SUBJECTIVE EXPERIENCE OF RULE-BASED IMMERSION IN ABSTRACT STRATEGY TABLETOP GAMES

Shruti Agrawal
IDC School of Design
Indian Institute of Technology, Bombay
Powai, Mumbai
shruti.idc@iitb.ac.in

Girish Dalvi
IDC School of Design
Indian Institute of Technology, Bombay
Powai, Mumbai
Address line 2
girish.dalvi@iitb.ac.in

ABSTRACT

Immersion, as a concept, has been well-studied in the context of various game elements such as narratives, game worlds, and audio-visual fidelity. However, there is little research on immersion within the context of rule-based game elements, i.e., non-narrative elements. This paper aims to empirically investigate the experiences generated by abstract strategy tabletop games in order to understand the association between rule-based game elements and immersion. To achieve this objective, participants were recruited to play three abstract strategy games following which post-gameplay interviews were conducted. Thematic analysis was then utilized to discover the conditions that may influence immersion. The results of the study indicate that various game characteristics, such as strategies, feedback, objectives, and action, or 'ludic elements', influence the experience of immersion. Furthermore, certain gameplay events, such as newness in the game state and dramatic changes in the game, or 'ludic events', were used by players to describe their gameplay experience. Additionally, differences in players' attitudes, preferences, and motivations, or 'player attributes', were found to play a significant role in eliciting immersive experiences.

Keywords

immersion, tabletop, subjective experience, player experience, abstract strategy games

INTRODUCTION

Tabletop games can evoke a range of player experiences, such as fun, engagement, frustration, and flow. Immersion is an important aspect of these experiences.

Proceedings of DiGRA 2024

Tabletop games come in a variety of forms, with some, such as *Gloomhaven* (Childres, I. 2017) and *Arkham Horror* (Launius, R., Wilson, K. 2005), featuring game worlds and narratives, others, like *Azul* (Kiesling, M. 2017) and *Patchwork (Rosenberg, U. 2014)*, being entirely abstract, and still others falling somewhere in between. Broadly, players tend to experience immersion differently in abstract games and those set in fictional world-based games. In abstract games, immersion is focused on the strategy derived from game rules, while in fictional world-based games, immersion is centred on the game-world, story, and characters; even though rule-based strategies exist (Kikkawa, T. et al. 2022). Both types of games can be immersive, but in different ways, and players often have different preferences for which type of immersion they prefer (Farkas, T. et al. 2020). However, research on immersion in fictional world-based games is more prevalent than in abstract strategy games. We contend that it is essential to define the term immersion in the context of abstract strategy tabletop games, to understand the unique form of immersion that these games offer through their rule-based, non-narrative structure. To achieve this, it is crucial to comprehend players' perceptions of immersion in these games and gain an understanding of their experiences. This study uses phenomenological research to gain insights into players' perceptions of immersive experiences in abstract strategy tabletop games. Before getting into the results and methods used to understand these perceptions, we articulate our position around the concept of immersion.

Existing work on immersion

In the field of games, researchers, players, and designers often use the term immersion to refer to the degree to which players feel fully absorbed in the game's world. According to Murray (2017), immersion is a state where one feels 'transported' into a simulated fictional world. Most theorists of games share a similar opinion about immersion in games. Ermi and Mayra (2022), on the other hand, expanded the definition of immersion in their study. They identified three modes of immersion: sensory, challenge-based, and imaginative. Similarly, Farkas et al. (2020) divided the immersive experience reported by participants into two categories: immersion generated by challenges in the game and immersion generated by the fictional world in the game. Brown and Cairn (2004) developed a model of immersion based on the *degree of involvement* with games.

It has been argued that the term immersion should be limited to games in which there is a fictional world of which players can feel like they are a part. Calleja (2022), for instance, posits that a theme alone, without the presence of rules, does not enable players to feel as if they are truly "inhabiting" the world. Therefore, as per his perspective, games like Azul cannot create an immersive experience as they do not have a fictional world. He believes that in such games, players can only achieve a *deep involvement*, but that "a higher degree of involvement" does not automatically translate to immersion. However, we argue that this is a one-dimensional view of immersion. For instance, Farkas et al. (2020) suggest that some players prefer to take on the role of a *problem solver* rather than becoming immersed in the themes/settings of games. Similarly, Ermi and Mayra (2022) described that immersion can also stem from the use of "both mental and motor skills in overcoming challenges presented by the game" calling it *challenge-based immersion*. Hence, we argue that it is important to explore the common understanding of immersion that is elicited by the challenges in games. Consequently, we will use abstract strategy tabletop games for an empirical study, as these games offer a high level of challenge and their themes do not affect

the gameplay, making them an ideal choice to study how players experience immersion in games without fictional worlds.

It has been argued that previous research on immersion conducted have limitations due to their reliance on interviews with players and a focus on a non-specialist understanding of the term (Calleja 2022). In contrast, this paper suggests the need for further studies that examine immersion in its colloquial and non-specialist sense, to expand the understanding of the term. To elaborate, etymologically, immersion is derived from the Latin word *immersionem* which means *dipping*. This term is utilized across multiple contexts to denote various forms of immersion. For instance, in religious history, immersion was used in the context of baptism; in the field of anthropology, 'cultural immersion' is used to refer to the process of immersing oneself in different cultures (Crossman, A. 2012). In the field of virtual reality, it is used to describe the level of realism and engagement in the virtual environment. In psychology and everyday language, it is used to describe a state of being completely absorbed in a task or activity. Therefore, as immersion is a term with a wide range of usage, it would be restrictive to examine it solely from a specialist's perspective.

