CANADIAN POLICE KNOWLEDGE NETWORK

RÉSEAU CANADIEN DU SAVOIR POLICIER

TELOS

Gaming and Simulation

New Approaches to Skills Development

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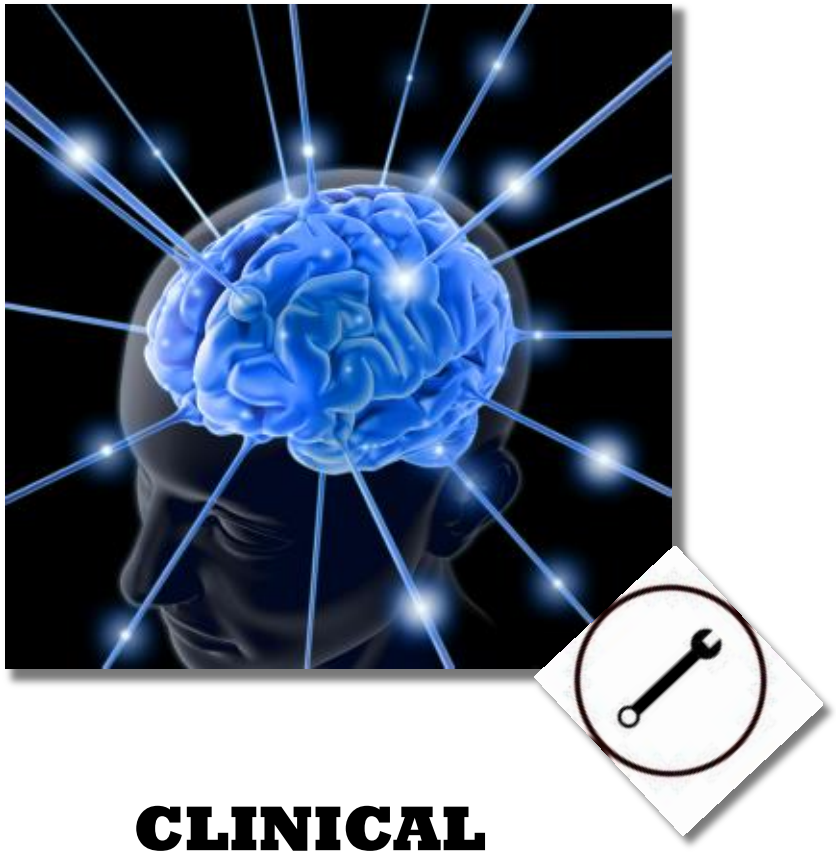
Games Lubricate the Body and the Mind

– Benjamin Franklin

MOTIVATION

Some People Need More Than Others



CLINICAL PSYCHOLOGY

EMPIRICAL PSYCHOLOGY

APPLICATION

THEORY

APPLICATION

Outline

- Value of Play
- Game Principles and Training
- Near Future Tools and Technologies

Value of Play

THE OPPOSITE OF PLAY ISN'T WORK, IT'S DEPRESSION

– STUART BROWN M.D.

