

**SENATE ENVIRONMENT AND COMMUNICATIONS  
REFERENCES COMMITTEE**

**INQUIRY INTO GAMING MICRO-TRANSACTIONS  
FOR CHANCE-BASED ITEMS**

Dr. James D. Sauer (PhD).  
Senior Lecturer, Psychology  
University of Tasmania, Australia

Dr. Aaron Drummond (PhD).  
Lecturer, Psychology  
Massey University, New Zealand

**Terms of reference**

The extent to which gaming micro-transactions for chance-based items, sometimes referred to as 'loot boxes', may be harmful, with particular reference to:

- (a) whether the purchase of chance-based items, combined with the ability to monetise these items on third-party platforms, constitutes a form of gambling; and
- (b) the adequacy of the current consumer protection and regulatory framework for in-game micro-transactions for chance-based items, including international comparisons, age requirements and disclosure of odds.

### Submission in brief

(a) Are loot boxes a form of gambling?

- Although loot box systems vary, many loot box systems meet the five psychological criteria to be considered gambling (Griffiths, 1995).
- For some loot box systems, players can also “cash-out” in-game rewards for real-world currency, meeting a common legal criterion to be considered gambling.
- Loot box systems that (a) meet all psychological criteria for gambling and (b) allow players to cash out winnings, appear to meet both the psychological and legal definitions for gambling.
- **We do not know** the short-term or long-term consequences of engaging with these mechanisms.
- **We do know** that many of these systems operate on schedules of reinforcement (i.e., algorithms that determine the frequency with which valuable rewards are delivered) that exploit powerful psychological mechanisms to promote the rapid acquisition of behaviours that are frequently repeated and persistent, and that these mechanisms underpin many other forms of gambling.
- **We also know** that there is some overlap between demographic characteristics associated with (a) the gamer population and (b) risk factors for developing problematic gambling behaviour.

(b) Are current consumer protection and regulatory frameworks adequate?

- These protections and regulatory frameworks are largely absent in Australia.
- Internationally, regulatory responses have included declaring loot boxes illegal (e.g., Belgium, the Netherlands), requiring developers to disclose the odds of winning specific items (e.g., China, Japan), and leaving them entirely unregulated (e.g., UK, US).
- We propose a tiered regulatory response, accommodating the diversity of loot box systems available:
  - For systems that meet both psychological and legal definitions of gambling, or any systems that allow players to cash out rewards, we recommend ratings agencies and gambling regulatory bodies view these systems as gambling activities, and restrict access to people of legal gambling age.
  - For systems that meet the psychological criteria for gambling, but not the legal criteria (i.e., where in-game rewards cannot be cashed out for real currency), we recommend ratings agencies (a) include the content descriptor “Simulated Gambling” next to the classification, and (b) consider requiring the game to be rated in a restricted category (MA15+ or R18+ dependent upon the characteristics of the system).
  - In both cases, we further recommend ratings agencies adopt additional consumer/parental advisory information detailing the presence of loot box mechanics in relevant video games to help consumers and parents make informed decisions.

## What are loot boxes?

“Loot box” is a catch-all term for a digital container of randomised rewards. Rewards may allow players to customise aspects of the in-game experience (e.g., the appearance of their character), or confer some benefit in terms of gameplay (e.g., providing players with more powerful weapons to offer them a competitive advantage).

Loot boxes, and in-game reward systems in general, are not homogenous. Some systems offer rewards or access to loot boxes based on merit (e.g., a player may receive a reward or access to a loot box for accomplishing a challenging in-game task); other systems allow players to purchase loot boxes using real-world currency.

This latter category – gaming micro-transactions for chance-based items – is the focus of our submission. It is important to note that our conclusions relate specifically to these loot boxes, and are not applicable more broadly to all forms of in-game monetisation or reward systems.