The current understanding of immersion in the field of games research, however, is often based on preconceived notions and assumptions about what it means to be immersed in a game. These notions may not accurately reflect the subjective experiences of players. By conducting an empirical study from a phenomenological perspective, we gather data directly from players about their experiences of immersion while playing games. This approach allows us to understand immersion as it is perceived and experienced by players, rather than relying on preconceived notions. This understanding can help us reconstruct our understanding of immersion, making it more accurate and reflective of the actual experiences of players. Hence, the main goal of this study is to examine the experience of players of abstract strategy tabletop games in depth, with a specific focus on identifying the factors that contribute to a sense of immersion. Therefore, the primary research question that motivated this study is: "What do players identify as influencing their sense of immersion in abstract strategy tabletop games?"

METHODOLOGY

This research aims to construct an understanding of immersion based on players' interpretation of their experience in abstract strategy tabletop games. As immersion is a subjective experience, it is important to use an approach that allows for an in-depth examination of the players' perceptions. A qualitative approach was chosen for this study, as it is well-suited for exploratory studies of this nature and allows for the examination of complex phenomena such as immersion (Creswell, J. W. 2018). Additionally, phenomenological approach is suitable for the study of video games and player experiences, as it allows for an in-depth examination of the player's subjective experiences and how they make sense of the game world.

Previous studies around immersion have used qualitative methods to generate theory around it, however, in most of those studies, players' responses depend upon recapitulation of their past gaming experience i.e., players don't require to play any games during/for the study. Important data remain unrecognized in this type of recall-based research, especially when it is about studying constituents of experiences (Alshammari 2015). On the other hand, data-collection methods like experience sampling often create hindrances in players' thinking processes during gameplay

(Haak, V. D. et al. 2003). These problems can be addressed by interviewing players right after a few gameplay sessions.

In our experiment, prior to conducting interviews, the participants played either two or three different games. Interviews were recorded, transcribed, and used for conducting thematic analysis. The codes and categories were triangulated with the researchers' knowledge about the selected games as well as the literature. Players reported various conditions that influence immersion which have been outlined in this paper.

Selection of games

The criteria for selecting games abstract strategy games included a short learning time of ten minutes, length of play between 5-40 minutes, and games that were new to the participants. The goal being choosing games that are easy to learn and play. The decision of new games for the participants was made so that any potential biases due to skill or personal preference may be eliminated. Prior to conducting the study on participants, researchers played the chosen games to develop an understanding of games' characteristics independent of players or circumstances within which the game was being played. Features like game rules and winning-losing conditions were identified by multiple gameplay and close observation of the rulebook. Through this method, we shortlisted three games – *Azul* (Kiesling, M. 2017), *Battleship* (Wickler, C. 1931), and *Connect 4* (Wexler, H., Strongin, N., 1974). All participants also reported having played at least one of these abstract strategy games: Ludo, Snakes & Ladders, and Chess. The interview questions were adapted based on the individual participants' descriptions of their experience with these games.

Selection of participants

Ten participants, aged between 21–30 years were recruited from a college in India, Bangalore. Seven of them were male, and three were female. Social media platforms and word of mouth were used to call for interested people to volunteer in the study. The included participants were fluent in English and could discern and elucidate the feelings related to the term immersion easily. To minimize the effect of skill on the experience of immersion, non-hobbyists were chosen. Although hobbyists could give deeper insights into their experiences, casual players represent a wider audience in the board game community as a whole and an empirical study centred around them may provide us with data that is more relevant for a broader spectrum of player types.

Gameplay session

Players filled informed consent form approved by IRB (Institutional Review Board) before gameplay sessions were initiated. The study involved groups of 2 or 4 participants playing games in 4 sessions, each lasting 2-3 hours. Each participant played 2 out of 3 selected games, with all participants playing Connect Four in each session to quickly set the mindset for the study. The second game played was either Azul or Battleship, with Azul being played in the first two sessions and Battleship in the remaining two. To examine the impact of the number of players on immersion, Azul was played in both groups of four and pairs of two. The experiment consisted of 5 steps: learning the rules of Connect Four, playing Connect Four, learning the rules of the second game (either Azul or Battleship), playing the second game, and completing a semi-structured interview.

Session	Participants	Azul (30-40 mins)	Connect 4 (5 – 10 mins)	Battleship (30-40 mins)
1	P1-P2	●	●	
2	P3-P4-P5-P6	●	●	
3	P7-P8		●	●
4	P9-P10		●	●

Table 1: Table showing the sessions and the games played in each session. P1, P2 stands for participant 1 and 2 respectively and R stands for Researcher.

Semi-structured interview

The interview was conducted in a semi-structured format to gather detailed responses and explore further based on the participants' answers. The questions were divided into three categories. The first set of questions aimed to prompt participants to reflect on their experiences with immersion in non-game related activities such as reading or studying. The second set of questions focused on specific elements that contribute to or detract from immersion in each game. Lastly, participants were asked to compare their experiences between the games they played, and to reflect on how their experiences playing games like Chess, Ludo, and Snakes-Ladders compared to the gameplay sessions. Despite the participants showing a clear bias in their game preferences based on whether they had won or lost, explanations of their preferences provided valuable insights.

