

GDC

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Implementing a Mental Health and Wellbeing Research Study in Games

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#GDC23



Introduction



- Joined FuturLab in March 2022 as a Generalist Unity Developer. The role was created especially for implementing a research study with Oxford University & Oxford Internet Institute into **PowerWash Simulator**
- The study was launched on 18th August 2022 as a publicly accessible Steam beta branch (for owners of the game), a month after the game's 1.0 release
- The study is due to end next week, on 28th March 2023
- Professor Andy Przybylski and his team are working on two papers with the findings
- While these papers haven't been released and the full results of the study haven't yet been publicised, the need for more integrated studies like this one is still hugely important - I'll cover this in more detail later



The role of ‘Study Implementer’

Unique Role

- Large amount of autonomy - important for fast turnaround
- Support available from the development team
- Kept up to date with release scheduling - able to react to delays and plan accordingly
- Sign-off for big decisions/changes, but otherwise left to own devices by FuturLab

In our case - A one-man army

Recommended experience for study integration

- Gameplay programming
- UI
- Design/UX
- Ideally experience of web API, or specific data-gathering systems

The Research Team

Previous papers of note

*Video game play is positively correlated with well-being (2020)*¹

- Collaboration with Electronic Arts & Nintendo of America
- Obtained participants' telemetry from gameplay and combined them with survey responses
- Focus on wellbeing, motivations and need satisfaction
- Found a positive correlation of gameplay and affective wellbeing

*Time spent playing video games is unlikely to impact well-being (2022)*²

- Disproving the misinformed belief that time spent playing games negatively affects mental health
- Worked with seven publishers
- As with the 2020 paper, used telemetry and self-reporting surveys – multiple waves of surveys with high retention
- More evidence/further studies needed to explore the wider impacts

Advancing the field with methods not previously attempted

- Collaboration with industry partners to a high standard and ensuring transparency for academic rigidity
- Providing previously undiscovered and invaluable evidence on the link between play and mental health

¹ Video game play is positively correlated with well-being - <https://royalsocietypublishing.org/doi/10.1098/rsos.202049>

² Time spent playing video games is unlikely to impact well-being - <https://royalsocietypublishing.org/doi/10.1098/rsos.220411>



**Professor Andy
Przybylski**



Dr Matti Vourre



**Dr Niklas
Johannes**



**Dr Kristoffer
Magnusson**

The Study

To our knowledge, the study that we created and launched last year was the first of its kind. For the first time a developer was hired into a game development studio with the role of performing an academic research study on the (consenting) player base, with the study actually taking place during standard gameplay.

Many behavioural studies have been conducted around videogames and their impact on players, but their reliance on self-reporting and self-diagnosing from the players' perspective meant that, while useful to get a gauge of player's perception, the data can't be relied upon as an unbiased measurement.

The study had an outstanding reception. Within the first weekend ~4700 players opted in and participated and ~72k study questions answered during gameplay.

As of last week ¹:

- ~9k opted-in participants

- ~700k study questions answered

- ~15k cosmetic rewards claimed by participants

(Just on Steam!)

¹ Data collected on 13th March 2023



Why create a 'Research Edition'?

- Furthering research in a vastly unexplored field
- Gaining an excellent insight into the behaviour of the players for the game - helps us make better informed design choices
- Survey questions that are detached from gameplay can only tell us how the participants self-diagnose their own experience
- The addition of in-game telemetry to support the questions, and to be able to accurately map the response alongside metrics for their gameplay behaviours allows researchers to draw more accurate and evidence-supported conclusions
- Providing a lot of awesome data!
- The better we understand the players, the better we can ensure our games are benefiting them



Identifying the potential risks and impact

Lack of participants

- Potential for few or no sign-ups
- First time user flow needs to be smooth and transparent
- Incentivising with progression-tracked cosmetic rewards
- Marketing push to ensure maximum sign-ups

Study reception – Negative publicity

- Chance for negative publicity as a result of the study – gameplay could be found to be harmful to wellbeing
- Problems with the implementation or conduct of the study
- Harmful for the reputation of the studio and potentially publisher
- Ensure that data collection and handling is transparent, ethical and legal
- Be clear and concise about the nature and intention of the study throughout marketing and opt-in process

Development of study interfering with main game & releases

- Planned large releases throughout development of the study (1.0, console releases and major DLC game updates)
- Strict repository practices (nothing from the study can go back into main development)

Identifying the potential risks and impact (cont.)

