SUPPLEMENTAL ANALYSES

1. Attentional Blink Effects

Blue lines indicate pre-testing performance and red lines indicate post-training performance. Statistics were conducted for lag 2, lag 8 and the difference between lag 8 and lag 2 accuracy.
2. Training Feedback: Representative Quotes, Strategies

**WM-REAS 1**

**SILVERSPHERE**

- Most challenging; enjoyed thinking and problem solving
- Most difficult game of four; frustrating, but fun; trial and error
- I didn’t really like it just because it was difficult (I know, I sound lazy). I like seeing my accomplishments right away and sometimes I wouldn’t move to a next level which was frustrating.
- The higher levels were frustrating when an obvious path was not available. Had to try multiple ways- often changing a strategy to something completely new or different.
- This was the game I looked forward to playing most. I like that it was progressive; I started in the level I left off at the previous session.

**STRATEGY/FFEDBACK**

- challenging, frustrating
- fun, enjoyable
- trial and error / try new strategies

**TWOTHREE**

- Strategies: I would use as many 3s until I would have to use 2 b/c it was faster.
- TwoThree was fun it kept me on my toes. It made be think of the best ways to collect the points for a number, for example, for 11 instead of shooting one 3 and four 2s I would do one 2 and three 3s.
- Fun game, but gets boring after playing it for 10 minutes.

**STRATEGY/FFEDBACK**

- figure what numbers to shoot
- use as many 3’s as possible
- find best combinations of numbers

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1 We thank Jason Steinberg for compiling this data.
DIGITAL SWITCH

• Try to be quick at switching the digibots
• Games got boring really fast and the incentive to do well since you could only get to a certain level before it became impossible to beat
• It was sometimes very difficult to switch the robots around during the coin drop, which made it hard to get a high score in the game.
• Digital Switch was fun after the first couple of times playing it, then it got really redundant.

STRATEGY/FFEEDBACK

• got boring
• some thought it was too easy
• save coins
• sometimes not physically easy switching the Bots with mouse
• fun, generally more at beginning because it got boring

SUSHIGOROUND

• Memorized menu; bought ingredients in advance; if out of ingredients left plates uncleaned b/c stalled for time w/ no penalty
• Would like to have tried different levels. same levels became boring and memorized all of the recipes.
• I paid close attention to whether or not there were multiple of the same dish being ordered because the customer that was closest on the serving belt would get the order first even if they ordered after. Also, I made sure that I called to order more ingredients when I got to about 5 left because if not then I would waste time ordering ingredients at the last minute.
• I always tried to make the sushi for the people furthest from the beginning because i knew they would have to wait the longest, or they were more likely to have someone else take their dish.
• Favorite game, most interactive and interesting. I tended to focus more because you have to buy the food when it gets low while making it for people. I made the sushi for the people on the far right first no matter what.
• Make common foods before customers arrive so you don't have to worry about making everything quickly when it is busy

STRATEGY/FFEEDBACK

• wait to clear plates so dishes would make it to the end
• memorize menu/recipes
• buy food in advance, don't let food run out
• make sure food gets to people at end of line - make their food first
• wanted to play more levels

WM-REAS 2

AENGIE QUEST

• I did not like that if you made ONE wrong move, you had to start all over. The layout of the game made it difficult to navigate, but it became easier to do as time went on. I liked that there was no time limit because I could think about how I was going to approach the puzzle before doing anything.
• The puzzles in this game were mildly challenging and became nearly sleep-inducing to solve the third and fourth time around. The angle of the game also made the controls a little confusing, which became annoying as a small misstep or mistake meant that you needed to start the entire level over again. Furthermore, I strongly disliked this little girl and found very little incentive in trying to help her.
• The game was engaging until I completed every level and began playing them all over again. Once that happened, I became very disinterested.
• The "playing field" was difficult to see. Since it was on a diagonal, I could not always tell where exactly the blocks were placed so that made it very difficult, not the actual puzzle itself, but the way I had to look at it. It really distorted everything.

STRATEGY/FEEDBACK

• some thought too easy, repeated game a lot
• orientation was strange
• didn't like that if you made one mistake you had to start over
• look at everything beforehand/plan
• pretty simple
• be familiar with controls/keys

GUDE BALLS

• Make sure that all the mice work well on all of the computers. A couple of the times that I played this game, I could not get the wheels to turn properly b/c of the mouse
• On the harder levels I noticed that one spent most of one's time managing the balls that were already "in play", rather than the ones that were in the top chute but not yet playable. This in turn meant that I had to diligently make way for newly arrived balls in positions that would allow me to unite them with like colors with as few moves as possible.
• Love/hate kind of game. Gude Balls was always very engaging because of the time limits. There was some trial and error involved, but more so the solution to each level was dependent on the decisive planning involved.

• This game was very engaging, and it was exciting to pass a level. The level I was stuck on for about 3 sessions was incredibly difficult because of the time limit, and I was never able to get past that level even though in one case, I was just one ball away from passing it.

STRATEGY/FEEDBACK

• fun
• multitasking
• generally, time limit was good - a good challenge but not unreasonable
• blow up further circles first

BLOCK DROP

• For the first couple tries I would set up a plan but mostly I would just jump and see where it got me. Even if I was going to fail that level I would still continue to finish it so that I knew where I needed to focus my attention and how many I missed when going through the level.

