F**king with Psychology: Psychological tests as boardgame design inspiration

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INTRODUCTION

Since the early 20th century, a wide variety of psychological tests and experiments have been conducted, many of which have passed into common usage. The Stanford Marshmallow test, for example (Mischel, Ebbesen, & Raskoff Zeiss, 1972), which assesses a child's capacity for delayed gratification, is now so widely-known that it has even been used in a recent political protest cartoon (Noth, 2017). In this paper, we will show how several of these tests have been directly adopted as the core mechanics for a wide variety of boardgames. Furthermore, we demonstrate that similar mechanics can be found in a variety of other games, even where there is no evidence of direct adoption. Given the presence of psychological tests in existing games, we argue that the body of psychological tests and experiments, provides rich fodder for game designers, and demonstrate this through a range of examples of boardgames which implement these tests. Finally, we identify and discuss additional tests for which adoption as core game mechanics could potentially be problematic.

An example of an explicit adoption of a psychological test is seen in "F**k: The Game[1]" (Inkster, 2015). On the game's website (Inkster, n.d.), the designer explains that it was directly inspired by an episode of *Stephen Fry's Planet Word* (Fry, 2011) which explored the Stroop test (Stroop, 1935). Like the test, the game rewards processing speed, selective attention and cognitive flexibility (see Figure 1).

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[1] We're not being coy here; the game's name really does include the asterisks.

*Figure 1 Rules to "F**k: The Game" – the first two cards are essentially the Stroop test; the remaining two cards are the designer's additions. Source: https://www.f--kthegame.com/pages/rules - used with permission*

More overt still is *Rorschach: The Inkblot Party Game* (Holcomb, Huber, McLaughlin, & Tibbles, 2008) which uses the Rorschach Inkblot test, a psychological assessment to determine subconscious choices (Rorschach, 1942), as the basis for a game. Less overtly, the game's core task – relating a vague image to some more concrete concept – has been reimplemented successfully and with more complexity and creative artwork in games like *Dixit* (Roubira, 2008) and *Mysterium* (Nevskiy & Sidorenko, 2015) and, arguably, in games like *Dohdles!* (Teuber, 2015) where players build 3D shapes from modelling clay. What we see – and how we interpret it – creates interesting opportunities for play.

Delayed gratification is seen in a wide variety of games, and while psychological tests such as the Marshmallow test, have not been explicitly repurposed, the reward for delaying gratification is nevertheless present. We see this mechanism in engine-building games, where resources may be consumed immediately or invested for future returns. For example, in *Agricola* (Rosenberg, 2007), a player can choose either to consume a vegetable immediately or to plant it to grow another vegetable which can, in turn, be eaten or planted for even greater farming returns (see Figure 2). These games reinforce the message that waiting leads to greater rewards.

Figure 2 In Agricola, the "Sow and/or Bake Bread" Round card allows the player to produce more vegetables or grain by "planting" their token; by delaying consumption, they can produce more resources.

On the other hand, the Dull Task Study (Festinger & Carlsmith, 1959) measures cognitive dissonance, where participants are found to reframe facts inaccurately in order to relieve internal discomfort. In the study, players who received a small reward were more likely to rate a boring activity as pleasurable, as compared to players who received a much larger reward and therefore felt compensated for their boredom. Of course, we've all played *Monopoly* (Magie and Darrow, 1933), but incentivising boredom may be difficult for game designers to implement in an interesting or rewarding way for players.

Similarly, the Asch Conformity Study (Asch, 1956) demonstrates the power of normative conformity in social groupings, although the level of conformity that was observed has often been overstated; Friend, Rafferty, and Bramel (1990) stress that the study was as much about independence as about conformity. A similar issue is confirmation bias, whereby people are more likely to believe and accept evidence that conforms to their world view, and are even shown to interpret evidence incorrectly rather than change their views. Players may be resistant to playing games that are about following the crowd, or being wrong; and as such, it may be difficult for game designers to repurpose these types of tests into potentially confronting game mechanics.

Further, we have identified a number of ethically questionable studies such as The Stanford Prison Experiment, the Milgram Shock Experiment, and the Bystander Effect Experiment, all of which can be seen as successors to Asch's Conformity Study. Whilst there are obvious issues with the ethics of these particular problematic experiments, there may be potential to use what they tell us about the social behavior of groups to design provocative games for larger groups that deal with these issues in ethically sensitive ways.

One further interesting phenomenon is the Illusion of Explanatory Depth (Rozenblit & Keil, 2002). This relates to people's tendency to overestimate their knowledge and understanding of a particular item – for example, the precise workings of a piano key, toilet, or helicopter. Study participants struggled to explain these items, even when they

believed that they understood how they worked. Games like *Balderdash* (Robinson & Toyne, 1984) and *Fictionaire* (Marly, 2010) which invite players to invent a definition for a given word or expression, explore this phenomenon to a degree. We believe that there is interesting scope for designing games that explore players understanding of an item or concept.

Our review of foundational psychological literature has identified a number of tests and experiments which have the potential to be implemented in boardgame mechanics. We have shown that several well-known tests and experiments have been either explicitly, or subtly used in game design, and have described others that present challenges for game designers to adopt. This discussion demonstrates that tests and experiments from psychology, used sensitively, can be an innovative source of proven, interesting and meaningful design inspiration for game designers.

BIO
Melissa Rogerson is a PhD candidate in the Microsoft Research Centre for Social NUI at The University of Melbourne. Her research examines the experience of playing boardgames in both physical and digital forms, as well as the characteristics and motivations of hobbyist boardgame players, designers, and developers, applying techniques from human–computer interaction to the study of games and play. Melissa is is co-chair of Boardgames Australia, and is a member of the jury for the International Gamers' Awards. She has translated award-winning boardgames from German to English and has co-designed expansions for the popular game *Agricola*.

Jane Cocks is a PhD Candidate at the University of the Sunshine Coast. Her PhD research endeavours to strengthen the bridge between the Psychology of Behaviour Change, and Game Design. She co-founded CheckPoint Organisation, an Australian Charity which acts to join the fields of mental health and wellbeing with games and technology, and has spoken extensively about these topics at conferences and conventions both nationally and internationally. Jane has completed Bachelor degrees in Behavioural Science and Health Science, Psychology Honours.

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