Loss of build parity or unstable experience

- Disconnect between gameplay experience between the two branches of the game
- Players wouldn't want to stay on Research Edition
- Pushing live new builds for major PWS game updates
- Ensuring expected restrictions are still enforced e.g. IP-licensed content is excluded (Tomb Raider and Midgar specials)
- General stability and parity for bugfixes

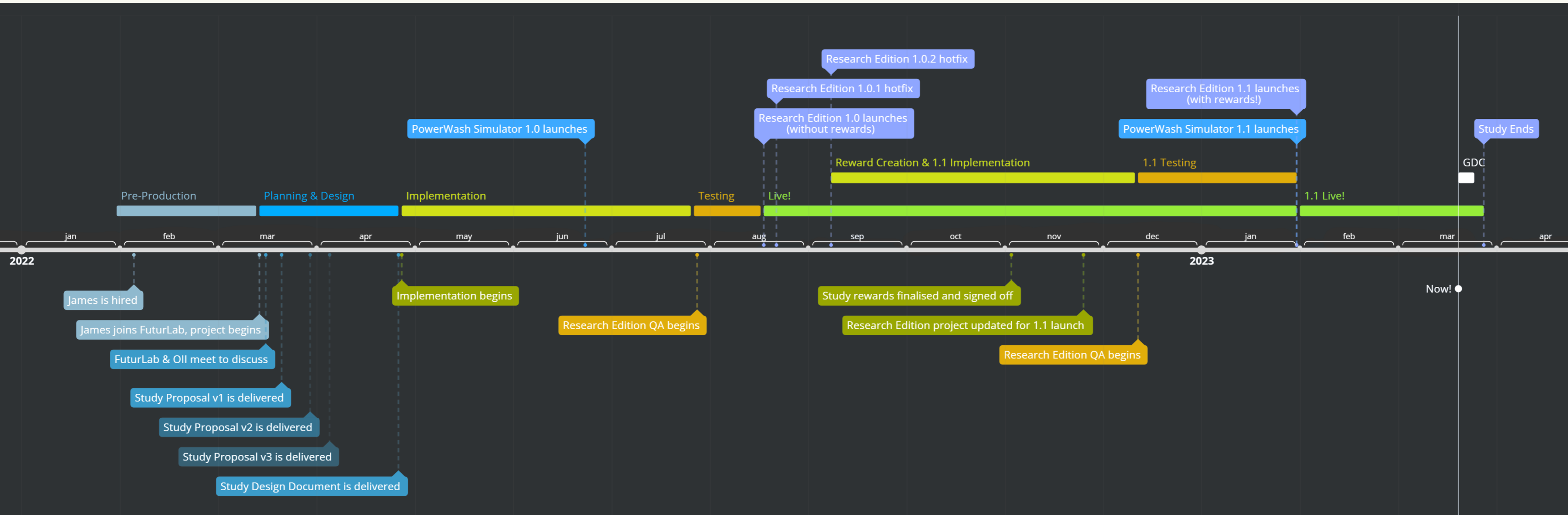
Working with Oxford Internet Institute & Oxford University

- Adhere to branding guidelines
- Thorough analysis of study design proposal before implementation to ensure the study was conducted in a responsible and ethical manner

Identifying and communicating risks to studio and publisher

- Concise design and planning before development work begins
- Ensure that all important design decisions are signed off by a core team

Research Edition Timeline



Gameplay Integration

Steam beta branch

- Separate from main game (too much risk)
- Able to keep development isolated from main game
- Ensured participants already owned the game