## Are loot boxes a form of gambling?

Our recent paper directly addressed this question (Drummond & Sauer, 2018). Specifically, we examined twenty-two games, released in 2016-2017, containing loot box systems to determine if these reward mechanisms constituted a form of gambling. Loot box systems in a number of the games examined met the psychological definition for gambling, and in some cases, may meet the legal criteria for gambling.

However, before discussing our findings in depth, we want to (a) highlight similarities between the psychological mechanisms underlying many loot box systems and those associated with more conventional forms of gambling, and (b) identify the psychological and legal criteria we used to define gambling.

### *Loot boxes and gambling: Shared psychological mechanisms*

Loot box systems present some striking similarities to more conventional forms of gambling. Players purchase loot boxes for money and receive rewards of varying value based upon chance. More specifically, though, there is an important “randomness” in the delivery of rewards. Across multiple purchases, players might receive a high value item on average every X number of times they open a loot box (where X represents a number of openings determined by a pre-defined algorithm). For example, a game with a 10% chance of a high value item in a loot box may result in success, on *average*, once for every ten boxes purchased. Critically, however, the *exact* number of boxes that must be purchased to obtain a valuable item varies. This kind of reward structure is a *variable ratio reinforcement schedule*, and underpins many forms of gambling (Rachlin, 1990). Variable ratio reinforcement results in people quickly acquiring behaviours and repeating these behaviours frequently in the hopes of receiving a reward. Behaviours acquired with variable ratio reinforcement are extremely persistent (Ferster & Skinner, 1957). It is a central feature of poker machine gambling.

### *Defining gambling: Psychological and legal criteria*

In the psychological literature, Griffiths’ (1995) identified five criteria distinguishing gambling from other forms of risky behaviour:

1. The exchange of money or valuable goods.

2. An unknown future event determines the exchange.
3. Chance at least partly determines the outcome.
4. Non-participation can avoid incurring losses.
5. Winners gain at the sole expense of losers.

Thus, to meet the psychological criteria for gambling, a given loot box system must:

1. Be purchasable for real-world currency.
2. Be accessed after payment is made.
3. Provide a reward determined at least partly by chance.
4. Be optional (i.e., players must be able to choose not to buy the loot box).

The fifth criterion was more complicated. We took a conservative approach and assumed that winners only profit at the expense of losers if the obtained reward provides winners with a direct competitive advantage over losers in future gameplay.

Further to these psychological criteria, legal definitions of gambling often (but not always) require that winnings can be “cashed out” for real-world currency. Not all loot box systems contain this functionality, but some do. Some games include the ability to cash out winnings via third party websites (i.e., not run by a game company), others via the platform on which the game is distributed. Note that, in many cases, where game items may be cashed out via third party websites, the game’s terms and conditions often explicitly prohibit this.

Thus, in addition to determining whether the loot box systems in the games reviewed met the psychological criteria for gambling, we also determined whether mechanisms existed allowing players to convert in-game rewards into real-world currency (meeting a common legal criterion for gambling).

### *Our findings*

Of the twenty-two loot box systems we reviewed, ten met all five of the psychological criteria for gambling. For four of these ten games, players could also cash out in-game rewards for real-world currency. A fifth game met four of the five psychological criteria, and allowed players to cash out in-game rewards.

Nearly half of the games reviewed met all the psychological criteria, and more than one-in-five met the cash-out criterion (allowing players to cash out winnings). These cases appear most clearly to constitute a form of gambling.

### **Addressing two common challenges to the claim that loot boxes are gambling**

#### *1. In-game rewards have no real-world value*

When regulators have ruled that loot box mechanisms are not a form of gambling, the ruling has tended to reflect the belief that “in-game rewards have no real-world value, therefore loot boxes are not gambling.” Some game publishers have also advanced this argument.

This argument is problematic for two reasons. First, the premise is false: for a number of games with loot box systems, players can convert in-game rewards to real currency via either third-party websites or the platform on which the game is distributed.

