

Breakfastclub

How Personality Traits effect attention and happiness in a simulated classroom

by Manuel Pasieka

Master en Inteligencia Artificial

Content

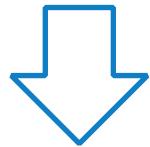
- ▶ Introduction
- ▶ Objectives
- ▶ State of the Art
- ▶ Proposed solution and Implementation
- ▶ Results and Conclusion
- ▶ Questions

Introduction

How different personalities effect
classroom attention and happiness?

Introduction

How different personalities effect
classroom attention and happiness?



Build a Simulation of a virtual
classroom and study different
personality profiles.

Objetivos

General Objectives

- ✓ Develop a multi agent based simulation of a virtual classroom
- ✓ Base Agent behavior on personality trait model
- ✓ Study different personality profiles

Particular Objectives

- ✓ Develop a deterministic closed loop simulation using Unity3d
- ✓ The simulation software and the specific simulation should be configurable

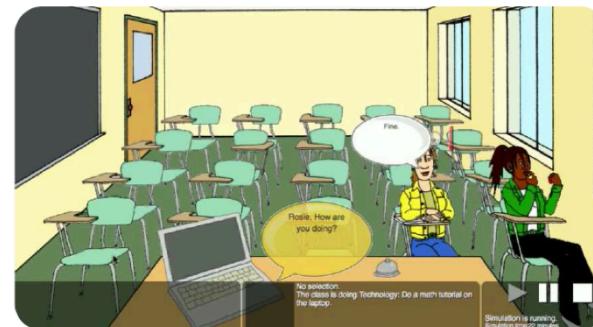
State of the Art

Commercial software exists that fails to be

- Open Source
- Agent based models
- Flexible
- Reproducible
- Data Analysis

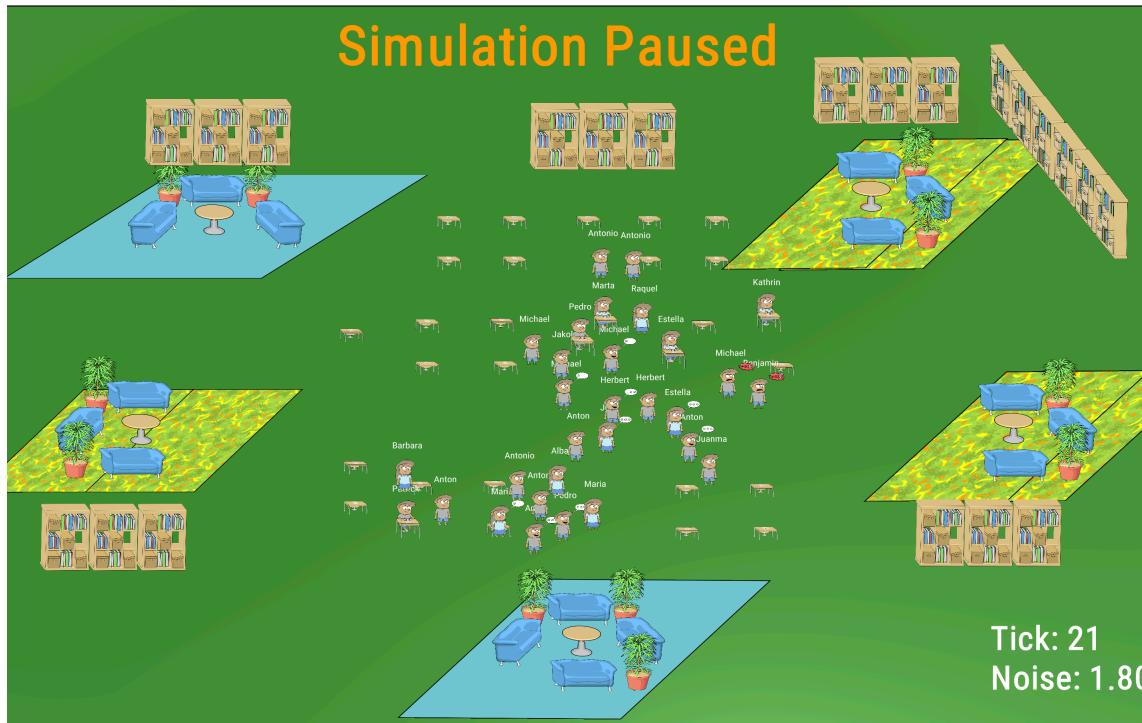


Teach Live



SimSchool

Breakfastclub



- ✓ Unity3d based deterministic closed loop simulation
- ✓ Base Agent behavior is based on the big five personality model
- ✓ Simulation and Analysis are automatized

Breakfastclub

- Agent based Models
- Big Five Personality Model
- Simulation: Agent, Logic, Analysis

Agent based model

An **agent-based model (ABM)** is a class of computational models for simulating the actions and interactions of autonomous agents (both individual or collective entities such as organizations or groups) with a view to assessing their effects on the system as a whole.