Benefits of Play

- Personal Health
- Relationships
- Education
- Work

Mental Health

Physical Health

Personal Health

Normative Development

Skill Mastery

Intimacy

Interpersonal Communication

Empathy

Norms & Mores

Relationships

Work

Task Completion

Satisfaction

Motivation

Team Work

Problem Solving

Curiosity

Critical Thinking

Performance

Retention

Education

Task Completion

Satisfaction

Motivation

Team Work

Problem Solving

Curiosity

Critical Thinking

Performance

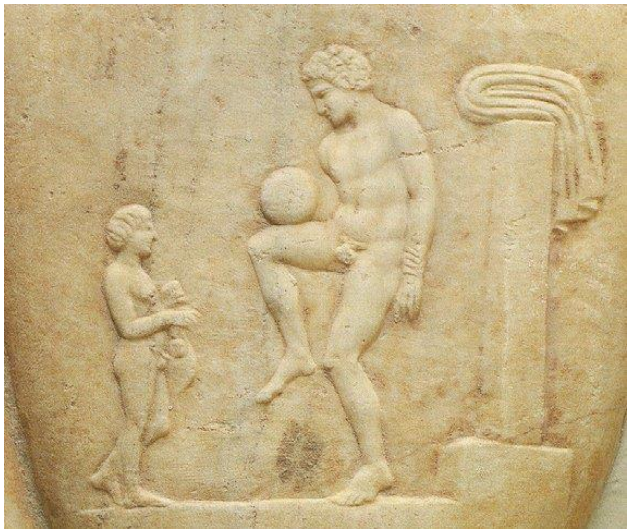
Retention

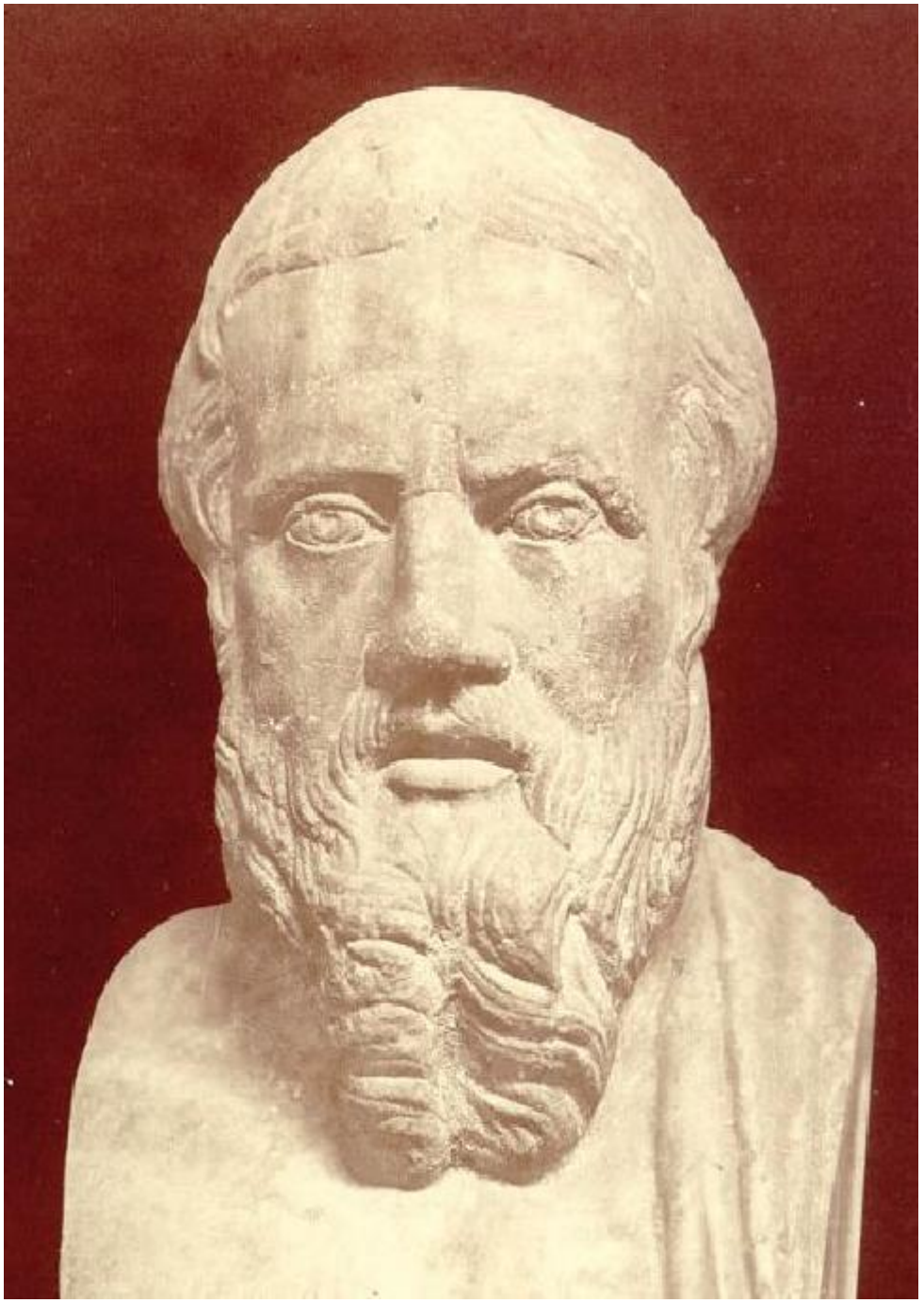
Summary

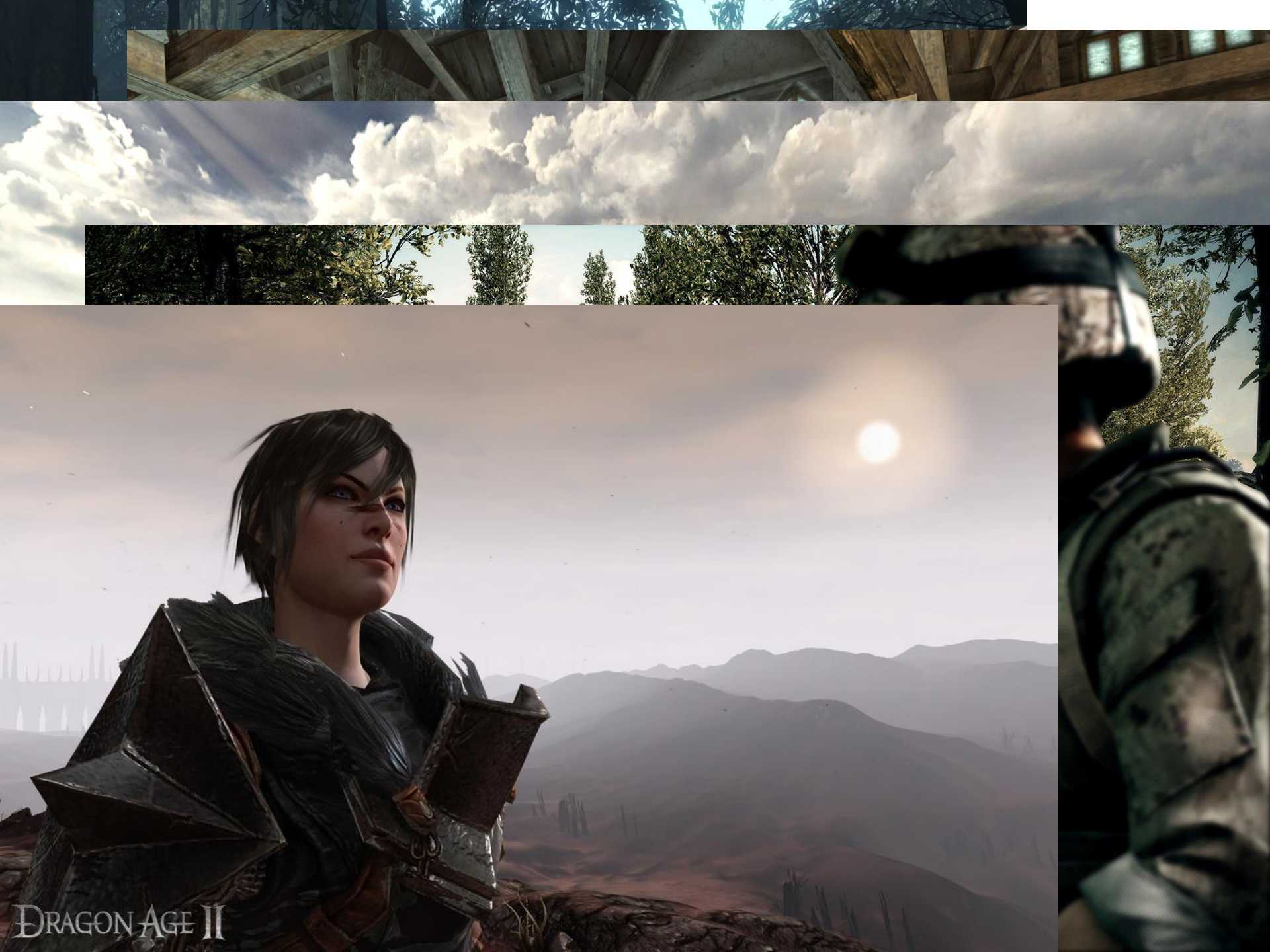
- Opposite of play is depression
- Play is rarely used in training
- Structure of training can fail to provide motivation
- Use of mechanisms of play can generate motivation to learn

Principles of Gaming & Training

- Gamification
- Video Games as Training Platforms






DRAGON AGE II

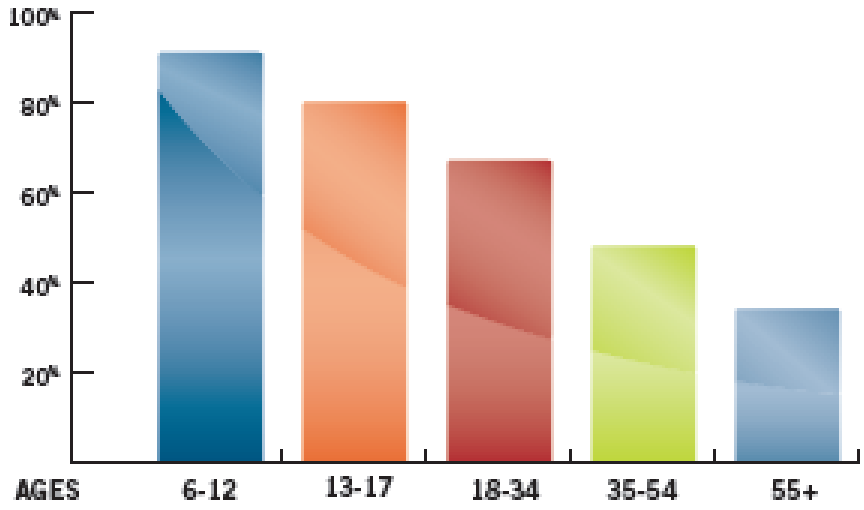
WHO IS PLAYING COMPUTER AND VIDEO GAMES?

