CIS 489 Literature Review
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1. A brief overview of the paper and the research goals.
2. How did the authors decided to test the goal?
3. What were the results and what was learned to better the science?

Paper 1: *Independent Validation of the Player Experience Inventory: Findings from a Large Set of Video Game Players*
Link: https://dl.acm.org/doi/10.1145/3613904.3642270

1. In this study, the authors research goals focus on the use of a Player Experience Inventory (PXI) to assess the functional and psychosocial consequences of digital gameplay. The goal of the research is to not only establish the PXI but to measure a variety of constructs central to player experience.
2. The PXI uses a survey scale to measure ten different constructs, five each for the functional and psychosocial consequences of playing digital games. In addition to these constructs, the PXI measures player enjoyment externally to the survey scale as it is described as "an individual's positive response towards media technology and its content." An online study was conducted to evaluate the psychometric quality of the PXI.
3. Results showed that the PXI performs well, with common indicators of psychometric quality delivering acceptable to excellent results. Results also showed that the enjoyment items used alongside the PXI were good quality, but immersion was considered a bad construct as it could not be clearly distinguished from meaning or enjoyment.

Paper 2: *Cheat Codes as External Support for Players Navigating Fear of Failure and Self-Regulation Challenges In Digital Games*
Link: https://dl.acm.org/doi/10.1145/3613904.3642603

1. The authors of this paper study the use of cheat codes in video games during challenging situations to measure the personality trait of action-state orientation, which explains differences in self-regulation ability in response to threats of failure. The authors found that individuals with higher in-state orientation used the cheat code more frequently, which also acted as an external support. They believe that the external support mechanisms can help players in self-regulation.
2. Participants were asked to complete a trait questionnaire before being introduced to Anno 1404, a city-building video game, through a 5-minute video tutorial. They then received a printed-out sheet with detailed explanation for improving their balance, which remained available to them while they played. After 5 minutes, a pop-up informed the participants that they could use a cheat to generate money as often as they would like, but only for the duration of a minute. Participants continued to play

the game for another 10 minutes, resulting in 15 minutes total of play time. They would then receive a pop-up that the game time was over but could be extended for up to 10 minutes. Following the end of their gameplay, participants completed questionnaires on the play experience, their gaming experience, cheating in games, and demographic variables. The experiment took participants around one hour to complete.

3. Authors found that individuals higher in state orientation, who have difficulties with self-regulation, tend to use cheat codes more often compared to individuals higher in action orientation who used cheat codes less often. They also found that the use of cheat codes does not have negative consequences on player performance and experience but rather that the opposite may be true by offering a more relaxed gaming experience. The study demonstrated the use of the self-regulation theory and how it can be applied to games research as well as HCI research.

Paper 3: *Examining the Use of VR as a Study Aid for University Students with ADHD*
Link: https://dl.acm.org/doi/10.1145/3613904.3643021

1. ADHD is a neurodevelopmental condition which affects many people in the areas of attention and impulsivity. The authors of this study focus closer on university students who struggle with ADHD and how the potential use of Virtual Reality (VR) technology may be able to improve performance.

2. The procedure began by screening participants using the Barkley Adult ADHD Rating Scale-IV (BAARS) and the Barkley Deficits in Executive Functioning Scale (BDEFS) which were administered online. Participants also completed a demographics questionnaire which related to prior mental health diagnoses, epilepsy, seizure, and motion sickness that could affect their well-being while using VR technology. After passing screening, participants completed three questionnaires assessing their typical levels of concentration, effort/efficiency, and motivation when completing homework and studying which contained seven items using a four-point Likert scale. Participants would then be sent an email containing instructions about the tasks they would complete during VR sessions before being invited to the laboratory. Participants would work on their tasks which included academic activities like homework or studying in VR for 50 minutes. After the work session, participants were asked to fill out three questionnaires on concentration, motivation, and effort. After 12 of these VR study sessions participants were requested to complete a follow-up assessment using the (BAARS). Not all participants completed 12 sessions and were requested to complete the follow-up assessment following their final session. Authors then invited participants to participate in a final interview which lasted 45 minutes.

3. The authors found that the use of VR effectively reduced external and personal distractions and significantly enhanced concentration. The study focuses on the ideal duration that VR should be used but recognizes that more research is needed to understand the overall effectiveness of the use of VR. The study suggests that VR

could be ideal in addressing issues that students with ADHD struggle with and improve their academic performance.