Second, this claim rests on a very narrow conceptualisation of utility; that utility depends on real-world cash value. It ignores the subjective value created for players from the combination of scarcity of, and competitive advantage provided by, in-game items in the gaming environment. These in-game rewards can have value for players – and influence players’ behaviour (i.e., motivate them to engage with loot box mechanisms) – without being converted into real currency. For example, a scarce costume may signify prestige in the games’ online community, or a particular weapon might be highly desirable because it increases the ease with which they can win future games. In both cases, the item has value for the player, and this value may motivate players to continue buying randomised rewards until they obtain the item they desire.

## 2. *Nobody loses because everyone gets something*

A second common objection is that everyone who purchases a loot box gets *something* so there are no losers. An obtained reward might be high or low in value (or desirability) but, unlike in more conventional forms of gambling, no one loses their money entirely. Both the ERSB (the game rating agency for US and Canada) and PEGI (Pan European Game Information; the game rating organisation for Europe) have cited this argument when explaining their view that loot boxes are not a form gambling (Griffiths, 2018).

The premise here is accurate: Everyone who opens a loot box gets a reward. However, some players still lose. There are two ways a player might “lose”. First, in some loot box systems, the functional utility of reward items varies markedly. Some items confer substantial competitive in-game advantages and others provide no advantage. In this sense, players who receive powerful upgrades win, and those who do not, “lose”. Second, in cases where in-game rewards can be cashed out via third-party websites, the market value for some items is lower than the cost of purchasing the loot box (see Appendix A). Thus, the item is worth less than the player paid to obtain it; meaning the player incurred a financial loss from the loot box transaction.

This issue also presents a broader, and potentially serious, legal hazard that we recommend the committee consider carefully before delivering their recommendations. Accepting the argument that nobody loses in these games because “everyone receives a prize” may set a legal precedent for illegal gambling operations more broadly (e.g., unlicensed casinos) to skirt gambling regulations by providing every player with some prize following a losing game (e.g., by giving losing players 5 cents of their money back on a losing blackjack hand).

### **What is the potential for harm?**

When considering the potential for harm associated with engaging with loot box systems, three points are worth noting:

1. The current body of evidence does not yet allow us to draw confident conclusions about the short- or long-term consequences of engaging with loot box systems.
2. However, it is clear that some loot box systems share important structural and psychological similarities with conventional forms of gambling (e.g., operating on variable ratio reinforcement schedules), designed to exploit potent psychological mechanisms associated with the development and maintenance of gambling-like behaviours. Although we do not know how variable ratio reinforcement mechanisms will affect playtime and spending

behaviour in the gaming context, we do know that, in general, variable ratio reinforcement schedules lead to the rapid acquisition of behaviours that are frequently repeated in the pursuit of a reward, and that these behaviours are typically extremely difficult for people to stop repeating. Thus, it is plausible that engaging with these loot box systems could have short-term consequences (e.g., over-spending on accessing loot box systems) and longer-term consequences (e.g., facilitating migration to more conventional forms of gambling).

3. Loot box systems need not meet the legal criteria for gambling to have potentially adverse effects on players (especially young players). Of the games we reviewed, all were available to underage players and all (even those that did not meet all the psychological criteria for gambling) included mechanisms for initiating and maintaining player engagement that tap basic psychological principles associated with gambling (Drummond & Sauer, 2018). Research investigating the exposure of adolescents to simulated gambling suggests that risks such as peer-pressure and the dilution of monetary value through the exchange of real currency for virtual currency might facilitate migration to monetary forms of gambling (King & Delfabbro, 2016). Moreover, adolescents tend to have poorer impulse control than adults, potentially increasing their vulnerability to gambling-like mechanics and behaviours learned from these mechanisms (Lussier, Derevensky, Gupta, & Vitaro, 2014). Finally, there is some evidence that the gaming population might be particularly at-risk for developing problematic gambling behaviours. For example, males are both more likely than females to develop pathological gambling behaviours (Johansson, Grant, Kim, Odlaug, & Götestam, 2009), and overrepresented in the video-gaming population (Entertainment Software Association, 2017).