59% of Canadians are gamers

33 YEARS OLD

gamer: a person who has played co

CANADIANS, BY AGE, WHO HAVE PLAYED A VIDEO GAME IN THE PAST 4 WEEKS



Source: NPD Group's 2010 Understanding the Canadian Gamer

Novice → Virtuoso

10,000 hours

Average number of hours spent video gaming by age 21

~ 10,000 hours

GAMIFICATION

~ THE USE GAMING PRINCIPLES AND MECHANICS TO ENHANCE NON-GAME CONTEXTS ~

Low Motivation Task

Game mechanic(s)

PROFIT

Quests
of Skellytore
Overdue!
Get inbox down to zero
300
Meet with Gimli in accounts
200
Produce this months newsletter
200
+ Tues 3 August
Update resume
150
Arrange cycling holiday in Mordor.
150
Quests
Profile
Loot
Options

Quests
of Skellytore
Level UP!

Quests
of Chet Meat
Found Loot!

The Profile
of Skellytore
Strength:
45
Stamina:
1
Intellect:
0
Social:
0
Spirit:
0
Level:
4
Marginally Decomposed Undead Minion
Quests
Profile
Loot
Options

Gamification Techniques

- achievements / badges
- levels
- leaderboards
- progress bars
- upgradeable avatars
- virtual currency
- points
- gifting
- trophies

Pointification Techniques

- ❑ Achievements / Badges
- ❑ Levels
- ❑ Leaderboards
- ❑ Progress Bars
- ❑ Upgradeable Avatars
- ❑ Virtual Currency
- ❑ Points
- ❑ Gifting
- ❑ Trophies

Extrinsic Rewards

Extrinsic Rewards

Motivators that are external to the individual (Money, Grades, Points)

Intrinsic Rewards

Motivators that are internal to the individual (Competence, Autonomy, Relatedness,)

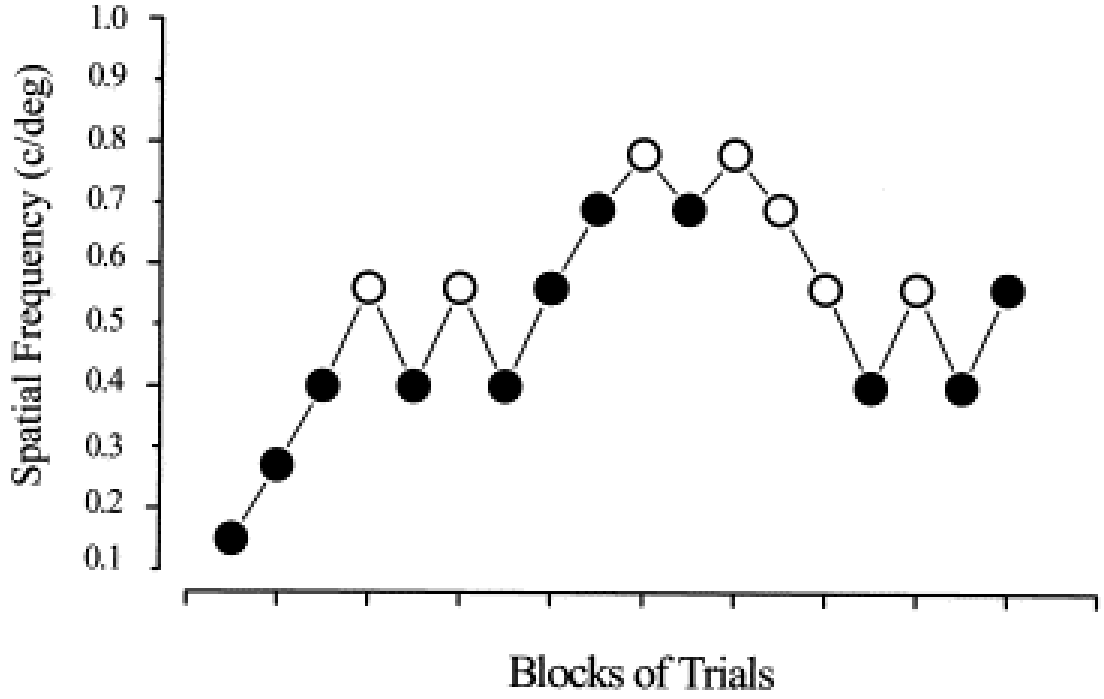
Intrinsic Rewards > Extrinsic Rewards

Competence
• Sense of Efficacy
• Progressive Challenge
Autonomy
• Volition (power to choose)
• Personal Agency
Relatedness
• Social Connectedness
• Interpersonal Bonding

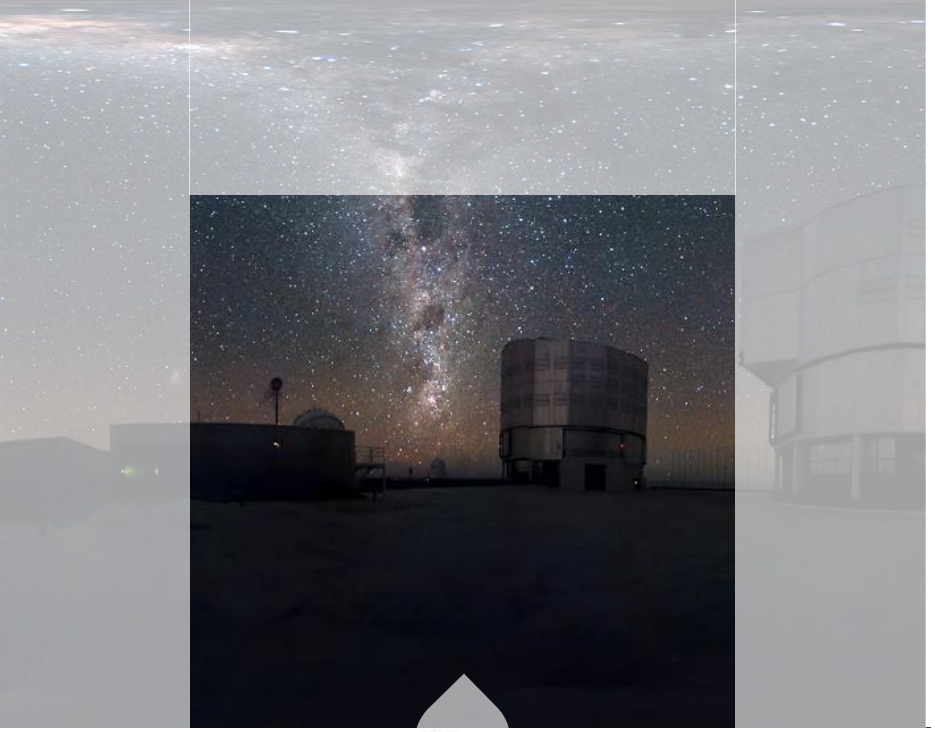
Blissful Productivity

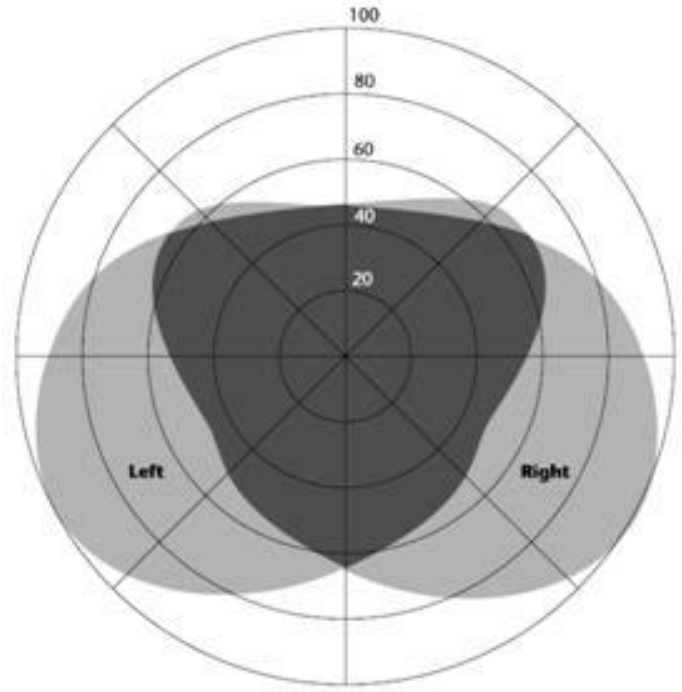
we are never so happy as when we are doing hard but meaningful work

