

Supplementary Data

Cleaning the Game Play Data and Craving to Smoke Ratings

The study app recorded which games were played, when they were played, and for how long. The app also recorded the craving to smoke ratings participants entered into the phone pre and post each game. The study app recorded that 1169 games were played on the study phones on or after the target quit day by participants randomized to have games access. These data were cleaned as follows.

Game play episodes of ≤ 6 seconds (452 of the 1169 game play episodes; 38.7% of all game play episodes and their associated craving ratings) were eliminated because it typically took the games at least 6 seconds to load so participants likely did not engage in meaningful game play during those 6 seconds. At this point, 717 game play episodes remained.

Next, we examined the time that elapsed between when participants finished playing a game and when they responded to the prompt to rate their craving to smoke. If they rated their postgame play craving within 10 minutes of completing the game, we retained their craving rating. If they rated their craving greater than 10 minutes after completing the game, we eliminated their postgame play craving rating (because their craving rating was not temporally associated with playing the game) thus eliminating 132/717 postgame play craving ratings (18.4%). The game play episodes themselves were retained.

We then examined the time that elapsed between one game ending and another game launching. If the elapsed time between the two games was ≤ 30 seconds, we combined the two games together to examine craving reduction and only considered the participant's pre- and postgame play cravings for the entire time they played these two games (and not their intermediary craving ratings between the two games because participants had not yet finished that game play episode even though they chose to switch games). There were 138 game play episodes (19.3% of the 717 game play episodes) that were combined with another game play episode for this reason leaving 579 game play episodes.

Finally, game play episodes longer than 60 minutes (129/579=22.3% of game play episodes) were changed to 60 minutes because it was judged unlikely that participants would play games on a mobile phone for longer than an hour (whereas it was judged likely participants had forgotten to hit the home key when they stopped playing the game and so the study app mistakenly continued to record that the participant was playing the game; according to the app, 8.5% of the game play episodes [49/579] were longer than 3 hours). The postgame play craving ratings for games played longer than 60 minutes were discarded because it was judged likely that these ratings were not made immediately following game play but rather were made the next time participants picked up the phone and saw the prompt to rate their craving.

SUPPLEMENTARY TABLE S1. RATINGS OF THE GAMES AT WEEK 4 (END OF STUDY) BY PARTICIPANTS RANDOMIZED TO GAMES ACCESS POST-TARGET QUIT DAY

Name of game	Type of game	Mean number of times participants played a given game post-TQD as recorded by the study app, M (SD)	Range in the number of times an individual participant played a given game as recorded by the study app	Out of 10 respondents, the number who rated the game at week 4 (meaning they reported playing the game on their study smart phone)	How much did you like the game? 1 (not at all) to 5 (very much), M (SD)	Was the game challenging? 1 (not at all) to 5 (extremely), M (SD)	How much did playing the game help you cope with urges to smoke? 1 (not at all) to 5 (very much), M (SD)
Catapult King	Arcade	2.38 (4.11)	0–13	6	2.67 (1.21)	3.00 (0.89)	2.33 (1.03)
Classic Words Plus	Word	0.06 (0.25)	0–1	1	3.00	3.00	3.00
Cut the Rope	Puzzle	0.69 (1.40)	0–5	7	2.57 (0.79)	3.29 (0.49)	2.14 (0.69)
Jewel Drops	Board	0.81 (1.76)	0–7	3	3.00 (2.00)	4.00 (1.00)	3.00 (2.00)
Plants vs. Zombies	Tower defense action	0.44 (0.89)	0–3	1	4.00 ^a	2.00 ^a	3.00 ^a
Quell Memento+	Puzzle	0.69 (1.99)	0–8	3	3.33 (1.53)	3.33 (1.16)	2.33 (0.58)
Ridiculous Fishing	Arcade	1.13 (3.46)	0–14	7	2.00 (1.53)	2.29 (1.25)	1.57 (0.79)
Ski Safari	Arcade	1.50 (3.16)	0–12	5	3.40 (1.34)	3.00 (1.41)	2.80 (1.30)
Solitaire	Card	7.75 (19.17)	0–74	5	4.40 (0.89)	2.40 (0.89)	3.80 (1.79)
Temple Run	Running	1.06 (2.21)	0–7	5	3.00 (1.23)	4.00 (0.71)	1.80 (1.30)
Three Squared	Puzzle	0.69 (2.24)	0–9	3	2.67 (1.53)	3.00 (1.00)	2.33 (1.16)

^aEarly in the study, Plants vs. Zombies stopped working on the study phones and only one participant rated it. TQD, target quit day.