• The game became boring after a while. I did enjoy it simply because if I got stuck on levels in the other games, I could always trust that I would move up a few levels in this game. I had no real approach to this game other than just to jump around on all the block. It was the easiest game.

• Visualize each step to the last step before moving the block.

• Easier to complete levels when looking at the full layout of the game up in the top right hand corner as opposed to the 3D block formation.

• Music, again, is so good. It was fun, and a neat way of thinking.

• trial and error
• think ahead

STRATEGY/FEEDBACK

• look at both views/side map
• flexible, got to try different strategies
• generally liked music
• look ahead
• trial and error
SILVERSPHERE

- I did not like it because I seemed to stay on the same levels for a multiple of sessions. It slowly made me irritated and uninterested to play after not completing a level after 3 sessions.
- Time limit is such a pain. Sometimes you have to get down to the second to pass a level
- I didn’t really have any strategies I just tried lots of different ways to get around until one worked.
- It was a fun game, but I didn’t like having a time limit. I like puzzles like that so when I couldn’t get it within the time period, but I knew how to do it, I got a little frustrated at times.
- I thought it silly that the developer designed levels that test dexterity instead of problem-solving and spatial skills.
- I constantly had to come up with alternate way of trying to complete each level.
- Trial and error. Towards the later session I began to try and visualize the outcome before trying it.
- When I got stuck I kind of gave up. I could always figure out how to get through but I had issues moving the ball well.
- Visualizing ways to move before moving
- Its easy to get stuck on certain levels in this game. I initially tried sticking to a plan of attack for each level and trying it as thoroughly as possible. When it didn't work, I would totally scratch my original plan and start doing things that seemed counter-intuitive...that often did the trick.

STRATEGY/FEEDBACK

- code at beginning as clue?
- very challenging, stayed on game level for multiple sessions
- time limit difficult
- trial and error/alternate ways of figuring out
ACTIVE CONTROL GROUP

ALPHA ATTACK

- Strategies: not waiting for the letters to get close to the ground
  Feedback: It did teach me to type w/o looking! Probably would have been more enjoyable if I had that skill.
- The levels without a required score were easy by typing letters when they were high up. Made passing the level the goal instead of getting a higher score. Game got boring during easy levels. I'm not a fan of "typing" games.
- The game was challenging when many letters would come down at the same time so my strategy was to get rid of them as soon as possible and not worry about how many points were received
- Trying to type as quickly as possible, sometimes just typing whatever
- It wasn’t a particularly bad game, I just don’t enjoy typing games. Sometimes I got overwhelmed on the hard levels.

STRATEGY/FEEDBACK

- Generally, type letters as fast as possible
- Use bombs wisely
- Generally, get through levels instead of going for high score
- learn keyboard
- Hard mixing numbers and letters
- fun, frustrating
- some just not fans of typing games

CRASHDOWN

- Fun but very challenging. Would sometimes remove all but 1 color to see all of it vanish at once. Tried to eliminate stack completely. had blank space once (clear of all blocks)
- Sometimes I just kept clicking without thinking when it got too fast; usually try to erase bottom blocks first
- At first, I would let the lines load and carefully select the group of 3’s, but as the lines loaded faster as each level increased, I couldn’t help but randomly click
- Strategies: Try to clump as many of the same color together before clicking.
- Clean blocks from top first, before bottom blocks. If those go away first, it ruins whatever blocks were present at first up there.
- I tried to clear blocks from the bottom first.
STRATEGY/FEEDBACK

- erase bottom blocks first
- erase top down
- end up randomly clicking when more challenging
- get many of same color blocks together
- some didn't like starting over from beginning each time after losing

MUSIC CATCH

- Keep my mouse moving and active despite the calming music. Try to get all yellow + purple notes to make the "catcher" larger, to catch move green notes more easily
- Try getting the yellow the most unless a purple one was near. Also avoided the red at all cost till I hit one, then they mattered less.
- Unfortunately I found this one pretty boring, and my motivation for swiping was to try and avoid all red shapes - when I hit into them I pretty much lost motivation.
- Move the mouse slowly to get as many yellows and purples as I can without getting burned by the red.

STRATEGY/FEEDBACK

- Get yellows and purples
- Avoid reds
- Calming/made sleepy/relaxing game and music
- boring

ENIGMATA

- My hand remained on the space bar to keep the missiles coming.
- Basically I just tried to get all the powerups possible, and tried to get the kinda good ones before the better ones. For the bosses, when armor was lowish, I stayed out of the way a lot to let my shield charge and let the missiles do the work.
- In early stages destroy everything and dont worry about armor. In later stages pick your battles.
- This game had a lot of options, which would've improved playing the game, but since we couldn't use them, it was just ok.

STRATEGY/FEEDBACK

- Get powerups
- Some hold down spacebar / constantly press spacebar
- Some wanted to buy things from store / more powerups / options
3. Relationship between Dodge, Attentional Blink and Trail Making

Data taken from validation study: *Selling points: What cognitive abilities are tapped by casual video games?* (Baniqued et al., 2013).

**PRINCIPAL COMPONENTS ANALYSIS**
Varimax Rotation, Pairwise Exclusion. Loadings above .2 are displayed.

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**RAW CORRELATIONS**
*Correlation is significant at the 0.01 level (2-tailed).*

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