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Kristen Abernathy* (abernathyk@winthrop.edu), **Lindsay Bradley**, **Emili Moan** and **Zoe Vernon**. *Fusion in Card Collecting Games: A Probable Outcome*. Preliminary report.

Card Collecting Games (CCGs), as well as many games in other genres, often employ a mechanic referred to as gacha-fuse-evolve where players randomly draw items with different levels of rarity (common, uncommon, and rare) that can be fused and evolved to create stronger items. With the free-to-play model that many online companies use, it is important that CCG developers keep the game easy enough that players want to continue to play but difficult enough that players want to spend money to better their experience. To achieve this, developers need to ensure fusions occur often enough to keep the non-paying players engaged, but seldom enough to entice players to purchase additional fusion opportunities. For this talk, we explore the probability of players drawing four different types of fusion (unique fusion, quad-fusion, evolutionary trees, and recipe fusion) in a given time period. We also run a sensitivity analysis to determine which parameters - deck size, number of rare cards, or length of play - are most sensitive. (Received September 22, 2015)