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Redefining Play: A Novel Framework for Differentiating Agency and Autonomy in Video Games

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ABSTRACT

Human Agency has always been an important aspect of the player's gaming experience. Game designers and researchers have studied the definition of Agency in video games, how it is measured, and its relationship with game elements and other player experiences. However, the current understanding of Agency remains ambiguous and is often conflated with similar concepts. In this paper, we review the existing literature to distinguish Agency from its most similar concept, Autonomy, and propose a model based on a single completed player behaviour in a video game. This model also clarifies the related concepts of Self-Efficacy and Competence, which are strongly linked to Agency and Autonomy. By providing a clearer framework, this model enhances our understanding of the complexity of player experiences and contributes to the advancement of game design.

Keywords

Agency, Autonomy, Self-Efficacy, Competence, Video Games, Player experience

INTRODUCTION

Agency refers to the ability of individuals to act based on their will and make their own free choices. It encompasses the power and freedom to make decisions and take actions that influence the environment. In the video game industry, Agency is seen as a critical design element. Game developers strive to create experiences where players feel a sense of control and influence over the game world. This is achieved through mechanics that allow for diverse choices, multiple narrative paths, and interactive environments that respond to player actions (Juul 2005). Successful implementation of Agency in games can enhance player engagement, immersion, and satisfaction, making it a vital aspect of game design (K.S. Tekinbas and Zimmerman 2003). This is evidenced by the chase to develop highly immersive games as well as open-world games, where game designers are looking to improve the gaming experience for the player by fostering Agency in their games.

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Although Agency is a fundamental concept in game design, its complexity often leads to it being conflated with the related concept of Autonomy in research. Autonomy is defined as the experience of perceiving oneself as the origin of one's behaviours (Ryan and Deci 2002). Both concepts emphasise the player's feelings of freedom and control, but they differ slightly in terms of the source of the experience. Despite this, few studies clearly articulate the distinction. In a well-designed game, these two experiences often work in combination, with Autonomy enabling the player to act as they wish and Agency ensuring that these actions have impactful outcomes. However, this does not mean that the two concepts are always intertwined, there are instances where only one of the two is present in a game. Distinguishing between these concepts can help to unpack the player's experience more precisely and support the design of game content tailored to the player's perceptions and feelings.

We propose a model that demonstrates the distinction between Agency and Autonomy throughout a single complete video game experience. Our interpretation emphasizes their temporal and experiential dimensions: Autonomy represents a player's sense of volitional decision-making at the moment of choice, whereas Agency unfolds over time as players experience the consequences of their decisions. This model enables a more complete analysis of these and other player experiences and facilitates the identification of the impact of game content on both Agency and Autonomy. In developing our framework, we draw on philosophical and sociological theories of Agency and Autonomy alongside psychological studies that examine Self-efficacy, as well as the concept of Competence from Self-Determination Theory (SDT); this mix of approaches reflects the range of perspectives that have been used to study Agency in video games. Moreover, Self-Efficacy, regarded in some studies as a component of Agency, and Competence, a core element of SDT alongside Autonomy, are closely related concepts that influence a player's independent decision-making in games. By explicating these ideas and integrating them into our model, we offer a more comprehensive framework for understanding player behaviour and experience during gameplay.

EXPERIENCES OF AGENCY AND AUTONOMY

In this section, we will review previous studies on Agency and Autonomy, focusing on the definitions used and the measurement approaches employed to distinguish these two concepts.

Agency

Defining Agency

In philosophy, Agency represents the capacity to act intentionally(Westlund 2021) and is a central theme in discussions about free will, moral responsibility, and human Autonomy (Anscombe 1957). It explores questions about how individuals can shape their destinies within the constraints of social and physical realities. In sociology, Agency is examined in the context of social structures and power dynamics, investigating how individuals navigate and potentially alter the systems they inhabit (Giddens 1984). The concept of Agency in sociology is derived from philosophy, and is narrowed down in terms of both constraints and behavioural purposes, diminishing the context in which Agency operates from the broader physical reality to the reality of the social system in which a person is embedded.

