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Addressing problematic video game use: A multimethod, dual-context perspective on leisure-time use

Commentary on: Policy responses to problematic video game use: A systematic review of current measures and future possibilities (Király et al., 2018)

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A more integrative approach to the prevention of problematic gaming behavior is recommended in Király et al.'s review. We discuss the Dutch policy responses to problematic gaming behavior and suggest two alternatives to the dominant survey research approach to achieve this. Employing time-use/diary studies allows us to map out the full scope of leisure-time use and employing log-data analysis improves our understanding of gamer behavior within the virtual context. All of these approaches would benefit from accounting for the diversity of within-virtual context behavior. The approach is summarized as a multimethod, dual-context approach to understanding leisure-time behavior.

Keywords: problematic gaming, prevention, multimethod, log-data, survey research, time use diaries

INTRODUCTION

In their recent paper, Király et al. (2018) provide a timely review on policy responses that address problematic gaming behavior. Their literature search revealed a small selection of 12 papers (six in English and six in Korean). The papers discuss prevention, treatment, and policy measures that target problematic (addictive) video game playing. Results are classified into three major groups: (a) reduction in availability of (problematic) games and game types, (b) measures aiming to reduce risk and harm, and (c) measures providing care for problematic gamers.

The authors note that Asian countries dominate the issue and have already implemented various measures. This includes government forced game-time restrictions (shutdown policy, South Korea), modification of game elements (fatigue systems, China), and time limits on Internet café access for young children (Thailand and South Korea). They acknowledge that western audiences would likely not accept some of these measures. The review was restricted to academic sources, ignoring some policy measures that have not been discussed in the academic literature.

We provide a brief impression of Dutch policy on this topic to supplement the review. In the Netherlands, a model of stepped care is offered to facilitate access to the public addiction care system for problematic gamers. A minority of video game players receives psychological treatment, often in youth-addiction care (Wisselink, Kuijpers, & Mol, 2016). Studies show that this is a distinctly mixed group of individuals with co-occurring substance or mental health issues (Van Rooij, Schoenmakers, & van de Mheen, 2017; Van Rooij, Zinn, Schoenmakers, Van de Mheen, & Rooij, 2012). The Trimbos Institute facilitates this stepped care model by providing a website (https://www.gameninfo.nl/publiek). This website contains an interactive self-test that provides feedback on gaming behavior and uses the Video game Addiction Test scale to assess problems (Van Rooij, Schoenmakers, Van den Eijnden, Vermulst, & van de Mheen, 2012). Those who score high on the test are offered location-specific contact information for addiction care. The test offers broad categories (high–medium–low score) and does not employ addiction terminology as a design decision. It is regularly used within classrooms and Dutch prevention care to start conversations about the limits of healthy gaming; it has been used approximately 88,000 times at this time (2012–2018).

In their review, Király et al. discuss limitations of the current literature. Many of the interventions, including the more stringent Asian policies, did not result in convincing results or were simply not evaluated for effectiveness. Policies often only target single aspects of gaming behavior: gaming time, gamers themselves, the gaming environment,

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or internal characteristics of the video games. A more *integrative* approach is suggested: "*The reason for this may lie in the fact that the policies outlined only addressed or influenced specific aspects of the problem instead of using a more integrative approach*" (Király et al., 2018).

We also argue in favor of such a more integrative approach and suggest a *wider* scope for this initial phase of research into the prevention of excessive technology use. Both research and policy responses might benefit from a perspective that includes the full range of leisure-time behaviors. Problematic gaming behavior does not happen in a vacuum: gaming displaces other activities. We suggest alternative methodological approaches that are currently underused and that might help us achieve this aim. The proposed approach is summarized as a *multimethod, dual-context approach* to understanding adolescent gaming behavior and leisure time.

MULTIPLE METHODS: SURVEY, LOG-DATA, AND DIARY APPROACHES TO (DIGITAL) LEISURE-TIME BEHAVIOR

Self-report survey studies

Current research efforts often involve a single type of media use, which is subsequently compared with indicators of (psychosocial) well-being. An example would be a study that demonstrates correlations between gaming time and depression (Hellström, Nilsson, Leppert, & Åslund, 2015; Kuss & Griffiths, 2012). This approach is very dominant in the study of problematic (addictive) behavior involving the Internet, mobile phones, games, and social media applications (Billieux, 2012; Colder Carras, Van Rooij, et al., 2017; Király et al., 2014; Mérelle et al., 2017; Van Rooij et al., 2014; Van Rooij, Schoenmakers, Van den Eijnden, & van de Mheen, 2010). There are numerous examples of this approach in related topics, covering exercise/sedentary behavior (Daley, 2009; Lanningham-Foster et al., 2006; Mannell, Kaczynski, & Aronson, 2005; Papastergiou, 2009; Stragier, Evens, & Mechant, 2015), gaming (Granic, Lobel, & Engels, 2014; Griffiths, 2010; Nikken & Jansz, 2006), social media use (Brunskill, 2013; Valkenburg & Peter, 2011; Vernon, Barber, & Modecki, 2015), and screen time (Przybylski & Weinstein, 2017).

