International Journal of Mental Health and Addiction (2019) 17:166–179
https://doi.org/10.1007/s11469-018-0009-3

ORIGINAL ARTICLE

Video Game Monetization (e.g., 'Loot Boxes'): a Blueprint for Practical Social Responsibility Measures

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Published online: 17 October 2018

Abstract

Video games are becoming increasingly monetized with the addition of in-game purchasing options, which has prompted some comparisons of these products to electronic gaming machines. The expansion and sophistication of 'microtransaction' options in online games (e.g., 'loot boxes') has also led to concerns about vulnerable users (e.g., adolescents) overspending on these schemes. Currently, there are limited regulatory and/or consumer protection frameworks for video game monetization schemes. This conceptual paper explores some potential social responsibility measures for monetized gaming products to stimulate further discussion and developments in this area. Loot boxes are a focus of this discussion given the current debate on their legality, i.e., similarity to electronic gambling machines. Drawing on social responsibility principles and research in the field of gambling studies, we outline some potential measures in the areas of: (1) game design and in-game purchasing system characteristics, (2) transparency and accuracy of game design and features, (3) broad consumer protection measures, and (4) consumer information and industry accountability. It is hoped that this paper will encourage further discussion among academics, regulators, and the industry. An empirical evidence base is needed to inform the design and implementation of countermeasures for monetization schemes that increase risk of gaming-related harm for some users.

Keywords Video game · Loot box · Predatory monetization · Microtransaction · Social responsibility: consumer protection

Online video gaming products and services generate billions of dollars in revenue. In addition to gaming companies making profits on sales of hardware and software, many gaming products are becoming monetized in ways that have invited comparisons to electronic slot machines (Abarbanel 2018; King and Delfabbro 2018). For example, some in-game monetization schemes have been designed to repeatedly solicit players with offers to make in-game

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purchases of virtual content (i.e., not limited to a 'once-off' purchase) (Civelek et al. 2018). Over the last 5 years, highly popular online competitive games and game franchises (e.g., *FIFA, Counterstrike, Overwatch, Destiny*) have adopted a service model that presents players with (typically small) purchase options known as 'microtransactions'. Microtransactions enable players to obtain additional game content or premiums (e.g., virtual items, textures/skins, currency, levels, or power-ups). Such purchases are common in mobile game revenue models where the base game is '*free-to-play*' but the player is encouraged to spend money to make unimpeded progress in the game (i.e., overcome a 'paywall').

The expansion of microtransactions in games has generated some concerns about the extent to which certain players (e.g., younger users) may be vulnerable to overspending or impulsive buying on these schemes (Dreier et al. 2017; Gainsbury et al. 2016a, b; King et al. 2016). There has also been conjecture that some activities may offer a pathway to gambling and/or that some activities are designed to resemble slot machines and feature the same basic element of randomness of in-game reward (Gainsbury et al. 2015, 2016a, b; Dussault et al. 2017; Hayer et al. 2018; Jacques et al. 2016; Teichert et al. 2017; Wohl et al. 2017). At the same time, there are concerns that some in-game purchasing systems that involve randomness, like 'loot boxes', may contribute to excessive playing behaviors and psychological overinvestment in video games in general (King and Delfabbro 2018). However, microtransactions in video games have not generally been subject to the same regulatory controls and player protection measures as gambling. There is increasing discussion at an international level on the potential need for regulatory scrutiny of these products (see Derevensky and Gainsbury 2016; Koeder and Tanaka 2017), including in relation to the increasingly popular activities of gambling on eSports and games of chance using in-game assets and currencies such as 'skins' (Macey and Hamari 2018a, b; UK Gambling Commission 2017a).

The regulation of monetized games and virtual currencies has emerged as a pertinent issue given the global popularity of online gaming products and in-game spending among younger users. For example, a nationally representative study of 3017 Australian young people aged 8–17 years reported that 34% had made in-game purchases in the previous 12-month period while playing online games (Office of the eSafety Commissioner 2018). A study by the UK Gambling Commission (2017b) reported that 11% of 2881 youth aged 11–16 years had participated in online betting activities using video game 'skins'. Another recent UK study of 1001 children aged 13–18 years found that 27% were familiar with 'skin gambling', 10% had reportedly gambled using skins at least once, and 29% believed it was a problem (Parent Zone 2018). However, given that not all video game monetization schemes are similar to gambling products, it may be difficult to simply transpose gambling regulation to these products. The purpose of this paper was to consider some potential candidate measures adapted and modified from the literature on gambling (e.g., Auer and Griffiths 2013a; Blaszczynski et al. 2005; Griffiths et al. 2009; Ladouceur et al. 2017) to stimulate further discussions in this area.