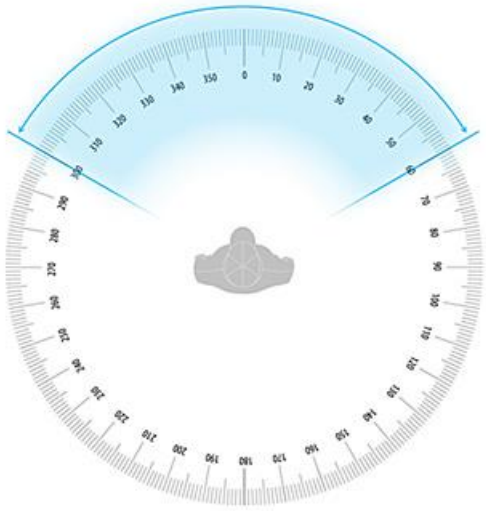
- Quests / Missions
- Online Feed back
- Dynamic Difficulties



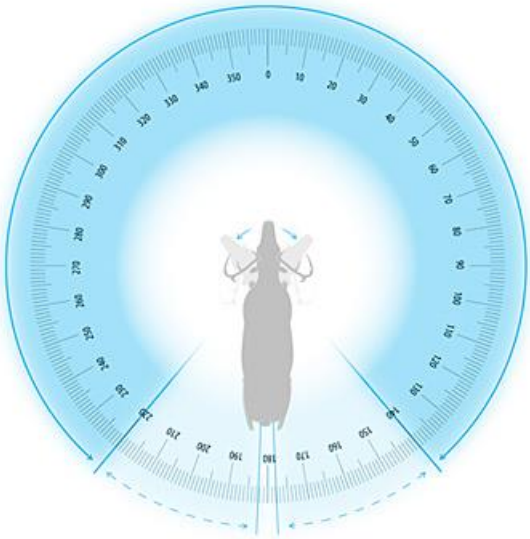
Video Games as Training Platforms







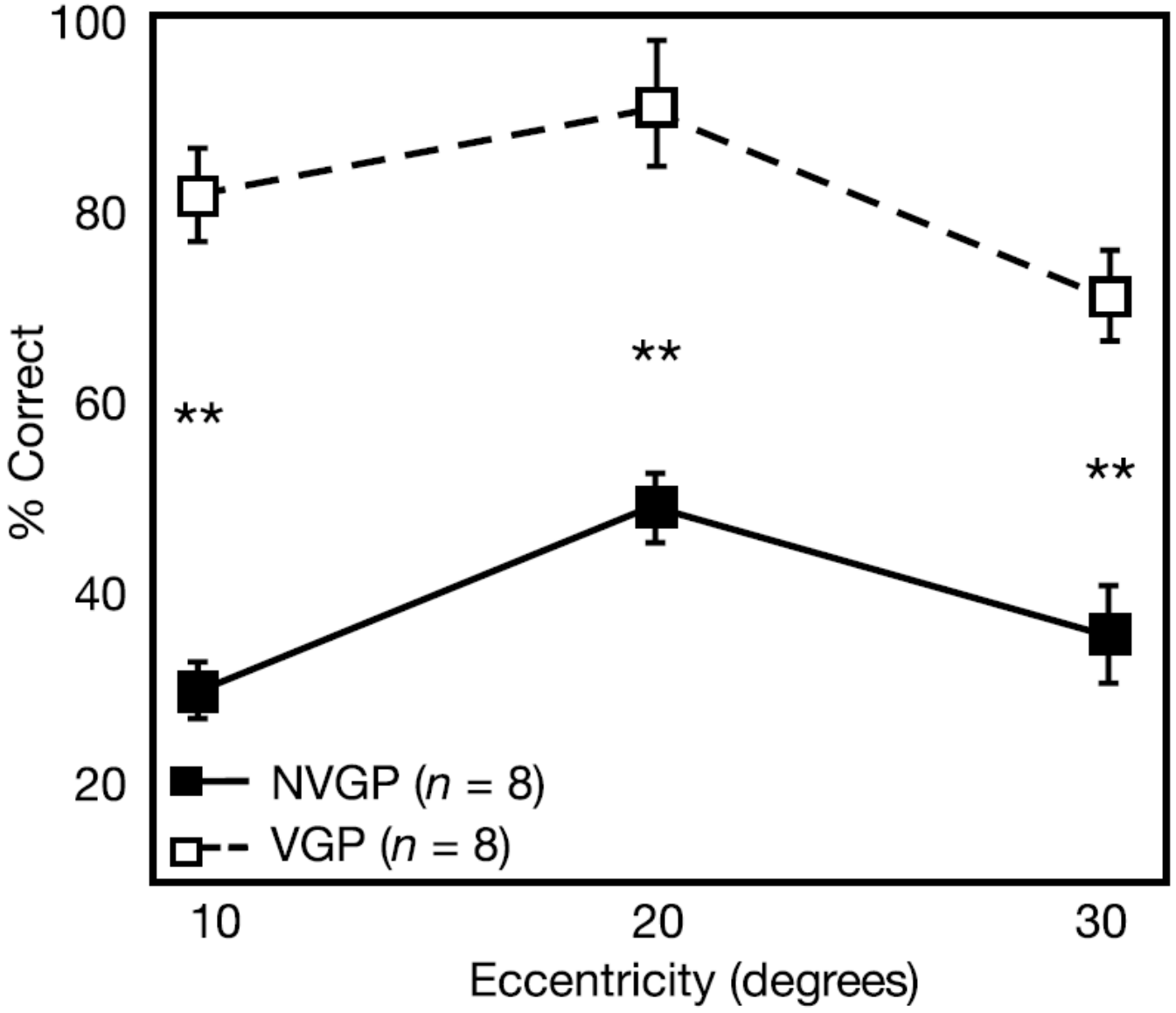