Analysis

The interviews were conducted in English, but few participants used words and phrases in Hindi. To make sure that the essence of the responses was not lost in translation, the audio transcription was kept multilingual. Multiple iterations of coding was done during the analysis phase beginning with abductive open coding. After the first round of coding, thematic analysis was performed. Codes like ‘pace of action’, and ‘possible numbers of actions’ were grouped under a common code called ‘nature of action’. We also used axial coding and mind-mapping to identify connections between codes. Additionally, codes developed through literature study helped to fill any gaps in understanding. Ultimately, we created a condensed and organized mind map that illustrates the factors that influence immersion and their interconnections.

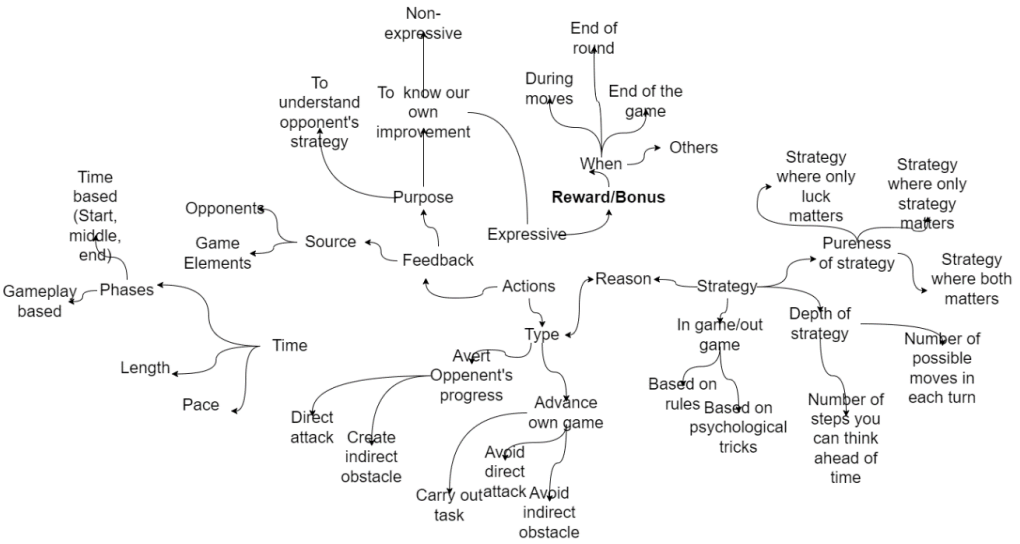

Fig 1: This diagram shows the concise mind map that was created to understand interconnectedness of elements.

FINDINGS

The analysis revealed that immersion can be affected by both the game system itself and the psychological state of the player, as suggested by Sarvesh et al. (2020). Players described their immersive experiences in a variety of ways, such as by referencing game features like length, objectives, pace, and feedback, which we refer to as *ludic elements*. These elements were further broken down into *ludic dimensions*, which players identified as impacting immersion. Additionally, players cited specific events within gameplay that they found immersive, which we tentatively call *ludic events*. In terms of *player attributes*, factors such as skill, taste, motivation, and actions were identified as potentially influencing immersion. The focus of the analysis was to uncover conditions stemming from the game system's formal rules, so only a brief explanation of the player attributes is provided.

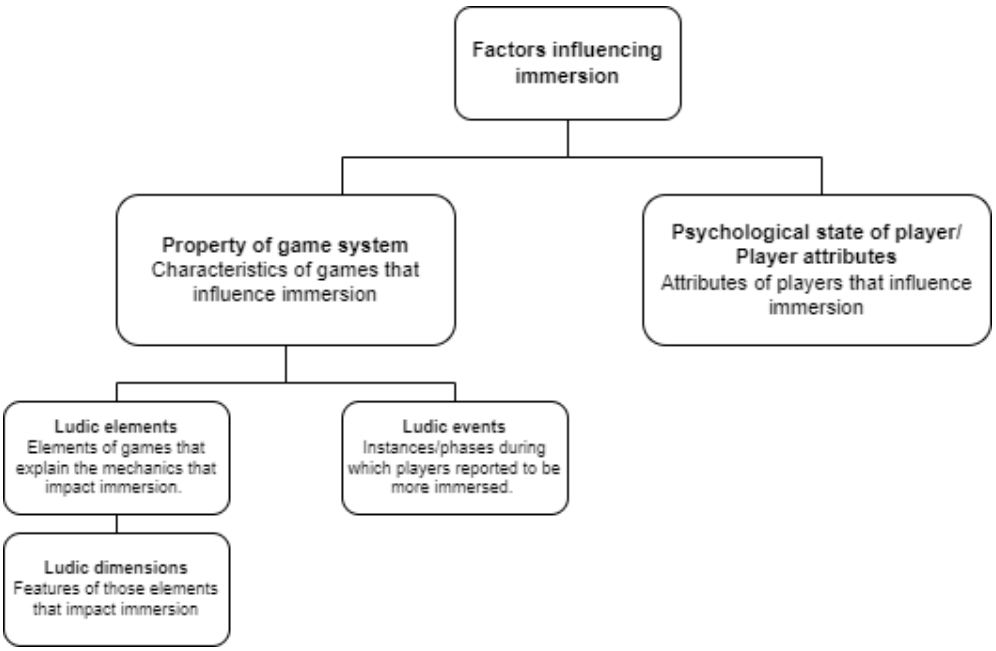

Fig 2: This diagram shows the primary factors that were found to influence immersion**.**

Ludic Elements

During the interview, players discussed the general features of games, like strategy and objectives, to explain how the mechanics of the game impacted their immersive experience. As a result, the term 'ludic elements' was created to refer to these types of characteristics. These broader characteristics were further divided into 'ludic dimensions', which are specific aspects of the ludic elements that influence the level of immersion. For instance, the ludic element *strategies* have dimensions like *frequency of strategy making* and *complexity of rules*. Six ludic elements were identified based on players' responses – objectives, strategies, actions, feedback, interaction, and length of the game.

