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Supervisors: Maarten Lamers & Christoph Kulgemeyer  
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### ***Exploring Explanatory Techniques and Transparency of Popular Science Videos on YouTube***

After a science video on Youtube with wrong or biased information becomes widespread, a simple retraction or removal of videos might not have the same impact or reach as the first one, as the ideas and misconceptions about the theme are already spread. The simplification or explanation techniques are ways of reducing the content, where variables related to education and entertainment need to be balanced. Our main objective is to avoid some pitfalls when communicating scientific-related subjects and understand if the content creators are open about their sources and their strategies for the simplification of the science-related topics. The use of qualitative methods to interview Youtube content creators allowed us to include their perspectives in our study. We analyzed explanatory strategies for simplification for the quantitative methods considering Video styles and Explanatory techniques measured by Category Points (CPs). In addition, we addressed the transparency about sources in the science landscape based on the source material's origin. As a result of the integration of both data sources, the outcomes showed that the great majority of video styles were Voice over Visuals and Vlogs, which define how most of the popular science videos are currently presented on YouTube. It was also noted among the videos analyzed that 49% of them did not present a primary source of information. Therefore, both the qualitative and quantitative methods were complementary in presenting a more objective picture of the science video landscape.

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Student: **Yannick Nales**  
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### **Deciding the fate of the world on a daily basis: Comparing rationality in decision making between RPG gamers and non-gamers**

In Role Playing Games players are constantly presented with big moral dilemmas and difficult choices. Based on earlier research it could be possible that this improves certain decision-making skills in RPG players compared to non-gamers. This study looks into what differentiates RPG players from gamers who do not play RPGs and people who play no games at all. We also look at what makes people rational, and how certain aspects of RPGs might improve rationality for RPG players. To do this we gathered 62 participants through online forums and social circles and provided them with a survey in which they were tasked with a rationality test. By analyzing the test results and comparing the rationality scores of RPG players and non-RPG players we found that there is no significant correlation between playing RPGs and a high rationality score. We did find that there is a significant correlation between a high rationality score and high self-evaluation of rationality. The results imply that playing RPGs does not noticeably improve rationality.

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Student: **Edith Järv**  
Supervisors: Iris Yocarini & Marcello Gómez Maureira  
Peers: Romy Koch & Giulio Barbero

### **All work and no play makes Jack an inefficient employee – a study on video games' effects on sustained attention**

Taking small breaks throughout long work hours is proven to be beneficial to our attention spans and work efficiency. How we choose to fill that break time however can have a big effect on our

performance. This research aims to measure whether video games, which have proven to induce flow and train our minds in numerous ways, can help boost sustained attention and therefore improve work performance if used as part of so-called 'microbreaks'. A total of 36 participants took part in an online experiment measuring their performance in sustained attention tests before and after playing video games compared to browsing 'BuzzFeed Quizzes', an entertainment website. Preliminary results of the study show that no significant improvements were measured in terms of attention, indicating that the potential of video games to induce flow does not translate to a playing a beneficial role in micro-breaks. Future research is needed to investigate how and when video games should be applied to maximise the potential benefits.

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Student: **Shanique Roberts**  
Supervisors: Bas Haring & Kim Stroet  
Peers: Tahra Medani Simons & Abigail Vlijt

### **Secret student: Investigating Eros in Teacher's Pet Relationships**

Teacher's pets are students with whom teachers have a special relationship characterized by genuine love, admiration, attraction, and affection. I wanted to investigate if the teacher's pet relationship could be seen as a romantic relationship. In an ideal situation, you would do that in a classroom, but due to the Covid-19 pandemic, it was not an option. As a result, I decided to shift my focus to films with similar relationships. I viewed Matilda, The Man Who Knew Infinity, Whiplash, Mona Lisa Smile, The Piano Teacher, Mean Girls, and Twilight as examples of student-teacher films. To detect these interactions, a framework with Eros characteristics such as attraction, threshold, and substitution was created. My research found that (I) the teacher-pet relationship shares many characteristics with a love relationship, and (II) classroom behavior may be analyzed through film using scenarios created in school settings.

