Functional Customization in Looter Shooters and Roguelikes: Crafting the Meta Build

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Abstract

This games user research study deconstructed functional customization in looter shooters and roguelikes. The study categorized the scope of functional customization and applied Self-Determination Theory and Self-Efficacy Theory to player psychology. There were no significant differences in games with learn by failure mechanics and those without them. In the combined sample, analyses found some functional customization levels were significantly positively related to feelings of autonomy and competence but found no significant relationships with relatedness or self-efficacy.

Keywords

Functional Customization, Looter Shooters, Roguelikes, Self-Determination Theory, Self-Efficacy, Failure Gameplay Loops, Player Motivation, Autonomy, Competency, Relatedness

Positionality

The researcher is a 26-year-old white male from Dallas, Texas. He holds undergraduate degrees in Mechanical Engineering and Mathematics and is currently a Master of Interactive Technology graduate student at SMU, specializing in production with a sub specialization in level design. His thesis explores looter shooters and roguelikes. He has gameplay experience

in three of the ten studied titles: *Borderlands 3*, *The Division 2*, and *Risk of Rain 2*.

Introduction

Action games are a super genre of videogames, characterized by fast-paced gameplay which requires reflexes, timing, and strategic thinking [1]. Action games can include first person and third person games [1]. It includes mechanics of combat, exploration, and puzzle solving [1]. There are many subgenres within action games such as fighting games, beat'em up games, platformers, and first-person shooters [1]. Looter shooter and roguelike games also fall under the action genre and were the primary focus for this study.

Looter Shooters are a distinct subgenre of action games, characterized by the combination of shooter mechanics, procedurally generated weapons and loot, fast-paced mechanics, and a grind to progress through the game to upgrade equipment [2], [3]. The core gameplay loop is customizing your character with long term rewards (guns and equipment) that are usually randomized gear drops that range from common to legendary rarity [2], [4]. Looter shooters typically feature rarity systems as a core mechanic, with item tiers commonly ranging from common, uncommon, rare, epic, to legendary, each offering progressively greater benefits to the player [4]. The item tier system is where higher rarity items provide enhanced functionality, power, or customization options compared to lower tier gear. The looter shooters looked at over the course of the study were *Borderlands 3, Borderlands 4, The Division 2, Escape from Tarkov, Warframe, and Destiny 2.*

Roguelikes are a distinct subgenre within action games, defined primarily by two foundational mechanics. The first is permadeath, which means that when a player's character dies, they do not respawn; instead, the player must restart the game from the beginning. This mechanic creates significant stakes for every decision and encounter, as progress is lost upon death [5]. The second core mechanic is the failure gameplay loop. In addition to permadeath, roguelikes are designed with the expectation that players will frequently experience failure, whether through character death or other setbacks. This design encourages repeated attempts, learning from mistakes, and gradual mastery of game systems. The loop of failure and retrying is important to the roguelike experience, which can impact both player progression and engagement [6].

These mechanics form a gameplay loop centered on repetition, adaptation, and incremental mastery, where players learn through failure and refine strategies across successive runs [5], [6]. Within the roguelike genre, like looter shooters, there are plenty of opportunities for the players to customize their character's ability, gear, and playstyle, all of which can change per run. A run is a colloquial term used to define a scenario a player goes through that ends with a victory or player death, where the player begins from scratch or at a much lower point of power [7]. There is also a small subsection of roguelikes called roguelites, but for the scope of this study any games that may have fit that genre were lumped into the overall roguelike subgenre. The roguelikes looked at over the course of this study are *Slay the Spire, Hades, Binding of Isaac,* and *Risk of Rain 2.*

Part of the success of looter shooter and roguelike games is driven by the customization systems common in each respective genre [5] [2] [3]. Looter shooter games are a mix of shooter mechanics with procedurally generated weapons and loot [2] [3]. Roguelike games are a mix of failure gameplay loops combined with high amounts of replayability through randomness and customization [5]. The looter shooter and roguelike genres represent overlapping segments of the global videogame market. The shooter games market was valued at 72.7 billion in 2024, and the looter shooter genre falls within this large bucket [8]. The roguelike market itself was valued at 1.33 billion in 2025 [9]. Game developers for these titles continue to utilize customization and replayability [5], [6]. Thus, these genres promote the ability for players to customize their characters functionally by altering gear, abilities, and playstyle [5] [2] [3]. The quality and quantity of customization can affect how players feel in control, capable, connected to others, and confident in their future ability to achieve objectives within looter shooter and roguelike games [10].

Functional customization in games refers to mechanics that allow the player to customize gameplay relevant elements [10]. In this study the aesthetic customization aspect of games was not considered. In looter shooters, customization follows basic kill-and-loot gameplay loops, while in roguelikes, customization often plays a crucial role within failure gameplay loops, where repeated defeat factors into the customization players can engage with [11]. Previous research explored customization in general in games [10]. However, there is little published research on specific functional customization and failure gameplay loops. This study sought to address that gap by focusing on a sample from the looter shooter and roguelike genres. This study utilized Self-Determination Theory (SDT) and

Self-Efficacy Theory (SET) to examine if functional customization and failure gameplay loops affect player motivation. The researcher operationalized SDT and SET to measure players' immediate psychological needs satisfaction and frustration, as well as future self-confidence. This games user research aimed to inform future game design efforts in player motivation.

The research questions were:

- How does customization in games shape a player's motivational experience?
- In what ways do failure gameplay loops influence how players engage with customization.
- Does customization in games meaningfully affect players' confidence?

Background

Self-Determination

The application of Self-Determination Theory (SDT) is a model of human motivation that describes what encourages and dissuades people. SDT includes 3 psychological needs: autonomy, competence, and relatedness [12]. Satisfying these needs enhances overall happiness [12]. It also increases a person's willingness to pursue goals that align with their internal values [12].

Autonomy

Autonomy needs satisfaction is defined by the experience of volition or willingness when doing a task [12]. When task activities are done for interest or personal value, perceived autonomy is high and is satisfied [12]. Autonomy need frustration occurs when the person fails to be able to make decisions according to their own volition, or in other words, to perceive task activities as contrary to one's own choice [12].

Competence

Competence needs satisfaction is defined by the experience of effectiveness and command when engaging in a task [12]. When individuals feel capable while achieving desired outcomes and overcoming challenges, perceived competence is high and is satisfied [12]. Competence need frustration occurs when challenges are too difficult or when feelings of effectiveness are diminished and individuals feel incapable, ineffective, or experience

repeated failure in their efforts, leading to a lower sense of control and proficiency [12]. Competence reflects the feeling resulting from engaging with a task in real time and the immediate after action report of a players performance [12].

Relatedness

Relatedness needs satisfaction is defined by the experience of closeness, connection, and a sense of belonging in one's social circle and relationships [12]. When individuals feel understood, valued, and emotionally supported by others, perceived relatedness is high and is satisfied [12]. Relatedness need frustration occurs when individuals feel excluded, rejected, or disconnected from others, resulting in a sense of isolation or distance from normal social circles in relationships [12].

Self-Efficacy

The theory of self-efficacy is a separate model for understanding human motivation [13]. Self-efficacy is defined as an individual's belief in their capability to organize and execute actions required to achieve and succeed at specific goals or accomplish a task [13]. When individuals believe they can succeed in a task, perceived self-efficacy is high [13]. Low self-efficacy leads to avoidance behaviors, reduced effort, and rapid withdrawal from difficult tasks [13]. Unlike competence, which reflects real-time feelings of effectiveness, self-efficacy is forward-looking. It measures a person's expectations of future performance and has been shown to predict actual subsequent performance on tasks [13], [14].

Self-Efficacy Theory (SET) contains four primary sources that shape efficacy beliefs: mastery experiences, vicarious experiences, verbal persuasion, and physiological/emotional states [13]. Mastery experiences are defined by performance outcomes and successful completion of tasks [13], [14] . Vicarious experiences are defined as observing others perform tasks successfully, thus raising one's own belief to successfully do the same task [13], [14]. Verbal persuasion is defined by being told by others that one can succeed at things [13], [14]. Physiological/Emotional states are defined by states like anxiety or stress influencing one's perceived self-efficacy [13], [14]. All four of these sources interact with one another to influence a person's self-efficacy.

Customization

Customization is defined as activities where users modify some aspect of an interface to a certain degree to increase its personal relevance [10]. Customization in games typically involves two main avenues: aesthetic customization and functional customization [10]. Aesthetic customization involves altering a player's character's appearance like their hair color, or types of clothes they are wearing [10]. This games user research does not touch on aesthetic customization.

Functional customization is defined as using or altering features designed mainly to fulfill task-based goals such as equipping a new weapon in a videogame or changing one's strategy [10]. Because functional customization is centered on tasks, it aligns directly with SDT and SET. Both measure how individuals experience and respond to task engagement. SDT captures how players feel during and immediately after task performances, while self-efficacy captures their confidence in future task performance and has been shown to predict actual subsequent performance [12], [13]. This task-based connection helps inform the researcher's evaluation of a game's functional customization using SDT and SET frameworks to create a taxonomy system. The researcher operationalized functional customization into three categories defining the components that constitute a game's functional customization options.

1. **Offensive** – Offensive customization refers to tools and systems that allow players to change and augment their approach to combat within games. Weapon options and instruments such as swords, bats, guns, bows, or unarmed strikes are used in a variety of ranged and melee encounters that allow the player to take offensive actions against a game's enemies. Further offensive customization can involve damage types, gun attachments, and various other properties.
2. **Abilities** – Abilities and skills refers to character capabilities derived from mechanics such as skill trees, or class specializations. These options provide unique actions, such as rewinding time or casting a magical explosion, etc.
    a. **Skill Trees** – a skill tree is a branching progression system where players unlock abilities and skills in a structured sequence, like following a 'branching tree'. Players usually invest down one of these branches to access full advanced abilities and skills [15].

    b. **Class Specializations** – Class specializations are predefined roles that can shape a player's playstyle. An example would be playing as a tank, a role that is designed to absorb damage from enemies that would have damaged their allies [16].
3. **Defensive** – Defensive customization refers to equipment, items or gear that players can equip to enhance survivability, resilience, and efficiency. Gear can include armor, shields, accessories, and consumables like health potions or buffs. Further defensive customization can involve upgrading armor stats, or augmenting gear with damage type specific defenses.

The researcher separated the three categories into a high and low classification. A high classification is given where there is a high presence within a game's system. A low classification is where only minimal or limited options are present, resulting in fewer opportunities for players to engage with that type of customization.

- **Offensive**
    - **High** – Games with three or more offensive customization systems, such as weapon selection, attachment options, damage types, and melee and ranged combat options. Examples from this study include *Borderlands 3*, which features weapon selection, attachments, elemental damage types, melee and ranged combat, and manufacturer perks [17].
    - **Low** – Games with fewer than three offensive customization systems, such as a fixed default weapon or randomized drops with no player selection. Examples from this study include *Slay the Spire*, where offensive output is limited to a default set of attack cards [18].
- **Abilities**
    - **High** – Games with three or more ability customization systems, such as branching skill trees, class specializations, and selectable action skills. Examples from this study include *Destiny 2*, which offers three classes, multiple subclass trees, and super abilities [19].
    - **Low** – Games with fewer than three ability customization systems, where the player may have a fixed set of abilities or no ability system at all. Examples from this study include *Escape from Tarkov*, which has no player abilities [20].
- **Defensive**

- **High** – Games with three or more defensive customization systems, such as equippable armor, shields, and gear mods or stat customization. Examples from this study include *Borderlands 3*, which offers armor, shield types, and gear mods [17].
- **Low** – Games with fewer than three defensive customization systems, where the player must rely on a fixed method of survivability or basic consumables. Examples from this study include *Risk of Rain 2*, where defensive items are limited to randomized drops and don't even function as armor that you can equip in an inventory [21].

These ranges provide an initial classification based on system count. However, the final high or low rating for each SDT construct later discussed in the methodology section holds more weight for how those systems specifically relate to that construct. For autonomy, the researcher evaluated how much control over the systems the game provides. For competence, the researcher evaluated how much each system enables mastery. For relatedness, the researcher evaluated whether each system affects other players, like in multiplayer. As a result, some games may receive a different rating for a specific construct distinction than their initial system count would suggest. As mentioned earlier, with a new theoretical taxonomy, these distinctions allowed the researcher to make a first pass at analyzing a game's varying levels within the three categories of functional customization in relation to the player's level of autonomy, competence, and relatedness and study if these player psychological states were affected by if a looter shooter or roguelike had a high level of functional customization or a low one.