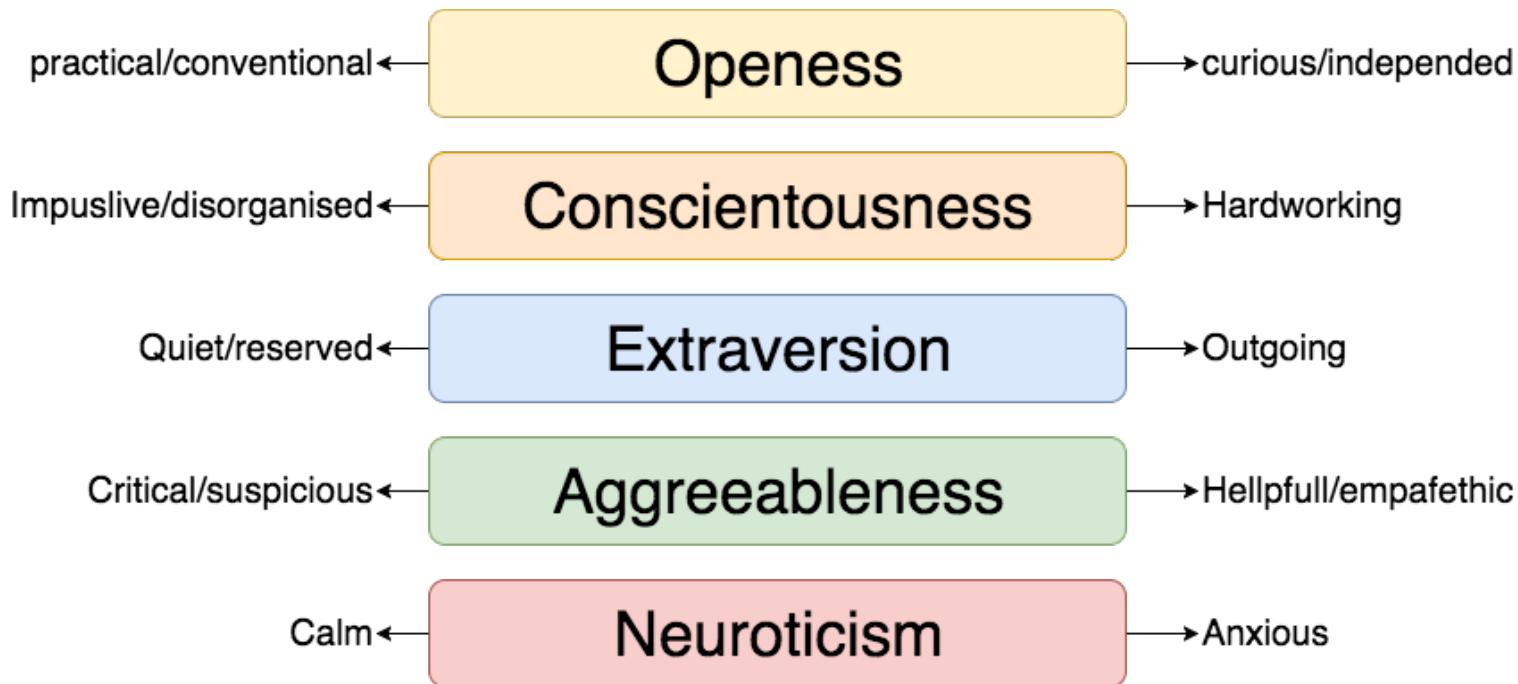
- Wikipedia

Applied in various fields

- Biology (e.g. epidemics)
- Economics (e.g. Stock Trade)
- Social Studies (e.g. Social Networks)

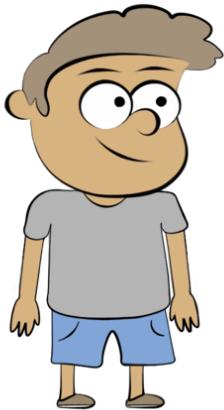
Big Five Personality Model

OCEAN or Big Five is a widely used empirical model, applied in theoretical and practical settings[1].