Asking questions during gameplay

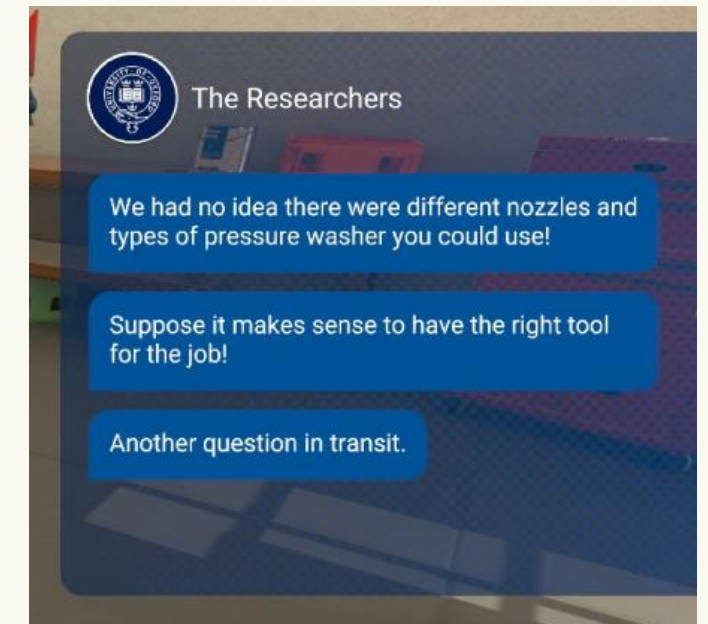
- Potentially disruptive- adding extra keybinds or taking first person camera control away
- Considered asking between levels but risk of players feeling like they had to 'speed-run' to answer questions

Convenient character dialog systems

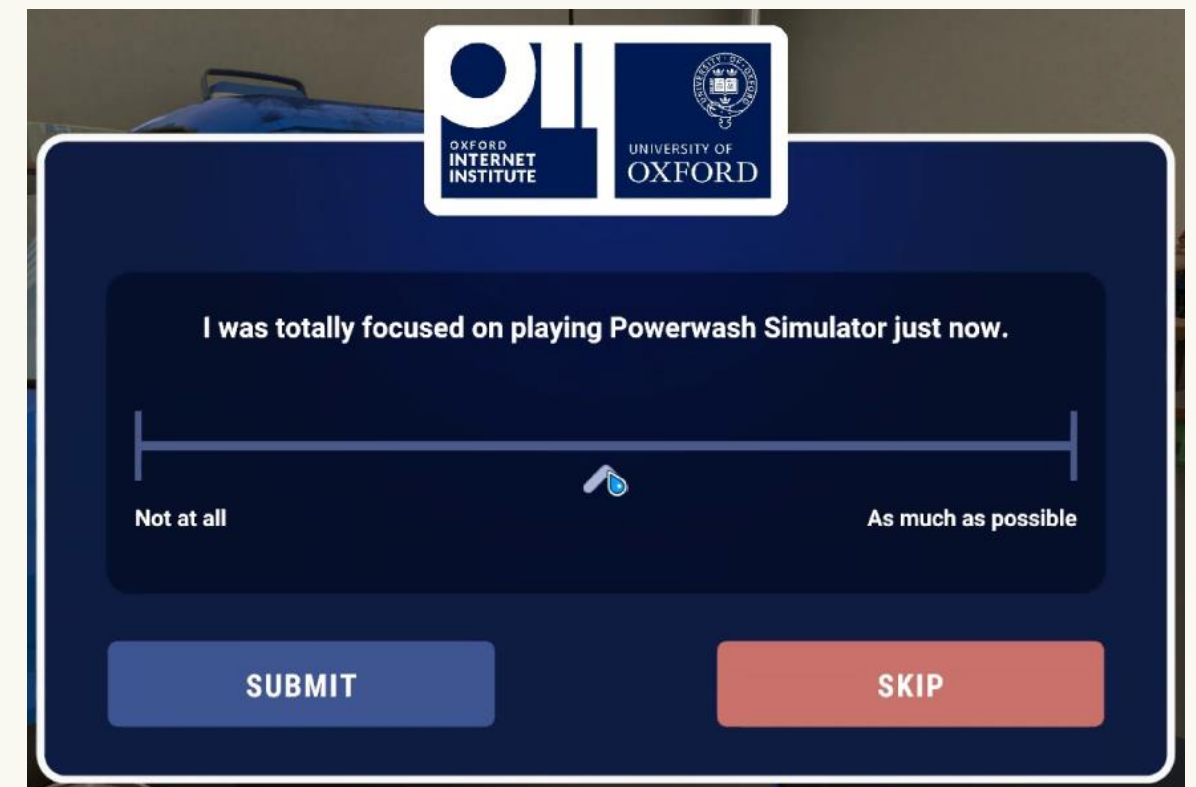
- Text/Instant messages from in-game characters
- Served as an excellent early warning system
- Able to feel like it was part of the game, conversational
- Some subtle (and rare) nods to in-game lore

Our take on a Visual Analogue Scale

- 1 - 1000 unit slider from negative to positive
- No default answer
- Ability to skip