In the early 21st century, Agency in games has not been studied in the same way as in other fields, where Agency is seen as a broad and complex concept. Research during this period tended to consider Agency as empowering to the player by the game, resulting from the game mechanics. As a result, two important arguments have emerged, Agency as Choice and Agency as Freedom (Tanenbaum and Tanenbaum 2009). The most well-known definition of Agency comes from Murray (1998), and she explained it as “the satisfying power to make meaningful actions and see the result of our decisions and choices”. This definition highlights the meaningfulness of the choices and considers the multitude of choices provided by the game less important. Mateas and Stern (2006) asserted a good example for this definition: “If there are many buttons and knobs for the player to twiddle, but all this twiddling has little effect on the experience, there is no Agency”. In addition, they discuss that the effect should be consistent with the player's intent and that if the result is not in line with the player's intent, the player will not be considered to have Agency, even if the action has an effect in the game world. Tekinbas and Zimmerman (2005) also argue that a game's actions and outcomes should be interconnected to bring meaningfulness and coherence in relation to the overall events within the game. Building on Murray's definition, Mateas and Stern (2006) provide further insight into the emergence of Agency, which they argue arises from the constraints and affordance of action by the design of the game experience. When material constraints and formal constraints are balanced in a game, then the restricted freedom of the player has the potential to produce Agency. Thus, from this point of view, player Agency can be seen as provided by the game's system design and is a kind of game affordance.

The above discussions are all studies of the existence of Agency under the condition that the players are restricted in certain aspects. In the same period, there are other scholars who believe that Agency is unrestricted freedom of action without limitations. MacCallum-Stewart and Parsler (2007)mentioned that 'full Agency' is “the ability of a player to move as they will and make totally free behavioural choices”. Wardrip-Fruin et al. (2009) view Agency as a phenomenon involving both the player and the game, that is, when the player desires to take a certain action, the underlying computational model supports the player's thought and provides the corresponding action within the game. In their article, they point out that Agency is not free will and turn the attention to how computer models can be leveraged to provide services to the player. These definitions are consistent at their core with traditional philosophical and sociological perspectives, narrowing down the context in which Agency occurs further to video games, with only a disagreement in the understanding of the level of constraints.

Beyond foundational definitions, the understanding of Agency in gaming has expanded with advances in the industry and academic study. While these works enrich our understanding, they often incorporate additional concepts, making Agency more abstract. Tanenbaum and Tanenbaum (2009; 2010) applied speech act theory, redefining Agency as a commitment to meaning, emphasising player intent over action outcomes. Neves et al. (2018) built on this by introducing the bio-costs contract, a descriptive model that operationalises these ideas but also adds complexity. This model draws on behavioural-role pragmatics (Watzlawick and Beavin 1967), which explores how roles influence interaction, and Conversation Theory(Pask 1976), which examines the iterative process of shared understanding. While these frameworks provide valuable theoretical insights, their broad application to gaming remains untested, because these theories often prioritize human-to-human

interactions, while in video games, this becomes the interaction between human and computer system.

Some philosophers have also looked at Agency in games in recent years, coming up with more philosophical visions of the definition. Nguyen (2019) interpreted agency as the artistic medium of games, arguing that players enjoy decisions because they feel their Agency. Peacocke (2021) expanded on this by exploring evidence for the aesthetics of Agency. Russell (2021) clarified distinctions between striving play and achievement play in Nguyen's work, proposing ideas about aesthetic experience and layered Agency. However, Bartel (2021) challenged Nguyen, arguing that Nguyen's reliance on aesthetic experience as a feature of artistic creation differs from traditional concepts in art studies. Bartel suggested that Agency's role as a medium in games cannot be confirmed without resolving these issues.

Besides these philosophical views, recent humanistic reflections have further broadened Agency's scope. Ruberg (2022) provided a queer reading of San Andreas Deer Cam, a Grand Theft Auto V mod, rethinking the centrality of human Agency. Gallagher (2022) examined autobiographical video games, proposing that they rewrite humanism and expand concepts of Agency, politics, and subjectivity. Muriel and Crawford (2020) conducted an empirical study based on interviews, exploring the sociological and political dimensions of Agency in games. While these conceptual expansions enrich the longitudinal understanding of Agency, they have not yet formed a clear framework that can be used in video game research. This lack of clarity remains, even though scholars continue to treat game feedback as essential for analysis, making it difficult to define measurable aspects of Agency to be used in empirical research.

