UniCog Games Documentation

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The core gameplay element in all the UniCog games is a session. In a game session, players are given a number of attempts (15) to reach the highest level possible. The session starts with an attempt at level 1. Once the player has had a successful attempt at a given level, the game presents the player with a new attempt at the next higher level. Otherwise, the player is presented with a new attempt at the same level. Each game determines what a successful attempt means according to its own gameplay design, as well as how the level progression introduces new challenges or objectives to the player.

Whack-a-Mole

Attempts: A player's attempt is successful when the player manages to hit more than 80% of the moles, while ignoring 80% of the bunnies. Each attempt has a 1 minute duration, thus a single session has a total duration of 15 minutes.

Levels: Each level increases the difficulty of the game by making the frequency and latency of targets and distractors, moles and bunnies, by a given factor. The increment factor, and the initial frequency and latency values, are set in the settings screen of the game. The increment factor is applied cumulatively throughout the levels of the game.

Example of first 4 levels with starting settings of 8% increment factor, and 2 sec for both frequency and latency.

Level	Frequency (sec)	Latency (sec)
1	2	2
2	1.84	1.84
3	1.6928	1.6928
4	1.557376	1.557376

…

Bejeweled

Sessions and Attempts: An attempt is successful when the player reaches or exceeds the target score of the current level before the timer reaches zero. Each attempt has a duration of 1 minute, for a total maximum session duration of 15 minutes. Players who reach the target score before 1 minute will play for less time overall.

Levels: Level progression information can be found in the following table:

Level	Jewel Types	Target Score
1	5	50
2	5	60
3	5	70
4	5	80
5	5	90
6	6	60
7	6	70
8	6	80
9	6	90
10	6	100
11	7	70
12	7	80
13	7	90
14	7	100
15	7	120

Word Search

Sessions and Attempts: An attempt is successful when the player manages to find all the clue words within a time limit (60 seconds).

Levels: Level progression information can be found in the following table. Currently there are 250 versions of each level (~8 weeks of unique versions in the worst case, 125 weeks for those that beat each level each time). After reaching the last version of a level the user is presented with the first version of that level.

Each level is characterized by the following parameters:

1. **Grid Size -** The number of tiles in each board.

2. **Min Words** and **Max words** - Represents the range of the number of words found within a specific level. Having a variable number of words in each level increases the number of distinct versions of a particular level.

3. **Min Word Size** and **Max Word Size** - Represents the range of word lengths found within the word bank of a specific level

4. **Vocabulary Level** - The grade level corresponding to the words in the word bank for a given level.

Level	Grid Size	Min Words	Max Words	Min Word Size	Max Word Size	Vocab Level
1	25	3	5	3	5	Grade 1
2	25	3	5	3	5	Grade 1-2
3	36	3	6	3	6	Grade 2
4	36	3	6	3	6	Grade 2-3
5	49	4	7	3	6	Grade 3
6	49	4	7	3	7	Grade 3-4
7	64	5	8	4	7	Grade 4
8	64	5	8	3	8	Grade 4-5
9	81	6	8	3	8	Grade 5
10	81	6	8	3	9	Grade 5-6
11	100	6	8	3	9	Grade 6
12	100	7	9	3	10	Grade 6-7
13	121	6	9	4	10	Grade 7
14	121	6	8	3	11	Grade 7-8
15	121	7	9	3	11	Grade 8

Below you can find an example of the game level progression:

Session 1:

Attempt number	Description	Version Played
1	The user has never played wordsearch before. The user is unable to find all the words before the attempt ends	LEVEL 1 / VERSION 0
2	The user completes the level	LEVEL 1 / VERSION 1
3	The user is unable to find the words before the attempt ends	LEVEL 2 / VERSION 0
4	The user is unable to find the words before the	LEVEL 2 / VERSION 1

	attempt ends	
5	The user is unable to find the words before the attempt ends	LEVEL 2 / VERSION 2

Session2:

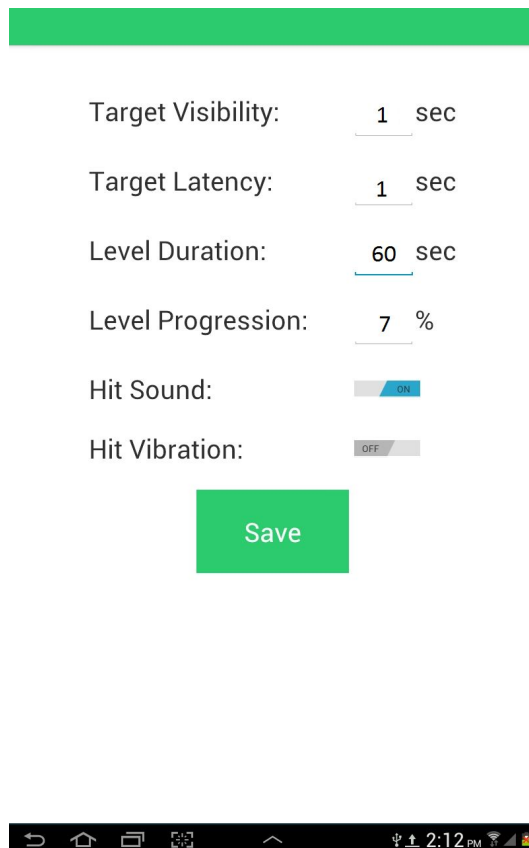| Attempt number	Description	Version played
1	The user completes the level	LEVEL 1 / VERSION 2
2	The user completes the level	LEVEL 2 / VERSION 3
3	The user completes the level	LEVEL 3 / VERSION 0
4	The user completes the level	LEVEL 4 / VERSION 0
5	The user completes the level	LEVEL 5 / VERSION 0

Installation

Whack-a-Mole:

1. Using your tablet's browser go to the whack-a-mole download site located in
http://hypatia.cs.ualberta.ca/~guana/wow/

2. Download the installer (.apk) from the "Unicog Enabled" section.

3. Follow the instructions on how to install applications outside of google play provided here:
https://www.cnet.com/how-to/how-to-install-apps-outside-of-google-play/

Setting up the Game:

In order to set up the settings of the game, please go to the settings screen. As explained above, the initial settings of the game determine its initial level of difficulty and difficulty progression factor. We have used the settings below in a study with patients with dementia. These values provided an adequate level of difficulty for the goals of our study. However, you can tune the game using any values you wish to implement. You'll only have to set up these values once after the installation process. In effect, the game will remember these settings after being closed for future sessions.

Target Visibility:	1	sec
Target Latency:	1	sec
Level Duration:	60	sec
Level Progression:	7	%
Hit Sound:	ON	
Hit Vibration:	OFF	

Save

Bejewled:

Simply access http://162.246.156.143/bejeweled_index from your tablet's browser.
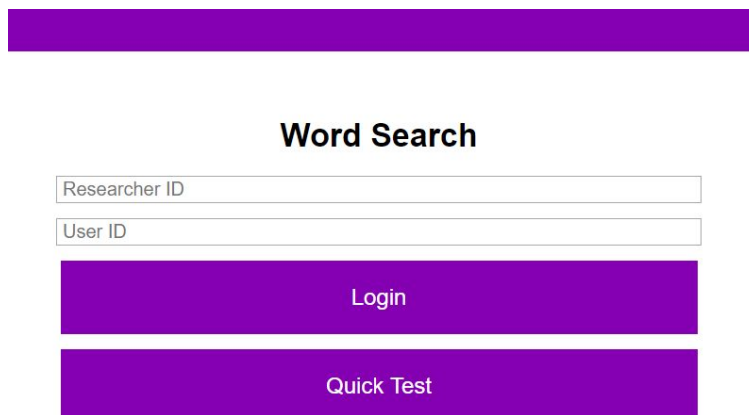
Word Search:

Simply access http://162.246.156.143/wordsearch_index from your tablet's browser.

- For ease of use, you can create a direct access icon to both games on your tablet home screen. Every tablet is different, but the process is similar to the one presented here http://mobile-pixels.com/pin-webapp-website-android-homescreen/

- Please remember bejeweled and word search require a stable internet connection to operate smoothly.

Using the Game

All UniCog games welcome users with a landing screen like the one presented below:

In order to preserve the consistency of the data collected with the games, please use the following convention for the *Researcher ID* values

- Researcher ID: <Researcher Last Name><YY:MM:DD>

- This is, if my name is *Marty McFly*, and today is *October 20, 1988,* my *Researcher ID* for today's sessions will be: *mcfly881020*

- *User ID* values are determined by your patient ecoding sheet.

Please remember to use "Quick Test" every time you're conducting tests or demos. This gameplay mode does not require researcher or user id information and does not collect patient performance information.