The identified ludic elements and dimensions, however, are not mutually exclusive in terms of influencing experiences that they tend to elicit. They are interconnected and inseparable and so are the various experiences that they give rise to. For instance, fulfilling objectives requires strategies; strategies are followed by actions and actions, in turn, are followed by feedback. Players make new objectives based on feedback that they receive. The interaction between players depends on the nature of objectives, strategies, actions, and feedback. Length of the games is also determined by other element and length itself determines other elements. Figure 3 shows the interconnectedness of the elements and dimensions.

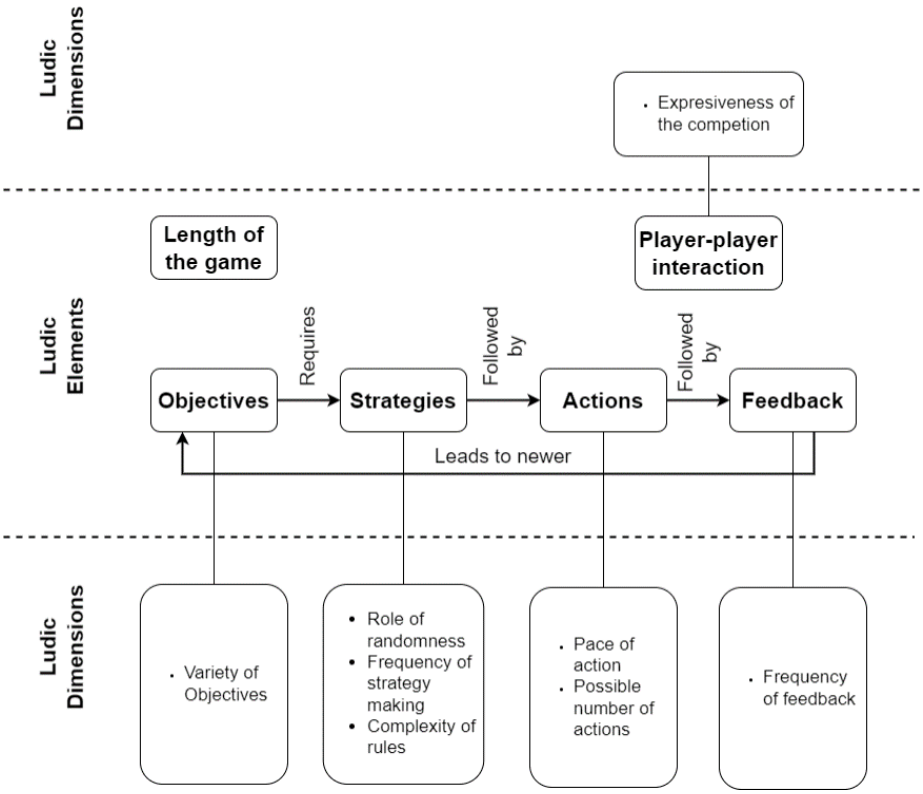

Fig 3: This diagram shows the interconnectedness between ludic elements. Players make strategies to fulfil objectives which is followed by actions. They get feedback based on actions.

Objectives

The players described their feeling of immersion as being closely tied to the objectives of the games. Objectives have been described as the main elements that constitute a game (Zimmerman, E., et al. 2003). Highlighting the importance of objective in the perception of immersive experience, one participant stated:

> "The objective was the main thing like I have to make some (pattern), and no other thought was in my mind."

The identified ludic dimensions of objectives that help a player immerse herself in the game is the *variety of objectives.* Objectives can be categorized as either hierarchical or non-hierarchical. Hierarchical objectives are like milestones in the game, for example, in Azul, the first goal is to fill the pattern tiles and the second is to fill the walls. Non-hierarchical objectives do not follow a specific sequence, like in the game Battleship, sinking the ships can happen at any point during gameplay. In contrast, the objective of Connect Four is straightforward - to make a pattern of four coins of the same colour before the opponent, leading to the perception that "it is a simple game with fewer things to think about."

Division of objectives hierarchically and non-hierarchically gives short-term and long-term goals to the players which may positively contribute to immersion in two ways: players get more options to decide their objective and, achieving short-term rewarding objectives may boost their confidence.

Strategies

When players are involved in gameplay, a large part of thinking goes into strategy-making. Just like objectives, strategies can have various dimensions too; each of them may lead to immersion or break immersion in their own way. The identified ludic dimensions of strategies are role of randomness, frequency and number of rules for strategy making.

Strategies can be long-term, short-term, or somewhere in between. Different games bring about the need to make different kinds of strategies. In Azul, due to the random distribution of tiles after every round, a short-term plan is more effective as it is based on the available tiles. Acknowledging this, a participate said:

> "In Azul, you picked it (tiles), you placed it (on board) and then you leave the rest of the decision for future."

