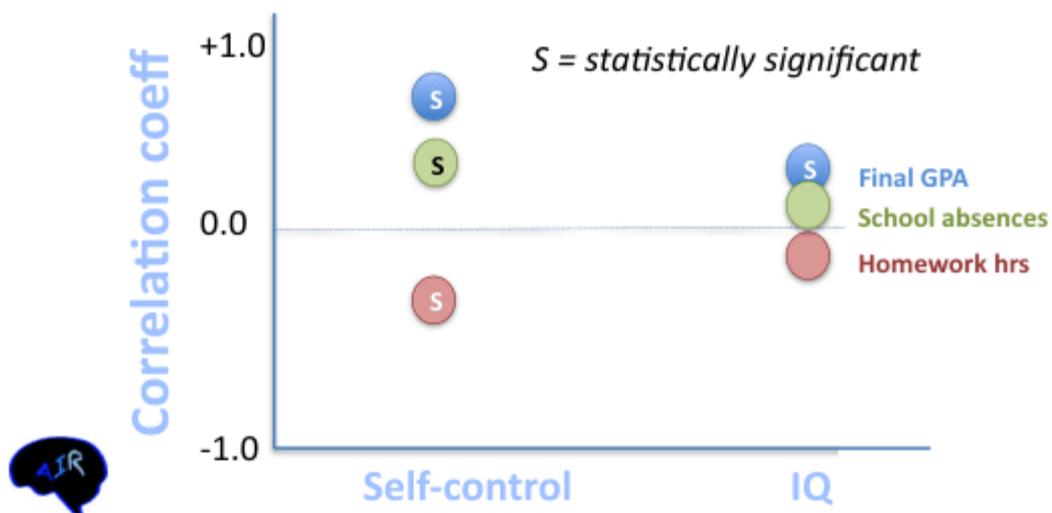


- **scientifically proven effectiveness** via genetics, neurobiology, psychology, and clinical research



what's the evidence ...

- self-control strongest predictor of academics



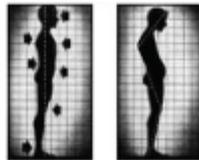
Duckworth & Seligman, 2005

what's the evidence ...

- self-control can be **strengthened** like a muscle



“Simon Says” practice and other self-control games **improve** academic performance (math & reading) in young children



Posture regulation for 4 weeks **increases** study habits & health maintenance, while **reducing** smoking & impulse shopping, in teenagers and young adults



our products ...



Watch Out



Catch



Mole Madness



Born to Fly



Runner

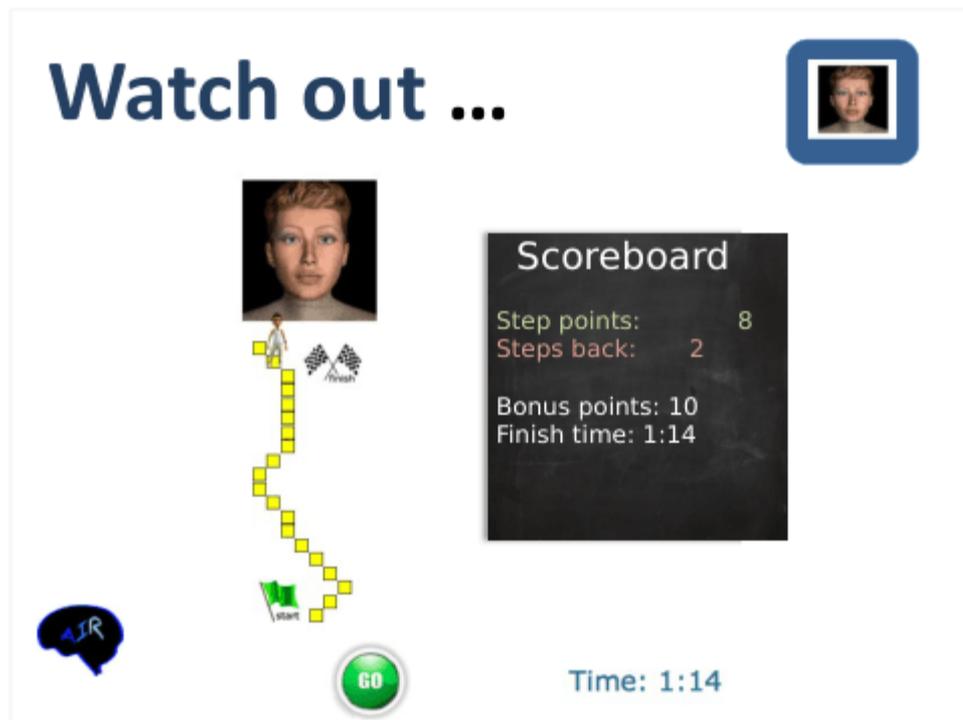


each game has ...