The obvious downside of this type of reductionist approach is that the wider context of leisure-time behavior is excluded. Gaming might be detrimental for some aspects of physical health, but might be associated with decreased exposure to risky party drug use. A child might spend more time on games when homework is finished or scarce, when the outdoor soccer season is over, etc. Correlational survey-based approaches generally do not account for this interplay and the overall leisure-time profile. Thus, we might consider which additional approaches allow us to expand our scope to capture the full range of leisure-time behavior.

Log-data studies

One approach to widen the scope is to use the massive amounts of log-data that interactive entertainment and games generate. These data offer a more objective perspective on within interactive media activities. Companies have been using this data to retain customers by avoiding "churn" or customer dropout (Borbora, Srivastava, Hsu, & Williams, 2011; Hadiji et al., 2014; Lovato, 2015).

Studying log-data is appealing, but the data suffer from a number of limitations (Parke, Wardle, Rigbye, & Parke, 2012, p. 98): the data are silo-based and narrow (specific to certain products). Ultimately, the range of log-data might well grow further. People have started to use *Virtual Reality* setups with motion cameras, and heart-rate monitors/eye tracking might become more integrated into games. However, even this data will not include the wider balance of leisure-time use and the full context of behavior.

Time use studies and diary approaches

Time use studies are an interesting candidate to complement both the survey and log-data approaches. They map out the full scope of time use. The method involves either retrospective surveys ("how many hours do you spend doing [×] on an average day") or more ecologically valid approaches that use "triggered" responses to elicit entries into a digital or paper-and-pencil diary (via an app or beeper). Generally, they focus on one specific aspect of life-balance, such as sedentary behavior. This can be helpful nonetheless; focusing on adults, Voorpostel, van der Lippe, and Gershuny (2009) showed that during three time periods (1965, 1975, and 2003), romantic partners increasingly spend time together on leisure activities. Focusing on adolescents, in particular, a study by Gorely, Biddle, Marshall, and Cameron (2009) followed 561 adolescent boys (average age: 14.6 years) and assessed time use via a self-reported paper-and-pencil diary. The study provides a fairly comprehensive image of leisure-time use. For instance, sedentary activities are identified as spanning almost 7 hr per weekend day (Gorely et al., 2009). These types of studies are useful as they go beyond the mainstream retrospective survey research, but they have their limitations as well. To date, they have not accounted for the activities that happen within the "virtual" gaming context.

THE PHYSICAL AND THE VIRTUAL: A DUAL-CONTEXT APPROACH TO UNDERSTAND GAMING

Most of the research on the impact of interactive media use does not account for the inherent diversity of new virtual environments. There is a clear difference between "zoning out" in a mobile game like *Candy Crush* at a bus stop, physical exercise when playing *Pokemon Go*, complex social online games like *World of Warcraft*, and "serious" games that promote (mental) health (Schoneveld, Lichtwarck-Aschoff, & Granic, 2017; Van Rooij, Daneels, Liu, Anrijs, & Van Looy, 2017).

There is a continuing struggle to provide scientifically grounded recommendations on optimal child screen use. Current efforts mostly ignore this inherent diversity: "2 hr of screen time" is not helpful advice when we realize that

