Interactive Media, Attention, and Well-Being

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Executive Summary

Behavioral training interventions have received much interest as potentially efficient and cost-effective ways to maintain brain fitness or enhance skilled performance with impact ranging from health and fitness to education and job training. In particular, neuroscience research has documented the importance of explicitly training (i) attentional control, in order to enhance perceptual and cognitive fitness as well as (ii) kindness and compassion, to produce changes in adaptive emotional regulation and well-being. At the same time, video game play has become pervasive throughout all layers of current society, thus providing a potentially unique vehicle to deliver such controlled training at home in a highly engaging and cost-efficient manner. Yet, several gaps remain in terms of realizing the true potential of the medium for positive impact, as developing engaging and effective research-based games anchored in neuroscientific principles that can have scalable, sustainable publishing models presents several new inter-disciplinary challenges.

At an August 2012 meeting hosted by the White House Office of Science and Technology Policy and sponsored by the National Science Foundation, a panel of international experts identified 5 main areas of focus to help raise the sector of scientifically validated games designed to boost well-being or attention:

(i) **Better understanding of core game mechanics driving impact outcomes.** Clearly not all games are created equal when it comes to fostering brain plasticity – some game mechanics appear more efficient than others, calling for a concerted effort in characterizing those game dynamics that are most potent in inducing brain plasticity and learning.

(ii) **Incorporating inter-individual differences in game design.** Recognizing that there are as many ways to play a game as there are players and experience levels, the need to acknowledge and exploit inter-individual variability was highlighted, calling for the design of individualized game experiences taking into account not only game play, but also physiological and brain markers in real time.

(iii) **Greater focus on social and emotional skills.** The fact that emotion and social conduct may be considered skills rather than traits, and thus like all skills can exhibit sizeable plasticity, calls for more games designed to impact affective states.
(iv) **Clearer validation methodologies and benchmarks.** Not a week goes by without some new claim about a new piece of software curing ADD/ADHD, or a new mini-game that slows cognitive aging. Yet, few of these statements withstand scrutiny. A hot debate about best methodological and reporting practices is thus underway in the field. In addition, objective demonstration of efficacy calls for larger multi-site studies, and possibly an infrastructure allowing independent evaluation of game/intervention efficacy.

(v) **Developing sustainable, scalable publishing models.** Translating in-lab research documenting a beneficial effect of video games on attention or well-being into a commercially-viable product that can reach many people and truly produce social change is a tall order. Lessons could be learned from the pharmaceutical industry, but alternate paths may be worth considering for behavioral interventions, such as through video games.

New approaches to the design, assessment, publishing and on-going optimization of video games for enhancing well-being and attention arose. While some of these recommendations can be found below, of particular note is that a game contest was proposed calling for games with the mechanics identified to foster brain plasticity. Critically, these games would be built so that users and researchers can easily control in-game mechanics, and thus adapt the games to their needs not only for play, but also for research. Such an approach recognizes that games are costly to develop and that sharing resources at the level of game design would open a unique path to addressing key health care and societal concerns in a user-friendly and cost effective manner.

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