- preset & dynamic parameters
- adaptive intelligence to monitor and adjust game play
- detailed performance recording and evaluation
- integration with social network



- pre-programmed parameters: for level of difficulty and criteria for advancement
- adaptive intelligence: coach, and advance to new challenge levels
- generates different levels of performance evaluation evaluation, from fine-grained for teachers and clinicians, to coarse for students
- integration with social network for larger scale play and performance comparison

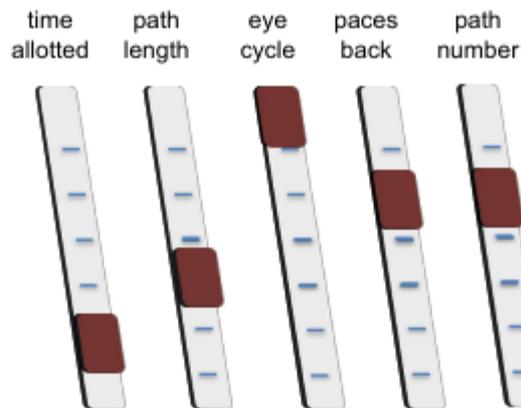


This is a version of the child's game, Red Light Green Light. Subject must advance his avatar to finish line, but can only advance when female-face avatar has her eyes closed. If subject moves when eyes are open, there is a penalty, involving stepping N number of steps. This game starts out with subject playing alone, but then, with higher levels, it turns social, and other players log in, socially networked. We also implement artificial intelligence to create competitors who can outcompete subject, pushing them harder, or weaker competitors to boost confidence. Our AI tracks subject's performance and allows for complete parameterization of game to influence the

Watch out ...



- **parameterize challenge levels**



This can run in either automated mode, or with administrators who wish control, can run in manual mode where each parameter of the game can be changed; we provide handbook for how the parameters map to psychologically relevant dimensions of learning.

Mole madness ...



Feed Me!