In addition to these works, there are a number of scholars who have taken into account the complexities of Agency in video games and therefore do not consider Agency as a whole, but rather break it down to study a certain part of it. Mateas and Stern (2006) argue that Agency emerges from balanced constraints in games and hinges on feedback from the system. They classify Agency into local and global levels, where local Agency refers to immediate feedback on player actions, while global Agency involves long-term consequences, where current actions strongly affect future events. Based on this, Kway and Mitchell (2018a) explored emotional Agency and linked it closely with local Agency. They also found emotional Agency does not require global Agency and may even inversely correlate with it. MacCallum-Stewart and Parsler (2007) introduced illusory Agency, where players feel empowered despite their actions having minimal real impact. In contrast, scholars have also proposed theoretical Agency, referring to players' objective ability to make changes in video games (Thue et al. 2010). Perceived Agency is a more encompassing concept, emphasising what players have perceived, including both the real ability and the 'illusion'. To a certain extent, it can also be said that perceived Agency includes illusory Agency, and partially overlaps with theoretical Agency. Kway and Mitchell (Kway and Mitchell 2018b) analysed player interviews and identified that perceived Agency comes from the player's ability and willingness to make meaningful expressions, and the system's recognition of this expression through feedback. Hybrid agency captures the multi-layered dynamic capacity of players to act within digital games, shaped by the interplay of technological interfaces, cultural practices, individual skills, and structural power relations (Mäyrä 2019). Cole and Gillies (2021) developed a framework based on interviews about players' mixed-emotion experiences in avant-garde games, mapping Agency along two axes and resulting in four new types of

Agency. All these extensive studies expand on the content and margins of the Agency, yet it remains evident that even when Agency is not considered as a whole, system feedback plays a crucial role in its generation. Thus, in both the broad and narrow sense, the feedback from the system is at the centre of the sources of Agency.

Evaluating Agency

Based on the above review of the definition of Agency in video games, it's clear that Agency itself is an expanding concept whose edges still haven't been precisely sketched. Therefore, to better understand this concept, we will also review previous measurements of Agency and try to find out what exactly is covered by it.

Only a few studies have used objective measurements in the study of Agency in games. Typically, these studies ask participants to perform a task and measure Agency based on their performance, such as using the player's electroencephalogram (EEG) data (Pech and Caspar 2022) or measuring the player's perception of time using an intentional binding technique (Isham et al. 2011; Bergström et al. 2022). This latter approach detects perceptions of time, but does not cover perceptions of embodiment, casual relation, etc., which are considered to be essential components of Agency. Therefore, while this approach may be appropriate in simple interaction studies, its applicability in the complex environment of video games is still questionable.

There is no widely validated questionnaire for Agency in video games since the definition of it remains unclear. Most studies present custom-made questionnaires according to their specific topics (Caserman et al. 2019; Miyake et al. 2019; Balcomb et al. 2023). Also, the majority of the studies do not treat Agency itself as the primary research concept, resulting in only 1-2 items in their questionnaire that directly refer to Agency. Although some of the studies have optimised the measurement of Agency, overall, the items of Agency still only form an insignificant part of the questionnaire, so the analysis of the Agency is rather incomplete.

There are currently three questionnaires that have been used in the video game and HCI domains that address the Agency itself: Sense of Agency Rating Scale (SOARS), The Sense of Agency Scale (SoPA, SoNA), and SOA Questionnaire. The Sense of Agency Rating Scale was initially produced for hypnosis research (Polito et al. 2013). Later, Pritchard et al. adopted this questionnaire for more general use (Pritchard et al. 2016)), and Polito and Hitchens (2021) later used this general form to explore the users' Agency experience in interactive and non-interactive media. The Sense of Positive and Negative Agency Scale also originated from psychology (Tapal et al. 2017) and Bowey et al. (2019) used this questionnaire to investigate how the choice design in role-playing games could affect players' sense of Agency. Neither questionnaire was designed specifically for video games, so they are not fully applicable in the video game scenario. Furthermore, both questionnaires focus on human control over themselves when located in a healthcare environment, rather than control over the content in a video game environment, and are therefore outside the scope covered by the definitions we reviewed above. The last one is a newer measurement that was created by Guo and Lo (2023). Notably, different from the previous two, this questionnaire is specially designed for video games. However, because this questionnaire is relatively new, it has not yet been widely used. Furthermore, the items in this questionnaire focus on game elements rather than player experience. Instead of directly measuring player Agency, this questionnaire's items are more likely to measure the ability of the game's mechanics to provide Agency.