[1] Norman, W. T. (1963). Toward an adequate taxonomy of personality attributes. *Journal of Abnormal and Social Psychology*, 66(6), 574–583. <https://doi.org/10.1037/h0040291>

Agents



Personality

- Openness
- Conscientiousness
- Extraversion
- Agreeableness
- Neuroticism

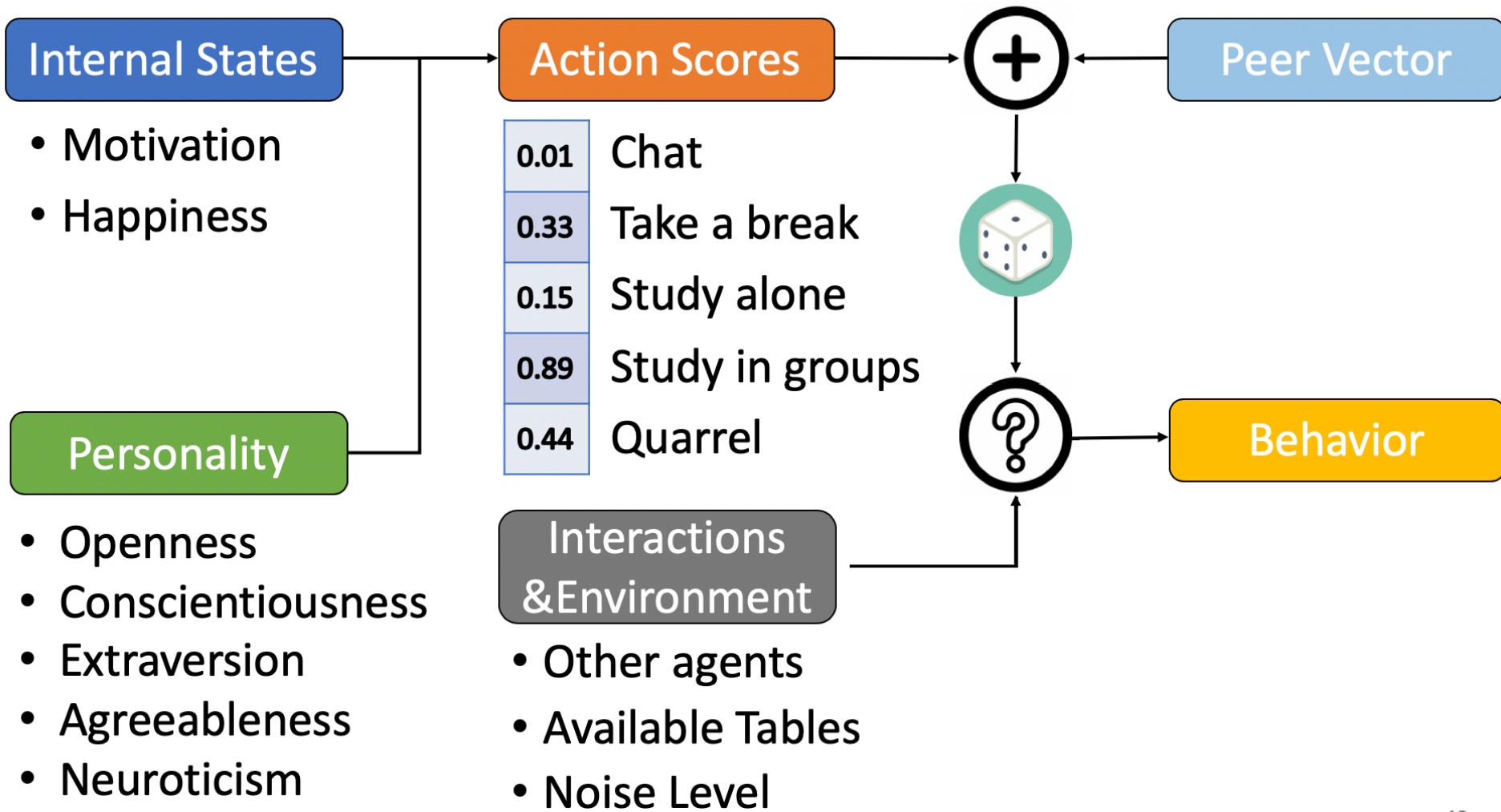
Internal States

- Motivation
- Happiness