1:26



Scoreboard

Correct hits: 33

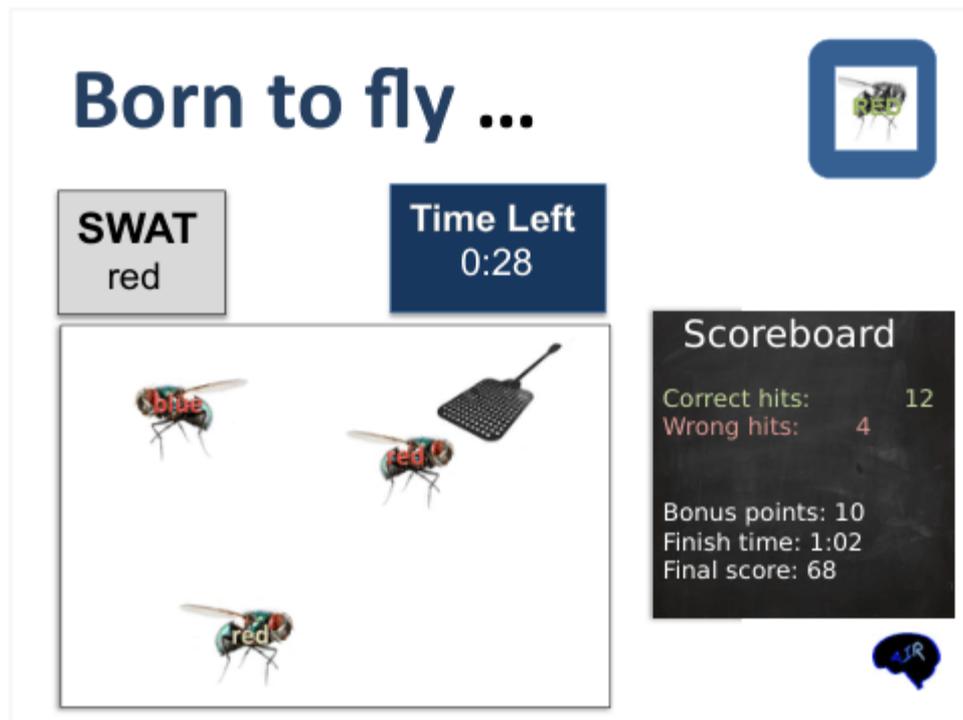
Wrong hits: 18

Bonus points: 0

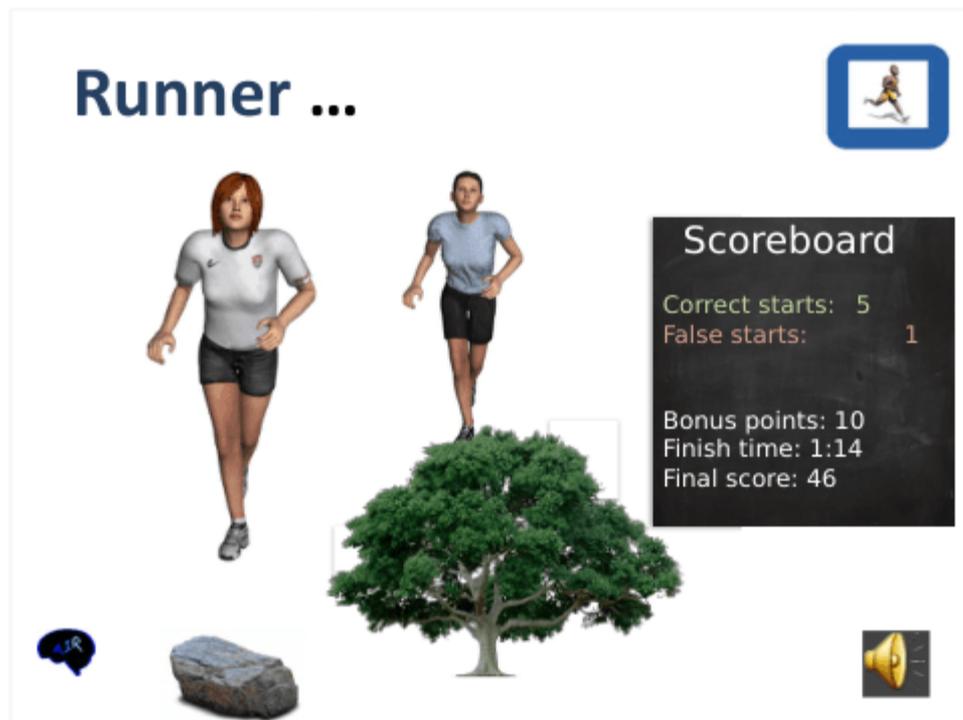
Finish time: 1:26

Final score: 29

Moles pop up in different locations and subject must whack or feed them (depending on the game) before they drop down. The self-control problem emerges in many situations as they must only feed/whack appropriate color (indicated in the target box), and sometimes the mole to feed or whack is one color while the worm or hammer is another. This maps to well known scientific experiments on self-control.