Game Deconstruction

Looter Shooter Games without Failure Gameplay Loops

Borderlands 3 & 4

Gearbox Software developed *Borderlands 3* and *Borderlands 4*, both first-person action games published by 2K in 2019 and 2025 respectively [17], [22]. *Borderlands 3* has sold over 22 million copies across PlayStation, Xbox, PC, and Nintendo Switch platforms while *Borderlands 4* has sold over two million copies across PlayStation, Xbox, and PC platforms [23], [24]. Procedurally generated loot, expansive character customization, and co-op mechanics position both titles within the looter shooter subgenre [17], [22].

Players choose from four Vault Hunter characters, each with three distinct action skills and multiple skill trees that support a lot of unique builds and playstyles [25]. The core gameplay loop in both titles centers around quests, defeating enemies, and looting gear, with progression offered via the skill trees [17], [25].

Functional customization in both titles is operationalized through character selection, different weapon traits and classes, skill tree point allocation that allows players to optimize damage types, cooldown reductions, augmentation of current abilities, and different ultimate abilities [17], [22], [25]. Procedurally generated loot, such as guns, shields, and other equipment, can interact with class abilities to produce a wide variety of different playstyles [17], [22], [25]. Both titles also feature a system of instant gear scaling, which helps ensure that customization choices remain meaningful across solo and multiplayer situations [17], [22], [25].

Destiny 2

Bungie developed and published *Destiny 2*, a first-person action game released in 2017 [19]. To date, it has sold over 20 million copies across PlayStation, Xbox, and PC platforms [19], [26]. By combining procedurally generated loot, customizable loadouts, and co-op systems, *Destiny 2* positions itself within the looter shooters subgenre [19]. Players take on the role of guardians, choosing from three classes, each with subclass trees and customizable loadouts [19]. The core gameplay loop centers on completing missions, acquiring loot, and refining builds across player-versus-environment (PvE) modes and player-versus-player (PvP) modes [19]. *Destiny 2* emphasizes co-op play through clans, matchmaking, and large-scale events [19].

Functional customization in *Destiny 2* is operationalized through armor/gear, weapons, mod systems, classes and subclasses [19]. Players choose between three main classes, each with a variety of subclass options nested underneath their original choice [19]. Players can also select from a wide selection of gear that provides the player with different benefits/modifiers that change stats such as health, damage, grenade count and more [25]. Players can also equip armor mods that also affect stats regeneration rates, elemental resistance, mobility, or shield recharge [27]. Players can equip a wide variety of weapons that can change a player’s game plan and engagement options with the games content, like the mod system, there are weapon perks that affect handling, stability, and damage

profiles [19] . Players can also opt to play the game solo or engage in multiplayer modes such as raids or do quests together [19].

The Division 2

Massive Entertainment and Ubisoft developed and published *The Division 2*, a third person action game [28]. To date, it has sold over 20 million copies across PlayStation, Xbox and PC platforms [28], [29]. Procedurally generated loot, modular gear systems and Co-op mechanics positioned *The Division 2* within the looter shooter subgenre [28]. Players create a division agent and choose from various specializations, each offering unique skills and gear paths [30]. The core gameplay loop centers around completing missions, engaging in combat, and collecting loot to upgrade weapons, armor, and abilities. The co-op system not only allows PvE content but also allows PvP content [28], [30].

Functional customization in *The Division 2* is operationalized through modular gear systems and weapon attachment slots that provide various gun benefits [30]. Players can equip gear that provides them with different benefits/modifiers that change stats such as critical hit chance, armor generation, or skill cooldowns [28]. Players can choose from various class specializations that alter the way a player engages in combat situations [28]. Players can also choose from a list of skills that provide them with different combat benefits, such as summoning a drone or getting a turret to aid them in fights against enemies [28]. Players can choose to play solo or multiplayer with friends where PvE and PvP content is available [30].

Escape from Tarkov

Battlestate Games developed *Escape from Tarkov*, a first-person action game that entered closed beta in 2017 and had a full release in 2025 [20]. No official sales data could be found, but according to Steam charts it is estimated there are around 1 million owners on PC platforms [20], [31]. Through its hardcore extraction mechanics, procedurally generated loot, and deep customization systems, *Escape from Tarkov* positions itself within the looter shooter subgenre [20]. Players enter the game as PMC or Scav characters aiming to survive, loot, and extract gear while fighting other players and non-playable characters (NPCs). The core gameplay loop centers around combat, scavenging, and gear management under permadeath conditions with deep customization options, all while facing other players to get the best loot possible [20].

Functional customization in *Escape from Tarkov* is operationalized through its weapon mod system, armor, and other gear such as backpacks [20]. Players can customize weapons with various weapon attachments such as barrels, receivers, stocks, optics, grips, and sights [20]. Players can also customize armor and gear to alter movement speed or health stats, and items like backpacks affect inventory space and accessibility [20]. Players primarily engage with these systems in solo PvP environments but can work together against other players [20].

Warframe

Digital Extremes developed and published *Warframe*, a free-to-play third person action game released in 2013 [32]. To date, there is no sales data at as *Warframe* is a free game, but it has released across PlayStation, Xbox, Nintendo Switch and PC platforms and is estimated to have around 200,000 players on Steam [32], [33], [34]. Procedurally generated missions, extensive customization systems, and co-op play position *Warframe* within the looter shooter subgenre [32]. Players assume control of the Tenno, ancient warriors equipped with biomechanical suits called Warframes, each offering unique abilities and playstyles [32], [33]. The core gameplay loop centers around selecting a Warframe, completing procedurally generated missions, acquiring loot and crafting resources, and upgrading gear [32], [33].

Functional customization in *Warframe* is operationalized through players choosing from a wide variety of warframes that offer a unique playstyle [32], [33]. Players can also customize their weapon choice, where they can craft and collect a wide range of weapons to choose their engagement options [32], [33]. *Warframe* also employs a mod system where their player can augment how their weapons and warframes operate by choosing different mods to equip [32], [33]. These mods can also affect core stats like how much damage or shield a player has for their character [32], [33]. There are also many different multiplayer options where players can quest and customize their warframes together [35].

Roguelikes with Failure Gameplay Loops

The Binding of Isaac

Edmund McMillen and Florian Himsl developed *The Binding of Isaac*, an top-down action game released in 2011[36]. To date it has sold over 14 million copies across PlayStation, Xbox, Nintendo Switch, and PC platforms [36], [37]. Procedurally generated dungeons, randomized item drops, and

failure gameplay loops position *The Binding of Isaac* within the roguelike subgenre [36]. Each run ends in either player victory or death, with death resulting in a full restart. Through repeated attempts players learn enemy patterns and item interactions, forming the games core failure gameplay loop. Players control Isaac or other unlockable characters through dungeons filled with enemies, items, and bosses [36]. Each run is unique, with randomized room layouts, items drops, and character builds. There is progression that includes permanent unlocks, character variants, and endings [36].

Functional customization in *The Binding of Isaac* is operationalized through active items, passive items, different characters, and trinkets [36]. Active and passive items can alter projectile behavior, movement speed, health, and damage [36]. Players can combine items to create combinations that can create effects and playstyles that players can use to also create new strategies [36]. Players can also unlock new characters that can change stats and abilities, allowing players to play each run differently [36].

Hades

Supergiant Games developed and published *Hades*, an isometric action game released in 2020. To date has sold over 7.8 million copies across PlayStation, Xbox, Nintendo Switch, and PC platforms [38], [39]. Procedurally generated combat encounters, randomized upgrades, and failure gameplay loops positions *Hades* within the roguelike subgenre [40]. Each run ends in either player victory or death, with death resulting in a full restart. Through repeated attempts players learn enemy patterns, earn progression in things like permanent upgrades, unlockable weapons, evolving storylines forming the games core failure gameplay loop. Players control Zagreus, attempting to escape the underworld through procedurally generated combat encounters and levels [38]. Each run features randomized rooms, boons, and weapon-based builds [40].

Functional customization in *Hades* is operationalized through boons, weapons called infernal arms, artifacts, and keepsake upgrades [40]. Players can choose boons that affect stats such as damage and health [40]. These boons can stack to create effects such as combining damage overtime with critical multipliers [40]. Players can also choose infernal arms, which alter the overall combat style with which a player can engage enemies [40]. Artifacts and keepsakes also alter player choices, such as providing boons additional benefits or providing extra damage against enemies [40].

Risk of Rain 2

Hopoo Games developed *Risk of Rain 2*, a third person action game published by Gearbox Publishing in 2020. To date, it has sold over 9 million copies across PlayStation, Xbox, Nintendo Switch and PC platforms [21], [41]. Procedural level generation, escalating difficulty, and randomized item acquisition position *Risk of Rain 2* within the roguelike subgenre [21]. Each run ends in either player victory or death, with death resulting in a full restart. Through repeated attempts players learn enemy patterns and item interactions, forming the games core failure gameplay loop. These features help *Risk of Rain 2* create dynamic gameplay [21]. Players choose from a roster of survivors that all have unique abilities and playstyles [21]. The core gameplay loop centers around surviving increasingly difficult waves of enemies, getting items, and traveling through procedurally generated environments [21]. Items range from passive buffs to active effects with no cap on stacking, allowing for exponential build growth [21]. There is a lot of progression that includes unlocking new survivors, skills and artifacts. *Risk of Rain 2* supports up to four player online co-op [21].

Functional customization in *Risk of Rain 2* is operationalized through item collection and survivor selection [21]. Players gather items throughout runs that can alter a player's damage, movement speed, health, and other aspects of their character [21]. Players can choose from a variety of different survivors, all of which have unique abilities that are used to engage in different play styles [21]. Players can play solo or multiplayer with friends to complete runs in a PvE environment [21].

Slay the Spire

Mega Crit developed and published *Slay the Spire*, a turn-based roguelike deck builder game released in 2019. As of 2021, it sold over 3 million copies across PlayStation, Xbox, Nintendo Switch, mobile and PC platforms [18], [42]. Procedural map generation, randomized card acquisition and failure gameplay loops positioned *Slay the Spire* within the roguelike subgenre [18]. Each run ends in either player victory or death, with death resulting in a full restart. Through repeated attempts players learn enemy patterns and card/relic interactions, forming the games core failure gameplay loop [18]. Players choose from four characters, each with unique starting decks and relics [18]. The core gameplay loop involves ascending a procedurally generated map, battling enemies through turn-based card play, and refining decks with new cards and relics [18]. There is a lot of progression for the

player that involves unlockable cards, relics and ascension difficulty levels [18].

Functional customization in *Slay the Spire* is operationalized through deck creation and construction, gaining relics and upgrading cards within the player's deck [18]. Players can choose between four different characters, which provides the player with a different set of possible decks available to them. Players then gather cards throughout a run by crafting them or getting them as rewards. These cards create a player deck that can emphasize defensive, offensive, or resource generation type of playstyle. Players can collect relics that have persistent modifiers that can alter a player's playstyle in preferred ways, such as having more resources or dealing more damage [18].

Table 1 List of Games and if they include Failure Loops

Game	Genre	Learn by Failure
Borderlands 3	Looter Shooter	No
Borderlands 4	Looter Shooter	No
Binding of Isaac	Roguelike	Yes
Destiny 2	Looter Shooter	No
The Division 2	Looter Shooter	No
Escape from Tarkov	Looter Shooter	No
Hades	Roguelike	Yes
Risk of Rain 2	Roguelike	Yes
Slay the Spire	Roguelike	Yes
Warframe	Looter Shooter	No

Hypothesis Development

Hypothesis 1

SDT defines autonomy as the experience of acting in accordance with one's own volition [12]. Functional customization, such as choosing gear, abilities or builds, gives players meaningful control over how they engage with the game [10]. The ability to choose can satisfy the autonomy need and strengthen internal motivation [10], [12]. Research has shown that functional customization can enhance autonomy by granting the player decision-making authority over their own character with a variety of flexible choices, reinforcing ownership and agency during play [10]. For example, as

mentioned earlier, in *Borderlands 3*, a player can choose from billions of procedurally generated weapons, select a skill tree path, and equip specific shield mods, all of which reflect their preferred playstyle. This level of decision-making authority allows the player to feel that their approach to combat is genuinely their own [17], [43]. These factors suggest that functional customization may enhance player's sense of control during play.