- Attention

Behavior

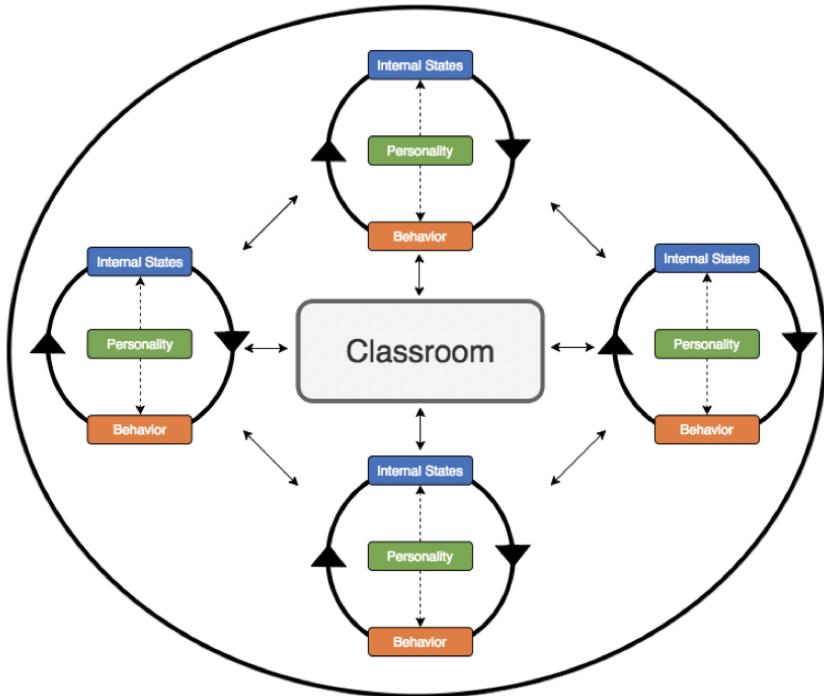
- Chat
- Take a break
- Study alone
- Study in groups
- Quarrel

Agent Logic

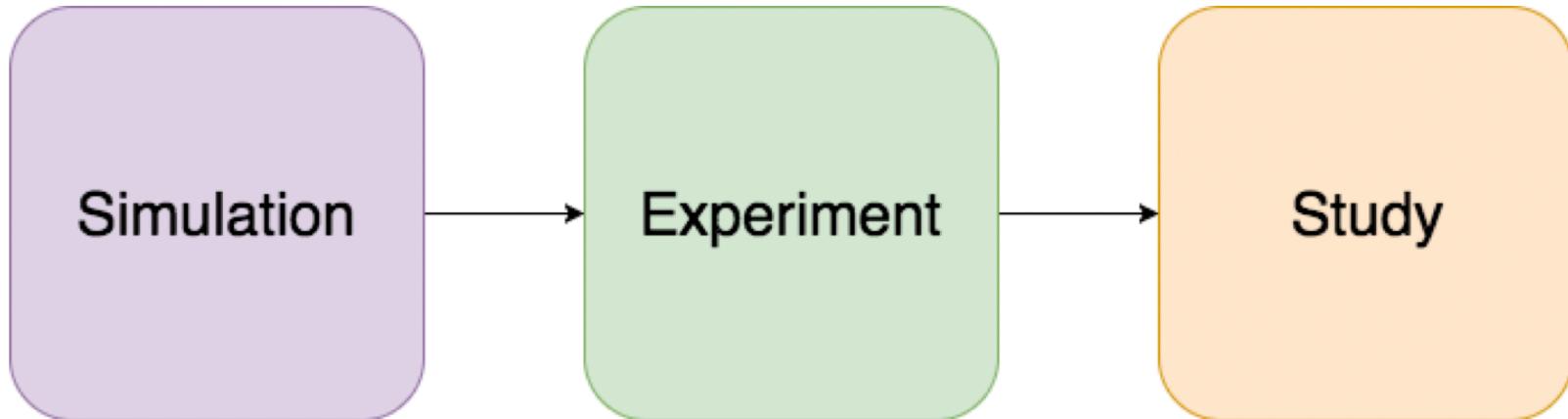


Agent and Group Dynamics

- Agents interact with each other and the environment
- Group dynamics emerge from agent interactions
- Different Agent Profiles have different Group dynamics