Autonomy

The philosophical understanding of Autonomy has evolved from classical ideas of self-rule to modern conceptions emphasising rational Agency and individual freedom. Early interpretations linked Autonomy to moral responsibility and rational self-governance, often associated with Kantian ethics, which views Autonomy as adherence to universal moral laws derived from reason (Wolff 1976). Contemporary discussions broaden this, addressing relational aspects, social influences, and the interplay between Autonomy and external constraints (Christman 2020). Westlund (2021) redefines autonomy as a dialogical practice of self-governance where individuals balance critical openness with self-trust, grounded in responsibility for their commitments. This dynamic understanding reflects its centrality to ethics and political philosophy.

In the field of Human-Computer Interaction (HCI) and video games, unlike the multifaceted concept of Agency, there exists a relatively well-established system for studying Autonomy. SDT is a psychological framework that explores human motivation, emphasising the role of intrinsic factors in fostering well-being and growth (Ryan and Deci 2000; Ryan et al. 2006). According to Ryan and Deci (2000), SDT posits that optimal motivation and psychological health arise when three fundamental psychological needs are satisfied: Autonomy, Competence, and relatedness. Autonomy in this context refers to a sense of control over one's actions and making choices aligned with personal values and interests. It can also be described as the willingness to perform a task (Deci and Ryan 1980), focusing more on the player's perceived control over decisions.

According to the systematic review on autonomy and agency in HCI, the SDT has been widely applied for the study of Autonomy in digital environments (Bennett et al. 2023). For instance, Smeddinck et al. (2016) investigated how automatic and player-initiated difficulty adjustment influences players' perceived Autonomy. Similarly, Deterding (2016) conducted grounded theory research to explore the effects of the social context of play on players' Autonomy. Klarkowski et al. (2016) examined the relationship between challenge-skill balance and player experience, evaluating several components of player experience, including Autonomy as defined by SDT. All of these studies build on the foundations of SDT, using the concept of Autonomy to explore the player experience within video games.

Given that Autonomy has a more solid conceptual foundation than Agency, it is clear that Autonomy also has more validated measurement questionnaires. The most well-known questionnaires are Player Experience Inventory (PXI) (Abeele et al. 2020), Basic Needs Satisfaction and Frustration in Games (BANGS) (Ballou et al. 2024), eGameFlow (Fu, Su, and Yu 2009), Ubisoft Perceived Experience Questionnaire (UPEQ) (Azadvar and Canossa 2018) and Player Experience of Need Satisfaction Questionnaire (PENS) (Ryan et al. 2006). These questionnaires were developed for the measurement of Autonomy in a video game context, yet they still have some shortcomings and involve elements that are ambiguous with Agency. Ballou et al. (2024) note that both PENS and UPEQ questionnaires only measure the need satisfaction and did not include the need frustration. Additionally, the ambiguity between Autonomy and Agency has also been found in tools like UPEQ and eGameFlow, which include items measuring players' control over the game—an aspect more closely related to Agency rather than Autonomy.

Despite these challenges, the robust conceptual foundation of Autonomy within SDT provides a strong basis for further refinement of these measurement tools. Our research aims to propose a model to disentangle Autonomy and Agency more clearly, ensuring that each is measured and understood in its own right while maintaining their interconnected relevance to player experience in video games.

Overlap and Differences

Although Autonomy and Agency have been extensively studied by video game scholars, few studies clarify the distinction between these two abstract concepts. Some articles use these terms interchangeably (Bennett et al. 2023) or even as components of each other's definitions. For instance, Peters et al. (2018) define Autonomy as “feeling Agency, acting in accordance with one’s goals and values”. This phenomenon is understandable, considering their conceptual similarities.

Firstly, both Agency and Autonomy emphasise the importance of freedom in the player's experience. Autonomy reflects the ability to make choices freely and without external constraints, while Agency ensures that those choices produce meaningful outcomes. Together, the two create an experience in which players feel in control of their behaviour and its effects. In most of the video games, these two experiences are integrated and form a complete flow from decision to experience. Therefore, in research, this process tends to be studied as a whole, blurring the boundaries between the two concepts. Secondly, from the perspective of player experience, both these concepts contribute to a player's sense of empowerment. Thus, when this feeling is measured, it can also be easy to confuse the distribution of the two different concepts within it.