Hypothesis 1: Players who can access a high level of functional customization options in looter shooters or roguelikes will feel more autonomy.

Hypothesis 2

SDT defines competence as the experience of feeling effective in overcoming challenges [12]. Customization allows players to align game challenges with their skill level, building proficiencies and increase control [44]. When players perceive that their options are effective ones for completing the game's tasks, like selecting builds or abilities, they report higher motivation and competence [44]. These factors suggest that functional customization may support competence by enabling strategic alignment between player skill options and specific mechanics of the game tasks during play. For example, a player struggling with fast moving enemies in *Risk of Rain 2* may choose to functionally customize their survivor with items that make their character move faster. By doing so and being able to defeat enemies that previously defeated them, the player gains a direct sense of mastery over the game's challenge. Functional customization can also enhance competence by allowing the player to tailor mechanics to their skill level and mastery [10].

Hypothesis 2: Players who can access a high level of functional customization options in looter shooters and roguelikes will feel more competence.

Hypothesis 3

SDT defines relatedness as the experience of feeling connected and valued by others [12]. In looter shooters and roguelikes, especially those with cooperative modes, customization helps players express their role's strengths to themselves and others [45]. This fosters recognition and belonging within teams or online communities [44]. Customization also enhances social presence in identity signaling, which supports relatedness in multiplayer environments [45]. For example, in *Destiny 2*, players can choose different class specializations and subclasses that fill distinct roles in

group content, When a group coordinates builds so that one player focuses on damage while another provides support, the act of customizing around each other can foster a sense of teamwork and belonging [19].

Hypothesis 3: Players who can access a high level of functional customization options in looter shooters and roguelikes will feel more relatedness.

Hypothesis 4

Self-Efficacy Theory defines self-efficacy as a belief in one's ability to succeed in specific situations or accomplish a task [14]. Customization enables players to develop unique strategies that improve performance, especially in failure gameplay loops like roguelikes [6], [11]. Because personalized functional customization allows players to adapt strategies and succeed in challenging contexts, these experiences could likely contribute to higher self-efficacy [6], [14]. For example, in *Borderlands 3*, if the player must defeat a boss that is weak to a certain weapon damage type, and the player equips a weapon they have looted that has that certain damage type, they can then defeat the boss by functionally customizing their character. Beating the boss can serve as a mastery experience, generating the player’s belief that they have the capability to complete the actions required to succeed in future boss fight experiences in that game.

Hypothesis 4: Players who can access a high level of functional customization options in looter shooters and roguelikes will feel more self-efficacy.

Hypothesis 5

SDT defines autonomy as the experience of acting in accordance with one's own volition [12]. Roguelikes often feature failure gameplay loops such as permadeath or repeated player setbacks that encourage experimentation and adaptation [5], [6]. These structures may promote autonomy in allowing players to learn through trial-and-error by systematically making important choices in how they approach challenges [5]. Based on these factors, players may experience greater autonomy when engaging with failure gameplay loops. For example, in *Slay the Spire*, a player may lose a run due to poor defenses, and on the subsequent run decide to customize their character around a block build. This ability to pivot based around previous

failures may empower the player to feel more in control of their own strategic options during play.

Hypothesis 5: Players who engage in failure gameplay loops will feel more autonomy.

Hypothesis 6

Self-Efficacy Theory defines self-efficacy as a belief in one's ability to succeed in specific situations or accomplish a task [13]. In failure gameplay loops, players must adapt and personalize strategies to overcome challenges, whether through death, narrative resets, or other failure states [6], [11]. When combined with functional customization, these factors may help players feel more in control, contributing to a stronger belief in their ability to succeed [11], [12]. For example, looking at *Slay the Spire*, when a player changes their build and begins to succeed, they see how functional customization allowed them to specifically counter the enemies and obstacles they faced previously, and see how they can solve the game's difficulty through coming up with their own strategy, thus increasing confidence in subsequent play sessions of that game.

Hypothesis 6: Players who can access a high level of functional customization options within failure gameplay loop games will feel more self-efficacy.

Table 2 Summary of Significant Relationships

Hypothesis	Construct	P value	Outcome
1	Autonomy and Functional Customization	0.0025	**Significant**
2	Competence and Functional Customization	0.0001	**Highly Significant**
3	Relatedness and Functional Customization	0.2985	**Not Significant**
4	Self-Efficacy and Functional Customization	0.1346	**Not Significant**
5	Autonomy and Roguelikes	0.8732	**Not Significant**

6	Self-Efficacy and Roguelikes	0.8659	**Not Significant**

Methodology

Overview

The study received approval from the Southern Methodist University (SMU) Institutional Review Board (IRB) and the researcher completed the Collaborative Institutional Training Initiative (CITI) certification for human subject research. All participants were required to be over the age of 18 as well as complete an informed consent form prior to participating in the study.

Participants

Recruitment was conducted through multiple channels. Participants were recruited via social media platforms and online communities relevant to the selected games:

Table 3 Recruitment Channels and Community Size

Recruitment Channels	**Weekly Visitors**
r/Borderlands [46]	~110,000
r/borderlands3 [47]	~57,000
r/Warframe [48]	~675,000
r/thedivision [49]	~161,000
r/DestinyTheGame [50]	~248,000
r/slaythespire [51]	~298,000
r/HadesTheGame [52]	~256,000
r/bindingofisaac [53]	~311,000
r/riskofrain [54]	~101,000
r/EscapefromTarkov [55]	~437,000
Borderlands 3 Community Discord [56]	~3,000
Borderlands 4 Official Discord [57]	~191,000

Destiny 2 Official Discord [58]	~128,000
Warframe Official Discord [59]	~327,000
The Division Official Discord [60]	~135,000
Hades Official Discord [61]	~128,000
Binding of Isaac Community Discord [62]	~85,000
Risk of Rain 2 Official Discord [63]	~218,000
Escape from Tarkov Official Discord [64]	~540,000

Additionally, the researcher recruited from the SMU Guildhall graduate Game Development Program, SMU Game Club and the SMU Esports Club using Slack and e-mail. This multi-platform approach sought outreach within active gaming communities.

Measures

The study utilized the cloud-based survey platform Qualtrics, distributed via anonymous links across the listed channels. The researcher exported all results via Qualtrics into Excel/CSV format and securely stored them in a Duo-authenticated Box folder on the university's licensed application workspace. The survey had both demographic and construct measurements for SDT and self-efficacy. In total, the survey included 40 items:

- Screening – 3 questions (see appendix A for informed consent)
- Demographics - 2 items
- Self-efficacy- 8 Likert-scale questions
- SDT- 24 Likert-scale questions and 3 free-response items

The base survey was split into 10 distinct versions, each operationalized to one of the selected games: *Borderlands 3 & 4, Warframe, The Division 2, Destiny 2, Slay the Spire, Hades, The Binding of Isaac, Risk of Rain 2, and Escape from Tarkov.* This structure allowed each survey to directly target players with first-hand experience in the game's customization systems. It also enabled the researcher to analyze game specific and genre level differences in psychological need satisfaction and self-efficacy across games.

Demographics

Figure 1 Age Question

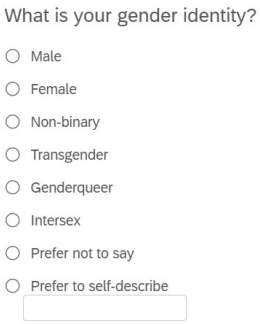

Figure 2 Gender Question

Self-Determination Theory (SDT)

To measure the three core constructs of SDT, autonomy, competence, and relatedness, this study utilized the Basic Psychological Need Satisfaction and Frustration Scale (BPNSFS) [65]. The BPNSFS consists of 24 statements rated on a five-point Likert scale, ranging from “not true at all” (1) to “completely true” (5), with intermediate options (2, 3, and 4) presented without labels. The 24 items were divided into six subscales, each containing four items. Autonomy satisfaction is measured by items 1, 7, 13, and 19, while autonomy frustration is measured by items 2, 8, 14, and 20. Relatedness satisfaction is measured by items 3, 9, 15, and 21, while relatedness frustration is measured by items 4, 10, 16, and 22. Competence satisfaction is measured by items 5, 11, 17, and 23, while competence frustration is measured by items 6, 12, 18, and 24. Subscale scores were calculated by adding the satisfaction score to the reversed frustration score for each respective need [65].

Each item was operationalized to augment the questions to include statements about players, functional customization, and other game related

verbiage. This adaptation ensured that all statements were contextually appropriate for both looter shooters and roguelikes. For example, an original item reading “I feel a sense of choice and freedom in the things I undertake,” [65] was revised to: “I feel a sense of choice and freedom in how I customize and approach challenges in games.”

Table 4 SDT Operationalized Questions

Pre-Operationalized Questions	**Post-Operationalized Questions**
I feel a sense of choice and freedom in the things I undertake.	I feel a sense of choice and freedom in how I customize and approach challenges in games.
Most of the things I do feel like “I have to”.	Most of the functional customization I do feel like “I have to”.
I feel that the people I care about also care about me.	I feel that the people I play with also care about me.
I feel excluded from the group I want to belong to.	I feel excluded from player communities that focus on the games I play or the functional customization I use.
I feel confident that I can do things well.	I feel confident that I play well when I can functionally customize my character.
I have serious doubts about whether I can do things well.	I have serious doubts about whether I can do things well even after I functionally customize my character.
I feel that my decisions reflect what I really want.	My customization choices feel like my decisions reflect what I really want.
I feel forced to do many things I wouldn’t choose to do.	I feel forced to customize my character in a way I wouldn’t choose to do.
I feel connected with people who care for me, and for whom I care.	I feel connected to other players who value teamwork and respect my functional customization preferences.
I feel that people who are important to me are cold and distant towards me.	I feel like some players or community members are cold and distant to how I play or functionally customize my character.
I feel capable at what I do.	I feel capable in games where I can functionally customize my character.

I feel disappointed with many of my performances.	I feel disappointed with many of my performances, even when I can functionally customize my character.
I feel my choices express who I really am.	My functional customization decisions express who I really am.
I feel pressured to do too many things.	I feel pressured to functionally customize my character too many times.
I feel close and connected with other people who are important to me.	I feel close and connected with other players who also functionally customize their characters.
I have the impression that people I spend time with dislike me.	I have the impression that players I interact with dislike how I choose to functionally customize my character.
I feel competent to achieve my goals.	I feel competent to achieve my goals by functionally customizing my character.
I feel insecure about my abilities.	I feel insecure about my abilities even when I functionally customize my character.
I feel I have been doing what really interests me.	I feel that functionally customizing my character is what really interests me.
My daily activities feel like a chain of obligations.	In (Game Name), functionally customizing my character feels like a chain of obligations.
I experience a warm feeling with the people I spend time with.	I experience a warm feeling with the players I spend time with, who also functionally customize their character.
I feel the relationships I have are just superficial.	I feel the relationships I have with other players are just superficial and functional customization of characters does not matter.
I feel I can successfully complete difficult tasks.	I feel I can successfully complete difficult in-game tasks when I can functionally customize my character.
I feel like a failure because of the mistakes I make.	I feel like a failure because of the functional customization mistakes I have made.

Please indicate the degree to which each statement feels true for you when playing ***Hades*** and you functionally customize your character with gear, abilities, weapons, or builds.