Execution and Data Analysis

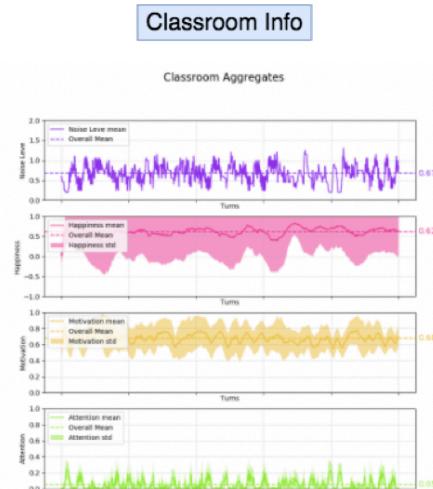
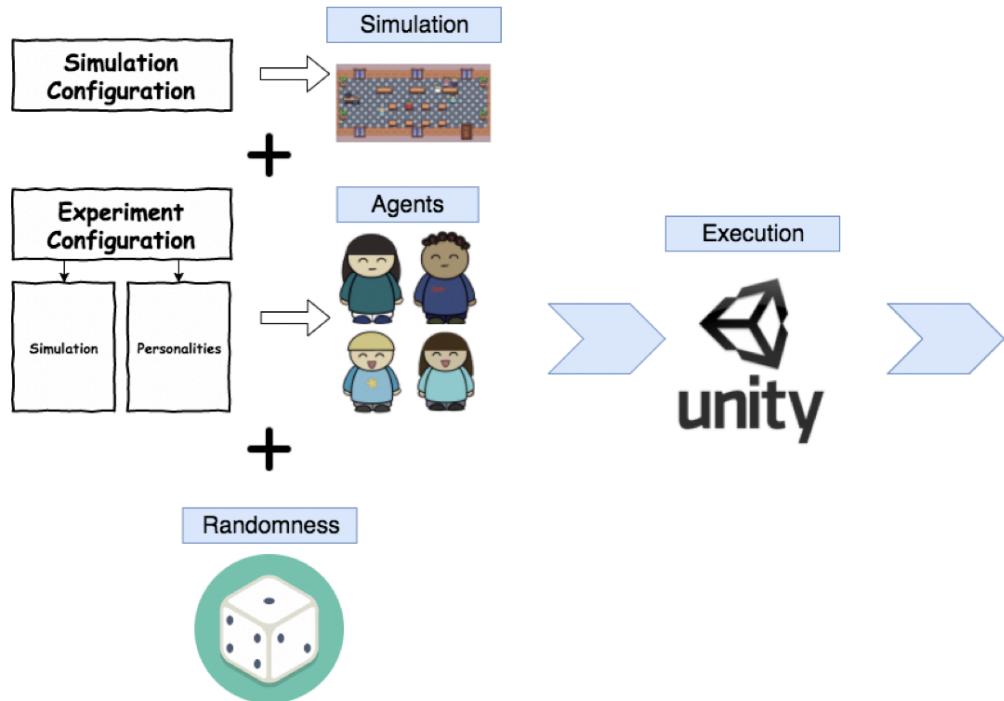


What is the behavior of
one set of agents?

What is the average
happiness and attention
of a combination of
personalities?

How do different
personality combinations
compare to each other?