Games with randomness like Ludo and Azul render participants incapable of predicting possible future outcomes accurately. Hence, players make short-term strategies without delving too much into the future outcomes and this may lead to a different nature of immersion. On the other hand, in games like Connect 4 and Chess, players often think many steps ahead, giving rise to more long-term strategies. Describing the importance of long-term strategies, a participant said:

> "His (a friend who plays chess) present move is a part of his tenth move. That kind of far-sighted planning is there in connect 4. So, that kind of strategic far sightedness makes the game more immersive."

If there was a spectrum of strategies with luck-based strategies and no-luck-based strategies lying at its extreme ends, Snakes and Ladders and Battleship would lie in the luck zone of that spectrum, Chess and Connect 4 would lie in the no-luck zone. Azul and Ludo lie somewhere in between. There were differences of opinion about immersion in the context of games based on randomness. One participant mentioned:

> "Randomness is necessary in games for fair play."

Another participant, who was not in favour of luck, mentioned:

> "But if you get used to it and luck keeps on playing its role, then you get slightly bored."

Our study, therefore, reveals conflicting opinion about the role of luck in the emergence of immersion within the players.

The frequency of strategizing varied among games. In Connect Four, players reported constantly strategizing, even during their opponent's turn. In contrast, players in Azul had less need to strategize and could relax during tile distribution or other players' turns, which is also called *downtime* (Elias, G. S. et al. 2020). Similarly, in Battleship, players only strategized during their turn when deciding where to send missiles. One participant who preferred Connect Four over Azul in terms of immersion said:

> "In connect 4, in each step you have to calculate that her (pattern) will be made or not or mine will be made or not. But Azul was more relaxed."

It was found that in games with more the rules, participants got more engaged in optimizing all of them and making a good decision. Describing this, a participant said,

> "You have to keep in mind a lot of rules in Azul…So, to keep track of all the rules is important so that we can optimize help in immersion."

Actions

Shalev (2019) defined action as "a single step or series of steps that players choose to perform". *Pace of actions* was found to be important factors in influencing immersive experience.

Mathematically, the pace of action can be defined as the number of moves per unit time. Some players take longer to make moves as they prefer to make strategic moves, while others prefer to make quick, intuitive moves that are more tactical. Describing their reason for preferring Connect Four over Azul, one participant mentioned:

> "I get more immersed in fast-paced games, I think. My mind is more into calculating that way… In a slow-paced game like Azul, the link breaks. You feel like checking your phone when the opponent is taking his turn, or you start thinking about other tasks, so continuity is lost."

The same participant also mentioned that he prefers to play time-bound Chess online rather than the classical way. On the other hand, a participant, who enjoys playing Chess said,

> "But if you see chess, there is no time barrier, because it is a different kind of game. It can go on for hours ... that game keeps on getting more interesting with time."

Based on our analysis, we infer that player attributes may be responsible for describing which type of pace will help players get immersed in a game.

Feedback

Feedback in games act as a response to actions that players take. Feedback has been explored in detail in digital games but feedback in tabletop games is different in nature. While digital games have continuous visual and audio feedback, tabletop games' feedback appears in the form of game state and players' reaction. For outcomes to be palpable, feedback is important. It also helps players in understanding how they and their opponents are performing. The dimension of feedback that players reported to have a positive influence on immersion is 'frequency of feedback about relative performance'.

For achieving a state of flow, feedback plays an important role (Csikszentmihalyi, M. 1988). Some participants in our study preferred to play Connect Four in terms of immersion because the game gets over quickly, and the players get feedback about their performance which helps them improve in the next game. Similarly, in Battleship, the number of ships of the opponents (as compared to their own) that have been sunk gives the players an idea of their performance continuously. In Azul, players receive feedback after each round in terms of the score which helped them understand their performance status. Comparing Azul and Connect Four, one participant said:

> "If I was getting more feedback in Azul, I'd rank it more."

In games like Azul, players focus on finishing their own objectives without having to focus on opponents' progress and scores are calculated at the end of each round. This makes the competition more indirect and reduces the frequency of feedback about relative performance which seemingly decreases the potential to get immersed in the game.

Player-player interaction

Interactivity is one of the important aspects of games. It was the ability of the computers to 'interact' that gave the digital gaming industry a big boost (Crawford, C. 2003). Interactivity can be looked at in various ways, it can be interaction with a system – like a single player computer game, or it can be interaction among different players. Most of the tabletop games give rise to player-player interaction. The level of interaction, however, varies with the rules of the game. And varying level of interaction were found to influence immersion differently.

It has been observed that a depending on player attributes and Game Rules, players act in two ways – defence and attack. To advance their own game in defence mode, players performed two types of tasks – make strategies for themselves and protect themselves from direct or indirect attack created by opponents. In Azul, while a few players mentioned being aware of their opponent's progress, most of them reported being engrossed in their own game. On the other hand, all participants mentioned

that they put more effort into predicting their opponents' moves in Connect Four to prevent their pattern from getting destroyed. Similarly, in Ludo, players try to stay away from the opponent's pawns to avoid their pawns from getting killed.

However, players also attack by creating direct and indirect obstacles for their opponents to maximize their own chances of winning. In Azul, for example, a few participants described that they kept an eye on the opponents' boards so that they could take away the pieces that the opponents needed before them. This is an indirect way of creating hindrances to opponents' progress. In ludo and chess, on the other hand, participants can directly kill pieces of their opponents. Many players mentioned that such forms of expressive attack on the opponents make the game more interesting and immersive. While describing the reason for his preference of Ludo over Connect Four, one participant said:

> "So, if you make a move, then the opponent can get scared thinking that your next move will be something like that. So that they can play with much more concentration. In Azul, the competition was not so expressive."