### **Are consumer protection and regulatory frameworks adequate?**

At present, to the best of our knowledge, there are no consumer protection or regulatory frameworks in place in Australia (other than those imposed by Apple's App Store or voluntarily adopted by individual games publishers, discussed below). There are currently age restrictions for online purchases on the major video game distribution platforms (i.e., *Steam*, *PS Store*, and *Xbox Network*), though it is not clear how robust these restrictions are.

### **International comparisons**

Internationally, governmental regulatory responses to loot box mechanisms have varied. Belgium and the Netherlands have ruled that loot boxes are illegal (effectively banning them from videogames). China and Japan have not banned loot boxes, but do require games with loot boxes to disclose the odds of receiving specific rewards (i.e., pay-out rates).

In contrast, relevant bodies in the US (ESRB) and UK (UK Gambling Commission) have ruled that loot boxes are not a form of gambling, and require no specific regulatory action. However, legislators in individual US states (e.g., Hawaii, Minnesota, and Illinois) have introduced bills to restrict young players' access to loot boxes, require explicit content warning about loot box systems, and/or require developers to disclose the odds of winning specific rewards.

Generally, where regulatory bodies have ruled that loot box systems are not gambling, the ruling has centred on the argument that in-game rewards have no real-world value; overlooking the fact that in some cases in-game rewards can be converted to real-world currency via third-party websites (e.g., Drummond & Sauer, 2018; Griffiths, 2018).

Industry responses have also varied. Apple’s official developer guidelines<sup>1</sup> require that “Apps offering ‘loot boxes’ or other mechanisms that provide randomized virtual items for purchase must disclose the odds of receiving each type of item to customers prior to purchase.”

Some games publishers (e.g., *EA Sports* and *Riot Games*) have also voluntarily decided to release this information for some of their games (e.g., *FIFA19* and *League of Legends*, respectively).

## Recommendations

Given the identified structural similarities between loot boxes and gambling, and the known potential for these mechanisms to produce maladaptive behavioural consequences, we recommend a two-tiered regulatory response (see also, Drummond & Sauer, 2018).

1. When loot box systems meet both the psychological and legal definitions of gambling, or in other cases where players can cash out in-game winnings, we recommend ratings agencies and gambling regulatory bodies consider restricting access to people of legal gambling age. Further, games that allow players to cash-out items via the distribution platform of the game itself (i.e., where the publisher, rather than a third party website, controls the cash-out mechanism), may also warrant regulatory oversight as bona fide gambling operations.
2. When loot box systems meet the psychological definitions of gambling (according to Griffiths’ criteria), but do not include the ability to cash-out winnings, we recommend that ratings agencies review these games and increase their recommended minimum age. Despite not meeting legal definitions of gambling, these systems exploit powerful psychological mechanisms associated with gambling behaviour. We recommend that the Australian Classification Board consider revising their guidelines to ensure all games with loot box systems that meet the psychological definitions of gambling are placed in an age-restricted category (either MA15+ or R18+). We suggest that the specific ratings given to such games should be based on revised guidelines developed by the Classifications Board, and depend on the prominence of the system within the game, and the specific features of the system (e.g., the reinforcement schedules in operation, and the odds of obtaining very high utility/desirability items). We also recommend that the Australian Classification Board adopt the content descriptor “Simulated Gambling” as the Entertainment Software Ratings Board in the US has done, and require distributors to apply this descriptor to all games with loot boxes that meet the psychological criteria for gambling (i.e., next to the classification on the box or website of the game).

In both cases, we also recommend ratings agencies adopt additional parental advisory information detailing loot box mechanics in video games to help consumers and parents make informed decisions about engaging with these systems.

