Loot Outcomes Are Not Influenced by 'Who' Creates the Raid ID

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Introduction

Many video games use randomly-generated elements to improve the player's gaming experience and overall replayability. This may take the form of randomly generated maps, monsters, encounters, and loot systems. Randomly-generated loot systems are especially popular in RPGs, wherein monsters drop a limited number of items from a larger list of possible items. Whether or not a specific item drops upon the death of a single monster is usually determined by 1) the likelihood that the item is selected from a list of possible items (i.e., the 'programmed' probability), and 2) a random sampling of the possible list of items, given the constraints on the number of items selected. Typically, the most sought-after items are rare, requiring players to kill large numbers of monsters to obtain them.

In the game World of Warcraft (WoW), players frequently point to 'streaks' in loot drops as evidence of non-randomness (see Gamblers fallacy) and debates over whether loot outcomes are 'truly random' are common (Muzpaly pers. comm. 2020). Many proponents of the non-randomness theory point to the fact that WoW uses a Pseudo-Random Number Generator (PRNG) system to create group or raid instances and their associated loot. In these systems, the computer generates a series of numbers according to a Seed, which is then converted to a presentable output (i.e., loot table). Although the numbers associated with the Seed are randomly generated, some argue that the selection of the Seed itself might be a non-random process. Instances of underlying patterns in seemingly random processes have also been used as indirect

evidence for non-random loot outcomes. For example, Ragnaros' 'Wrath of Ragnaros' mechanic is supposed to randomly target three members in the raid. However, recent evidence suggests that players are not selected randomly but are instead selected according to lowest GUID (i.e., the date those characters were created on the server – see 1). Although the targeting for this mechanic has been fixed to select characters at random, it has generated speculation on the underlying mechanics governing loot systems.

Some active WoW players believe that Raid IDs could be part of a non-random process governing loot outcomes. A Raid ID is created and assigned to a raid group when a member of that group zones into the instance. Within the guild <Entropy> on the Herod server, several members have suggested that Raid IDs may function as, or are related to, the Seed used in the PRNG system governing loot. Furthermore, proponents of the Raid ID theory argue that loot outcomes might also be affected by the character who obtains the Raid ID. This has created significant speculations and superstition about Raid IDs, with members vying to be the one who created the Raid ID. Furthermore, when a member obtains a 'good ID' (i.e., favourable loot outcomes) for a raid or several raids in succession, efforts are made to ensure that the character secures the Raid ID for subsequent raids in the hopes of obtaining 'good' loot in the future.

In this study, we tested whether a single person's Raid ID (i.e., a 'lucky Raid ID', hereafter referred to as 'fixed ID') generated different loot outcomes than a randomly selected Raid ID (hereafter referred to as 'random ID'). We focused on the raid instance Molten Core (MC) because it contains a sufficiently large number of potential loot drops from which to draw data, and because it is currently the longest-running raid on Classic Servers. Prior to data collection, we categorized each item in the loot table of MC bosses according to quality as

'good' or 'bad', and then compared the average number of 'good' loots obtained between a fixed ID and random ID.

Methods

We collected loot data for MC over the course of a 37-week period, recording the respective Raid ID for each week as a fixed ID (n = 20) or random ID (n = 17). Data on loot were recorded in a spreadsheet and we used the total number of 'good' loot obtained in a given week as an indicator of overall loot quality for that sample. Legendary item drops from each week (if any) were excluded from the analysis. An additional three weeks of data for the random ID (n = 3) category were obtained from loot information posted by User ClassicRogueVII on Reddit. Information on Loot quality (i.e., good or bad) was assigned to each potential loot piece *a priori* in the hopes of being as objective as possible and to ensure accurate comparison of loot quality over the course of our study (see Supplemental Materials). Our formal hypothesis may be stated as follows:

Null Hypothesis

H_O: There is no difference in the average number of 'good' loot obtained from a fixed ID and a random ID.

Alternative Hypothesis

H_A: There is a difference in the average number of 'good' loot obtained from a fixed ID and a random ID.