Of specific interest to this discussion will be the microtransaction commonly referred to as the 'loot box'. A loot box refers to an in-game reward system that can be purchased repeatedly with real money to obtain a random selection of virtual items (Drummond and Sauer 2018). The low probability of obtaining a desired item means that the player will have to purchase an indeterminate number of loot boxes to obtain the item. Loot boxes appear to resemble gambling slot machines or scratch lotteries because they require no player skill and have a randomly determined outcome (i.e., prize). There is uncertainty in some jurisdictions as to whether loot boxes meet the legal definition of gambling because financial expenditure on loot

boxes is not generally considered to be a financial 'loss' and virtual items are not considered to be 'something of value' (Nettleton and Chong 2013; Schwiddessen and Karius 2018). Similarly, the relevant terms of service often specify that virtual goods are not actually owned by users and have no monetary value (e.g., see Activision 2017). Moreover, there is often no possibility of direct financial return in these transactions, meaning that the player is unable to recover what has been spent in the activity. Such characteristics distinguish these features from traditional gambling products despite some similarities in their structure.

A challenge for online gaming regulation and consumer protection has been the lack of academic and legal consensus regarding the status of these activities as a form of *gambling* versus a form of *gaming* (King et al. 2015; Griffiths 2018). Some jurisdictions, such as Belgium and the Netherlands, have been the exception on this issue, with their regulators and/or politicians recently determining that loot boxes can be considered a form of gambling (Hruska 2018; BBC News 2018). In legal proceedings in the USA where claimants have argued that they experienced harms resulting from 'financial losses' due to microtransactions, the assumption that the gaming activity involved 'gambling' has consistently been rejected, notwithstanding a recent Washington court ruling that the social casino game series *Big Fish Casino* was a form of illegal gambling (Solana 2018). The Chinese government has taken a different approach to these schemes; in 2016, they passed legislation that required game developers to disclose the odds of receiving certain items from loot boxes (Grayson 2017).

Given that the 'gaming-gambling dichotomy' (i.e., the notion that these activities should be viewed either as gaming or gambling) may sometimes be inflexible, King and Delfabbro (2018) proposed an alternative term—*predatory monetization*—to refer to microtransactions that may involve some elements of gambling and/or have other properties that encourage continuous player spending. Predatory monetization schemes typically involve in-game purchasing systems that disguise or withhold the true long-term cost of the activity until players are already financially and psychologically committed. Such schemes are designed to encourage repeated player spending using tactics or elements that may involve, either singularly or in combination, limited disclosure of the product; intrusive and unavoidable solicitations; systems that manipulate reward outcomes to reinforce purchasing behaviors over skilful or strategic play. Such strategies may exploit an 'information asymmetry' or inequalities in information between purchaser and provider such as when the industry uses knowledge of the player's game-related preferences, available funds, and/or playing and spending habits, to present offers predetermined to maximize the likelihood of eliciting player spending.

Irrespective of whether microtransactions should be formally classed a form of gambling or should be considered simply as entertainment, there seems to be a growing need for consumer protection measures for in-game purchasing systems. The literature on social responsibility and harm reduction measures for electronic gambling machines and online gambling products provide many useful reference points. Researchers in Australia (Blaszczynski 2001; Blaszczynski et al. 2004; Delfabbro and King 2012; Gainsbury 2012; Hing 2001; Monaghan 2009), Canada (Cloutier et al. 2006; Sévigny et al. 2016), the United Kingdom (Orford 2005; Smeaton and Griffiths 2004), and the United States (Nelson et al. 2008; Nower and Blaszczynski 2010) have discussed measures and approaches for gambling products which could be considered for adaptation to microtransactions.