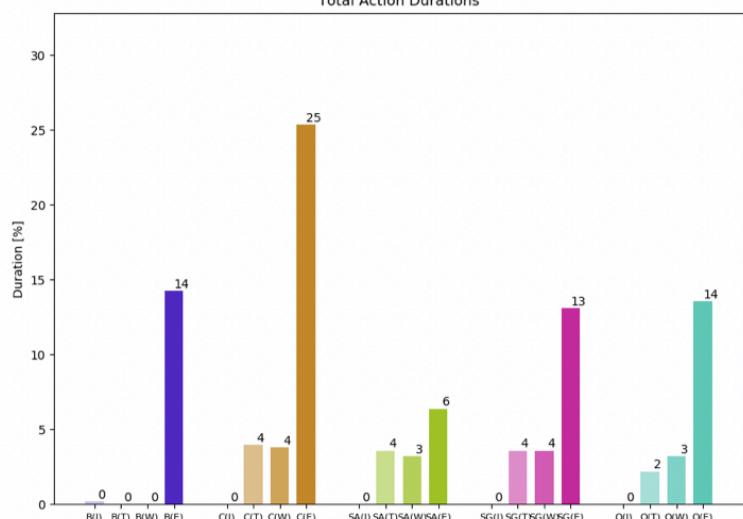
Execution and Data Analysis



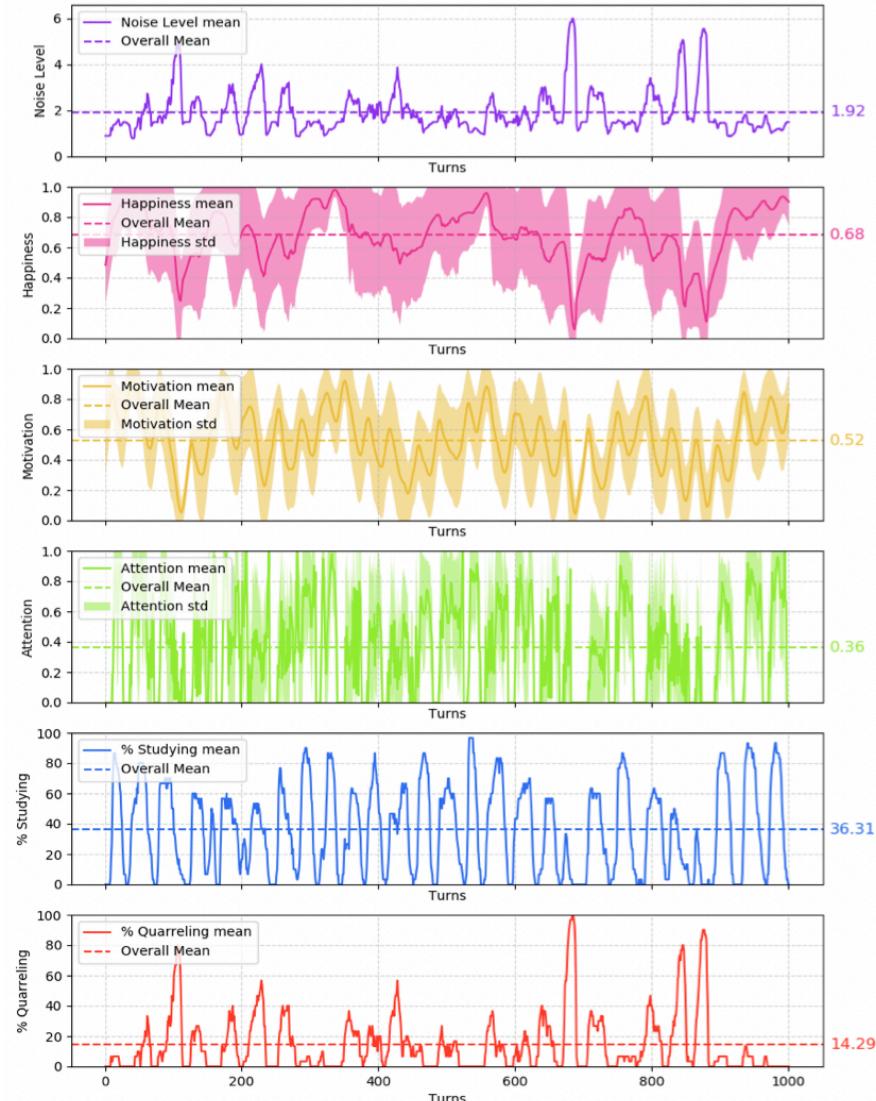
Agent Info

Normal: Openness: 0.75, Conscientiousness: 0.6, Extraversion: 0.55, Agreeableness: 0.65, Neuroticism: 0.5

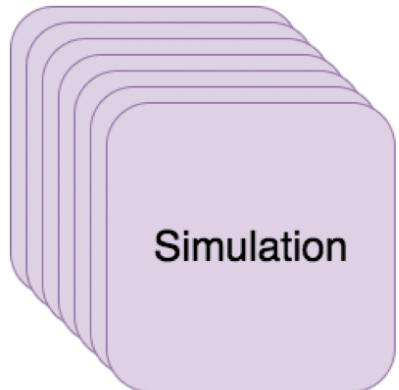
B(I)	-0.50	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B(T)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B(W)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B(E)	0.00	0.00	0.00	0.87	0.00	0.06	0.01	0.00	0.00	0.03	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00
C(I)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C(T)	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.50	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
C(W)	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C(E)	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.90	0.00	0.02	0.00	0.00	0.04	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00
S(AI)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S(AT)	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.50	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S(W)	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.09	0.00	0.00	0.00	0.06	0.06	0.00	0.00	0.00	0.00
S(AE)	0.00	0.00	0.00	0.02	0.00	0.03	0.02	0.00	0.00	0.00	0.51	0.37	0.00	0.02	0.00	0.00	0.03	0.02	0.00	0.00	0.00	0.00
SG(I)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SG(T)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
G(W)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.89	0.00	0.03	0.03	0.00	0.00	0.00
G(E)	0.00	0.00	0.00	0.03	0.00	0.04	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.14	0.76	0.00	0.02	0.00	0.00	0.00	0.00	0.00
Q(I)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Q(T)	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.55	0.00	0.00	0.00	0.00	0.00
Q(W)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.28	0.69	0.00	0.00	0.00	0.00
Q(E)	0.00	0.00	0.00	0.05	0.00	0.04	0.01	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.03	0.00	0.84	0.00	0.00	0.00
B(I)	B(T)	B(W)	B(E)	C(I)	C(T)	C(W)	C(E)	S(AI)	S(AT)	S(W)	S(AE)	SG(I)	SG(T)	SG(W)	SG(E)	Q(I)	Q(T)	Q(W)	Q(E)			