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Student: **Nicole de Groot**  
Supervisors: Felienne Hermans & Ross Towns  
Peers: Alaaeddin Swidan & Suzan Verberne

### **"What's in a chunk?": A Recall Study of Quantative Chunking in Source Code**

Chunking is "the recoding of smaller units of information into larger, familiar chunks" (Thalman et al., 2019). Several chunking studies have been done with chess (De Groot, 1946), language (Simon, 1974), and source code (McKeithen et al., 1981). These studies proved that experts have more, differently organized knowledge than beginners. McKeithen et al. conducted a recall study with code that found that beginners hold a broad variety of smaller chunks containing more natural-language elements than experts. However, as this setup and its findings are outdated, new knowledge can be gained from a conceptual replication study. In the current study, we broaden the theoretical framework, and recreate a short-term recall study inspired by McKeithen et al. in a modern setting. Using text analysis techniques, like comparative dictionaries and n-grams, we clarify the use of chunking in subjects' recalled Java code. These can show differences between the different skill level groups within the sample. With this, we try to answer the following questions: How do recall and chunking of a Java snippet differ between skill levels (beginner, intermediate, expert), and between a normal and a scrambled version? And, How can text analysis techniques be implemented on recalled source code of subjects and what can be inferred from the results? An online questionnaire is used which includes the recollection of two versions of a Java snippet (normal versus scrambled). For recollection, we use an embedded Ace editor to simulate a natural coding environment. Analyses are done by doing quantitative analysis on several variables that summarize the recall of each subject (e.g. length of answer, amount of correct concepts used, and relative overlap between subject answer and solution). Statistical analyses proved that version or expertise have no or a marginally significant effect on recall of a Java snippet. More research is necessary to determine the use of text analysis techniques on code

that is written under a time limit and thus may contain many typos and other errors that might not occur otherwise. However, analysis techniques show potential when techniques can be combined in the future to create a more complete analysis pack for source code.

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Student: **Veerle van Reisen**  
Supervisors: Maarten Lamers & Sanne de Vries  
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### **Short-term influence of physical activity on the expectation to use an exercise app**

The effects of mobile exercise applications (apps) on physical activity have often been investigated. An unexplored question is formed by turning around the variables and to investigate whether physical activity has an influence on the expectation to use mobile exercise apps. Research has shown that future exercise behaviour can be predicted by past exercise behaviour.

In an online questionnaire, participants were randomly distributed between two conditions and were instructed to do an active or inactive activity. Subsequently, three active and inactive app overviews were reviewed by the participants and assessed on different topics, including expectation to use the app.

The study shows no significant difference between condition group and expectation to use active or inactive apps. However, a significant result is found in the interaction between condition and gender regardless of the app type. This result shows that after exercising for 10 minutes at a moderate intensity level, the expectation to use an app for males decreases whereas for females it increases. These findings conclude that exercising in combination with gender do have a reverse effect on the expectation to use an app, regardless whether the app is an exercise or inactive app. Similar significant results were found in other assessment questions about willingness to use, recommend and install the app and the given rating.

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Student: **Daphne Wong A Foe**  
Supervisors: Maarten Lamers & Harvey Kort  
Peers: Chayen Henar & Glenn Calor

### **Similar or Disparate Brain Patterns? EEG Variability in Jaran Kepang Dancers**

Electroencephalography (EEG) devices have advanced in recent years such that individuals can now measure their own brain waves and patterns without having to go to a clinical research facility. This paper utilizes the EEG recording consumer device NeuroSky Mindwave Mobile 2 to explore the traditional Jaran Kepang phenomenon. Jaran Kepang is a dance-performance of Indonesian origin where the dancers go into trance and take the form of other 'beings'. This paper questions whether the dancer's brain patterns in trance are different from ours. The aim of this experimental study was to compare intrapersonal EEG variability of three Jaran Kepang dancers between their roles of "host" and "alter" during trance, but also the intrapersonal EEG records of three professional actors who act as the respective "host" and "acted-alter", and the interpersonal EEG variability between two controls. With the approval of the Ethics Review Committee and everything else in place, this study took an unfortunate turn due to the global Covid-19 pandemic. The study was instead conducted both by and on the main-researcher for graduation purposes. The results show no between-subject significant differences. However, for all participants significant within-subject results were found between baseline and the reading mind state. We hope to continue our research in the future.

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Student: **Martijn Wester**  
Supervisors: Fons Verbeek  
Peers: Lilian Toonstra & Diederik Cames van Batenburg

### **Shower behavior: the development and evaluation of an interactive persuasive shower system**

In this thesis, shower behavior is studied and an attempt is made on changing people's shower behavior with the use of persuasive technologies. A relevant topic considering increasing global ecological footprints, and shower consumption being a substantial part. Shower behavior is the origin of this consumption, yet this topic is still underexplored. This thesis forms a basis, covering three main topics: the development of an autonomous shower monitoring device for analyzing shower consumption, using interactive technology persuading its users to shower shorter by providing (immediate) feedback on their usage, and experiments conducted at three households provide first findings and a proof of concept for the system. The system proves to be successful in bringing insight into shower usage and shows promising signs of affecting it. Additionally, technical background is provided that can be valuable for development of many other microcontroller projects or research methods, such as combining wirelessness with long term battery powered real time logging, energy efficiency, and backend structure. All being still fairly unknown or undocumented territory.