This paper will draw on some of the lessons and experiences from the gambling field to develop a preliminary blueprint for social responsibility measures for video game monetization schemes. This blueprint should not be considered a final set of criteria or guidelines; rather, this

is a proposal to generate further discussion on the topic. It bears noting, too, that many of these suggested guidelines become redundant if game designers take larger preventative actions, such as removing the random or quasi-random element from their microtransaction offerings. Given the rapid pace at which gaming technologies are evolving, due in part to the ability of game developers to update or modify their products very rapidly, there is a need to consider potential guidelines and consumer protection measures to develop some standards in these products. Social responsibility was considered as practices in alignment with the ethical principles of fairness, transparency, and accountability as set out by regulators across jurisdictions (Blaszczynski et al. 2011; Hing 2001; Griffiths 2009; van Rooij et al. 2010).

Introducing a Blueprint for Microtransaction Social Responsibility

This paper will be presented in four main sections. The first section (*game design and in-game purchasing systems*) will discuss some of the features or characteristics of video games and the in-game purchasing systems themselves. The aim was to refer to social responsibility principles for game design and monetization that may serve to reduce the likelihood that players will overspend in these game systems. This section also considers practical steps to minimize or remove the 'exploitative' or 'predatory' aspects of known features in online games, i.e., features that entice or require the player to continually spend to make in-game progress while maintaining the player's lack of awareness or understanding of the long-term costs of the game. The second section (*transparency and accuracy of monetization systems*) considers some of the ways in which games describe or convey information about the nature of its systems to the player. This section proposes measures that attempt to align with the principle of informed consumer choice, i.e., information that would typically in the 'cold light of day' help the player to make better decisions about the value proposition of the in-game monetization system.

The final two sections encompass social responsibility guidelines for the broader systems that support the online game activity (e.g., the publisher's marketplace, the game 'ecosystem' or networking environment, game support websites). The first section (*consumer protection measures*) describes measures that adjust the 24/7 availability and access to the product, improve the capability of users to set restrictions on their own or others' (e.g., children's) use, and support for users to recognize and seek help for difficulties or harms resulting from in-game purchasing. The final section (*consumer information and industry accountability*) refers to measures that may help ensure the gaming industry is communicating clear and accurate information about its products to its consumers, including enabling users to keep track of their microtransaction history and the promotion of responsible gaming.

Game Design and In-game Purchasing System Characteristics

Ability to Set Limits on Spending Recent news stories have reported on teenagers and vulnerable users spending thousands of dollars on microtransactions (Gach 2017). Similarly, an increasingly prevalent feature of individuals seeking treatment for gaming-related problems has been the presence of financial debts due to overspending on microtransactions (Higuchi 2017). To some extent, the ability of the player to spend an unlimited amount of money on

these games played a role in escalating player difficulties in these situations. Microtransaction systems do not currently impose any limits on player spending, making it possible in theory for a player to spend an unlimited amount of money on loot boxes (Kinnunen et al. 2016). Introducing a default limit on in-game purchasing that cannot be revoked for a predetermined time may aid in reducing overspending (see Auer and Griffiths 2013b; Nelson et al. 2008).

The Requirement of Payment Options that Display Real Currency Microtransactions are often completed with the use of a virtual currency that is first purchased by the player and then traded for the virtual good (e.g., loot box). For example, in the game *Hearthstone*, the player must purchase the currency known as *arcane dust* using a credit card (or other payment method) and then use this currency to acquire a loot box. In some cases, the real-world currency to virtual currency may vary according to how much virtual currency is purchased, with incentives to purchase larger amounts of virtual currency to receive a discount. It is also typical for the virtual currency to be much larger in numerical value than the real currency (e.g., $1 equals 25 gems). This system may have the effect of disguising the true cost of the transaction for the player. A protective guideline that requires loot boxes are always visually associated with their real-world price or cost (i.e., not just virtual currency) may serve to increase player awareness of spending.

Two-Step Purchasing Process A simple measure that may reduce impulsive or accidental spending is the requirement of a two-step process for all microtransactions. This could involve the player having to read the terms and conditions of the transaction (or a brief version of the disclosures of the transaction and conditions understandable to a layperson) or re-enter their account username and password, to prompt the player to reconsider and confirm the purchase and slow down or reduce the automaticity or 'mindlessness' of purchasing behavior.

