Control Scheme Proposal

All player actions are dependent on whether the player is currently holding some number of dice from empty to full (not including basic movement and jumping)

Movement		**Combat**		Is holding RMB required?
Move Forward	**W**	Dice Pull	**Hold RMB**	N/A
Move Back	**S**	Shotgun	**Single LMB Click**	YES
Strafe Left	**A**	Machine Gun	**Hold LMB**	
Strafe Right	**D**	Slam Dice In Air	**Single LMB Click + Hold Shift**	NO
Jump	**Space**	Snipe	**Holf LMB Click + Hold Shift**	YES
Dice Fly	**Hold Space - Holding Dice**			
Movement Tech				

Note: After using an action that requires the player to be holding RMB, they must release RMB and click again to activate Dice Pull

SEE RATIONAL BELOW

Key Thoughts

While I originally thought that a traditional retro FPS control scheme would be best for our game, the more research and thinking I've done, the more I believe we should do something more experimental (read Experimental Approach below). The major drawback of adapting the traditional FPS approach to controls is that they often require you to change hand position and stretch to reach certain keys. Unless you have one of those crazy MMO mice with 15 buttons, eventually, every key on your keyboard will have an associated action until you get to Y, H, and N going left to right. Additionally, players realistically only have access to their index and ring fingers to execute inputs if they want to retain the ability to walk forward with their middle finger and jump with their thumb. Still, you often lose some of your ability to move (either strafing in one or both directions or jumping) to some extent.

One of the key components of Bullet Heaven games is the simplicity of their control and their mechanical focus on movement. In the Bullet Heaven games I've played, gameplay primarily consists of moving around the environment to avoid enemies while automatically attacking and killing enemies. If we adopt the traditional FPS control scheme, I'm worried we'll become just another retro movement shooter. There are enough of those. Since the heart of this game is the dice pull mechanic, we should experiment outside the box to try and find the optimal controls to give players the experience we want.

Research Results

Traditional FPS Approach

Players use single-stroke key binds and their mouse scroll wheel to switch between weapons. When a weapon is selected, the player can hit LMB to use its primary attack. RMB is usually reserved for ADS or weapon-specific mechanics such as special abilities or modifications.
Outside of using WASD to move, movement mechanics are usually designated to specific keys available to the player's pinky and thumb, often Space, Left Shift, and Left Control. Almost universally (among games with control schemes primarily designed for right-handed players), players use movement/traversal mechanics with their left hand on the keyboard.
Players switch weapons with the Scroll Wheel and number keys and activate their primary attacks using the Left and Right Mouse buttons with their left hand. In games with more complex combat mechanics, the keys surrounding WASD, usually C, V, F, R, and E, are delegated to additional combat mechanics. Note that these non-movement mechanic keybindings are usually within close proximity to the player's index finger, likely to prevent situations where players have to choose between using a movement mechanic and a combat mechanic with their pinky.
In FPSs with traditional weapon-based mechanics, almost all actions are executed with single keystrokes and button presses.

Obvious Pros:

- Most PC FPS players have experience with these types of control schemes
- Easy to learn
- Low skill floor

Obvious Cons:

- Players sometimes need to take their hands off the movement keys (primarily WASD) to execute some actions
- Increased time between actions if the player needs to swap their equipment
- Having small hands can be a disadvantage if a game uses lots of key binds

Experimental Approach

Players use multi-stroke or situational key binds to use weapons or attacks at any time without switching to a different weapon or piece of equipment. For example, the movement mechanics found in Hyper Demon (see below) can only be executed when the player is in specific situations. For example, the player can only hit space to execute a ground slam when they are in mid-air and not hitting one WASD. Since the player cannot hit space to jump anyway, the functionality of the space key changes during the instant the player is in the air and not hitting WASD. Since the ground slam can only be executed in a very specific situation, it is unnecessary to have a dedicated key bind. We can also expand the number of actions the player can perform by removing the notion that the mouse only has three valid inputs. You could theoretically have an infinite number of actions assigned to the mouse buttons (LMB, RMB, and middle click) by creating different sequences of clicks. For example, each button can be clicked and held independently, so you could have actions assigned to left click, hold left click, hold left and right click, hold right click and hit left click once, and so on.