120°



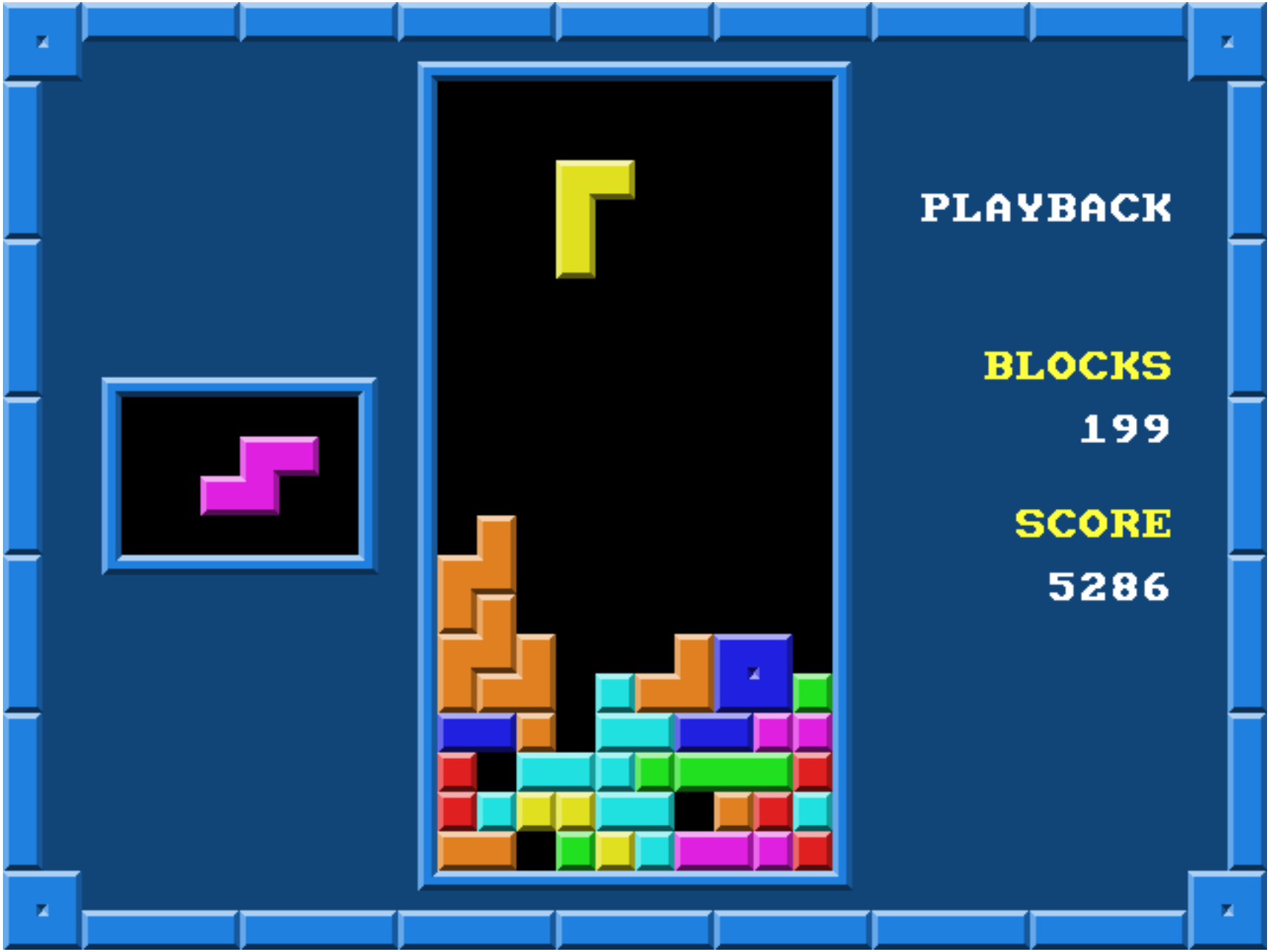
280°

http://www.youtube.com/watch?feature=player_embedded&v=vJG698U2Mvo

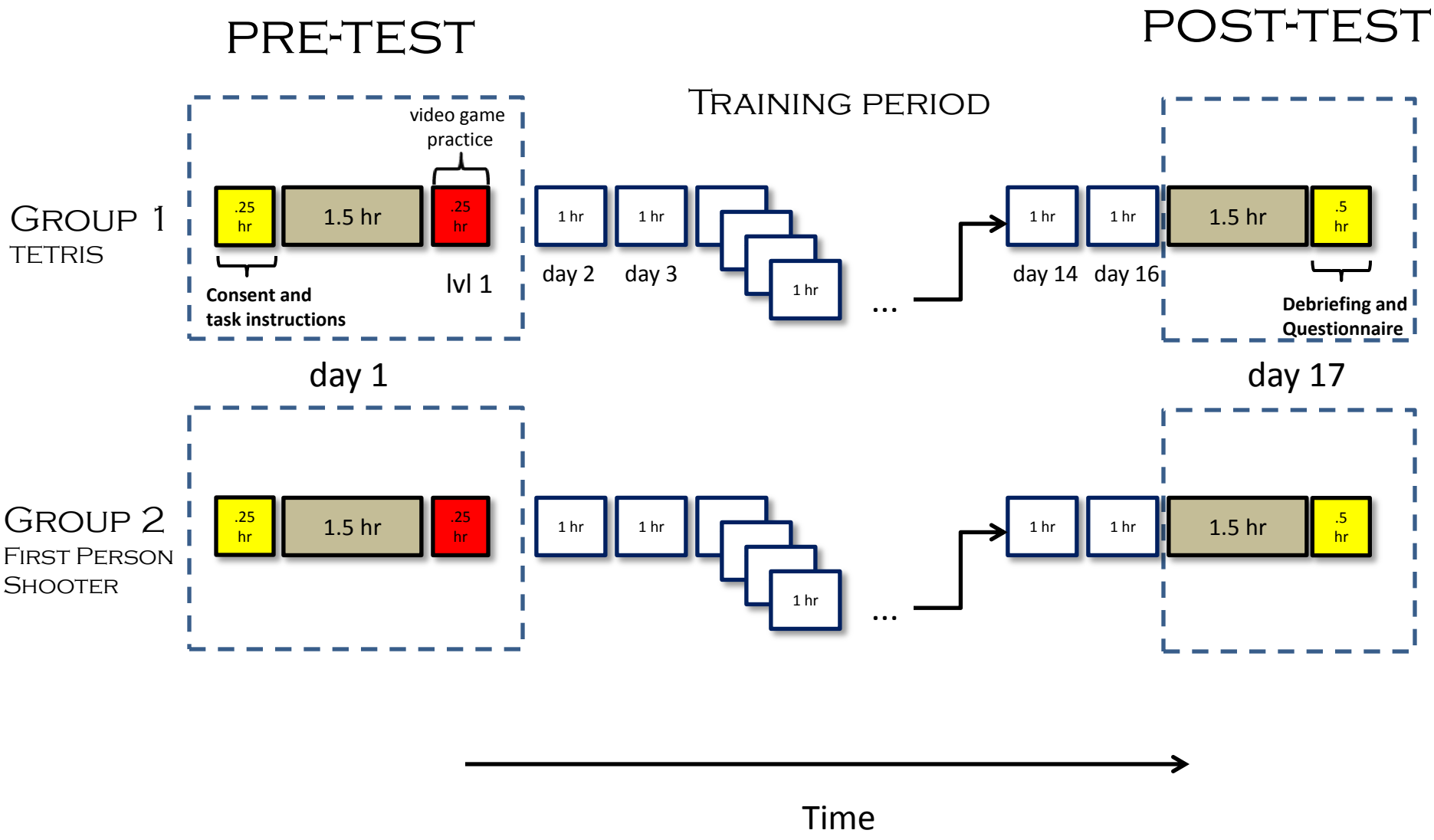
http://www2.psych.ubc.ca/~rensink/flicker/download/index.html