Autonomy primarily focuses on the player's perceived control over their decisions, while Agency emphasises the emotional responses arising from the consequences of those decisions. This distinction is evident not only conceptually but also etymologically. The term Autonomy derives from the Greek roots ‘auto-’ (self) and ‘nomos’ (law), meaning "freedom to use its own laws". In contrast, Agency originates from the Latin ‘agere’, meaning "to set in motion, drive forward; to do, perform," highlighting the aspect of self-causation (Bennett et al. 2023). These origins reflect the differing emphases of each concept. Autonomy pertains to the volitional and self-directed nature of actions, with the focus being the decision itself. It provides a sense of control derived from making choices aligned with one’s own goals and values, free from external pressure. On the other hand, Agency is concerned with the outcomes of actions. It generates the feeling of "my actions matter" and "I am responsible for causing this situation," leading to a perceived control over external affairs. In this context, Agency within video games emphasises the player's influence on in-game events and the consequential feedback provided by the system.

The subtle distinction between Autonomy and Agency is further illustrated in the tools used to measure these concepts in video games. Questionnaires targeting Agency tend to emphasise two key dimensions: effectiveness and causal attribution. Effectiveness refers to the player’s perception that their actions have meaningful consequences. For example, items like "My inputs had considerable impacts on the events in the story" (Foffano and Thue 2019) and "My actions had significant effects on the story". (Ware et al. 2019) assess the player’s sense of influence on the game’s narrative. Causal attribution, on the other hand, focuses on the player’s belief that they are the direct source of changes within the game world. This is reflected in

simpler statements like "It seemed as if I was controlling the virtual hand" (Rosa et al. 2019) and "The movements of the virtual body were caused by my movements" (Ahuja et al. 2021). Some questionnaires delve deeper into cognitive aspects of causal attribution, with items such as "I am in charge of what this avatar does" (Banks et al. 2019) and "I could recognize which events in the story I have caused with my inputs" (Foffano and Thue 2019). These items probe not only the player's sense of control but also their ability to connect specific outcomes with their decisions.

Interestingly, questionnaires designed to assess Autonomy in video games sometimes also include overlapping elements related to effectiveness and causal attribution. For example, the UPEQ contains items such as "My actions had an impact on the [game]" and "The choices I made while [playing] influenced what happened." Similarly, the eGameFlow scale includes items like "I feel a sense of control and impact over the game" and "I feel a sense of control over the game." These items highlight the interconnected nature of Autonomy and Agency in video game experiences, where the perception of freedom to act (Autonomy) is often blurred with the perception of making meaningful contributions (Agency). However, apart from these, the majority of Autonomy-related questions focus on the player's ability to make choices and take actions according to their own will, emphasising self-determination without external constraints.

This distinction between Autonomy and Agency enriches our understanding of player experience in games. Autonomy ensures that players feel free to make decisions that align with their internal motivations, fostering a sense of personal engagement. Agency, on the other hand, reinforces the player's sense of control over the aspects of the game beyond the player themselves by providing feedback that reflects the player's impact on the game world. Together, these concepts shape the depth and richness of player experiences, yet a clear boundary between the two concepts is needed to investigate the patterns of the influence.

COMPETENCE AND SELF-EFFICACY

Another potentially confusing overlap between two constructs are Self-Efficacy and Competence. Some studies of Agency, measure Self-Efficacy as part of this experience. However, the theory is somewhat misaligned from the concept of Agency that we describe above, as Self-Efficacy has been considered as the essential part of taking action, while the Agency as discussed above, switched the concern to the video games' feedback. A concept theoretically similar to Self-Efficacy can be also found in SDT – Competence. In this section, we will introduce these two concepts and discuss their differences. These two concepts are essential to disentangle to help us refine the model of Agency and Autonomy that we propose in this paper to help us better understand how these experiences manifest themselves in video games.

Self-Efficacy

Self-Efficacy is a concept frequently discussed in research on Agency. The most widely referenced theory originates from Bandura. In his work, Bandura defines Agency as "the power to originate action" (Bandura 2001). Later in his Social Cognitive Theory (Bandura 1986), he expanded this concept and articulated that Agency comes from one's ability to adjust and control their cognition, motivation and behaviour through the impact of their Self-Efficacy (Code 2020). According to this theory, Self-Efficacy is the belief in one's capability to succeed and is considered an important source of

Agency. It has also been recognised as a component of Agency in subsequent research. For instance, Code (2020) examined Agency in learning contexts and developed a questionnaire to evaluate it, with Self-Efficacy as part of the questionnaire items.

These definitions of Self-Efficacy and Agency also have some applications in video game research. Samadi et al. (2024) investigated gameplay elements that support Self-Efficacy in Shoot 'em up games. Weerdmeester et al. (2017) examined the role of Self-Efficacy in biofeedback-controlled video games designed to improve mental health. Additionally, Foffano and Thue (2019) include Self-Efficacy as part of their Agency measurement, exploring how player experiences vary depending on their perception of the AI experience manager.