Statistical Analysis

We used an unpaired Two-Sample T-test to compare loot quality obtained between fixed and random IDs. We used a two-tailed T-test because it was possible that loot quality obtained

from the fixed ID was worse than that obtained from the random ID. We used the number of

'good' loot obtained each week as a statistically independent sample and ensured that the data

met assumptions of normality and homogeneity of variance. All statistical analyses were

performed in R Statistical Software (2).
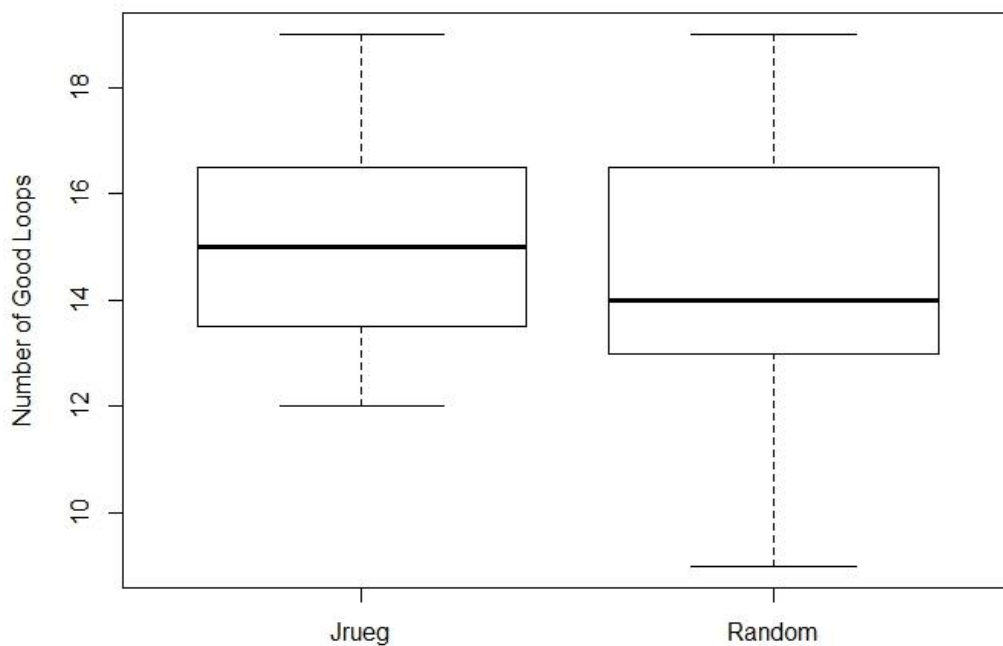
Results and Discussion

Figure 1. Number of Good Loops obtained by fixed IDs (Jrueg) and random IDs (Random) from 40
weeks of loot data in Molten Core.

The median number of good loots was 15 and 14 for fixed and random IDs, respectively

(fixed ID standard deviation: 2.0; random ID standard deviation: 2.6). However, the overall

average number of good loots did not vary between random and fixed IDs ($p = 0.18$, $t = 1.35$, df

$= 38$). Thus, we fail to reject the null hypothesis and conclude that the overall loot quality does

not vary according to raid ID, or any underlying dependency on which characters obtain the raid ID.

This study demonstrates that loot quality is not determined by the character who creates the raid ID. Even though the quality of loot from fixed IDs were occasionally higher than the median (i.e., 19 in Week 4, Week 12) and there were instances of consecutive weeks above the median (i.e., 17, 16, and 19 in weeks 10, 11, and 12, respectively), these trends were inconsistent and not statistically different from the loot outcomes obtained using random IDs.

It is important to note that our study did not consider the potential impact of Raid ID on specific loot items. Rather, we used an *a priori* system of gauging loot quality and conducted our study according to the categories used therein. The advantage of this approach is that our data were more robust, whereas focusing on specific items would require a much larger dataset and more time in MC. Thus, we could ask "does a fixed ID get more of item X", but our current sample size would be insufficient for most items. Nonetheless, if a fixed ID does not produce, on average, more good quality loot than a random ID, Raid ID is unlikely to affect the outcome of specific items dropping. Given our findings, and the overall intentions of game designers, it is likely that loot outcomes in World of Warcraft are governed by probability and random processes.

Acknowledgements

References

1. https://www.reddit.com/r/HardcoreClassicWoW/comments/e2e9d9/ragnaros_knockback_affects_3_targets_max_targets/

2. R Core Team. R: A language and environment for statistical computing. R Foundation for Statistics Computing, Vienna, Austria; 2013. URL http://www.R-project.org/.