Conceptualising, Operationalising and Measuring the Player Experience in Videogames

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ABSTRACT
The player experience is at the core of videogame play. Understanding the facets of player experience presents many research challenges, as the phenomenon sits at the intersection of psychology, design, human-computer interaction, sociology, and physiology. This workshop brings together an interdisciplinary group of researchers to systematically and rigorously analyse all aspects of the player experience. Methods and tools for conceptualising, operationalising and measuring the player experience form the core of this research. Our aim is to take a holistic approach to identifying, adapting and extending theories and models of the player experience, to understand how these theories and models interact, overlap and differ, and to construct a unified vision for future research.

Author Keywords
Videogames; player experience.

ACM Classification Keywords
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General Terms
Measurement; Experimentation; Human Factors; Theory.

INTRODUCTION
The increasing number and diverse range of people playing videogames are evidence for the unique motivational pull this medium offers. The question of how, and in what contexts, interactions with games promote lasting engagement and immersion is an ongoing one. The experience of being entertained, as regarded from a psychological point of view, is not fully understood [30]. While it is commonly accepted that videogames are gratifying and enjoyable, the multifaceted nature of research in this area has led to a broad range of approaches for understanding the phenomenon.

Media-related enjoyment is a complex construct that includes references to physiological, affective, cognitive, and social dimensions [30][24]. The player experience can be considered in a variety of ways including the subjective feelings experienced by players [3], the motivations for playing videogames [30][25], and the influence of the medium, in terms of design and content, on the experience [30].

There is promising research focused on the rigorous and systematic analysis of the gameplay experience and there are varying perspectives emerging in relation to how, and in what circumstances, games engage people at a cognitive, social, and emotional level. This workshop aims to examine the complex issues surrounding the conceptualisation and measurement of the player experience, taking into consideration:

- motivations for video gameplay;
- the state of a player during gameplay with a focus on the experience itself; and
- how structural elements of videogames impact on player experience.

During the workshop we intend to deconstruct the concept of the player experience and undertake a deep analysis of the characteristics, attributes and qualities that contribute to enjoyable gameplay. An expected outcome from the workshop is an emerging model of the player experience.

PLAYER EXPERIENCE
The growth of research into the player experience in the past five years is evident with research covering player motivations, engagement and immersion, and the influence that game design has on player enjoyment. The workshop examines the contributions that existing research makes as we look to better conceptualise, operationalise, and measure player experience.

Player Motivation
Recent research has identified motivation, in terms of cognitive processes, as playing a central role in the gameplay experience. Videogames are largely autonomous pursuits that create their own internal motivations for playing [13]. Intrinsic motivation can be characterised by free choice, interest, optimal challenge, and psychological needs, such as effectance, personal causation, competence, autonomy, and social needs [8]. Motivation theories focus

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on people as problem solvers; notions such as curiosity, incongruity, and complexity; and concepts of perceived control and self-determination [18].

In the early 1980's, Malone [20] identified three categories of individual motivations during gameplay: challenge, fantasy, and curiosity. This original theory was later expanded to add control as an individual motivation, as well as cooperation, competition, and recognition as interpersonal motivations [21]. Increasingly, the social components of gameplay are being explored as motivations for gameplay (e.g.,[6][34]). While intrinsic motivation is central to videogame play, research has also examined the influence of extrinsic motivation on the gameplay experience. The Work Preference Inventory has been used to measure both intrinsic and extrinsic motivation orientations of game players [1].

Ryan, Rigby and Przybylski [25][26] have applied an established psychological theory – Self-Determination Theory (SDT) – to videogame player motivations. SDT is primarily concerned with the potential of social contexts to provide experiences that satisfy universal needs in people. In addition, research has identified the influence that personal characteristics of the user, such as a willingness to suspend disbelief [19], or internal tendencies to become involved [32], have on a player's gaming experience.

Enjoyment and the Player Experience

Research persistently identifies that people primarily use media for enjoyment [27]. Media enjoyment has been categorized as having affective, cognitive, and behavioural dimensions [22], and these dimensions have been used to examine videogame enjoyment [10]. More widely, enjoyment in videogames has been examined with respect to flow (e.g. [27][5]). Flow is a theory of optimal experience that may be described as the holistic sensation that people feel when they act with total involvement [7]. The most typical kind of flow experience is play, and games are the most common forms of play activity [7].

Given that engagement and absorption are pillars of enjoyment within a gameplay context [16], videogames have been examined with respect to immersion [16], presence [29], and cognitive absorption [2]. Many of these concepts are linked. Immersion, like flow, is defined as a state whereby people become highly absorbed in their activities [16]. Similarly, cognitive absorption is a state of deep involvement that results in temporal dissociation and a lessening of awareness of surroundings [2]. Presence may be defined as the subjective sensation of being within a scene depicted through a virtual medium [29].

It's important to acknowledge the interrelationship between the sensory experience provided by the videogame environment and states of flow, immersion, presence, and cognitive absorption. While the medium is the trigger or context for these states, by definition these states occur within, and are properties of, the person. For example, presence and immersion are achieved when a person's perception fails to acknowledge the role of the medium or technology [29]. Immersed and absorbed players 'lose' themselves within a game world [16]. To achieve such a state, a player needs to be able to seamlessly interact with the external representations produced by the game.