Obvious Pros:

- Players do not need to take their hands off the movement keys (primarily WASD) to execute actions

- Can be more accessible to players with differing hand sizes or situations where they cannot stretch their hand across their keyboard
- Decreased time between actions if the player needs to swap their equipment

Obvious Cons:

- Steeper learning curve
- Higher skill floor
- The average PC FPS player might not have experience with these types of control schemes

Universals / Standards

Directional Movement: WASD

Jump: Space

Primary Attack: Left Mouse Button

Themes and Trends

Dash: Left Shift

Sprint: Left Shift

Crouch: C / Left Control

ADS: Right Mouse Button

Alternative Attack / Attack Modifier: Right Mouse Button

Next Weapon / Previous Weapon: Scroll Wheel Up & Down

Switch To Last Weapon Used: Q

Switch To A Specific Weapon: 1, 2, 3, 4, 5…

Reload: R

E: Interact

Research

Bullet Heaven

Vampire Survivors

- Movement: **WASD**
- Attack: **Some directional attacks rely on the direction the player character is facing**

Retro Movement Shooter

Ultrakill, Amid Evil

- Movement: **WASD**
- Jump: **Space**
- Dash: **Left Shift**
- Slide: **Left Control**
- Primary Fire: **Left Mouse Button**
- Alt-Fire: **Right Mouse Button**
- Switch Weapons: **Scroll Wheel**
- Specific Weapons: **1, 2, 3, 4, 5**
- Last Weapon Used: **Q**
- Change Variation: **E**
- Change Arm: **G**

Dusk

- Movement: **WASD**
- Jump: **Space**
- Crouch: **Left Control**
- Walk: **Shift**
- Attack/Throw: **Left Mouse Button**
- Weapon Zoom: **Right Mouse Button**
- Switch Weapons: **Scroll Wheel**
- Last Used Weapon: **Q**
- Flip Weapon: **R**
- Holster: **H**
- Interact: **E**
- Flashlight: **F**

AAA Movement Shooter

Doom Eternal

- Movement: **WASD**
- Jump: **Space**
- Dash: **Left Shift**
- Primary Fire: **Left Mouse Button**
- Weapon Mod: **Right Mouse Button**
- Glory Kill / Melee: **E**

- Chainsaw: **C**
- Equipment Launcher: **Left Control**
- Flame Belch: **R**
- Crucible: **V**
- Switch Weapons: **Scroll Wheel** / **Hold Q**
- Switch Weapon Mod: **F**
- Switch Equipment: **G**

Apex Legends

- Movement: **WASD**
- Sprint: **Hold Left Shift**
- Jump: **Space**
- Crouch: **C / Left Control**
- Tactical Ability: **Q**
- Ultimate Ability: **Z**
- Attack: **Left Mouse Button**
- ADS: **Right Mouse Button**
- Toggle Fire Mode: **B**
- Melee: **V**
- Reload: **R**
- Switch Weapons: **Scroll Wheel**
- Holster Weapon: **3**
- Quip Grenate: **G**
- Ping **F**

- Interact: **E**
- Inventory: **Tab**

Unique Indie Shooters

Hyper Demon

- Movement: **WASD**
- Jump: **Space**
- Dashing: **Space + Direction Key (In Air)**
- Slide: **Holde Space (While Dashing)**
- Stomp: **Space (In Air)**
- Dodge: **Space + Direction Key (When being attacked by an enemy w/ Glowing Eyes)**
- Attack (Shotgun): **Tap Left Mouse Button**
- Attack (Machine Gun: **Hold Right Mouse Button**

Receiver

- Movement: **WASD**
- Jump: **Space**
- Toggle Crouch: **Tap C**
- Run: **Tap W (Repeatedly)**
- Attack: **Left Mouse Button**
- Aim Weapon: **Hold Right Mouse Button / Tap Q**
- Holster / Draw Weapon: **Tilde**
- Reset Game: **Hold L**