Finally, we note that in our opinion, the potential for loot boxes to have negative psychological and behavioural consequences does not depend on meeting the legal criteria for gambling (e.g., being able to cash out winnings). Rather, this potential comes from exposing

---

<sup>1</sup> <https://developer.apple.com/app-store/review/guidelines/>

young gamers to loot box systems that exploit potent mechanisms for initiating and maintaining gambling-like behaviour (e.g., variable ratio reinforcement).

### References

- Drummond, A., & Sauer, J. D. (2018). Video game loot boxes are psychologically akin to gambling. *Nature Human Behaviour*. doi:10.1038/s41562-018-0360-1
- Entertainment Software Association. (2017). *Essential facts about the computer and video game industry*. Retrieved from [http://www.theesa.com/wp-content/uploads/2017/09/EF2017\\_Design\\_FinalDigital.pdf](http://www.theesa.com/wp-content/uploads/2017/09/EF2017_Design_FinalDigital.pdf)
- Ferster, C. B., & Skinner, B. F. (1957). *Schedules of reinforcement*. East Norwalk, CT, US: Appleton-Century-Crofts.
- Griffiths, M. D. (1995). *Adolescent gambling*. London: Routledge.
- Griffiths, M. D. (2018). Is the buying of loot boxes in video games a form of gambling or gaming? *Gaming Law Review*, 22(1), 52-54. doi:10.1089/blr2.2018.2216
- Johansson, A., Grant, J. E., Kim, S. W., Odlaug, B. L., & Göttestam, K. G. (2009). Risk factors for problematic gambling: A critical literature review. *Journal of Gambling Studies*, 25(1), 67-92. doi:10.1007/s10899-008-9088-6
- King, D. L., & Delfabbro, P. H. (2016). Early exposure to digital simulated gambling: A review and conceptual model. *Computers in Human Behavior*, 55, 198-206.
- Lussier, I. D., Derevensky, J., Gupta, R., & Vitaro, F. (2014). Risk, compensatory, protective, and vulnerability factors related to youth gambling problems. *Psychology of Addictive Behaviors*, 28(2), 404-413. doi:10.1037/a0034259
- Rachlin, H. (1990). Why do people gamble and keep gambling despite heavy losses? *Psychological Science*, 1, 294-297.



## Appendix A



The screenshot shows the Steam Community Market interface. At the top, the Steam logo and navigation links (STORE, COMMUNITY, ABOUT, SUPPORT) are visible. The main heading is "Community Market" with a subtext: "Buy and sell items with community members for Steam Wallet funds." Below this, a search bar shows "Showing results for: PUBG PLAYERUNKNOWN'S BATTLEGROUNDS". A table lists six items for sale, each with a small image, name, game title, quantity, and price.

NAME	QUANTITY	PRICE ▲
 <b>AVIATOR CRATE</b> PLAYERUNKNOWN'S BATTLEGROUNDS	187,517	Starting at: \$0.03 USD
 <b>Rugged (Beige) - Crossbow</b> PLAYERUNKNOWN'S BATTLEGROUNDS	65,198	Starting at: \$0.03 USD
 <b>Working Boots</b> PLAYERUNKNOWN'S BATTLEGROUNDS	73,745	Starting at: \$0.03 USD
 <b>Vintage Polo Shirt</b> PLAYERUNKNOWN'S BATTLEGROUNDS	48,829	Starting at: \$0.03 USD
 <b>Raglan T-shirt (Red/White)</b> PLAYERUNKNOWN'S BATTLEGROUNDS	39,222	Starting at: \$0.03 USD
 <b>Combat Pants (Black)</b> PLAYERUNKNOWN'S BATTLEGROUNDS	56,077	Starting at: \$0.03 USD

Screenshot taken from *Steam*'s online community market ([available here](#), accessed on 23.07.2018) showing items purchasable for \$0.03USD. These items are in-game rewards, obtained from loot box systems, from the game *PlayerUnknown's Battleground* (*PUBG*). Accessing the loot box systems in *PUBG* costs \$2.50USD.