Functional Customization: using or altering features designed mainly to fulfill task-based goals. (i.e. Ability Upgrades, Weapon Upgrades, New Abilities, New Weapons, New Gear, etc.)

	not true at all	completely true
I feel a sense of choice and freedom in how I customize and approach challenges in games.	○	○
Most of the functional customization I do feel like "I have to".	○	○
I feel that the people I play with also care about me.	○	○
I feel excluded from player communities that focus on the games I play or the functional customization I use.	○	○
I feel confident that I play well when I can functionally customize my character.	○	○
I have serious doubts about whether I can do things well even after I functionally customize my character.	○	○
My customization choices feel like my decisions reflect what I really want.	○	○
I feel forced to customize my character in a way I wouldn't choose to do.	○	○
I feel connected to other players who value teamwork and respect my functional customization preferences.	○	○
I feel like some players or community members are cold and distant to how I play or functionally customize my character.	○	○
I feel capable in games where I can functionally customize my character.	○	○
I feel disappointed with many of my performances, even when I can functionally customize my character.	○	○
My functional customization decisions express who I really am.	○	○
I feel pressured to functionally customize my character too many times.	○	○
I feel close and connected with other players who also functionally customize their characters.	○	○
I have the impression that players I interact with dislike how I choose to functionally customize my character	○	○

Figure 3 SDT Questions Part 1

I feel competent to achieve my goals by functionally customizing my character.	○	○
I feel insecure about my abilities even when I functionally customize my character.	○	○
I feel that functionally customizing my character is what really interests me.	○	○
In Hades II, functionally customizing my character feels like a chain of obligations.	○	○
I experience a warm feeling with the players I spend time with, who also functionally customize their character.	○	○
I feel the relationships I have with other players are just superficial and functional customization of characters does not matter.	○	○
I feel I can successfully complete difficult in-game tasks when I can functionally customize my character.	○	○
I feel like a failure because of the functional customization mistakes I have made.	○	○

Figure 4 SDT Questions Part 2

Three free response questions were created by the researcher to allow participants to respond to questions related to autonomy, competence, and relatedness in an open format:

- **Question 1 – Autonomy**: Thinking about the game you selected, how does functional customization affect your sense of control while playing? Feel free to describe any moments, features, or feelings that stood out.
- **Question 2 – Relatedness**: Thinking about the game you selected, how does functional customization affect your sense of connection to others while playing? Feel free to describe any moments, features, or feelings that stood out.
- **Question 3 – Competence**: Thinking about the game you selected, how does functional customization affect your sense of your own skill while playing? Feel free to describe any moments, features, or feelings that stood out.

Self-efficacy

To measure players perceived self-efficacy, this study utilized an 8-item self-efficacy scale adopted from the established New General Self-Efficacy Scale (NGSES) [66], [67]. Each item is rated on a five-point Likert scale, ranging from “Strongly disagree” (1) to “Strongly agree" (5). The scale is used to collectively assess players’ confidence in their ability to overcome challenges, adapt strategies and persist through difficult situations [66], [67]. The overall self-efficacy score was calculated by averaging all eight item responses [66], [67].

The researcher operationalized each item to augment the questions to include statements about players, functional customization and other game related verbiage. This adaptation ensured that all statements were contextually appropriate for both looter shooters and roguelikes. For example, an original item reading “I will be able to achieve most of the goals that I set for myself.” [66], [67] was revised to say, “I will be able to achieve most of the goals that I set for myself by functionally customizing how I play.”

Table 5 Self-efficacy Operationalized Questions

Pre-Operationalized Questions	Post-Operationalized Questions
I will be able to achieve most of the goals that I set for myself.	I will be able to achieve most of the goals that I set for myself by

	functionally customizing how I play.
When facing difficult tasks, I am certain that I will accomplish them.	When facing difficult tasks in game, I am certain that I will accomplish them by adjusting my build.
In general, I think that I can obtain outcomes that are important to me.	In general, I think that I can obtain outcomes in game that are important to me by personalizing my build with functional customization
I believe I can succeed at most any endeavor to which I set my mind.	I believe I can succeed at most any gameplay challenge to which I set my mind
I will be able to successfully overcome many challenges.	I will be able to successfully overcome many challenges where I can functionally customize my build.
I am confident that I can perform effectively on many different tasks.	I am confident that, because I can functionally customize my build, I can perform effectively at many different gameplay tasks.
Compared to other people, I can do most tasks very well.	Compared to other people, I feel I use functional customization very well.
Even when things are tough, I can perform quite well.	Even when gameplay is difficult, I can perform quite well using a build that I functionally customized.

Please indicate how much you agree or disagree with each statement, thinking specifically about how your functional customization choices impact your confidence while playing ***Risk of Rain 2***.

Functional Customization: using or altering features designed mainly to fulfill task-based goals. (i.e. Ability Upgrades, Weapon Upgrades, New Abilities, New Weapons, New Gear, etc.)

	strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I will be able to achieve most of the goals that I set for myself by functionally customizing how I play.	○	○	○	○	○
When facing difficult tasks in game, I am certain that I will accomplish them by adjusting my build.	○	○	○	○	○
In general, I think that I can obtain outcomes in game that are important to me by personalizing my build with functional customization	○	○	○	○	○
I believe I can succeed at most any gameplay challenge to which I set my mind	○	○	○	○	○
I will be able to successfully overcome many challenges where I can functionally customize my build.	○	○	○	○	○
I am confident that, because I can functionally customize my build, I can perform effectively at many different gameplay tasks.	○	○	○	○	○
Compared to other people, I feel I use functional customization very well.	○	○	○	○	○
Even when gameplay is difficult, I can perform quite well using a build that I functionally customized.	○	○	○	○	○

Figure 5 Self-Efficacy Questions

SDT Functional Customization Taxonomy Game Categorization Process

Using this study's functional customization taxonomy, the three categories of offensive, abilities, and defensive customization were used to rate their estimated level of influence on each of the three SDT constructs for the selected games. In practice, the researcher's functional customization categories' ratings of each title was input into the matrix for the three separate constructs of autonomy, competence, and relatedness. Specifically, the researcher scored each game with a rating that was either high or low for autonomy-perceiving offensive customization options, autonomy-perceiving abilities customization options, autonomy-perceiving defensive customization options, competence-perceiving offensive customization options, competence-perceiving abilities customization options, competence-perceiving defensive customization options, relatedness-perceiving offensive customization options, relatedness-perceiving abilities customization options, and relatedness-perceiving defensive customization

options. Then, in order to rank the game's overall level of autonomy afforded to a player, those three functional customization categories ratings were combined. If two of autonomy's three functional customization categories were rated high, it was ranked as high functional customization for autonomy or conversely, if two or more categories were rated low, it was ranked as low functional customization for autonomy. Next, in order to rank the game's overall level of competence afforded to a player, those three functional customization categories ratings were combined. If two of competence's three functional customization categories were rated high, it was ranked as high functional customization for competence or conversely, if two or more categories were rated low, it was ranked as low functional customization for competence. After that, in order to rank the game's level of relatedness afforded to a player, those three functional customization categories ratings were combined. If two of relatedness' three functional customization categories were rated high, it was ranked as high functional customization for relatedness or conversely, if two or more categories were rated low, it was ranked as low functional customization for relatedness.

Autonomy Categorizations

Autonomy was evaluated based on the degree of player control across the combined three functional customization categories.

1. ***Binding of Isaac*** **(LOW)** [36]
    a. **Offensive Customization:** Low – Players can rarely choose what offensive capabilities they have as it is limited to random drops.
    b. **Abilities Customization:** Low – Zero customization options for the player to control how they character can progress except for choosing a different character, with minor differences between them.
    c. **Defensive Customization:** Low – Players can rarely choose what defensive capabilities they have as it is limited to random drops.
2. ***Borderlands 3*** **(HIGH)** [22]
    a. **Offensive Customization:** High – Millions of gun variations with different attachments, elemental damage types all which the player can control and customize.

   b. **Abilities Customization:** High – Branching skill tree options that allow for each playable character to enable a deeply customized playstyle.
   c. **Defensive Customization:** High – A wide variety of shield and gear mods that help block varying types of damage and allow the player to have different defensive abilities.
3. ***Borderlands 4*** **(HIGH)** [17]
   a. **Offensive Customization:** High – Millions of gun variations with different attachments, elemental damage types all which the player can control and customize.
   b. **Abilities Customization:** High – Branching skill tree options that allow for each playable character to deeply customize their playstyle.
   c. **Defensive Customization:** High – A wide variety shield and gear mods that help block varying types of damage and allow the player to have different defensive abilities.
4. ***Escape from Tarkov*** **(LOW)** [20]
   a. **Offensive Customization:** Low – Very in-depth weapon attachment system, with different weapons to play, but player control with finding and interacting with these options are limited.
   b. **Abilities Customization:** Low – Zero player abilities are found within the game.
   c. **Defensive Customization:** Low – Basic armor system with low control and customization as many options can be considered default.
5. ***Destiny 2*** **(HIGH)** [19]
   a. **Offensive Customization:** High – Wide range of weapons and weapon types each with different modifications, damage types, and attachment players can equip.
   b. **Abilities Customization:** High – Subclass system with skill tree options that allow for each playable character to deeply customize and control playstyle.
   c. **Defensive Customization:** High – Wide range of armor sets with stats and mods that allow players to customize their defensive stats in balance with their offensive capabilities.
6. ***The Division 2*** **(HIGH)** [28]
   a. **Offensive Customization:** High – Many different weapon types with the ability to customize attachments.

b. **Abilities Customization:** High – Branching skill trees that allow for control over different abilities and gadgets to use in combat.
c. **Defensive Customization:** High – Armor tiers for rarity with different gear sets that can also allow different defensive gear modification to further control player stats.

7. ***Hades* (HIGH)** [40]
    a. **Offensive Customization:** High – Player can choose from a variety of weapons that change a runs playstyle and strategy, providing a lot of control to the player.
    b. **Abilities Customization:** High – While this game does not have traditional skill trees or class customization, abilities are handed out to the player at random throughout a run, but the player has some degree of choice from the random set of options.
    c. **Defensive Customization:** Low – Little to no defensive options with exception to defensive stats provided to the player at random after certain sections of the game.
8. ***Risk of Rain 2* (LOW)** [21]
    a. **Offensive Customization:** Low – Fixed weapons depending on which survivor the player chooses. Offensive item drops are also completely random in most scenarios, removing control.
    b. **Abilities Customization:** Low – Fixed abilities, with minimal customization depending on which survivor the player chooses.
    c. **Defensive Customization:** Low – No armor, fixed gear, defensive item drops are also completely random in most scenarios, removing control.
9. ***Slay the Spire* (LOW)** [18]
    a. **Offensive Customization:** Low – No weapons or customization on how to deal damage except for being provided a default set of attack cards.
    b. **Abilities Customization:** High – A predetermined set of cards that make up a player's default deck with some customization options coming at random throughout a run where the player as minor agency by allowing upgrades or buying of different cards.
    c. **Defensive Customization:** Low – Little to no defensive options where the only way to defend oneself is to heal at very predetermined spots or having some artifacts that protect the player in various ways.
10. ***Warframe* (LOW)** [32]

a. **Offensive Customization:** High – Wide variety of weapons with mods and damage types that players can control.
b. **Abilities Customization:** Low – Players can equip warframes that change some abilities, but control over the abilities is heavily constrained to specific warframes.
c. **Defensive Customization:** Low – Similar to abilities, warframes are the only form of providing defensive stats except for adding mods to the warframes themselves, that have some survivability benefit.

Competence Categorizations

Competence was evaluated based on the degree of gameplay challenges and mastery experiences across the combined three functional customization categories.

1. ***Binding of Isaac*** **(LOW)** [36]
    a. **Offensive Customization:** Low – Players can rarely choose what offensive capabilities they have as it is limited to random drops limiting a player's opportunities to master certain item combinations.
    b. **Abilities Customization:** Low – Zero customization options for the player to control so mastery only comes from learning how to deal with what is given to the player during a run.
    c. **Defensive Customization:** Low – Players can rarely choose what defensive capabilities they have as it is limited to random drops limiting a player's opportunities to master certain item combinations.
2. ***Borderlands 3*** **(HIGH)** [22]
    a. **Offensive Customization:** High – Weapon variety allows players to refine and master combat strategies.
    b. **Abilities Customization:** High – Skill trees provide opportunities to specialize and enhance abilities, rewarding progression and mastery.
    c. **Defensive Customization:** High – Shields and gear mods allow players to practice and optimize survivability, which reinforces competence when managing enemy encounters.
3. ***Borderlands 4*** **(HIGH)** [17]
    a. **Offensive Customization:** High – Weapon variety allows players to refine and master combat strategies.

b. **Abilities Customization:** High – Skill trees provide opportunities to specialize and enhance abilities, rewarding progression and mastery.
c. **Defensive Customization:** High – Shields and gear mods allow players to practice and optimize survivability, which reinforces competence when managing enemy encounters.