Breaks in Play or Cooldowns A similar system to two-step purchasing is the implementation of a 'cooldown' (i.e., an onscreen timer during which the player is unable to spend money). In the gambling literature, this has been referred to as 'embedded disruption' (Warren et al. 2014) or time-out/ break-in-play measure. Such systems have been used in trials of so-called 'precommitment' technology on gaming machines in several countries (Bernhard et al. 2006; Focal Research 2007; Griffiths et al. 2009) as well as in online gambling environments. Players may also be able to schedule certain days or times when their account would not be available and to receive notifications when their accumulated time or money commitment has reached a certain level.

Loot Box Items Are Obtainable Through Standard Play One aspect of the appeal of the loot box system in some games is the exclusive availability of items from within loot boxes (i.e., the player has no other method of acquiring the items than to spend money). In addition, some games may make certain exclusive items in loot boxes a 'timed exclusive', meaning that the player must make purchases within a predetermined time frame before they are indefinitely unavailable. This artificial scarcity of desirable items may be the impetus for some players to spend money, particularly players with a drive to complete the game or unlock all features in order to feel satisfied. 'Scarcity' is a recognized principle in the literature on persuasion that can encourage consumers to make more impulsive decisions (Cialdini 2009). Such methods not only emphasize the potential gains that can be had from making a particular decision, but also encourage counter-factual thinking: reflection on how consumers feel if they 'miss out' on

the opportunity that it immediately present (i.e., "if only I had spent more, I could have acquired that item"). By ensuring that all items in the game can be acquired through normal play, it may be possible to reduce the need (or 'compulsion') of some players to spend on microtransactions.

Purchased Items Do Not Expire and Cannot Be Permanently Expended The terms of use for online games often specify that players of these games do not technically 'own' game content but instead hold a revocable license of indeterminate duration to play the game. In this way, game content should be considered ultimately 'indefinite' in nature. However, players may be less inclined to overspend on items if these items are designed to be as essentially 'permanent' as the regular content in the game. More specifically, a potential guideline may require that purchased game content should not expire, be deleted or consumed without being freely retreivable in some way to the player.

Loot Box Items Should Not Confer Competitive Advantages Microtransactions, such as loot boxes, provide in-game rewards that tend to fall into two general categories: (1) cosmetic rewards, referring to items that alter the appearance of in-game assets (e.g., 'skins') but do not affect the functional experience of play, and (2) items that confer in-game advantages (e.g., 'power-ups'), or increase the rate at which the player acquires points or 'XP', or increase the likelihood of a favorable in-game outcome (e.g., a rare item drop), are known as 'pay to win' features. While game developers claim that these options are not necessary to play or make progress in the game, some players may still rely on the latter class of item in particular to optimize their playing experience and therefore overspend on these items. In the past, many video games offered players the option to 'cheat' or manipulate the game to their advantage by toggling options such as player invincibility and unlimited weapons; many such games now will often require the player to spend money to use such options. Ensuring that purchased rewards are cosmetic and do not alter the 'playing field' (i.e., fairness of competition) may reduce overspending and ensure that all game outcomes are primarily determined by skilful play.

Loot Box Reward Probabilities Should Not Be Determined by Player Behavior Some registered game patents appear to indicate that some game companies may employ microtransaction systems that adjust the reward payout so that it is determined largely by player behaviors rather than by random chance. A patent by McClellan et al. (2017) for *Kabam* refers to 'mystery boxes' where the payout is influenced by player statistics, including (but not limited to) how much time or money the player has already spent in the game. Knowledge about the player's behavior may be exploited, for example, in a scenario where a novice player receives better rewards at the beginning of the game, but then the odds of receiving the desired rewards reduce over time and thereby encourage more persistent play. A measure to ensure fairness may be to require that loot boxes have fixed probability payout rates that do not depend, for example, on how much money the player typically spends or currently has available to spend.

Marketplaces for Loot Boxes Located in Separate Area of the Game Some online games are designed such that players are required to visit a specific in-game location (e.g., 'marketplace' or 'vendor') to redeem the rewards earned by acquiring currency or completing tasks ('quests') through playing the game as intended by the designers. This

marketplace area may in some games also be positioned as the main selling point for microtransactions, meaning that players who decide not to spend money on microtransactions will nevertheless be unable to avoid exposure to these features. For example, in the game *Destiny*, the player must exchange tokens earned by playing the game to a vendor (the '*Eververse*' marketplace) that promotes offers to purchase microtransactions. Positioning microtransaction-based marketplaces in a separate location and making their on-screen presence non-mandatory to progress in the game would prevent players from being exposed to these offers irrespective of their interest and intention to buy.