In-game communication/early warning



In-game visual analogue study question

‘Research Edition’ Differences

No multiplayer

- Less variables

No shared progress with main game

- The least impact we could have on the main game the better

English language only

- Decision based on regional data FuturLab already had

External IP content excluded

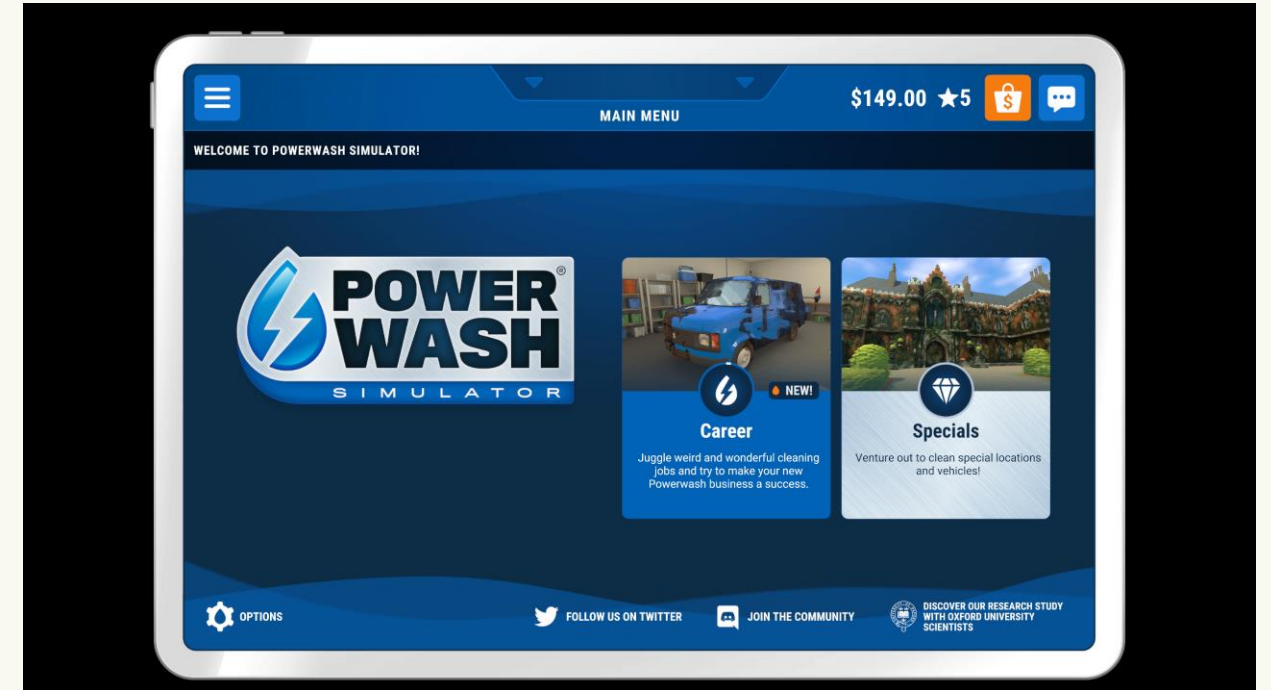
- Avoiding any legal concerns

Questions asked outside of timed/challenge content

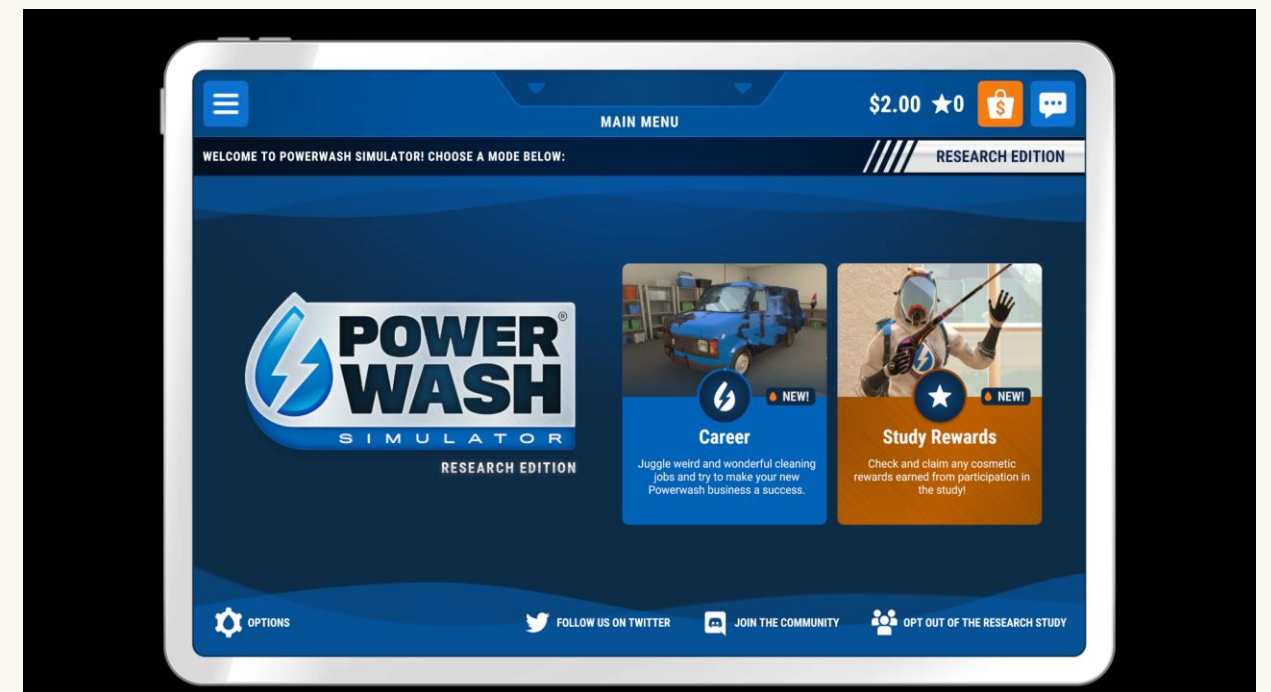
- To avoid any disruption and frustration from the pop-up prompts

Mostly-online requirement

- Didn’t remove offline play
- If offline, answers were cached (appropriately encrypted) on participant’s local machine
- Reward progress would only update when the user had an active connection



PowerWash Simulator menu screen - main game



PowerWash Simulator menu screen – Research Edition

The 'Research Edition' – Opt-in Flow

[Click to view video](#)

The 'Research Edition' – In-game Prompts & Rewards

[Click to view video](#)

Incentive Rewards

Pros

- Allows for more study involvement
- Unique designs, exclusive for participants*

Cons

- High potential for 'less than useful' data
- Players will find a way to 'cheese'
- Unique designs, exclusive for participants*

Considerations

- Potential negative impact from exclusivity - especially since study was Steam-only and game is cross-platform
- *Resolved by time-limiting the exclusivity
- Some basic anti-cheese measures
- Able to easily filter out data from players that cheese it (little washing and/or movement in the gameplay data)
- No harm done, some nice skins for them



Timed exclusive cosmetic rewards for participants

The Data

In the Research Edition all of the data is anonymous – will be further de-identified.

There are two types of data being collected:

Base telemetry

Metrics for player progression, shop purchases, general gameplay activities etc. These are both kept by FuturLab and provided to the researchers for analysis in the study.

We used Microsoft's Azure PlayFab for Unity integration and lots of flexibility for gathering and metrics