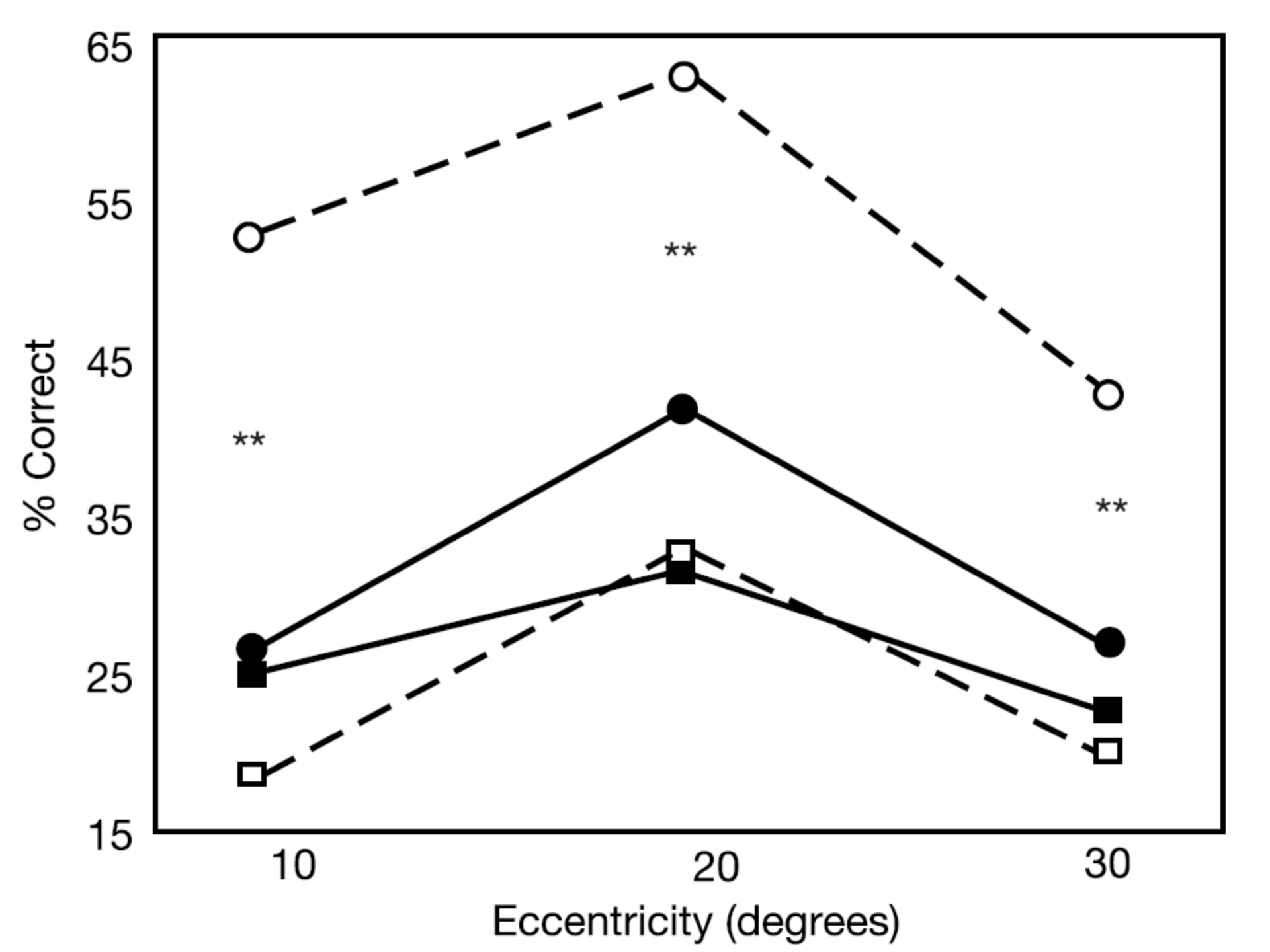


Video game players out perform non-players on measures of visual processing

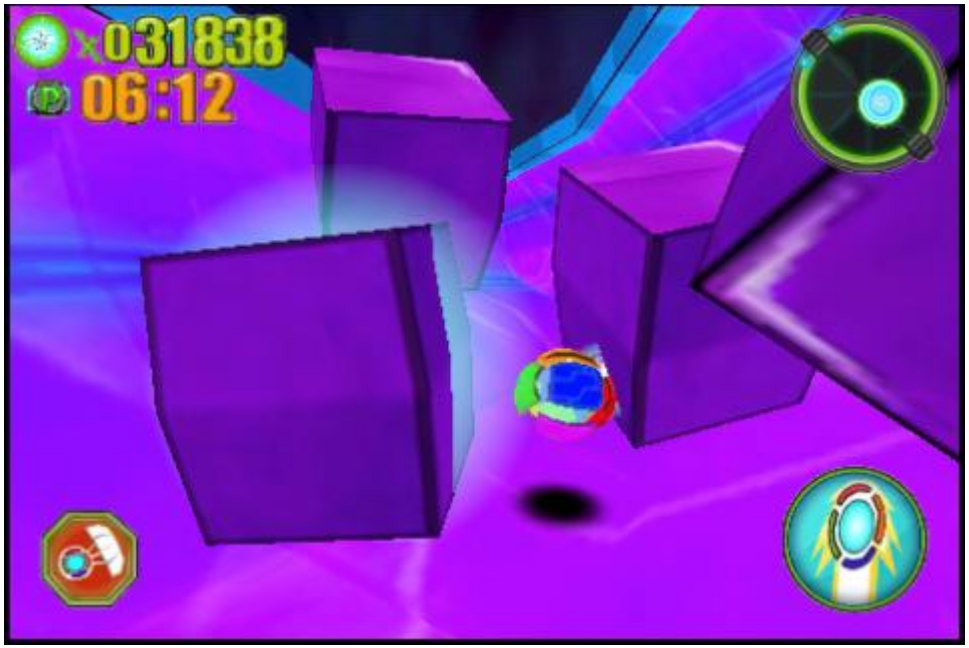

PLAYBACK
BLOCKS
199
SCORE
5286

NE
31
/372
Gx6

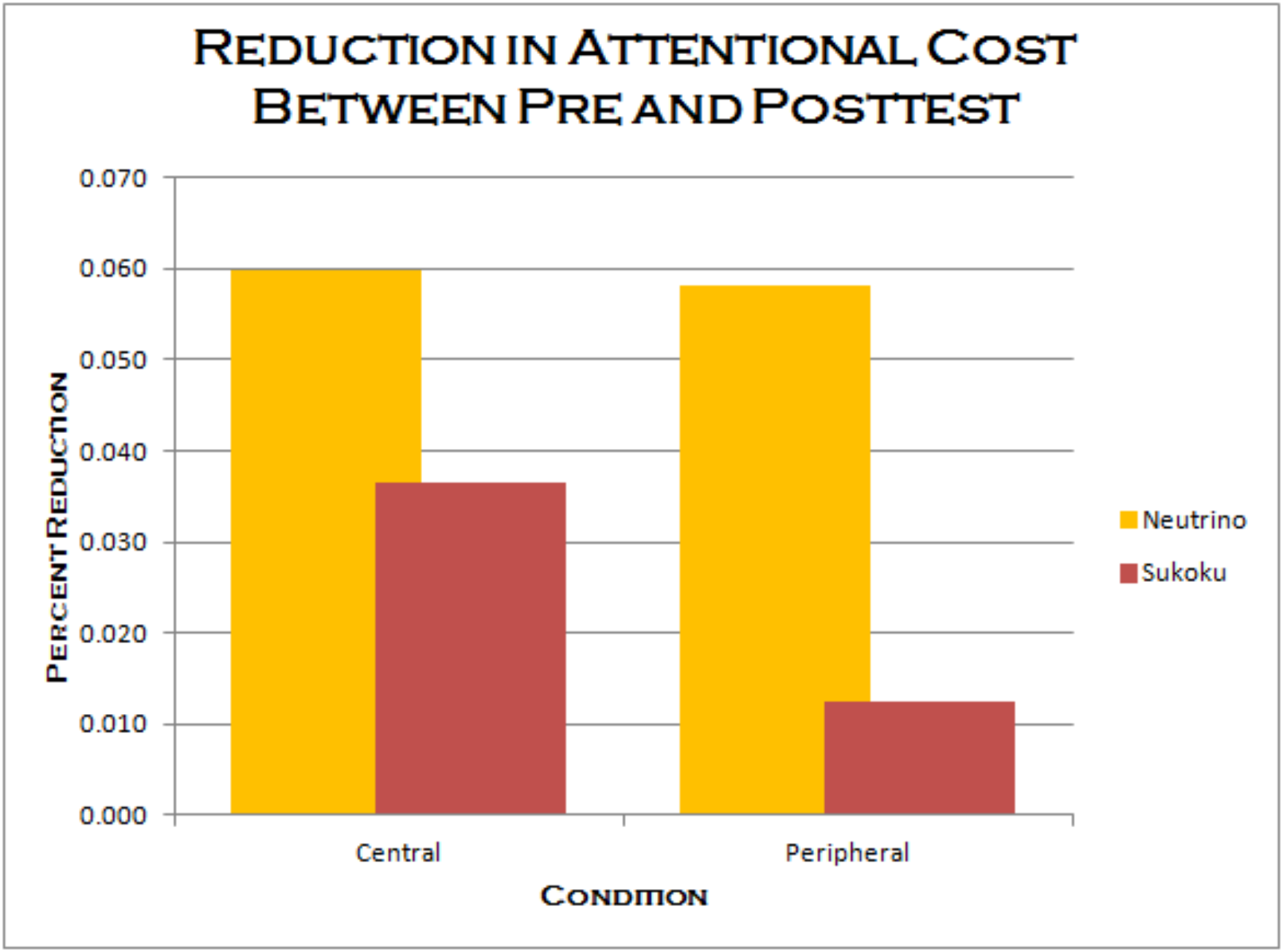

PRE-TEST
POST-TEST
TRAINING PERIOD
GROUP 1
TETRIS
video game practice
.25 hr
1.5 hr
.25 hr
Consent and task instructions
lvl 1
1 hr
1 hr
1 hr
day 2
day 3
...
1 hr
1 hr
day 14
day 16
1.5 hr
.5 hr
Debriefing and Questionnaire
day 1
day 17
GROUP 2
FIRST PERSON SHOOTER
.25 hr