No Solicitations or Limited Time Offers Another measure related to player exposure to offers relates to the presence of solicitations (e.g., on-screen offers). Some games employ recurring 'limited time offers' that are designed to elicit a sense of urgency and therefore increase the likelihood that the player will desire to spend money. The removal or reduction of these solicitations may ensure that the player's focus within the game remains consistent with the design principle of playing (e.g., skilfully) to achieve success.

Removal of Repeat or Duplicate (i.e., Contextually Worthless) Rewards Some online games feature loot boxes that yield an array of rewards of varying contextual value. Some such rewards may be extremely rare (e.g., 1-in-1000 chance of 'dropping'). A common point of frustration among players is receiving common or contextually 'worthless' items from loot boxes. The low probability of obtaining a desired item means that the player will have to purchase an indeterminate number of loot boxes to obtain the item. In this connection, a protective measure against overspending would be to ensure that the player does not receive a duplicate item when making in-game purchases. In effect, this measure would ensure that the player is always guaranteed a novel/usable item. The player may also be able to estimate the upper limit of total loot boxes or total cost required to obtain the rarest or most desired item in the game.

Audio-Visual Design of Loot Box 'Opening' While the primary appeal of loot boxes may be their intermittent reinforcement and the acquired rewards, for some players, the act of opening the loot box itself may have strong psychological appeal. This appeal may relate to the audio-visual cues associated with the loot box, such as the sound effects, the suspenseful animation of the box opening, and/or colorful light or other graphical effects that emanate from the loot box. These features may give the act of opening loot boxes some additional intrinsic appeal that reinforces the player to spend money (i.e., secondary reinforcement). The salience of these cues could be reduced by requiring that loot boxes are consistent in appearance with other virtual reward containers in the game (i.e., the player opens the same boxes throughout the game). Alternatively, removing loot box audio-visual cues (i.e., the depiction of a loot box being opened) may help players focus on and appraise the value of the actual contents of loot boxes.

Purchase of Currency Outside of the Game Gambling venues in some jurisdictions are required to ensure that automatic teller machines (ATMs) are located a certain distance (e.g., 100 m) from the licensed gambling area (Hing 2004; Haw and Hing 2011). In online games, the option to purchase microtransactions is often embedded and always accessible within the game, which may be considered analogous to having a credit card facility at the blackjack table. It may be protective for players to have microtransaction

features positioned more externally to the game environment, such as on a website or social media platform.

Transparency and Accuracy of Game Design and Features

Game Classification Refers to Microtransactions and Types In response to calls in some jurisdictions for consumer advice displayed on games featuring microtransactions (akin to the standard age rating and content descriptors for explicit depictions of violence, drug use, and sexual content), the Entertainment and Software Rating Board (ESRB) has introduced a classification termed 'In-game purchasing' for any game featuring microtransactions (Good 2018). A limitation of this descriptor is that it does not refer to the randomness of loot box rewards or the potential for unlimited purchases. This description could be improved by providing information referring to the interactive and financial aspects of the activity (King et al. 2012). Example labels include "Allows unlimited purchases" or 'Contains slot machine games that require real money'.

Display of Odds for Random Rewards Irrespective of the probability of receiving desired rewards from a loot box, these odds could be prominently and constantly displayed in the in-game marketplace. This guideline may include an unambiguous and numerically defined likelihood of receiving items (i.e., the 'loot table') rather than less informative graphical displays or color-coding (e.g., green = common, purple = rare, etc.). Non-random odds or odds influenced by other in-game conditions (e.g., the requirement of completing the game's main story missions) should be displayed accurately. This may be considered analogous to the requirement of EGMs to feature a percentage 'return-to-player'.

Appropriate Terms to Describe Purchasable Items While many games employ elements of mystery and misdirection to achieve intended narrative or other effects, the purpose or functionality of items purchased by microtransactions should be clearly described to ensure that players can form reasonable expectations of the purpose of game items that are acquired with real money. The game should provide statements of fact only and avoid the use of sensationalistic or ambiguous language that may overstate the utility of the product.