4. ***Destiny 2*** **(HIGH)** [19]
    a. **Offensive Customization:** High – Weapon perks and elemental damage types reward players who know when to use what for when which can be mastered.
    b. **Abilities Customization:** High – Subclass system allows for players to refine builds and improve their effectiveness.
    c. **Defensive Customization:** High – Armor mods and stats provide ways for players to optimize their survivability.
5. ***The Division 2*** **(LOW)** [28]
    a. **Offensive Customization:** High – Weapon attachments and their variety allow for the players to further mastery combat experiences.
    b. **Abilities Customization:** Low – Skill trees are limited in their depth, which provides a lower amount of mastery curve.
    c. **Defensive Customization:** Low – Armor provides more survivability but lacks the depth needed for players to master the system.
6. ***Escape from Tarkov*** **(HIGH)** [20]
    a. **Offensive Customization:** High – Detailed weapon attachment system where knowing the best combinations needed for a player's current situation can be rewarded.
    b. **Abilities Customization:** Low – Zero player abilities are found within the game.
    c. **Defensive Customization:** High – Inventory management for each run can be crucial and mastered to benefit the player who invested time in learning the most efficient use of their inventory space.
7. ***Hades*** **(HIGH)** [40]
    a. **Offensive Customization:** High – Players can choose from a variety of weapons that radically change a runs playstyle and strategy, providing many opportunities for players to master each style.
    b. **Abilities Customization:** High – While this game does not have traditional skill trees or class customization, abilities are handed

out to the player at random throughout a run, and the player will master the abilities provided throughout the run.

c. **Defensive Customization:** Low – Little to no defensive options with exception to defensive stats provided to the player, thus defensive mastery is simply learning how to avoid damage.

8. ***Risk of Rain 2*** **(LOW)** [21]
    a. **Offensive Customization:** Low – Randomized item drops reduce the player agency in their ability to master the different playstyles as they are forced into certain playstyles.
    b. **Abilities Customization:** High – Each survivor comes with their own skill sets and abilities that can greatly be improved over mastery and practice from the player.
    c. **Defensive Customization:** Low – Little to no defensive options with exception to defensive stats provided to the player at random after certain sections of the game making it hard for the player to mastery defensive capabilities
9. ***Slay the Spire*** **(LOW)** [18]
    a. **Offensive Customization:** Low – Damage output is tied to cards received during a run, so player mastery at increasing damage is limited.
    b. **Abilities Customization:** High – Deck building requires skill and is something that can be mastered overtime to give the best chance for the player to win against enemies.
    c. **Defensive Customization:** Low – Players can only heal at certain points of the game, so the only defensive mastery is learning how to best mitigate damage.
10. ***Warframe*** **(LOW)** [32]
    a. **Offensive Customization:** Low – While there is a lot of weapons and mods, the mastery of skill in using them remains low.
    b. **Abilities Customization:** High – While the warframes limit the players into specific abilities, there is a steep mastery curve to learning each warframes optimal playstyle.
    c. **Defensive Customization:** Low – Survivability is tied to warframes stats thus the player learning and mastering how to stay alive is irrelevant to the warframes they pick.

Relatedness Categorizations

Relatedness was evaluated based on the extent to which multiplayer functionality and community engagement were integrated into the

gameplay experience across the combined three functional customization categories.

1. ***Binding of Isaac*** **(LOW)** [36]
    a. **Offensive Customization:** Low – No co-op options.
    b. **Abilities Customization:** Low – No co-op options.
    c. **Defensive Customization:** Low – No co-op options.
2. ***Borderlands 3*** **(HIGH)** [22]
    a. **Offensive Customization:** High – Weapon variety allows for players to engage in different ranges of combat in cooperative play.
    b. **Abilities Customization:** High – Skill trees and character selection diversification allow players to spread out player roles amongst each other.
    c. **Defensive Customization:** Low – Shields and gear doesn't affect how a player interacts with other players.
3. ***Borderlands 4*** **(HIGH)** [17]
    a. **Offensive Customization:** High – Weapon variety allows for players to engage in different ranges of combat in cooperative play.
    b. **Abilities Customization:** High – Skill trees and character selection diversification allow players to spread out player roles amongst each other.
    c. **Defensive Customization:** Low – Shields and gear doesn't affect how a player interacts with other players.
4. ***Destiny 2*** **(HIGH)** [19]
    a. **Offensive Customization:** High – Weapon variety allows for players to engage in different ranges of combat in cooperative play.
    b. **Abilities Customization:** High – Skill trees and subclasses diversification allow players to spread out player roles amongst each other.
    c. **Defensive Customization:** Low – Armor and armor mods do not affect how a player interacts with other players.
5. ***The Division 2*** **(HIGH)** [28]
    a. **Offensive Customization:** High – Weapon variety allows for players to engage in different ranges of combat in cooperative play.

    b. **Abilities Customization:** High – Abilities and skill trees allow for communication with teammates to shore up weakness and support strengths.
    c. **Defensive Customization:** Low – Armor and armor mods do not affect how a player interacts with other players.
6. ***Escape from Tarkov*** **(LOW)** [20]
    a. **Offensive Customization:** Low – Weapon choice does not affect team play, with the small exception a difference in viable attack ranges.
    b. **Abilities Customization:** Low – Zero player abilities are found within the game.
    c. **Defensive Customization:** High – Inventory management can be strategized and communicated with players in the same party to maximize efficient carry space for acquired loot.
7. ***Hades*** **(LOW)** [40]
    a. **Offensive Customization:** Low – No co-op options.
    b. **Abilities Customization:** Low – No co-op options.
    c. **Defensive Customization:** Low – No co-op options.
8. ***Risk of Rain 2*** **(LOW)** [21]
    a. **Offensive Customization:** Low – Randomized drops hurt the ability to be able to strategize with friends/party members, and you can take item drops from your friends/party members.
    b. **Abilities Customization:** High – During survivor selection you can coordinate with friends/party members on which survivors to pick to shore up the weakness and focus on the strengths of the survivors chosen.
    c. **Defensive Customization:** Low – No defensive options affect your friends/party members.
9. ***Slay the Spire*** **(LOW)** [18]
    a. **Offensive Customization:** Low – No co-op options.
    b. **Abilities Customization:** Low – No co-op options.
    c. **Defensive Customization:** Low – No co-op options.
10. ***Warframe*** **(LOW)** [32]
    a. **Offensive Customization:** Low – Weapon builds are often very individualistic.
    b. **Abilities Customization:** Low – Warframes generally do not have very confined roles, so the need to diversify warframes between friends/party members does not exist.

c. **Defensive Customization:** Low – Warframe defensive customization does not affect party members.

Table 6 Game Categorization by SDT Construct by High or Low

Game	Genre	Autonomy*	Competence*	Relatedness*
Binding of Isaac	Roguelike	Low	Low	Low
Borderlands 3	Looter Shooter	High	High	High
Borderlands 4	Looter Shooter	High	High	High
Destiny 2	Looter Shooter	High	High	High
Escape from Tarkov	Looter Shooter	Low	High	Low
Hades	Roguelike	High	High	Low
Risk of Rain 2	Roguelike	Low	Low	Low
Slay the Spire	Roguelike	Low	Low	Low
The Division 2	Looter Shooter	High	Low	High
Warframe	Looter Shooter	Low	Low	Low

*If ≥ 2 sub-categories were rated High the overall construct designated as High; if ≥ 2 sub-categories were rated Low the overall construct was designated as Low.

Results

The surveys gathered data from a total of 180 participants. To measure consistency and reliability, the researcher ran a Cronbach's alpha in Stata16 for each construct, see table 5. Cronbach’s alpha measures internal consistency, where scores above 0.70 are generally considered acceptable reliability. The composite BPNSFS score was found to be reliable, mitigating the two subcategories below an $\alpha = 0.70$

Table 7 Cronbach Alpha Coefficients

Construct	**α**
New General Self-Efficacy Scale	0.9142
Basic Psychological Need Satisfaction and Frustration Scale	0.8288
Autonomy Satisfaction	0.5349
Autonomy Frustration	0.7150
Relatedness Satisfaction	0.7436
Relatedness Frustration	0.5522
Competence Satisfaction	0.7359
Competence Frustration	0.7476

H1 - Supported: Players who can access a high level of functional customization options in looter shooters or roguelikes will feel more autonomy.

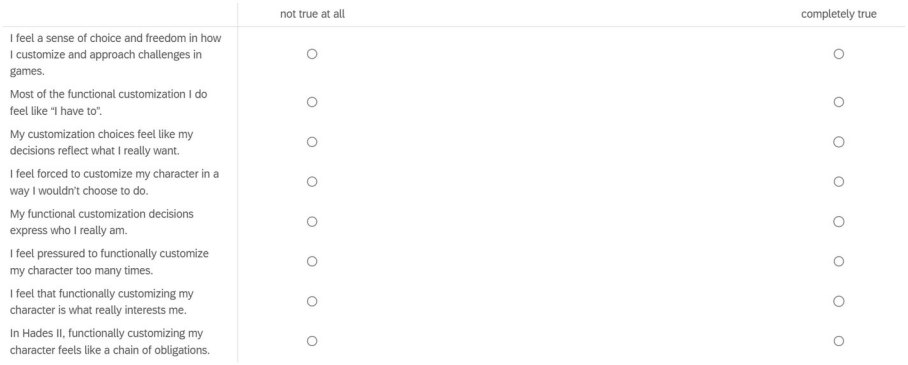

Figure 6 Autonomy Survey Questions

Table 8 One-Way ANOVA between Autonomy and Games

Source	**SS**	**df**	**MS**	**F**	**P-Value**
Between Groups	699.7832	9	77.7537	2.98	0.0025
Within Groups	4433.1668	170	26.0775		
Total	5132.9500	179	28.6757		

Table 9 Welch's ANOVA between Autonomy and Games

Test	F	df1	df2	P-Value
Welch’s	3.0361	9	23.5718	0.0147

Table 10 Autonomy: Mean, Standard Deviations, Number of Participants, and Functional Customization Category Level

Game	Autonomy			
	Mean (M)	**Standard Deviation**	**Number of Participants**	**Functional Customization Category Level**
Risk of Rain 2	**31.3636**	3.5395	22	**Low**
Borderlands 4	30.7500	8.1394	4	High
The Division 2	30.6944	4.5799	72	High
Borderlands 3	29.7500	4.3513	20	High
Escape from Tarkov	28.7000	7.2119	10	Low
Hades	28.4286	2.5071	7	High
Warframe	27.6000	1.3416	5	Low
Destiny 2	26.1290	6.6870	31	High
Slay the Spire	25.8000	6.0581	5	Low
Binding of Isaac	25.5000	6.3509	4	Low

To get the autonomy score, the participants’ autonomy need frustration score was reversed and added to the autonomy need satisfaction score to get an autonomy composite score [65]. Higher values indicated greater control and lower frustration [65]. A one-way ANOVA examined autonomy in the combined dataset of the 10 games. The mean of autonomy differs significantly among the games (p=0.0025). However, Bartlett’s test for homogeneity of variances was significant (chi2(9) =26.73, p=0.002), which

can suggest that the assumption of equal variances was wrong. To account for this, a Welch's ANOVA confirmed a significant effect of the games on autonomy composite scores (p=0.015). This result supports the hypothesis that players who use functional customization in looter shooters and roguelikes feel more control as they play.

H2 –Supported: Players who can access a high level of functional customization options in looter shooters and roguelikes will feel more competence.

Figure 7 Competency Survey Questions

Table 11 One-Way ANOVA between Competence and Games

Source	**SS**	**df**	**MS**	**F**	**P-Value**
Between Groups	1238.1320	9	137.5702	6.74	0.0001
Within Groups	3471.8458	170	20.4226		
Total	4709.9779	179	26.3128		

Table 12 Competence: Mean, Standard Deviations, Number of Participants, and Functional Customization Category Level

Game	Competence			
	Mean (M)	**Standard Deviation**	**Number of Participants**	**Functional Customization Category Level**
Borderlands	**37.2500**	3.2016	4	High

4				
The Division 2	35.9722	4.2723	72	Low
Borderlands 3	34.7500	4.2535	20	High
Destiny 2	34.6452	5.5410	31	High
Warframe	34.2000	4.6043	5	Low
Risk of Rain 2	33.4545	4.0676	22	Low
Binding of Isaac	33.2500	3.7749	4	Low
Escape from Tarkov	28.5000	4.6007	10	High
Hades	28.0000	5.1640	7	High
Slay the Spire	25.8000	3.7014	5	Low

To get the competence score, the participant's competence need frustration score was reversed and added to the competence need satisfaction score to get a competence composite score, with higher values indicating greater perceived mastery and lower frustration. A one-way ANOVA examined competence in the combined dataset of the 10 games. The mean of competence differs significantly among the games ($p=0.0001$). This result supports the hypothesis that players who use functional customization in looter shooters and roguelikes will feel more competent as they play.