1.5 hr
.25 hr
1 hr
1 hr
1 hr
...
1 hr
1 hr
1.5 hr
.5 hr
Time

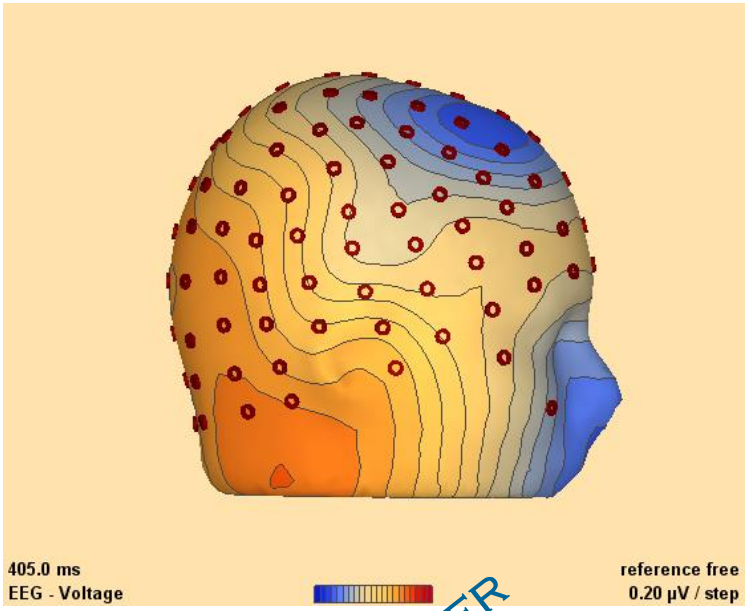

65
55
45
35
25
15
% Correct
**
**
**
10
20
30
Eccentricity (degrees)

Neutrino
and the
QUANTUM
PARADOX
x031838
06:12
x010957
02:52
BOOST

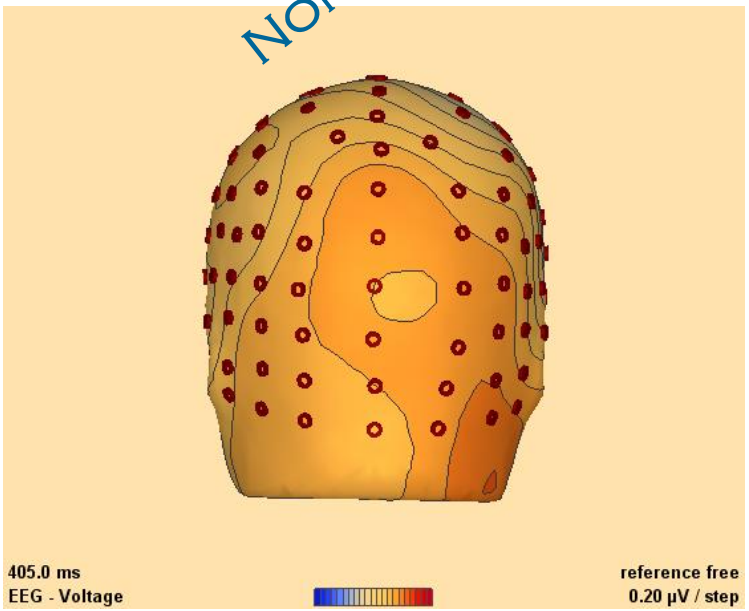

x031838
06:12

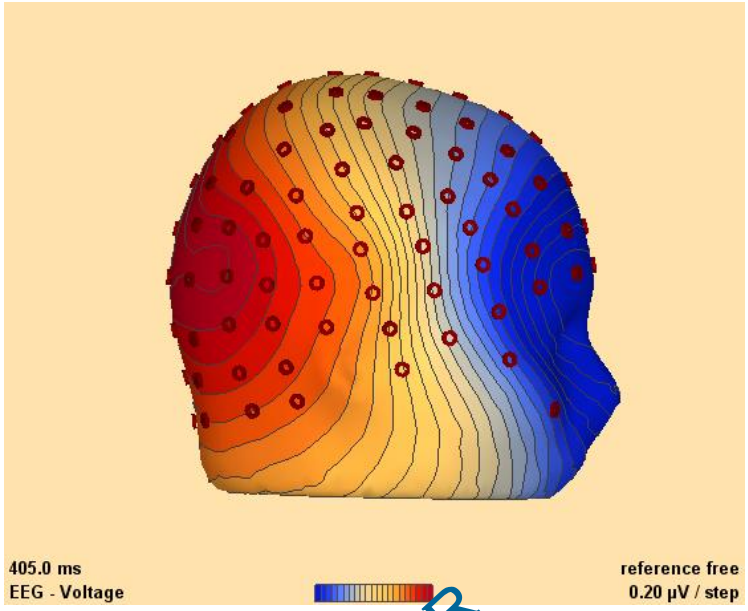
Menu
?
00:02


Reduction in Attentional Cost Between Pre and Posttest
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
Percent Reduction
Central
Peripheral
Condition
Neutrino
Sukoku