Consumer Protection Measures

Age Restriction on Games with Microtransactions Although microtransactions may not meet the technical definition of gambling, an argument has been advanced that these activities should not be freely available or advertised to those under the legal age (Dwan 2017). Some young people may lack the capacity to form reasonable judgements on the value proposition of microtransactions, which becomes especially problematic if these individuals are not using their own money in these games (e.g., a parent's credit card). In addition, many of the top gaming companies' terms of use specify that in-game purchases by minors should be or are assumed to be conducted with the approval of a parent or guardian and there may be limited or no refund avenues. The display of classification labels specifying the appropriateness of these products for older players only (e.g., 'Mature' or 'Adults only' ratings) may deter some parents or guardians from purchasing games with these features for younger users.

Refund Entitlement The service agreement for online games with microtransactions differs in relation to entitlement to refund options for purchases of virtual currency. Some games state that a refund may be sought within 48 h of the purchase, whereas others claim that the player is not entitled to a refund. Given that virtual goods do not typically 'perish' or diminish in value, a protective consumer measure would apply a more forgiving window of opportunity for players to change their mind and seek a refund.

Regular Statements on Spending Activity Given that the actual cost of microtransactions may be disguised or lack visibility as credit card debt, some players may benefit from reminders of their recent and historical financial investment in the game (see Griffiths et al. 2009), including spending within sessions across days and weeks. This information may help some players make more informed decisions about their future spending intentions. A statement sent by regular paper mail to the player may reduce the ease with which that player is able to conceal in-game purchases from a partner or family member.

Self-Exclusion and Limiting Availability Most gambling venues have limited business hours (i.e., not open 24/7) and enable gamblers to 'self-exclude' (i.e., ban themselves from the premises for a certain period, e.g., 12 months). Gambling studies (e.g., Hayer and Meyer 2011; Nelson et al. 2008; Xuan and Shaffer 2009) have shown that self-exclusion improves abstinence from gambling and the reduction of harmful consequences. In contrast to many forms of gambling, however, an online game is always available (assuming that the game server is operational) and players cannot self-exclude. The introduction of limited business hours for in-game marketplaces (e.g., closed between midnight and 6am), especially for younger players, may therefore be protective. The ability to self-exclude from or disable all microtransaction options and offers on one's game account (e.g., 'gamertag' on *Xbox Live*) may be welcomed by players who are committed to avoiding these features.

Checklist for Problematic Gaming Use Player insight into problematic use and risky behaviors is considered foundational to making self-directed behavioral changes (Prochaska et al. 1992). For players who regularly purchase microtransactions or who play the game relatively more often, a brief screener (e.g., three items) may help players to identify signs that the in-game purchasing and/or playing behavior is starting to escalate and may be resulting in negative consequences. This approach has long been employed in gambling to promote player awareness of potentially harmful behavior (Cunningham et al. 2011).

Consumer Information and Industry Accountability

Access to Records of In-game Spending Players deciding to take stock of in-game purchasing may have difficulty in this task unless all purchases were made by credit card. Access to detailed records of purchases, including dates and times, as well as the obtained rewards (i.e., list of items) may help the player to gain an informed perspective on their behavior and identify patterns of behavior that highlight the times at which the player was vulnerable to overspending. Along a similar line, the player may benefit from being able to access the spending activities and outcomes of other players. This may help the player to form an opinion on the required level of spending to obtain a certain collection of goods within the game.

Notification of Changes to Microtransaction Systems The value proposition of items in some games may be difficult to assess without extensive knowledge of the game's later levels or demands of the player. For this reason, a player who invests a large amount of money in microtransactions only to discover that these rewards hold much less value than expected beyond a certain point in the game may experience significant cognitive regret. Following this reasoning, players should be informed in advance by the developer if major changes to microtransactions (e.g., payout rate, utility of in-game items) will be introduced that greatly affect the value or utility of items acquired by microtransactions.

Tips to Maintain Healthy Playing Behavior Game developers should be more aware that a minority of their users may develop problematic gaming behaviors (van Rooij et al. 2010). Among these vulnerable groups, the delivery of regular, clear, and concise prompts to engage in activities that promote well-being (e.g., eat healthy snacks, take breaks from gaming, sufficient sleep, physical exercise) may reduce the risk of becoming too involved in games. Similarly, there could be prompts for players to carefully consider in-game purchasing options and make responsible decisions. Underage users could be prompted to always obtain parental permission. Additional information could be made available on the publisher's website (e.g., Microsoft's *Healthy Gaming Guide*; Microsoft 2017).