Sensitive study data

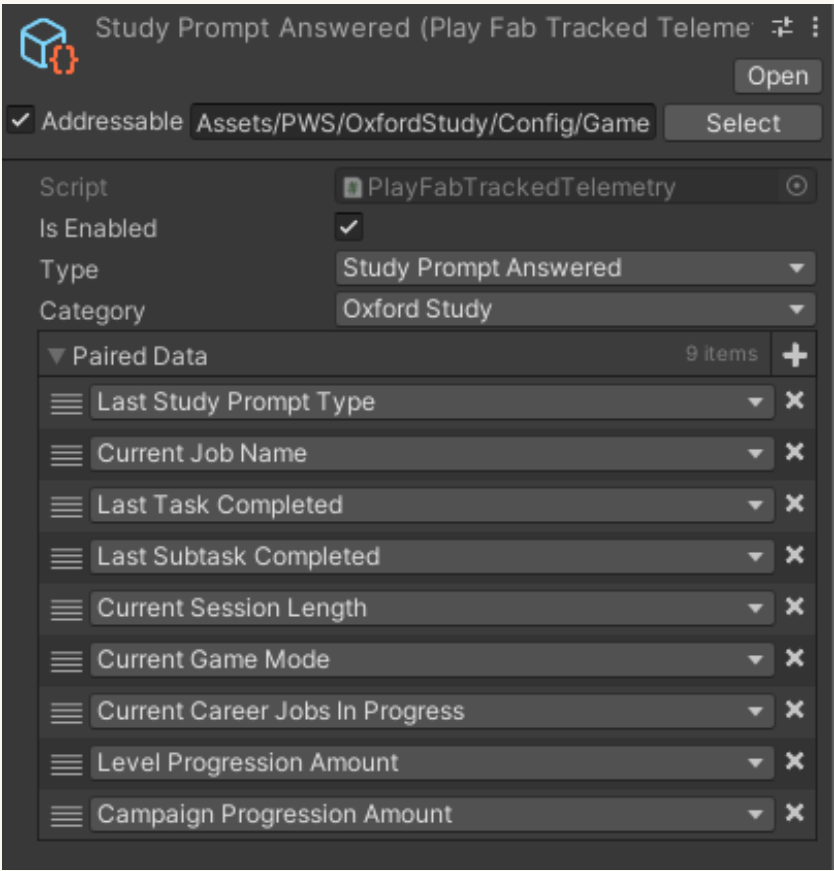
Responses from the Research Edition-specific questions.

Any question that the players respond to from the researchers does not go to FuturLab and instead is sent securely from the game client to the researchers' own database. No-one except the researchers have access to see the sensitive information (until de-identified and published).

We used Qualtrics's solution – very secure and allowed us to write to the single dataset from many sources at once

Telemetry Example

- Created our own custom events for tracking player activities
- Event-telemetry pairing system using asset files



```
{
  "OxfordStudyLocalTimeStamp": "2022-12-08T10:31:48.682000Z",
  "PlayFabEnvironment": {
    "Application": "mainserver",
    "Vertical": "master",
    "Commit": "cfc85f1",
    "Cloud": "main"
  },
  "OxfordStudyEntityId":
  "1b4893d8239b65417ea746c92db9c1adc686e8a1",
  "EventNamespace": "title.B9933",
  "CurrentSessionLength": "0",
  "TelemetryVersion": "1.0",
  "LevelProgressionAmount": 0.3435546,
  "EntityType": "player",
  "SourceType": "GameClient",
  "CampaignProgressionAmount": 0,
  "CustomTags": {
    "Category": "OxfordStudy"
  },
  "EventName": "study_prompt_answered",
  "Timestamp": "2022-12-08T10:31:49.4685236Z",
  "CurrentCareerJobsInProgress": [
    -1633223645
  ],
  "EntityId": "3BAD910E0530BC59",
  "EventId": "7eb7309121a2448abb083eef6a9a5052",
  "TitleId": "B9933",
  "CurrentGameMode": "Career",
  "Source": "B9933",
  "LastSubtaskCompleted": "Bonnet",
  "LastStudyPromptType": "Focus",
  "CurrentJobName": "HOME_VAN",
  "OxfordStudyEventId": "b10bcd1f-1678-4b92-acdb-8dc6c242c33b"
}
```


Advice For The Future

Implement the study questions and flow as much as possible into the gameplay

- The less players feel like they are being disturbed during the gameplay flow, the less negative bias the questions can have
- We don't want to spoil the data by trying to measure it!

Have as many options as can be useful when using repeating prompts throughout gameplay

- Avoid player frustration from unnecessary repetition
- Players felt like their data couldn't possibly be useful

Participation rewards worked well as incentivisation, be mindful of exclusivity expectations

If using multiple databases ensure that the data 'timeline' can be easily mapped

- Generate Event IDs for easy matching of data if using multiple databases
- Send the same timestamp (localised or not) to both APIs

Sending regular updates of game state at intervals over focusing purely on events

- We had no way of telling what the player was doing if they were playing but not *fully* washing objects - some players like to draw in the dirt :)

Inclusivity is important, definitely strive to be as inclusive as possible when gathering personal data



Final Words

- **Worth the risks!**
- Whether you're a publisher, developer, researcher or otherwise, consider getting involved
- Check out Andy and his team's papers, they're fascinating!
- Look out for the upcoming publications on this study
- More info on the study can be found at <http://futurlab.co.uk/oxfordstudy>
- Any questions about the study itself, please contact Andy's team at game-research@oii.ox.ac.uk
- *Thank you!!*