H3 - Not Supported: Players who can access a high level of functional customization options in looter shooters and roguelikes will feel more relatedness.

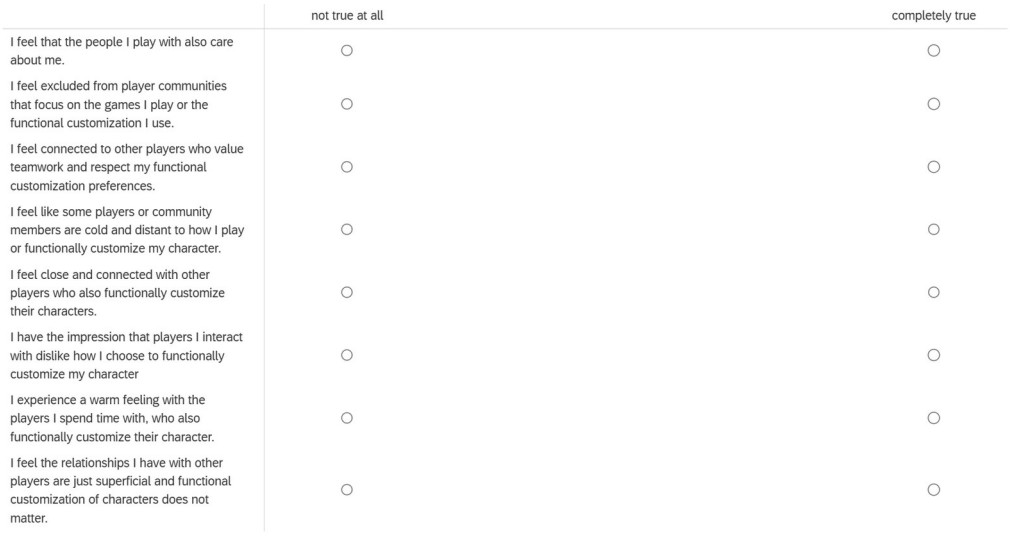

Figure 8 Relatedness Survey Questions

Table 13 One-Way ANOVA between Relatedness and Games

Source	SS	df	MS	F	P-Value
Between Groups	370.5401	9	41.1711	1.20	0.2985
Within Groups	5836.9044	170	34.3347		
Total	6207.4444	179	26.3127		

To get the relatedness score, the participant's relatedness frustration score was reversed and added to the relatedness need satisfaction score to get a relatedness composite score, with higher values indicating stronger social connection and lower frustration. A one-way ANOVA examined relatedness in the combined dataset of the 10 games. The mean of relatedness did not differ significantly among the games (p=0.2985). This result does not support the hypothesis that players who use functional customization in looter shooters and roguelikes will feel more socially connected to the game as they play.

H4 – Not Supported: Players who can access a high level of functional customization options in looter shooters and roguelikes will feel more self-efficacy.

	strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I will be able to achieve most of the goals that I set for myself by functionally customizing how I play.	○	○	○	○	○
When facing difficult tasks in game, I am certain that I will accomplish them by adjusting my build.	○	○	○	○	○
In general, I think that I can obtain outcomes in game that are important to me by personalizing my build with functional customization	○	○	○	○	○
I believe I can succeed at most any gameplay challenge to which I set my mind	○	○	○	○	○
I will be able to successfully overcome many challenges where I can functionally customize my build.	○	○	○	○	○
I am confident that, because I can functionally customize my build, I can perform effectively at many different gameplay tasks.	○	○	○	○	○
Compared to other people, I feel I use functional customization very well.	○	○	○	○	○
Even when gameplay is difficult, I can perform quite well using a build that I functionally customized.	○	○	○	○	○

Figure 9 Self-Efficacy Survey Questions

Table 14 One-Way ANOVA between Self-Efficacy and Games

Source	SS	df	MS	F	P-Value
Between Groups	7.9855	9	0.8873	1.55	0.1346
Within Groups	97.4044	170	0.5730		
Total	105.3898	179	0.5888		

To get the self-efficacy score, the participant's self-efficacy was scored and averaged among the 8 items from the NGSES. A one-way ANOVA examined self-efficacy in the combined dataset of the 10 games. The mean of self-efficacy does not differ significantly among the games ($p=0.1346$). This result does not support the hypothesis that players who use functional customization in looter shooters and roguelikes will feel more confident in their ability to succeed in subsequent play.

H5 – Not Supported: Players who engage in failure gameplay loops will feel more autonomy.

Table 15 One-Way ANOVA between Autonomy and Genre

Source	SS	df	MS	F	P-Value
Between Groups	0.7369	1	0.7369	0.03	0.8732
Within Groups	5132.2131	178	28.8327		
Total	5132.95	179	28.6757		

To get the autonomy score, the participants' autonomy need frustration score was reversed and added to the autonomy need satisfaction score to get an autonomy composite score, with higher values indicating greater control and lower frustration. A one-way ANOVA examined autonomy in the combined dataset of the 2 genres. The mean of autonomy does not differ significantly among the genres (p=0.8732). This result does not support the hypothesis that players who engage in high failure gameplay loops will feel more control as they play.

H6 – Not Supported: Players who can access a high level of functional customization options within failure gameplay loop games will feel more self-efficacy.

Table 16 One-Way ANOVA between Self-Efficacy and Genre

Source	SS	df	MS	F	P-Value
Between Groups	0.0169	1	0.0169	0.03	0.8659
Within Groups	105.3729	178	0.5920		
Total	105.3898	179	0.5888		

To get the self-efficacy score, the participant's self-efficacy was scored and averaged among the 8 items from the NGSES. A one-way ANOVA examined self-efficacy in the combined dataset of the 2 genres. The mean of self-efficacy did not differ significantly among the genres (p=0.8659) This result does not support the hypothesis that players who use functional customization in looter shooters and roguelikes will feel more confident in their ability to succeed.

Post-Hoc – Functional Customization Subcategorizations with SDT and Self-Efficacy

In post-hoc analyses, the researcher further examined the subcategory data to identify which specific results were significant. Table 13 below summarizes the significant findings from the one-way ANOVAs. The competence-perceived offensive customization rating was a significant SDT subcategory result (p=0.0225), and abilities customization was also significant (p=0.0552).

Table 17 Functional Customization Subcategory One-Way ANOVA Results

Construct	Category	Customization Type	Mean (Low)	Mean (High)	F-stat	p-value	Significance
SDT	Competence	Offensive	32.47	34.65	5.3	0.0225	Significant
SDT	Competence	Abilities	34.98	33.51	3.7	0.0552	Significant

Discussion

The researcher asked whether failure gameplay loops influence how players engage with customization. Neither the autonomy-genre comparison nor the self-efficacy-genre comparison found significant differences between looter shooters and roguelikes. This may suggest that the presence of failure mechanics by itself does not meaningfully change how customization affects player motivation.

This study used a researcher developed categorization taxonomy system to explore how functional customization in looter shooters and roguelikes relates to the different constructs of Self-Determination Theory and Self-Efficacy Theory. The researcher's goal was to determine whether the level of functional customization of a game affects how players perceive their own autonomy, competence, relatedness, and self-efficacy. The researcher rated each of the ten games across three subcategories of functional customization, offensive abilities, and defensive, and then classified each game as either high or low for each SDT construct. The combination of the high and low ratings in each of the three subcategories of functional

customization for each SDT construct were used separately to score the game's overall rank as high or low in an autonomy, a competence, and a relatedness result. The statistical results were mixed in the autonomy and competence analyses. Relatedness, self-efficacy at the game level and self-efficacy at the genre level were not significant.

The researcher further conducted a subcategory analysis to see if/which of the three types of functional customization were driving the few significant results. While the overall autonomy ranking scores in the taxonomy showed a relationship to functional customization, none of the three subcategories were individually significant for autonomy, suggesting that a player sense of control may come from the overall breadth of customization a game offers rather than any one of the three subcategories. The overall competence ranking scores in the taxonomy did show a relationship to functional customization. The subsequent subcategory analysis revealed that offensive and abilities customization were the subcategories with significant relationships to competence, but in opposite directions. Offensive customization had a positive relationship, suggesting that a player's sense of mastery may be influenced by the weapons, damage types, and combat options a game provides. Abilities customization had an inverted relationship, where games with fewer ability systems had higher competence scores, suggesting that too many skill trees or class options may dilute a player's sense of mastery rather than enhance it. The overall and detailed findings using the qualitative responses are further discussed below.

Competence

Games where players had more options for weapons, damage types and combat engagement tools tended to have players who reported higher feelings of mastery and effectiveness.

Table 18 Competence: Mean, Standard Deviations, Number of Participants, and Functional Customization Category Level

Game	Competence			
	Mean (M)	**Standard Deviation**	**Number of Participants**	**Functional Customization Category Level**
Borderlands 4	**37.2500**	3.2016	4	High
The Division 2	35.9722	4.2723	72	Low
Borderlands 3	34.7500	4.2535	20	High
Destiny 2	34.6452	5.5410	31	High
Warframe	34.2000	4.6043	5	Low
Risk of Rain 2	33.4545	4.0676	22	Low
Binding of Isaac	33.2500	3.7749	4	Low
Escape from Tarkov	28.5000	4.6007	10	High
Hades	28.0000	5.1640	7	High
Slay the Spire	25.8000	3.7014	5	Low

When the subcategory analysis broke competence down by offensive, abilities, and defensive customization, offensive and abilities customization were the subcategories that showed significance, but in opposite directions. Offensive customization had a positive relationship, where games with more offensive depth had higher competence scores. Abilities customization had an inverted relationship, where games with fewer ability systems had higher competence scores. For offensive customization, it could be that the level of depth in a game gives players space to experiment with and then master all sorts of combinations that work for them. This aligns with how SDT defines competence as the experience of effectiveness and mastery, and with research showing that clear and immediate feedback on player actions is a core driver of competence within games [12], [44]. Offensive and Ability systems provide feedback more directly than defensive systems, since a player can immediately feel whether their weapon and ability choice

is effective in combat. This result is consistent with the researcher's high evaluation of offensive customization and games like *Borderlands 3*, which offers billions of procedurally generated weapons across multiple manufacturers, each with different firing behaviors and elemental damage types [17], [43].

Qualitative responses helped provide information for the statistical relationships observed. When asked how functional customization affects their sense of skill, many participants described build knowledge in theory crafting as a form of skill in itself. One participant stated that “Functional customization is the absolute core of how I perceive my skill in game.” This response suggests that competence in genres is not just about reflexes or skill. It also includes the knowledge of what works, why it works and then how to put it together. At the same time, the most frequently expressed view was that customization boosts skill but does not replace it. Participants differentiated the ability to build well from the ability to play well with one writing that “No matter what build you make, even if it's the most perfect build known to mankind, if you can't master the basics, you will not have a fun time.” This suggests offensive customization relates to competence through a multiplier effect. Players who understand the systems feel more skilled, but that feeling is strengthened in actual gameplay performance, not just pregame selection.

Participants also described feeling strong payoffs when a self-designed build performed well using words like “validated,” “satisfying,” and “accomplishment.” These reactions help explain why offensive customization specifically matters for competence. Offensive systems are the most visible during gameplay. A player feels the difference between a weapon that kills enemies fast and one that does not. Choosing a weapon setup and seeing it succeed feeds directly into the SDT definition of competence as experience of effectiveness and mastery [12]. Defensive and ability customization operate more passively. A player might not notice their armor working well unless they notice they die less, which is not a fast form of feedback, and abilities always vary in usefulness in combat, with some not having any direct feedback. The inverted abilities finding suggests that when games offer too many ability systems, the resulting complexity may actually work against feelings of mastery rather than increase them.

Not every game performed as expected. *The Division 2*, which the researcher categorized low for competence, had the second highest competence mean in the study. One thought is that players in *The Division 2*

may be deriving their competence feelings from other game systems that the researcher did not weigh heavily enough, like the games cover based tactical combat or its end game raid loops. *Escape from Tarkov* went in the opposite direction. Despite being categorized as high for competence, it received one of the lowest scores. This might be due to the punishing nature of the game where players can permanently lose their gear, and that might work against the feelings of mastery even though there are some deep systems in and of itself.