Discussion

Video game monetization schemes have become a significant feature of the online gaming landscape. Given their variability in design and functionality, it may be difficult for some users to critically appraise the value of some in-game purchasing options and some vulnerable users may be financially and psychologically exploited by these schemes. At the same time, the gaming industry has downplayed the gambling-like aspects of 'loot boxes' by referring to these schemes as "surprise and delight" mechanics that should not be regulated (IGEA 2018) and has disregarded the research evidence of gaming-related harms (King and Gaming Industry Response Consortium 2018). This paper has shown that there are some aspects of gambling regulatory frameworks that could be potentially adapted to online gaming products. The implementation of measures that enable greater transparency of purchase conditions, for example, may be a cost-effective measure to promote player awareness of these activities. However, online games are fundamentally different from gambling products in some respects, such as in relation to the 'prize'; the methods used to determine payout; the greater emphasis on skilful play; and integration with other online and non-monetized features. Online games are generally much more complex than most gambling activities, and these products are more dynamic and have greater potential to tailor the playing experience (and in-game purchasing offers) to incentivise each individual player given their ability to access to player data. Nevertheless, some of the important lessons extracted from the areas of gambling prevention and harm reduction could be trialed in future empirical research on video games.

Current discussions of regulation of microtransactions have often debated whether certain activities should be considered a form of 'gambling'. In our view, this approach may be too constraining for considering the range of methods in these schemes that can exploit vulnerable users. The concept of 'predatory monetization' may be a useful point of reference for evaluating the potential risks to the player. Some schemes involve an *information asymmetry* (i.e., the game system knows more

about the player than the player can know about the game) that adjusts the presentation of offers to players in ways to maximize the likelihood of the player spending money (Ernst 2017). Similarly, players may not be aware or informed of the odds of receiving desired items from microtransactions, and the game may use pressuring tactics to incentivize purchases (e.g., 'limited time' offers). The next steps for regulating these types of activities will require further collaborative discussion on whether certain schemes should be required to be more *transparent* of its systems, or whether there should be certain *standards* for monetized structural characteristics in video games. While this paper has outlined some potential areas to help inform players, the concept of transparency may be fraught with limitations when considering the depth and complexity, randomness, obscure details, and always-evolving nature of online games. Game designers may be unwilling to disclose how they design their games given that these products involve intellectual property developed from multi-million-dollar investments. Thus, the development of more ethical standards in monetization and general restrictions on certain types of offers and design may potentially offer greater player protections that may also keep pace with technological developments.

This paper has provided a preliminary blueprint on which to base further discussions of social responsibility in relation to video game monetization. It was evident from these discussions that more research is needed to understand the financial aspects of online games and their relationship to persistent play and the onset of problematic gaming. Many video games are changing in fundamental ways (e.g., featuring larger worlds, more random elements, episodic content, and systems that 'gate' and 'throttle' player progress) to keep users playing longer and more regularly and to accommodate more options to monetize in-game content. The overlay of monetized content over traditional skill/strategy-based content has led to a basic tension in place choice and game design: should the player play longer to win or pay more to win? Problematic gaming that involves monetized features may be more financially involved and share features in common with gambling disorder (e.g., spending more than one can afford, borrowing or stealing money). A logical next step for addiction research is to examine different types of in-game monetization and their association with problem gaming symptoms and gaming-related harms. As gaming and gambling continue to converge, there will be a greater importance placed on the need to understand the optimal approaches—including player education, interventions, industry action, and modifications to the activities themselves—to respond effectively to the needs and behaviors of this large and diverse player base.

Funding This work received financial support from a Discovery Early Career Researcher Award (DECRA) DE170101198 funded by the Australian Research Council (ARC).

Compliance with Ethical Standards This article does not contain any studies with human participants performed by any of the authors.

Conflict of Interests Daniel King and Paul Delfabbro have not been involved in any research involving the marketing or refinement of gaming or gambling products for commercial operations.

Constraints on Publishing No constraints on publishing were reported by the authors.

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