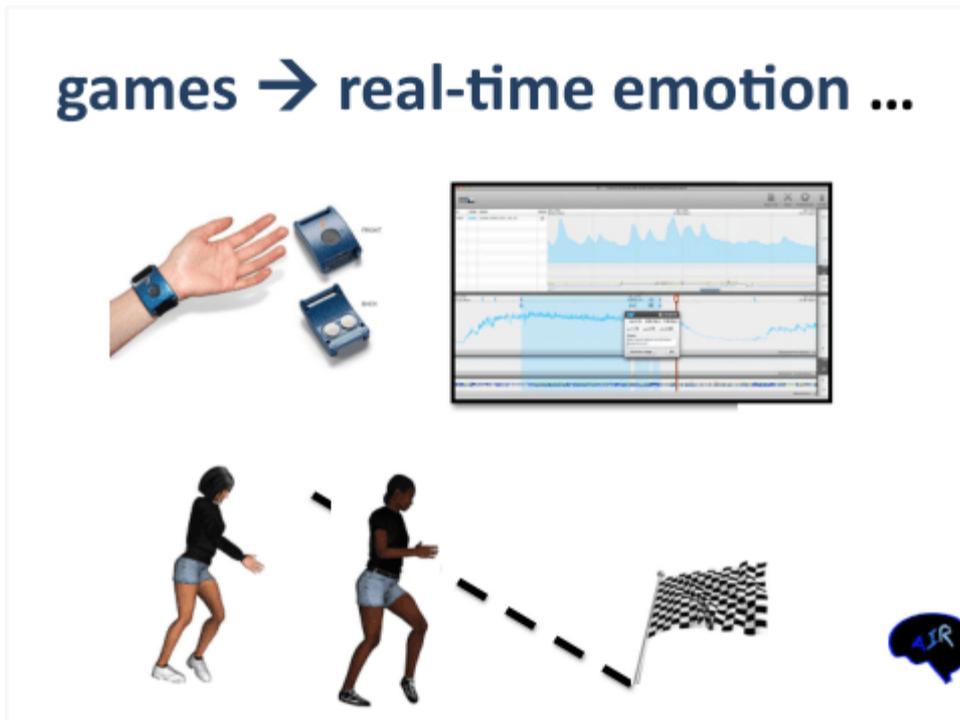


This is an active-game version of the Stroop test. Here, subjects must swat either the color word indicated or the color splotch indicated. The self-control challenge comes from the fact that a color word printed in a different color poses a conflict. So if I must swat all flies with the word “red” but see flies with the word “blue” in red print, I have to inhibit focusing on printed color.



In the runner game, either preprogrammed runners join the subject or others log on. Game entails running through different habitats as fast as possible to reach finish line, avoiding obstacles, and stopping whenever loudspeaker says “stop.” if you keep running when you hear stop, you are moved back. Sometimes you hear other words that sound like stop such as “shop” or “slop” and here, you don’t have to stop. If you do and others don’t, you will lose time. Once subjects stop, the speaker then says “go” or some close approximation. Subjects can only go when it is actually the word “go”, not, e.g., “goat.” This is a motor inhibition problem that maps to scientific experiments

games → real-time emotion ...



This game will take advantage a wrist device that measures galvanic skin response. In this game, you go faster the more relaxed you are. If you are getting stressed by your advance in the race, your avatar moves more slowly. This game therefore uses biofeedback to influence self-control.

Different data levels ...

student
online

Scoreboard
Step points: 8
Steps back: 2

student
offline



highest score 72

highest level 5



staff/parent
offline



RT	HL	Max	Min	Av	SD
111	4	28	12	18	3.2
231	3	48	10	32	2.9

the competition? ...

e.g., Lumosity



Attention, Self-control

- 14 million users
- 25% quarterly growth since 2007



Self-control

	AIR	lumosity <small>reclaim your brain™</small>
science-based	✓	✓
focus on core cognition	✓	✓
social games	✓	✗
social network play	✓	✗
generalization beyond game	✓	✗
user control – parameters	✓	✗
artificial intelligence coach	✓	✗
detailed performance analysis	✓	✗

Note: The 'social games' and 'social network play' rows are highlighted in orange. A thought bubble containing a 'CALL OF DUTY 3' game cover is positioned over the 'social network play' row. A small 'AIR' logo is in the bottom right corner of the table area.

Lumosity is pulling in massive \$\$, but is incredibly limited. We can do far better.

marketing options ...

- games & analysis package for **schools**: public, private, alternative



- games & analysis package for **home use**



- individual games as **downloadable apps**: public & scientific community







Welcome back Amanda!

					
Highest Level	2	3	2	3	2
Highest Score	45	56	73	85	50
Current Level	1	3	2	2	2
Week 1					
Done					
Extra	0	1	1	3	2
Week 2					
Done					
Extra	0	1	0	4	0

Click **Next** to get started or **Done** to come back later

Next

Done

Profile page

what's the evidence ...

- Self-control correlates with youth criminality



M. DeLisi et al study (2007):

- 723 incarcerated delinquent youths
- those most lacking in self-control were **5 times** more likely to be career criminals
- self-control explained ~80% of variation; remaining variance is age, race, gender, socioeconomics, mental illness, ADHD, trauma experience