Although most of the participants described getting immersed in games in which the competition is more expressive, there were a few participants who were not bothered by the lack of expressiveness in the competition and preferred Azul. One such participant said:

> "In Azul, self-interaction and self-strategy were more. So rather than focusing more on hindering him, I was trying to increase my score. If I'm interested in something throughout the session, then I feel immersed."

Length of the game

Out of the 3 games that were selected for the study, connect 4 was the shortest while Azul and battleship lasted for almost an equal amount of time (30-45 minutes). Immersion happens in stages and total immersion is the ultimate state that takes some time to reach (Brown, E. et al. 2004). This suggests that longer games provide sufficient time for the players to immerse themselves in the game. Describing this, a participant mentioned:

> "So, I think that it takes time to get immersed in something… Like when we study, we get slowly immersed in studying, and then once we are immersed properly, it lasts for a longer duration. So, in the battleship, as time went on, I continued to get immersed more in it."

Whilst some players felt that longer games helped in their sense of immersion, others reported that playing shorter games a greater number of times can have a similar effect. This was backed by the fact that our participants played Connect Four more times than they were asked to as they reported getting more immersed with each gameplay. Describing this, one participant said:

> "In connect 4, in the first game, I felt quite boring, but in the second and third time, I felt competitive, and I felt like I have to win, so I felt immersed in it."

Depending on Player Attribute and context of the gameplay session, players preference may vary. Players also mentioned that games that are too long might

become boring if there is not much to strategize. Describing his opinion about Battleship, a player who prefers games with more strategy making said:

> "Time factor was one of the things which made me lose immersion. Battleship took lot of time."

Level of effect on immersion

The relationship between ludic dimensions and immersion is not consistent across all players, with some experiencing positive effects while others may experience negative effects or no effect at all. Additionally, certain elements were found to have a dual effect on immersion, potentially due to the diverse nature of players and the intricate relationship between elements and experiences.

Ludic events

Players also described their experience of immersion in terms of specific moments or phases of games. We call such instances *ludic events*. For example, many players claim to feel more immersed in the concluding phase of a game. Ludic events are instances or phases which players used to illustrate their experience of immersion. These events emerge because of the interplay between various ludic elements as well as player attributes. We decided to report them separate from ludic elements for two reason – intersection of multiple ludic elements which give rise to complex experiences, and depth of description of experience.

Newness in game state

Zimmerman et al. (2003) described game state as "a formal way of understanding the current status of the game without taking into account the skills, emotions, and experience of the players". Games can have multiple game states some of which are more uncommon than previous ones that players have encountered. Such game states lead to the feeling of newness in the game. This can be understood as game states that the players have either never encountered before or states that are uncommon (less probability). It was found to be a possible contributing factor of getting immersed in a game. Explaining the cause of his liking for Chess, one participant described:

> "I also think that human psychology is that humans like newness. So, in games, where with time, there is newness, it is more immersing. The games which keep on getting more predictable with time gets boring."

Newness can come from factors that are not determined by game rules as well. For instance, one participant said:

> "Connect 4 is consistent, so after winning 5 times, you may get bored as it is consistent. But if your competitor change, then it might get interesting."

Rare events bring newness in the game state and made the players come up with new strategies. Ludic elements like complexity of rules, luck, and player-player interaction may give rise to new game state that helps players get immersed in the game.

Dramatic change

Silva et. al. (2013) stated that "a game has drama if it is possible to overcome a difficult situation by surprising strategies or tactical moves (for instance, sacrifices)." In the same vein, describing his experience, a participant said:

> "Also, in chess, by a single shot, you turn the game upside down. So, that also makes chess more interesting."

In Ludo, when pawns of a player are close to home and another participant gets an opportunity to kill them, those pawns must restart from base. This doesn't only make the game interesting, it keeps the other players engaged throughout the game, no matter how they are performing. Hence, if games are designed in such a way that players look for such opportunities and have a hope of winning even when their situation is not so good, then their attention in the game can last longer.

Ending phase

Phases, according to this study, are the different chunks of time distributed randomly or sequentially during the gameplay. Phases of the game can be divided into two criteria - based on time (start, middle, and end) or based on impact of the outcome. If the impact is more, the immersion is more:

> "In most of the games I play, I feel more immersed in the end because firstly, I think, let's roll out and see what happens. And later, you see that this is what it is, now let's try to win this game."

In Azul, the tiles picked in the final round are perceived to be more important as compared to those picked in earlier rounds:

> "At the starting, it is not a big concern but at the end, when only two or three tiles are left, then every pick is a turning moment."

Similarly, when asked about chess, many participants said that Chess gets slightly boring in the beginning but as the game proceeds, it starts to get more interesting. However, based on factors not determined by games like opponents' skill, certain duration of game can become more interesting than other:

> "The problem with chess is that it gets a little boring in the beginning. Although it depends upon who you're playing with. Some people start to dominate in the game from the very beginning."

The reason behind more immersion during the ending phase could be an amalgamation of many ludic elements (like higher positive feedback and accomplishment of objectives) and player attributes.