Autonomy

A game that offers deep weapons customization, but shallow abilities and no defensive options may not feel as free as one that provides moderate depth across all three. Functional customization overall had a significant relationship with feelings of autonomy though the pattern was different from competence. Where competence was driven by the offensive and abilities subcategories, autonomy did not show significance from any individual subcategory. This suggests that a player's sense of control is not tied to one specific type of customization but instead comes from the overall functional customization a game provides.

Table 19 Autonomy: Mean, Standard Deviations, Number of Participants, and Functional Customization Category Level

Game	Autonomy			
	Mean (M)	**Standard Deviation**	**Number of Participants**	**Functional Customization Category Level**
Risk of Rain 2	**31.3636**	3.5395	22	Low
Borderlands 4	30.7500	8.1394	4	High
The Division 2	30.6944	4.5799	72	High
Borderlands 3	29.7500	4.3513	20	High
Escape from Tarkov	28.7000	7.2119	10	Low
Hades	28.4286	2.5071	7	High

Warframe	27.6000	1.3416	5	Low
Destiny 2	26.1290	6.6870	31	High
Slay the Spire	25.8000	6.0581	5	Low
Binding of Isaac	25.5000	6.3509	4	Low

The most unexpected finding was that *Risk of Rain 2's* item system would work against feelings of being in control, since players cannot choose exactly which items they receive during a run [21]. Qualitative response provided some statements that were different than what the data showed. Roguelike players from *Risk of Rain 2, Hades*, and *The Binding of Isaac* describe autonomy less as pregame planning and more as real-time adaptation. Rather than building a character before a session starts, these players would improvise and come up with new strategies based on what the game gave them. The act of making the best of randomized options may itself generate a strong sense of volition [68]. This is different than how autonomy seems to work in looter shooters, where players from *Borderlands 3* and *The Division 2* described crafting builds intentionally over time. However, there was something that the quantitative data did not capture. Players from *Destiny 2* and *The Division 2* described that while their games technically offer many build options, only a small portion of them can be considered good in higher difficulty encounters. One participant responded by describing this as "the illusion of choice." Despite *Destiny 2* being categorized as high for autonomy, it had the second lowest autonomy mean in the study. This may suggest that the sheer number of customization options may not be enough if the community driven optimization narrows what players feel comfortable choosing. *Destiny 2's* constant updates to the games balance and equipment may limit how much players feel their customization options are actually their own [19].

The genre comparison of looter shooters and roguelikes did not find a significant difference in autonomy either. The researcher expected that failure gameplay loops would help roguelike players feel more in control by forcing meaningful choices after each death, but this notion cannot be concluded by any of the data in this study [6], [12]. For the three roguelikes, *Risk of Rain 2* had the highest autonomy mean of any game while *Slay the Spire* and *The Binding of Isaac* had some of the lowest. This may suggest that the specific design of a game's customization system matters more for autonomy than where it falls into the looter shooter or roguelike genre. For

example, *Risk of Rain 2* provides randomized items during gameplay that force players to adapt on the fly, while *Slay the Spire* limits card choices to a smaller pool per run [18], [21]. Both are roguelikes, but their customization systems offer very different levels of player freedom during play.

Relatedness

Functional customization did not have a significant relationship with feelings of relatedness. The subcategory analysis also found nothing significant across the three different categories. A large number of the participants stated that functional customization does not affect their connection to others. Responses like “it doesn’t” and “I play solo” appeared across nearly every game. For many players, functional customization is something personal that does not carry over into any feelings of social connection. Where relatedness did appear in the free responses, it was in the specific games that had multiplayer. *The Division 2*, *Destiny 2*, and *Risk of Rain 2* described how choosing roles for group play, like one player doing damage while the other player focuses on healing, as this created a sense of teamwork. But these responses were absent from the single-player games. Players from *Hades*, *Slay the Spire* and *The Binding of Isaac* consistently noted that the game simply did not involve other players in a meaningful way, with one participant writing, “I answered these connection questions low because they feel irrelevant to the game experience.” The inclusion of primarily single-player roguelikes in a study measuring relatedness could have influenced the responses for this construct, which is later discussed in the limitations section.

Self-Efficacy

Neither the game-level analysis nor the genre comparison found a significant relationship between functional customization and self-efficacy. The researcher initially expected that having more customization options would help players feel confident they could succeed in future challenging situations [13], [14]. The data simply did not support this. One possible reason is that self-efficacy, as measured by the NGSES scale, captures a person’s general belief in their ability to succeed across situations rather than their confidence with one specific functional customization system within one specific game. Previous research has found significant relationships between self-efficacy and game interactivity when using measures contextualized to the game experience [69]. This study used the NGSES, which measures general self-efficacy across all situations rather

than confidence within a specific game's systems. Looking at the data, a player may be able to craft a meta build, and thus feel highly competent, but this does not translate to scoring higher on a general self-efficacy scale. The non-significant result here may reflect this difference in measurement rather than the absence of a relationship between functional customization and self-efficacy.

Evaluating the Functional Customization Taxonomy

Based on the researchers' own player experiences, this case study originally theorized a three-part taxonomy, offensive, abilities, and defensive would be necessary to describe functional customization across the genres of looter shooters and roguelikes and then set up the data collection to evaluate the taxonomy structures. After the initial categorization and hypothesis testing, the categorization of customization types did not support combining the rating in all three to assign an overall ranking. Thus, where there were significant relationships found in the data, the researcher used the results to update and extend the application outside of the working taxonomy proposal.

Specifically, the researcher used the significant competence offensive customization subcategory to re-rate the games using the sample's competence offensive means. Using the low group mean from the significant competence offensive ANOVA as an empirical threshold, each games competence mean was compared to this cutoff point to see whether the data supported the researcher's original rating. The process found five games had to have their offensive subcategory rating changed. *Escape from Tarkov* and *Hades*, both originally rated as high, fell below the threshold. *Warframe, Risk of Rain 2*, and *The Binding of Isaac*, originally rated low came in above it. However, when these changes were applied to the overall functional customization rating using the two-of-three rule (if two or more subcategories are high, the game is rated high overall), only one game changed its overall classification, *Hades,* which moved from high to a low rating. The fact that five subcategory changes produced only one overall change has implications for the usefulness of this taxonomy. While the three categories helped organize and describe each game's systems, they did not prove useful in predicting how players would score on autonomy, competence, or relatedness in looter shooter and roguelikes. The recategorization showed that the researcher's initial subjective ratings were sometimes at odds with how players actually experienced the different games' systems. Games like *The Division 2*, and *Risk of Rain 2* consistently

scored higher than the researcher's categorization predicted, while *Hades* and *Escape from Tarkov* scored lower. This suggests that the categories as defined may not capture what makes functional customization meaningful to players in these genres.

The same recategorization process was applied to the significant abilities customization subcategory. Using the low group mean as a threshold, three games had to have their abilities subcategory rating changed: *Borderlands 4* moved from high to low, while *The Binding of Isaac* and *Escape from Tarkov* moved from low to high. However, when these changes were applied to the overall functional customization rating using the two-of-three rule, no games changed their overall classification. This further reinforces that the taxonomy did not prove useful for predicting player constructs.

Limitations and Future Research

The primary limitation of this study was the sample size. Using a standard sample size formula (n = Z^2 * p * (1-p) / E^2) at 95% confidence with a 5% margin of error, the required size per game would be approximately 385 participants. With 180 total participants spread across 10 titles, this study did not reach that threshold for any individual title. At 180 participants, the overall margin of error is around 7.30% at 95% confidence, or around 82% confidence at a 5% margin of error. This is further compounded by the uneven distribution of participants across the different titles. *The Division 2* had 72 participants and *Destiny 2* had 31 participants, which accounted for a larger portion of the looter shooter sample, while titles such as *Borderlands 4* and *The Binding of Isaac* only had 4 participants each. This trend is only exacerbated when looking at the roguelike titles, all of which fall under 25 participants. This imbalance across titles may have skewed the aggregate mean scores towards specific titles like *The Division 2*, masking the lower population games. Future research should aim for larger, more evenly distributed samples across all titles to strengthen the reliability of game-level comparisons.

The second limitation lies in the recruitment methodology and the biases it can introduce. Participants were recruited primarily through subreddits and Discord game-specific communities. This introduces a self-selection bias, as the populations on these online forums are likely to represent highly dedicated, core players who are already fans of the games. Players who are active enough to join various gaming communities online may have very

different player profiles than those of a more general or casual audience. Additionally, a portion of participants were recruited from the SMU Guildhall Graduate Program, and SMU Esports and SMU Game Club. These participants are very familiar with games which can also introduce a selection bias as they are more informed about game systems and customization systems. The study also did not compensate participants, meaning only those who were intrinsically motivated to respond completed the survey. Players who do not care about functional customization or who have negative experiences with it may have been less likely to participate, potentially inflating the positive scores for construct like competence and autonomy. Future research should consider broader recruitment strategies and participant compensation to capture a wider range of player profiles, including casual players and those less engaged with customization systems.

The third limitation may involve the operationalization of functional customization for the different SDT constructs. The researcher categorized games based on the three categories of offensive customization, defensive customization, and ability customization. These categories are subjective in nature and there is opportunity for different researchers and players to have different definitions of how to describe what exactly functional customization means within context of videogames. Also, while a threshold of three or more distinct systems was initially used as an overall guideline for rating the games high or low for each subcategory of an SDT construct, the researcher ultimately relied on qualitative judgement about how each games systems would interact with the SDT constructs rather than strictly adhering to the numerical cutoff. There was one big anomaly, with *Escape from Tarkov* technically having lots offensive systems, but researcher still categorized it as low autonomy offensive customization, due to the SDT construct having more weight in this example. Future research should seek to expand the definition of functional customization into further categories, such as whether the player can functionally customize their character before a game starts or during gameplay. The findings regarding *Risk of Rain 2* suggest that player autonomy is not solely defined by pregame choices but might be influenced by the strategic pivots made during gameplay, even with randomness as a factor. It would also be valuable to explore other types of functional customization such as environmental customization or difficulty modifiers like the ascension system in *Slay the Spire* [18].

The fourth and final limitation involves the data recategorization methodology used in this study. The researcher used the low group mean from the significant competence offensive subcategory as a single threshold to determine whether a games categorization should be revised. While this approach provides an empirical basis for the revision, it can be undermined by the small sample size. Future research with larger samples could validate or refine this recategorization approach and explore additional empirical methods for classifying functional customization levels.

Conclusion

The results from the study show that functional customization can be a factor in feelings of competency and autonomy when playing a game. From a game production perspective, when extending previous research, these additional findings offer several lessons regarding functional customization systems and looter shooters and roguelikes that could extend session playtimes. It is consistent with deep customization systems that can assist the transition from external to internal player motivation [44]. In some games, satisfying the needs for autonomy and competence allows the gameplay to become its own reward, rather than relying solely on external prizes [12], [44]. When players feel their growth is a result of their own agency, they are more resilient [12]. This study's participants talked about building knowledge and theory crafting as its own form of skill expression, while also saying that when they customize, it would boost their skill and not replace it. Therefore, investing in functional customization does not just add features, it can increase player resilience and mastery, ensuring that they play longer because they are personally invested in the success of their own thought up strategies [10], [44].

The most significant finding in this study was the strong link between functional customization and feelings of competence. For producers, this means prioritizing offensive and ability customization depth, such as weapon types, damage systems, different combat styles, class specializations, and skill trees is likely the most important thing for making players feel competent. At the same time, the inverted abilities finding suggests that overloading players with too many skill trees or class options may work against competence rather than support it. Autonomy, by contrast, appears to require a broader design approach where players feel ownership across multiple layers of customization rather than any single system. Research has shown that satisfying autonomy and competence

needs can help producers predict enjoyment and continued play [44]. From a marketing perspective, highlighting strong offensive customization and overall functional customization depth may help extend play sessions and encourage continued play [44].