There is some overlap between this theory and, as mentioned earlier, early 21st-century scholars' understanding of Agency as complete freedom of choice. Within this framework, Self-Efficacy is present in Agency as a factor influencing decision-making. However, more recent research on Agency in video games has shifted the focus to the system's feedback on the player's behavior, rather than emphasising the player's unrestricted freedom to act. As a result, the consideration of Self-Efficacy as part of Agency is less consistent with contemporary research. In contrast, based on the distinction between Agency and Autonomy proposed in the previous section, decision-making falls under the domain of Autonomy. Self-Efficacy serves as supportive information, enabling players to act according to their own will. Therefore, within the context of video games, Self-Efficacy should be more closely associated with Autonomy rather than being identified as part of Agency.

Competence

When connecting Self-Efficacy with Autonomy, it is important to consider another related concept from Self-Determination Theory: Competence. As previously mentioned, SDT identifies three key components essential for optimal motivation and psychological well-being: Autonomy, Competence, and relatedness. Competence, within the SDT framework, is recognised as a critical factor for intrinsic motivation, reflecting the need for individuals to feel capable and effective (Ryan and Deci 2000). Thus, to some extent, Competence is similar to Self-Efficacy, as both explain a player's perception of their abilities. Notably, in video games, Competence can be enhanced through repeated practice and effort (Azadvar and Canossa 2018).

The concept of Competence, as outlined in the SDT framework, has been extensively applied in video game studies. Tyack and Mekler's systematic literature review on the use of SDT in games highlights that Competence need satisfaction and intrinsic motivation have been broadly applied in analysing player experience, guiding game design and building models of player-computer interaction (Tyack and Mekler 2020). Furthermore, several validated questionnaires have been developed for empirical studies on Competence. According to Tyack and Mekler (2020), among the 83 papers they reviewed addressing Competence, 40 used the PENS questionnaire, while 15 employed the Intrinsic Motivation Inventory (IMI) (Ryan 1982). These two instruments were identified as the most commonly used tools across SDT-based measures. In addition to these two main instruments, there are other questionnaires, such as the aforementioned BANGS, the UPEQ and the Game Experience Questionnaire (GEQ) (IJsselsteijn et al. 2013), which also contain items to measure Competence. These tools further expand the methodological approaches available for studying Competence in the context of video games.

Overlap and Differences

Based on Bandura's definition, Self-Efficacy is one's belief in their ability to plan and pursue actions that achieve their desired goals (Bandura 1982), and Competence in the SDT under the scenario of video games refers to the sense of I could act effectively and exert mastery in the video games (Ryan and Deci 2002). In terms of these two definitions, the concepts are not significantly different, both focusing on judgements of an individual's ability to effectively complete a task, which in the context of a video game could involve mastering a mechanic, completing a challenge, or achieving a goal. However, there are some subtle differences in the degree of judgement: Belief, compared to Feeling and Sense, is a stronger expression, reflecting a firmer perception of one's own abilities.

When we look at the measurement of these two concepts, we find that, similar to the previous set of terms, Self-Efficacy and Competence are similarly divided by action in the time dimension. Questionnaire items for Competence in video games typically evaluate players' perceptions of their abilities based on their past or ongoing gaming experiences. This is evident in questionnaires like BANGS, UPEQ, PENS, and IMI. Each of these tools includes items emphasising time stamps related to the gameplay experience: |"I felt that I made progress while playing [X]" (BANGS), "My [gaming] abilities have improved since the beginning" (UPEQ-Competence), "I feel very capable and effective when playing" (PENS) and "After working at this activity for a while, I felt pretty competent." (IMI). All of these time indicators suggest that the items ask about the player's experience during and after play, and thus the measure of Competence is retrospective, rooted in the player's factual gaming experience.

In contrast, Self-Efficacy is assessed through tools that emphasise expectations and predictions about future performance. When we look at the questionnaires on Self-Efficacy, we find that although the content of the questionnaires themselves does not indicate a clear point of time, the process of the empirical study describes that they are pre-test questionnaires. The measurements were taken before the implementation of actions, asking participants about their perceived ability to succeed in an upcoming task. Thus, Self-Efficacy is a forward-looking belief that represents more of a player's predictions and expectations about their abilities.