Events of rewards or penalty

In games, actions are followed by outcomes. Feedback makes us aware of those outcomes. Both micro and macro-level feedback of outcome help players know the outcome of their actions. Rewards, like extra points for filling all the colors in walls in Azul and getting an extra chance to roll die when you get a six in Ludo are positive outcomes that can encourage players and contribute to immersion. On the other

hand, punishment, like a deduction in the score for having tiles in the floor line, and getting pawn killed in Chess or Ludo, can also help in immersion as players learn from their mistakes. Recounting this while describing what he liked about Azul, a participant said:

> "Like you can get negatives, bonus, the adding elements is also interesting."

Describing the benefits of hits in Battleship, a player replied:

> "The fact that in battleship, when we get one hit, we get to make another move until we get a miss, make the game interesting, I think. In ludo also, when you get 1 six, you get one more chance. If we didn't get one more chance, then the motivation would have not been continued. Due to these rewards, you feel like you're getting closer to the target quickly. It also keeps you curious."

Player attributes

The psychological state of players plays a significant role in influencing the experience generated through gameplay in a "game-player" system (Agrawal, S. et al. 2020; Zimmerman, E. et al. 2003). This study found various nuances in terms of immersion, with some players citing elements like luck and pace of action as important for immersion, while others found them to be immersion-diminishing. These differences in opinion may be due to player attributes such as skill level, state of mind, and personal tastes, preferences, and methods, which can influence a player's experience of immersion. Overall, these factors can be grouped under the overarching theme of player attributes.

Making strategies based on psychology and rules

While playing games, strategy can come from the multifaceted nature of the players. They can have a divergent approach towards making strategies to play the game. Two types of sources for strategy ideas were identified. First, based on the formal rules of the game and second were those that were based on understanding the psychology of the opponent. For example, in the game Azul, strategies for determining which tiles will be best for filling in adjacent spaces on the walls are based on the formal rules of the game. However, opponents are an integral part of the game-player system, and players often try to create strategies to deceive them. Strategies that involve manipulating the psychology of opponents were found to be an important aspect of the experience of immersion. Describing his reason behind getting immersed in Connect Four, a participant said:

> "Even though we had to play five times, we played it the sixth time because it got more engaging for me as it was like playing with human behaviour."

Another participant mentioned:

> "I follow these rules and I try to fool him by making him think that I am making this move but I will play my strategy on the other side of the board."

Skill

Player's skill can be defined as their ability to play and win games (Elias, G. et al. 2020). A player having an opponent with more skill is more likely to lose and when the opponent's skill level is the same then both are equally likely to win the game, especially in games where luck do not play a significant role. While coming up with strategies, it is also necessary that players consider the skill of their opponents as well. In terms of immersion, it can be said that the skill level of the players should match, otherwise the game will become too easy or too challenging, both of which are not desirable. Players often mentioned the role of opponents' skill in emergence of immersion, for instance, comparing Chess and Azul, one participant said,

> "Chess is also complex, but it depends on the competitor you're playing with. If the opponent is an expert, he can twist you or make you think more, but in Azul, there is less manipulation."

Feedback from the opponent.

Unlike digital games, board games are played in the same space in presence of the opponents. Such games encourage players to receive feedback in many ways. One of the ways is visually through the game objects like boards, coins, pieces, pawns, dice, etc. Another way is to get it directly or indirectly from opponents. In Battleship, the participants receive verbal feedback, on whether they were hit or missed, by their opponents. In Azul and Connect 4, the verbal response is not needed, but players mentioned paying attention to the opponent's facial expression to understand what they're thinking. Expressing how the opponent's countenance reflected their strategic inclination to some extent, a participant said:

> "So along with focusing on your game, you also have to observe the opponent's facial expressions (battleship)."

These micro-level feedback that players use to make strategies were mentioned by some participants while describing their thoughts during the experience of immersion.

LIMITATIONS

Games offer a complex array of experiences that are challenging to interpret individually. When players use the term "immersion," they may be referring to a blend of experiences such as enjoyment, engagement, and presence. The ludic elements discussed in this paper are just a subset of the larger group that contribute to immersion. It is difficult to distinguish one element from another in terms of the experiences they create, as they are intricately interconnected. Our identification of ludic elements, dimensions, events, and player attributes can be useful in developing a fuller understanding of immersion.

The participants in this study were non-hobbyists, and therefore they were less vocal about their gameplay experiences as compared to regular players. Additionally, the small sample size of the study means that the findings are preliminary and require further validation. Our research used three abstract strategy tabletop games to collect data, but there are many other games, both digital and analog, with different mechanics that could impact immersion in ways that were not identified in this study.

Further research using different games could provide a deeper understanding of the experience of immersion.

CONCULSION

Immersion is a central experience in games and has been the subject of considerable research. Through this study we characterize immersion by examining players' experiences in abstract strategy games. Using thematic analysis, we found that players describe their experiences of immersion in terms of ludic elements and ludic events. Ludic elements, such as the variety of objectives, frequency of strategy making, complexity of rules, number of possible actions, and the frequency of feedback, were found to have strong associations with immersion. Additionally, elements such as randomness, the pace of action, and the length of the game were also found to influence immersion, but these effects varied depending on player attributes. Apart from these, the study identified unique game states, dramatic changes, and end states as key phases during gameplay that contributed to immersion. In games with thematic representational game objects, such as tiles and walls in Azul, and ships in Battleship, the presence of theme-based elements was found to be unimportant, and their use was limited to naming the representational objects.