Game Design and Player Experience

Enjoyable game experiences result from players being able to work through the game interface to become immersed in playful activity. The game environment is the medium that allows the player to achieve such an experience. The characteristics of the game form and content, in combination with characteristics of players, influence a player's feeling of presence [19]. It is the interaction between sensory stimulation, environmental factors, and a player's internal tendencies that encourage involvement and enable immersion [32]. Achieving a state of flow is dependent on flow activities, activities that have clearly achievable goals and where the person understands the rules of interaction and feels in control [7]. Flow relies on a dynamic interaction between the skill and challenge levels offered by an activity [7]. Immersive flow experiences emerge when an ideal balance between level of ability and challenge is achieved.

Malone and Lepper [21] identified heuristics for creating engaging experiences. These heuristics are based on features that make games fun and have been designed to motivate and engage. Habgood [13] has used these heuristics as the foundation for designing engaging educational games. Similarly GameFlow [28] is designed to identify elements of game environments that influence the player experience. Based on flow, GameFlow is a model consisting of eight elements with associated criteria for achieving enjoyment in games. Research has also explored how different people are motivated by different psycho-structural elements of games [31]. This research builds on the structural features of games that might influence the play experience [33] and a taxonomy created by King et al. [17] that offers a psychological understanding of these structural features.

MEASURING PLAYER EXPERIENCE

Alongside the issue of conceptualisation of the player experience is the question of how player experience is validly measured. A number of survey measures have been developed and validated to varying extents. Many of the relevant measures focus specifically on the experience of videogame play, including the Player Experience of Need Satisfaction [26], the Game Experience Questionnaire [15] and the Game Engagement Questionnaire [4]. Other relevant measures include those that are focused on immersive or engaging experiences, but not necessarily specific to videogames, examples include the Tendency

Towards Presence Scale [29] and the ITC-Sense of Presence Inventory [19].

Additionally, emerging research has begun exploring the value of biometric data as a more objective means of assessing the experience of videogame play. Research in this area has explored questions of dynamic difficulty adjustment, engagement, immersion, flow, emotional response, motivation, arousal and the impact of violent content. The measures employed include electro-encephalography (EEG), electromyography (EMG), eye tracking, heart rate, respiration, skin conductance, blood pressure and functional magnetic resonance imaging [16][9][11][12][14][23]. In terms of measurement of the play experience, important questions remain around; the overlap between different measures, the reliability and validity of both subjective and objective techniques, and also how the two types of techniques can be used effectively together.

WORKSHOP GOALS AND THEMES

Within this workshop we look to understand the complex relationship between players, the play experience, and the game environment. In order to understand this complexity we must analyze the active role that player characteristics and the game have on motivations to play. Antecedents that influence play experience, such as individual player differences, and the design, structure, and content of game elements also need to be considered. Player experience in terms of flow, presence, immersion, and cognitive absorption are central to research in this field.

We are particularly interested in research that rigorously and systematically analyses the gameplay experience. In taking a psychological perspective, we intend to examine theories of motivation (e.g. SDT) and explore how these might be used to better understand and measure people's enjoyment of videogames. Existing theories of engagement and absorption and their relationship to the gameplay experience are cornerstones of research in this field. How these theories may be considered with respect to antecedents to, and predictors of, enjoyable, engaging, and immersive play experience is also of particular interest.

The overarching goals of the workshop are not only to explore conceptualisations of player motivation, the play experience and the game environment, but also to begin to understand how these aspects interact, overlap and differ. Example questions in this space include; how are the elements of game environments that promote flow, immersion engagement etc. best distinguished from the internal experience of the player in these states? How do players' individual motivations interact with features of the game environment? How do the various conceptualisations of play experience (need satisfaction, flow, immersion, enjoyment, engagement etc.) differ and overlap?

TOPICS OF INTEREST

We invite contributions from various disciplines on topics including, but not limited to:

- Examining the physiological, affective, cognitive, and social dimensions of player experience;
- Analysis of the relationship between structural game elements (e.g., goals, feedback) and player experience;
- Novel methods designed to support the investigation of the gameplay experience; and
- Adaption of existing methods and discussion of strengths and weaknesses in the context of the play experience.

In sum, we aim to bring together experts with an interest in the topics listed with a view to better understanding each other's work but more importantly, to identify and explore where different conceptualisations and methodologies overlap, complement and potentially inform one another.

WORSHOP FORMAT

This 1-day workshop will begin with brief introductions by all participants and short presentations of all workshop submissions. On completion of the presentations we will conduct a brief exercise to identify themes, ideas and issues that have emerged. Small group activities will follow. These activities revolve around scenarios designed to explore the strengths of existing subjective and objective measures of the play experience. Discussions and results for each group will be recorded and presented. The final session is a wrap-up that focuses on general observations from the workshop, future work and plans for follow-up activities.

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