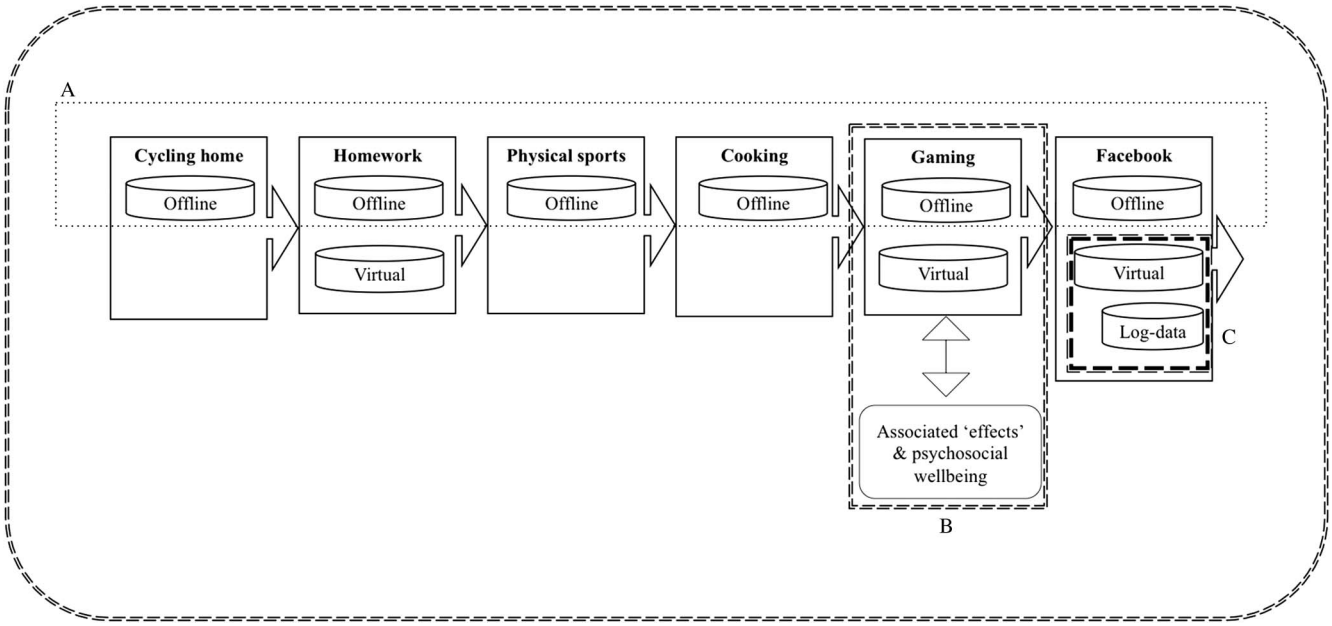

Figure 1. Multimethod, dual-context approach to understanding leisure time and gaming behavior: reach and limitations of various methods. (A) Traditional time-studies approach (time-use diary): wide but shallow; (B) Media-effects approach; (C) Log-data analysis: "*silo*"

not all screen time is alike (Ferguson, 2016; Swanson, 2016). Current debates on gaming "addiction" also ignore the massive in-game variety of content and interactive experiences. Furthermore, approaches do not yet identify the problematic mechanisms or design aspects that cause problems (Aarseth et al., 2016; James & Tunney, 2017; WHO, 2017a, 2017b). Attention for the user's actual behavior in virtual game contexts and the complex interplay of beneficial and detrimental effects of the computer/media experience are rarely found beyond digital anthropology (Snodgrass, Dengah, Lacy, & Fagan, 2013; Snodgrass, Lacy, Francois Dengah, & Fagan, 2011).

In short, games create new "virtual," online environments that should not be discounted, although they might be harder to study than physical environments. For instance, in-game friendships have been associated with decreased depressive mood and loneliness (Colder Carras, Porter, et al., 2017; Domahidi, Festl, & Quandt, 2014; Van Rooij, Schoenmakers, Van den Eijnden, Vermulst, & Van de Mheen, 2013). The psychological "presence" in these virtual spaces can be quite firm; people in a *Virtual Reality* experience might end up walking into walls and tripping over wires. We argue that both research and policy that targets gaming behavior should account for this second context as well.

A MULTIMETHOD, DUAL-CONTEXT APPROACH TO POLICY AND RESEARCH THAT TARGETS GAMING BEHAVIOR

In their review, Király et al. argued for a more integrative approach to the prevention of problematic gaming behavior. We have provided approaches that may be used to understand the full range of leisure-time activities that surround the gaming behavior. Any reduction in gaming behavior automatically means an expansion of other activities; this should be accounted for in research and policy responses that target gaming behavior. Figure 1 summarizes the main approaches in relation to their virtual "online" and "offline" context. Even with an online behavior, such as Facebook use, there is an offline context that is relevant for study and interpretation of the behavior. For example, users might desist in Facebook use because their train arrives. Ideally, combining these methods would transcend their limitations. The virtual aspect refers to the online context associated with the behavior, i.e., the world beyond the screen that is harder to observe for non-participants.

Specifically, we discussed two potential alternatives to the currently dominant media-effects, survey research (Figure 1B). Employing time-use/diary studies (Figure 1A) would allow us to expand our scope beyond the single activity and map out the entire landscape of leisure-time use. The downside is that the information is generally more shallow and descriptive. Analyzing log-data analysis (Figure 1C) would improve our understanding of gamer behavior within the virtual context. All these methodological approaches, however, would benefit from accounting for the diversity of within-virtual context behavior. The improved understanding directly contributes to better-targeted and more effective interventions that promote responsible gaming behavior.

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