Classroom Info

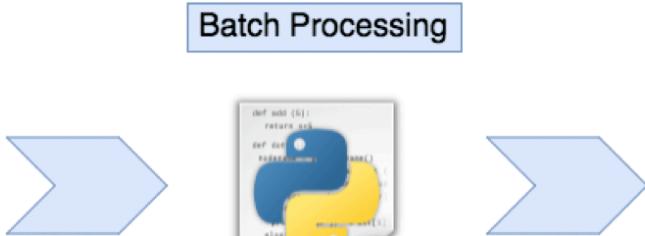


Execution and Data Analysis



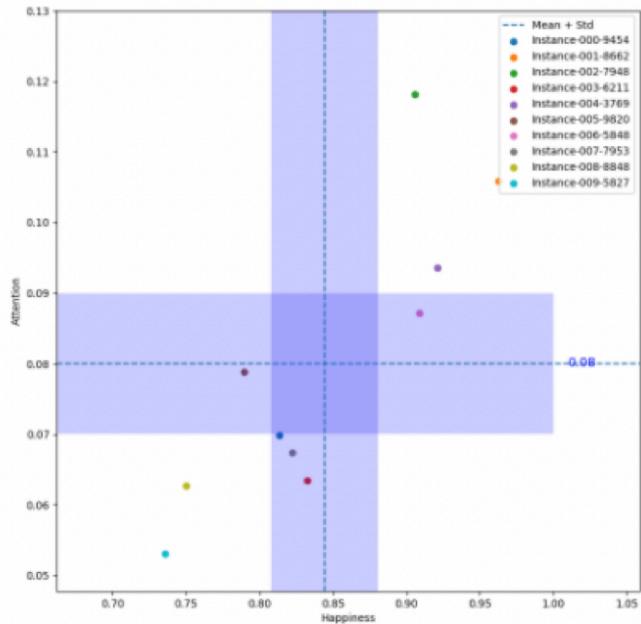
+

Randomness

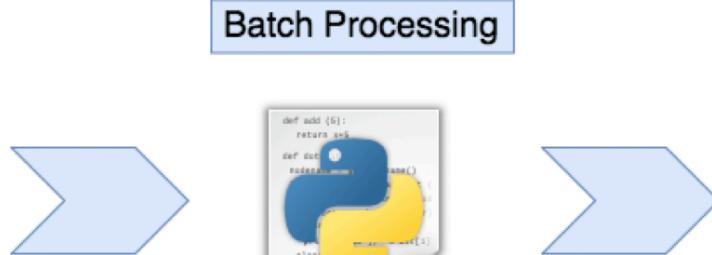
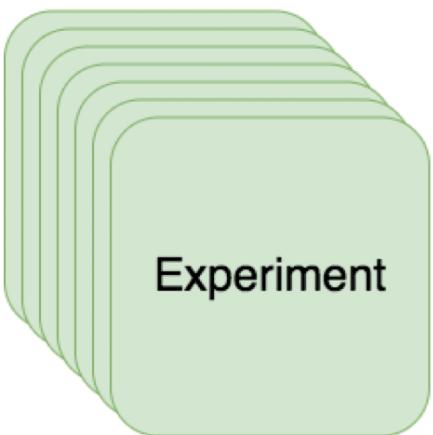


Average

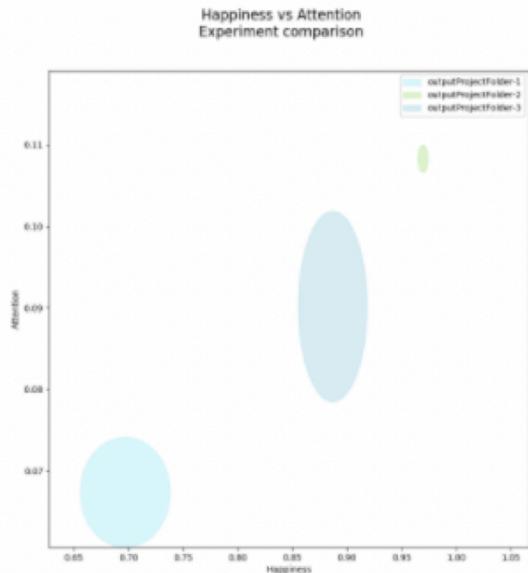
Happiness vs Attention
outputProjectFolder