In summary, the two concepts vary in their time focus and intensity, Competence is more experiential, focuses on information received directly by the player at the moment, captures the players' feelings about their abilities as they interact with the game, and changes in real-time over the course of the game. Conversely, Self-Efficacy is about predictions about the future, focusing on a belief set that guides decision-making before actions take place, and implying a fixed commitment that does not continue to change throughout the play. This distinction can also be simplified as the difference between immediacy and predictability: Competence reflects "what I can do now," while Self-Efficacy reflects "what I believe I can do in the future."

THE MODEL FOR AUTONOMY AND AGENCY

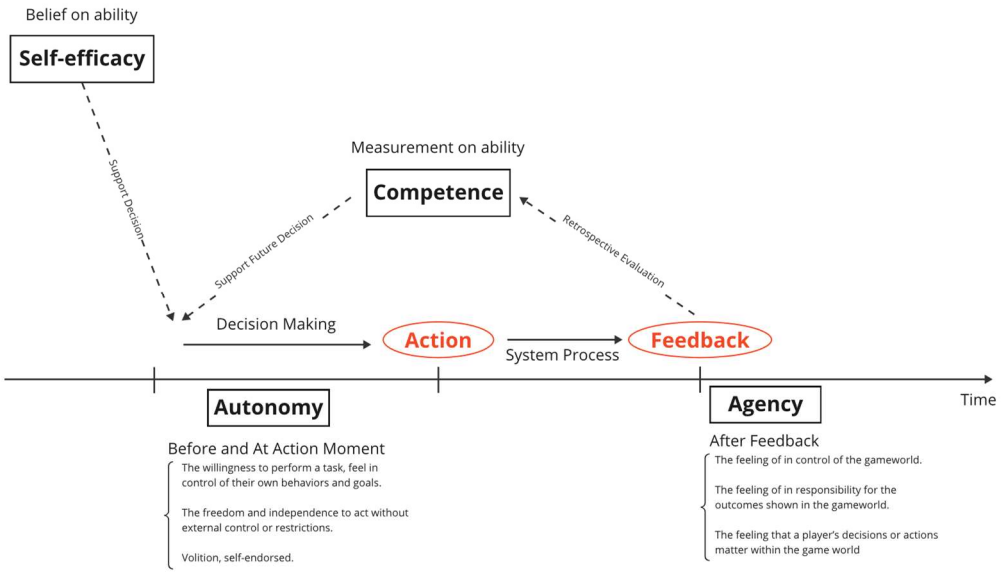

Figure 1:The distinction between Autonomy and Agency, Self-Efficacy and Competence in a single complete video game behaviour.

Based on the previous study of these two sets of concepts, it is clear that the core of the distinction between them lies in time. Autonomy focuses on the players' control over their own goals and the corresponding behaviours, thus the experience of Autonomy occurs no later than the moment when the action takes place on the timeline. Agency, by contrast, comes from the game system's feedback on the player's actions: this feedback can be instant, such as feedback on the player's interactions with in-game objects, or it can be delayed from the action, such as changing the course of the game's subsequent storyline. In general, the experience of Agency follows the feedback from the game system, and thus sits after action and feedback in the timeline, mirroring with Autonomy at the front of the timeline. Similar, but not identical, another set of concepts, Competence and Self-Efficacy, can also be divided based on time, although the time difference in this group is more macro. As mentioned before, Competence is a retrospective assessment of a player's ability and is updated as the player playthrough. Thus, Competence is also present throughout the player's progress, influencing the player's choice of actions and being influenced by the system's feedback. Self-Efficacy, on the other hand, is at a higher level, representing the player's predictions of future ability over the entire game, and is located at the very beginning of the timeline, before the game is started.

Therefore, based on what is explained above, here we would like to propose a new model for distinguishing between these concepts under the scenario of playing video games. In this model (Figure 1), Autonomy and Agency are split in time by action, with Autonomy representing the experience of controlling the action itself before the player performs, and Agency representing the experience of controlling the action object after the player receives feedback from the system. Competence iterates over the duration of the game based on the information the players receive about their abilities in the game and participates in the decision-making process of their next action. Self-Efficacy is relatively outside of this action-centred structure, and is located before the start of the entire game.