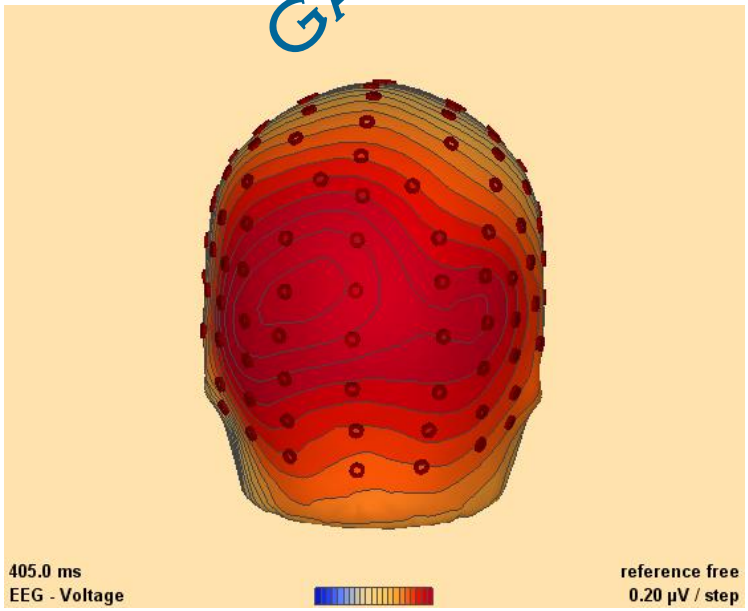


NON-GAMER



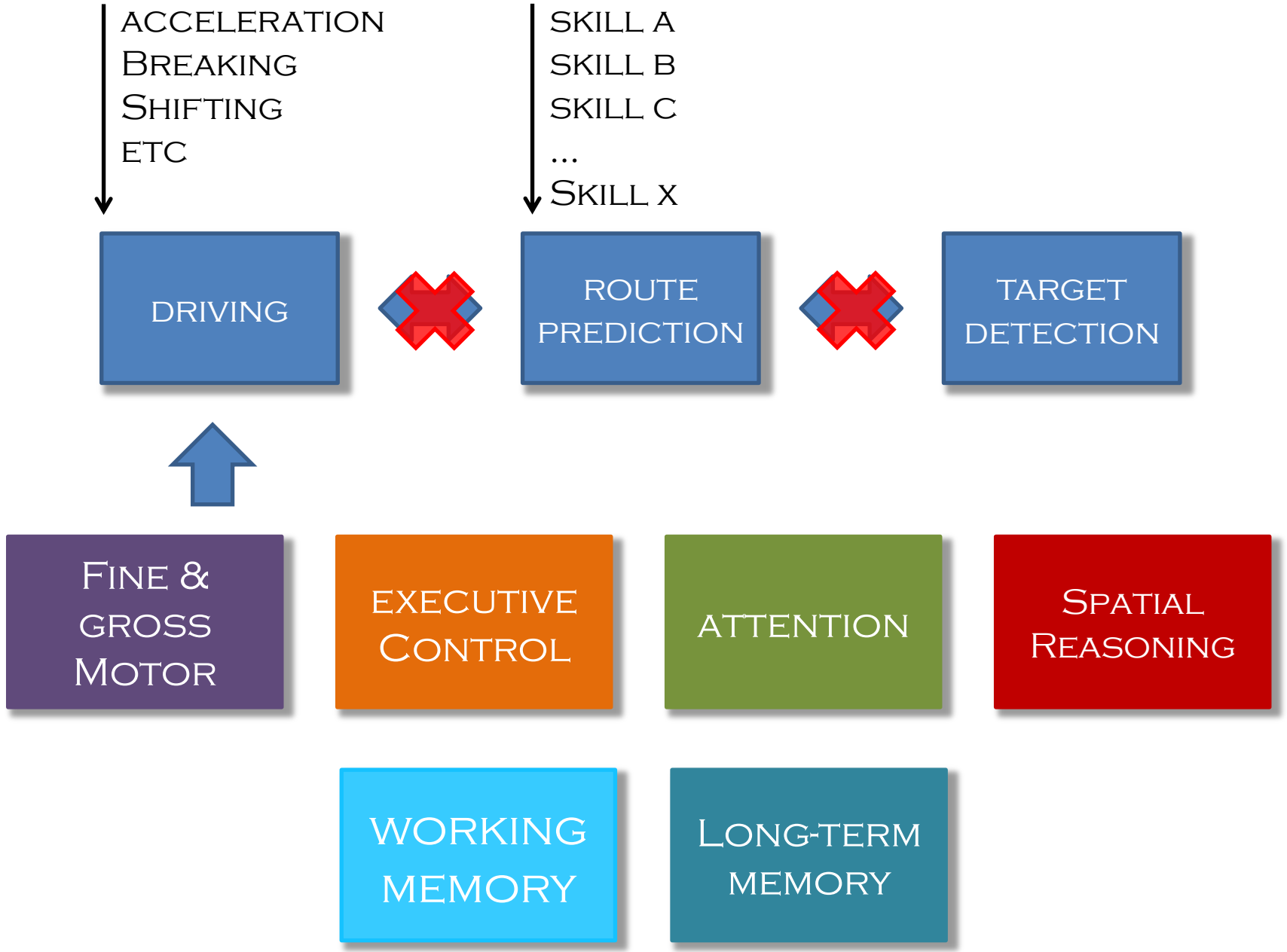


GAMER



VIDEO GAMES DEVELOP

1. Visual Attention
2. Spatial Reasoning
3. Motor Control
4. Executive Control
5. Problem Solving
6. Memory ???


ACCELERATION
BREAKING
SHIFTING
ETC
SKILL A
SKILL B
SKILL C
...
SKILL X
DRIVING
ROUTE PREDICTION
TARGET DETECTION
FINE & GROSS MOTOR
EXECUTIVE CONTROL
ATTENTION
SPATIAL REASONING
WORKING MEMORY
LONG-TERM MEMORY

TASK SPECIFIC TRAINING

GENERAL COGNITIVE DEVELOPMENT

Not all games are created equal

- Action Games work well for visual processing
- Interactive puzzles build spatial reasoning
- Working on defining what games features influence various forms of development

On the Horizon

Affordable Virtual realty and Simulators

Online biometric performance assessment and feedback

Take Home Messeges

- Principles of play can be a valuable resources when looking to motivate learners
- Game mechanics and games can be used to increase the size of your training toolbox
- Off-the-shelf video games are effective at teaching specific skills and developing broad cognitive abilities

Thank you