This study also highlights the need for further research to investigate the identified constructs in different categories of games. For example, it would be relevant to examine the effects of randomness on immersion, the nature of strategy-making that it promotes, and its effects. Additionally, it would be useful to explore how players remain immersed in games that take hours to complete. Further research is needed to understand what factors combine to generate game states that are new and dramatic, and what other types of player attributes exist and how they can be categorized based on their preferences in order to design immersive games that cater to different player types.

REFERENCES

Agrawal, S., Simon, A., Bech, S., Bærentsen, K., & Forchhammer, S. 2020. Defining Immersion: Literature Review and Implications for Research on Audiovisual Experiences. Journal of the Audio Engineering Society, 68(6), 404–417. https://doi.org/10.17743/jaes.2020.0039

Alshammari. 2015, July 31. When to ask participants to think aloud: A Comparative study of concurrent and retrospective think-aloud methods. UEA Digital Repository. https://ueaeprints.uea.ac.uk/id/eprint/57466/

Begy, J. 2013. Experiential metaphors in abstract games. Transactions of the Digital Games Research Association, 1(1). https://doi.org/10.26503/todigra.v1i1.3

Brown, E., & Cairns, P. 2004. A grounded investigation of game immersion. Extended Abstracts of the 2004 Conference on Human Factors and Computing Systems -CHI ’04. http://dx.doi.org/10.1145/985921.986048

Calleja, Gordon. 2022. *Unboxed: Board Game Experience and Design*.

Childres, I. 2017. *Gloomhaven*. Board Game. Cephalofair Games.

Crawford, C. 2003. Chris Crawford on game design. New Riders.

Creswell, J. W., & Creswell, J. D. 2018. Research design: Qualitative, quantitative, and mixed methods approaches. SAGE Publications, Incorporated.

Crossman, A. 2012, February 10. Immersion definition: Cultural, language, and virtual. ThoughtCo. https://www.thoughtco.com/immersion-definition-3026534

Csikszentmihalyi, M. 1988. The flow experience and its significance for human psychology. In Optimal Experience (pp. 15–35). Cambridge University Press. http://dx.doi.org/10.1017/cbo9780511621956.002

Elias, G. S., Garfield, R., & Gutschera, K. R. 2020. Characteristics of games. MIT Press.

Engelstein, G., & Shalev, I. 2019. Building blocks of tabletop game design: An encyclopedia of mechanisms. CRC Press.

Farkas, T., Wiseman, S., Cairns, P., & Fiebrink, R. 2020, November 2. A grounded analysis of player-described board game immersion. Proceedings of the Annual Symposium on Computer-Human Interaction in Play. http://dx.doi.org/10.1145/3410404.3414224

Kiesling, M. 2017. *Azul*. Board Game. Plan B Games.

Kikkawa, T., Kriz, W. C., &; Sugiura, J. 2022a. Gaming as a cultural commons: Risks, challenges, and opportunities. Springer Nature.

Lankoski, P., Björk, S., & al., et. 2015. Game research methods: An overview. Lulu.com.

Launius, R., Wilson, K. 2005. *Arkham Horror.* Board Game. Fantasy Flight Games.

Laura, E., & Frans, M. (n.d.). Fundamental components of the gameplay experience: Analysing immersion. DiGRA. Retrieved November 24, 2022, from http://www.digra.org/digital-library/publications/fundamental-components-of-the-gameplay-experience-analysing-immersion/

Mcmahan, A. 2003, January 1. Immersion, engagement, and presence: A method for analyzing 3-D video games. Unknown. https://www.researchgate.net/publication/284055280_Immersion_engagement_and_presence_A_method_for_analyzing_3-D_video_games

Murray, J. H. 2017. Hamlet on the Holodeck, updated edition: The Future of Narrative in Cyberspace. MIT Press.

Neto, J. P., & Silva, J. N. 2013. Mathematical games, abstract games. Courier Corporation.

Origin and meaning of immersion. (n.d.). Etymology, Origin and Meaning of Immersion by Etymonline. Retrieved January 27, 2023, from https://www.etymonline.com/word/immersion

Rosenberg, U. 2014. *Patchwork.* Tabletop. Lookout Games.

Rusch, D. C. (2017). Making Deep Games: Designing Games with Meaning and Purpose. CRC Press.

Solly, M. 2020, February 6. The best board games of the ancient world. Smithsonian Magazine. https://www.smithsonianmag.com/science-nature/best-board-games-ancient-world-180974094/

Spoiled for choice: The psychology of choice overload in games, and how to avoid it Player Research. (n.d.). Player Research. Retrieved November 26, 2022, from https://www.playerresearch.com/learn/spoiled-for-choice-the-psychology-of-choice-overload-in-games-and-how-to-avoid-it/

Tekinbas, K. S., & Zimmerman, E. 2003. Rules of play: Game design fundamentals. MIT Press.

van den Haak, M., De Jong, M., & Jan Schellens, P. 2003. Retrospective vs. concurrent think-aloud protocols: Testing the usability of an online library catalogue. Behaviour & Information Technology, 22(5), 339–351. https://doi.org/10.1080/0044929031000

Weitze, C., Developing goals and objectives for gameplay and learning. Chapter 12, Goals. https://dl.acm.org/doi/pdf/10.5555/2811147.2811160

Wexler, H., Strongin, N., 1974. *Connect Four.* Tabletop. Hasbro.

Wickler, C. 1931. *Battleship.* Tabletop. Hasbro.