Execution and Data Analysis



Group comparison



Experiment and Study

Personality Trait Profiles

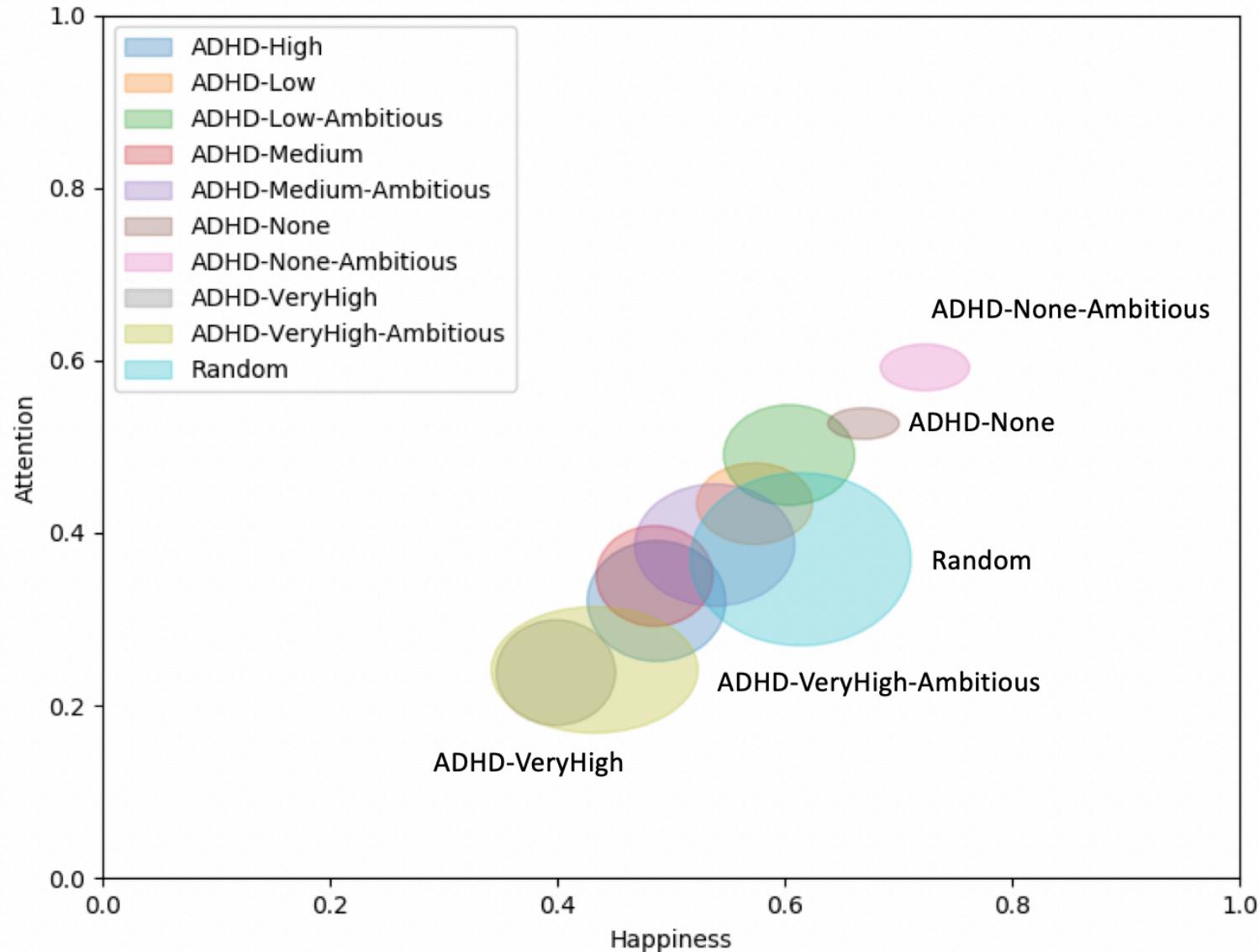
Student Type	O	C	E	A	N
ADHD [1]	RND	0.20	RND	0.20	0.80
Normal	0.75	0.60	0.55	0.65	0.50
Ambitious	0.80	0.80	RND	0.80	0.20
Random	RND	RND	RND	RND	RND

Classroom Profiles

Group	ADHD	Normal	Ambitious	Random
ADHD-Low	7%	93%	0%	0%
ADHD-Medium	17%	83%	0%	0%
ADHD-High	33%	66%	0%	0%
ADHD-VeryHigh	50%	50%	0%	0%
ADHD-None	0%	100%	0%	0%
ADHD-None-Ambitious	0%	50%	50%	0%
ADHD-Low-Ambitious	7%	46%	46%	0%
ADHD-Medium-Ambitious	20%	40%	40%	0%
ADHD-VeryHigh-Ambitious	50%	0%	50%	0%
Random	0%	0%	0%	100%

[1] Nigg, J. T., Blaskey, L. G., Huang-Pollock, C. L., Hinshaw, S. P., John, O. P., Willcutt, E. G., & Pennington, B. (2002). Big five dimensions and ADHD symptoms: Links between personality traits and clinical symptoms. *Journal of Personality and Social Psychology*, 83(2), 451–469.
<https://doi.org/10.1037/0022-3514.83.2.451>

Results



Conclusion

- Open Source Simulation
<https://github.com/mapa17/breakfastclub>
- Consistent group difference between personality profiles

Thank you

Prof. Dr. Michael Kickmeier-Rust
(Supervisor)



Prof. Elena Verdu Perez
(Supervisor)



Felix Meissl
(Art Work)



Quistiones



unir
LA UNIVERSIDAD
EN INTERNET

www.unir.net