This study also proposed a three-part functional customization taxonomy, dividing systems into offensive, abilities, and defensive subcategories. The taxonomy served as a useful framework for structuring the game deconstructions and provided a consistent lens for comparing games across genres. However, the subcategory analysis and subsequent recategorization process revealed that the taxonomy in its current form was not predictive of player constructs, and the researcher's initial classifications did not always align with participant data. Based on these results, the researcher does not recommend using this taxonomy to classify games into high or low functional customization categories, as the data did not support that level of reliability. The taxonomy is better suited as a descriptive tool for breaking down what a game offers rather than a predictive tool for how players will respond.

Risk of Rain 2 had the highest autonomy mean score despite relying heavily on randomized item drops, suggesting that randomness does not necessarily diminish a player's feeling of control and that players can adapt and feel ownership over their adaptation within the randomness [70]. Qualitative responses supported this, with one participant responding that managing items made them feel they had “more agency and always have a chance of winning if I play well,” and another said that two players given the same seed would still produce different builds because “they can control what they want.” For producers, this supports the use of procedural generation and randomized loot tables as an easy way to keep gameplay feeling fresh by making nearly every instance of a play session feel different for the player than the last.

While this study could not draw quantitative conclusions about failure loops specifically, qualitative responses from Hades players hinted at a potential connection. One participant said that “gradually unlocking upgrades over many failed runs” allowed their ability to customize builds to grow alongside their skill. This may be suggesting that failure loops could serve as a method for both competence and autonomy to grow in players over time.

Overall, this study's findings point to two distinct areas where functional customization influences player motivation. Competence appears most

connected to the customization choices players make, such as selecting builds, weapons, and loadouts. Autonomy, on the other hand, appears more connected to real-time gameplay, where players feel free to execute their strategies and adapt on the fly. This study shows that functional customization can act as a player's tool for feelings of control and perceived mastery. When players believe they can create their own success through making better builds, failure becomes an afterthought rather than a barrier to play. The implication for producers is to design a game where functional customization provides players with the tools needed to feel in control and like they are getting better, and player enjoyment and continued play will increase [44].

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Appendix

Complete Survey Questions

Survey Questions - The Division 2

Start of Block: Demographic InformationDefault Question Block

Q1 What is your age?

- O Below 18 (1)
- O 18-19 (2)
- O 20-29 (3)
- O 30-39 (4)
- O 40-49 (5)
- O 50-59 (6)
- O 60-69 (7)
- O 70-79 (8)
- O 80+ (9)

Skip To: End of Survey If What is your age? = Below 18

Q4 CHANGE Please confirm that you have played ***The Division 2***.

- O Yes I have played (1)
- O I have not played the above game (15)

Skip To: End of Survey If Please confirm that you have played The Division 2. = I have not played the above game

Page Break

Q2: Informed Consent PROJECT TITLE: Customization in Games: Investigating Autonomy, Control, Relatedness, and Self-Efficacy in Looter Shooters and Roguelikes PRINCIPAL INVESTIGATOR: Alex Maddox Graduate student, The Guildhall **Overview** We are conducting a research study to learn more about how functional customization in looter shooters and roguelikes affect a player's autonomy, competence, relatedness, and self-efficacy and if any learnings can be applied to other genres Your participation in this study is voluntary. If you agree to take part and then change your mind, you can withdraw for any reason. There are no penalties if you withdraw, decline to participate, or if you skip any parts of the study. If you agree to participate, you will have played a looter shooter or roguelike game in the last few months and will take a brief survey about your player experience. Your participation should take about 10 minutes or less. Minimal risks No benefits **Introduction** Before you say that you will be in this research study you need to read this form. It is important for you to understand all the information in this form because it will tell you what the study is about and how it will be done. It will tell you about some problems that might happen during the study, as well as the good things that might happen during the study. When you read a paper like this to learn about a research study, it is called "informed consent." When you give your consent for something, it is the same thing as giving your permission. If you do not understand something in this form, please talk with one of the staff to answer your questions. Do not sign this consent form unless all your questions have been answered and you feel comfortable with the information you have read. You will be given a copy of the form to keep. **Purpose** The purpose of this research study is to learn more about how player motivation in looter shooters and roguelikes is shaped by customization, autonomy, and competence within game design, and I will be drawing heavily from Self-Determination Theory (SDT) and Social Cognitive Theory (SCT). I am refining a survey instrument that integrates validated scales (like BPNSFS and NGSE) to measure these psychological constructs in gameplay experiences. My research aims to identify design strategies that foster sustained engagement and psychological well-being. You are being asked to take part in this study because you are an active player or individual with gaming experience. Your feedback is vital for evaluating the psychological impact of game design features, and for improving inclusive, player-centered development practices. 385 participants will be part of this study. **Your Rights** Your participation in this study is voluntary. You do not have to take part in this study and it is okay to refuse to sign this form. If you agree to take part and

then change your mind, you can withdraw for any reason. Deciding not to be in the study, choosing not to complete a part of the study, or leaving the study early will not result in any penalty or loss of benefits that you are entitled to receive from SMU. If you decide to withdraw before completion of the study, all your information will be destroyed. If you change your mind and later want to withdraw your permission to participate after completion of the study, you may do so by notifying Alex Maddox, email: amaddox@smu.edu. If you decide to do this, all your information will be destroyed. **Procedures** If you agree to participate, you will complete an online survey hosted on Qualtrics that takes approximately 10 minutes or less. The survey includes multiple-choice and scaled-response items about the games you play, and experiences related to functional customization, autonomy, competence, relatedness, and self-efficacy. You may be asked to reflect on how looter shooters and roguelike you've played affect your sense of control, achievement, and enjoyment. All responses will remain anonymous. **Duration** Participants need to have played more than a few hours of games in the looter shooter or roguelike genre (such as Borderlands 3, Risk of Rain 2, Binding of Isaac, etc.). The survey will take about 10 minutes or less. **Risks** There are no expected risks to you because of participating in this study. **Benefits** There is no guarantee or promise that you will receive any benefits from this study. **Costs and Compensation** There is no cost to you for taking part in this study. **Confidentiality** The information collected about you during this study will be kept confidential to the fullest extent of the law. However, information about you from this study may be provided to governmental officials if necessary in the interest of public health and safety, but only to the extent necessary to satisfy the public purpose. Otherwise, only the researchers who are part of this study will see the information about you from this study. The results of this study may be published in a scientific book or journal or presented to other people. If this is done, your name will not be used so no one will know who you are. Digital information will be stored in a multi-authenticated secure folder online, Box, and Duo, to keep it safe from access by people who should not see it. The information collected about you during this study will not be used or distributed for any future research studies. The information will be destroyed in five years after the completion of this study. **Whom Do I Contact If I have Questions or Problems?** If you have concerns or questions about the study, contact one of the following individuals: Principal Investigator: amaddox@smu.edu If you are not satisfied with how this study is being conducted, or if you have any concerns, complaints, or general questions about the research or your

rights as a participant, please contact the SMU Institutional Review Board (IRB) to speak to someone independent of the research team at researchcompliance@smu.edu or 214-768-2033. **Confirmation of Consent by Research Subject** You are making a decision about being in this research study. When you sign this form by checking the YES box, you are giving your permission to be in the study. By signing this form, you have not given up any of your legal rights or released anyone from liability for negligence. You confirm that you are at least 18 years of age. This consent form has explained to me the purpose of the research project, the study procedures that will take place, and the possible risks and discomforts that may happen. I have read (or have had read to me) this consent form. I believe that I have enough information to make my decision. I have also been told my other options. I agree to give my consent to take part as a subject in this research project.

O YES, I consent, begin the study (1)

O NO, I do not consent, I do not wish to participate (2)

Page Break

Q12 If you would like to receive a confirmation of your consent to participate in this study, please enter your email address.

O Email: (1) _____

Page Break

Q3 What is your gender identity?

- O Male (1)
- O Female (2)
- O Non-binary (3)
- O Transgender (5)
- O Genderqueer (6)
- O Intersex (7)
- O Prefer not to say (4)
- O Prefer to self-describe (8)

_____

End of Block: Demographic InformationDefault Question Block

Start of Block: Self-Efficacy

Q5 Please indicate how much you agree or disagree with each statement, thinking specifically about how your functional customization choices impact your confidence while playing ***The Division 2***. **Functional Customization**: using or altering features designed mainly to fulfill task-based goals. (i.e. Ability Upgrades, Weapon Upgrades, New Abilities, New Weapons, New Gear, etc.)

	strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
I will be able to achieve most of the goals that I set for myself by functionally customizing how I play. (1)	O	O	O	O	O
When facing difficult tasks in game, I am certain that I will accomplish them by adjusting my build. (2)	O	O	O	O	O
In general, I think that I can obtain outcomes in game that are important to me by personalizing my build with functional	O	O	O	O	O

customizati on (3)					
I believe I can succeed at most any gameplay challenge to which I set my mind (4)	O	O	O	O	O
I will be able to successfully overcome many challenges where I can functionally customize my build. (5)	O	O	O	O	O
I am confident that, because I can functionally customize my build, I can perform effectively at many different gameplay tasks. (6)	O	O	O	O	O
Compared to other people, I feel I use functional customizati on very well. (7)	O	O	O	O	O

Even when gameplay is difficult, I can perform quite well using a build that I functionally customized. (8)	O	O	O	O	O

End of Block: Self-Efficacy

Start of Block: Self Determination Theory

Q6 Please indicate the degree to which each statement feels true for you when playing ***The Division 2*** and you functionally customize your character with gear, abilities, weapons, or builds. Functional Customization: using or altering features designed mainly to fulfill task-based goals. (i.e. Ability Upgrades, Weapon Upgrades, New Abilities, New Weapons, New Gear, etc.)

	not true at all (1)	(2)	(3)	(4)	completely true (5)
I feel a sense of choice and freedom in how I customize and approach challenges in games. (1)	O	O	O	O	O
Most of the functional customization I do feel like “I have to”. (2)	O	O	O	O	O
I feel that the people I play with also care about me. (3)	O	O	O	O	O
I feel excluded from player communities that focus on the games I play or the functional customization I use. (4)	O	O	O	O	O
I feel confident	O	O	O	O	O

that I play well when I can functionally customize my character. (5)					
I have serious doubts about whether I can do things well even after I functionally customize my character. (6)	O	O	O	O	O
My customization choices feel like my decisions reflect what I really want. (7)	O	O	O	O	O
I feel forced to customize my character in a way I wouldn’t choose to do. (8)	O	O	O	O	O
I feel connected to other players who value teamwork and respect my functional	O	O	O	O	O

customization preferences. (9)					
I feel like some players or community members are cold and distant to how I play or functionally customize my character. (10)	O	O	O	O	O
I feel capable in games where I can functionally customize my character. (11)	O	O	O	O	O
I feel disappointed with many of my performances, even when I can functionally customize my character. (12)	O	O	O	O	O
My functional customization decisions express who I really am. (13)	O	O	O	O	O

I feel pressured to functionally customize my character too many times. (14)	O	O	O	O	O
I feel close and connected with other players who also functionally customize their characters. (15)	O	O	O	O	O
I have the impression that players I interact with dislike how I choose to functionally customize my character (16)	O	O	O	O	O
I feel competent to achieve my goals by functionally customizing my character. (17)	O	O	O	O	O
I feel insecure about my abilities even when I functionally	O	O	O	O	O

customize my character. (18)					
I feel that functionally customizing my character is what really interests me. (19)	O	O	O	O	O
In The Division 2, functionally customizing my character feels like a chain of obligations. (20)	O	O	O	O	O
I experience a warm feeling with the players I spend time with, who also functionally customize their character. (21)	O	O	O	O	O
I feel the relationships I have with other players are just superficial and functional customization of characters does not	O	O	O	O	O

matter. (22)					
I feel I can successfully complete difficult in-game tasks when I can functionally customize my character. (23)	O	O	O	O	O
I feel like a failure because of the functional customizati on mistakes I have made. (24)	O	O	O	O	O

End of Block: Self Determination Theory

Start of Block: Free Response Questions

Q7 Thinking about the game you selected, how does functional customization affect your sense of control while playing? Feel free to describe any moments, features, or feelings that stood out.

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Q14 Thinking about the game you selected, how does functional customization affect your sense of connection to others while playing? Feel free to describe any moments, features, or feelings that stood out.

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Q13 Thinking about the game you selected, how does functional customization affect your sense of your own skill while playing? Feel free to describe any moments, features, or feelings that stood out.

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_____

End of Block: Free Response Questions