As mentioned above, the model uses time as its axis and action as its core, with various concepts interacting with each other and operating. Here, we will describe how the model works in an ideal state, based on chronological order. At the very beginning of the timeline, the players begin the game with a belief in their ability to play the game and an expectation of future performance. At this stage the player has Self-Efficacy. As the timeline progresses and the player enters the game and starts to play, at this point the player needs to determine the goals and corresponding actions based on the information that has been gained, and Self-Efficacy is involved in the decision-making process as a support for the ability to carry out the actions. Ideally, video games would provide players with the freedom to set goals and take actions of their own desires. In this case, Autonomy emerges from the players' control over themselves. As time passes by, players have taken action and the game system has responded accordingly, and Agency emerges as the player's control over the game. At the same time, the feedback from the action also influences the players' retrospective evaluation of their gameplay ability, creating Competence based on Self-Efficacy, and replacing Self-Efficacy in the subsequent decision-making process of the game.

Notably, not all of the above concepts are consistently present during gameplay, and the concepts are not completely bound to each other, although there are subtle interactions between them. Firstly, there exists minimal Autonomy for the player in a video game, at least the players have the option to leave. When we consider only the in-game content, it is true that there will be some situations where the player lacks Autonomy. A typical example of this is the scene in *It Takes Two* (Hazelight Studios 2021) about the toy elephant: players may not want to be cruel to the stuffed animal, but the game does not offer any other options, and the only additional option is to leave the game. So in this case, the players feel a lack of Autonomy because they are not acting on their own willingness, but are being forced to do so by the game. At the same time, even without Autonomy, the player still performs the action, so it does not affect the operation of subsequent concepts.

In this model, Agency arises from how the game responds to the player's actions. As long as there is feedback, the player has some level of Agency, and the intensity of the response affects how strong that experience is. If an action leads to a completely different game ending, the player clearly feels a strong sense of Agency. While narrative-driven feedback provides obvious signs of Agency, mechanical feedback can create just as powerful an experience through system responsiveness. For example, in the platforming sections of It Takes Two, players feel Agency through immediate and precise feedback: when a character jumps, their movement visibly adapts to input pressure; when a hammer hits a nail, the object reacts with appropriate sound effects and destruction animations. These small interactions create a clear cause-effect loop, independent of the story. Even failure does not remove Agency—if a player misses a jump, the exaggerated flailing animation and quick respawn show that their action still matters in the game. Similarly, in Papers, Please (3909 LLC 2013), the game does not rely on a branching narrative but still provides clear feedback. When a player approves or denies an entry, the game responds with a visual cue: the character's passport gets a colored stamp, and a small animated figure walks through or is turned away. This minimal yet clear feedback gives players a sense of control and reinforces their Agency in the game, even without a complex storyline.

Different from the previous two, Competence is present throughout the player's gameplay, mapping out the player's capabilities and guiding the player's choice of action options. It is also optimised during play based on actual gameplay feedback. In

this model, it is interesting to notice how it relates to Self-Efficacy. As I have previously elaborated, Competence in a game is generated on the basis of Self-Efficacy, with reference to actual in-game responses to actions. When the game is finished, the latest version of Competence is then added to Self-Efficacy, making adjustments to the player's beliefs about their own abilities.

FUTURE STEPS

In the above discussion, we reviewed the definitions of the four concepts of Autonomy, Agency, Competence, and Self-Efficacy, grouped them in pairs, and articulated their overlaps and differences based on their definitions and the actual items measured in the questionnaire. Building on this, we generated a model of the game experience that encompasses these four concepts, with action as the core and time as the direction. Our work is currently at the theoretical stage and no empirical research has been taken to validate whether this model is solid. Firstly, the differences in the model between Autonomy and Agency are not supported by actual data, and further testing is needed to determine the accuracy of each of the essentials in the model. Existing questionnaires for measuring Agency have some limitations, so in order to achieve the goal of validation there is a need to find an effective tool. Secondly, the relationship between Competence and Self-Efficacy has not been fully identified and more research is needed on this component. Overall, subsequent research will focus on the verification of the validity of the model.

CONCLUSION

This paper aims to clarify important concepts related to the player experience in video games. Our motivation stems not only from the lack of research in this field on the differences between these concepts but also from the need to better understand the sources and distinctions among the experiences perceived by players during gameplay. This understanding can enhance the investigation of players' interpretations of games.

Based on an initial literature review and our understanding of games, we have developed a new model of the player’s gaming process that explicitly addresses four key concepts: Agency, Autonomy, Self-Efficacy, and Competence. This model can be used as a foundation for future research to explore the player experience in more detail and to determine how the player experience may evolve over the duration of the game. While the accuracy of the model requires further validation, it represents an important first step in distinguishing similar concepts within the field of player experience.

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