CHAPTER 10

Effectance, Self-Efficacy, and the Motivation to Play Video Games

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When communication researchers consider computer games (and video games) as a new form of media entertainment, they typically highlight those games’ interactivity, because it is the main feature that distinguishes computer games from most other kinds of entertainment (Grodal, 2000; Vorderer, 2000). Not only do game players actively process information provided by the medium (as do viewers, readers, and users of other noninteractive media), but they also contribute substantially to the quality and progress of the media product itself. Their decisions and actions determine how a game looks, how it develops, and how it ends. Consequently, most theoretical work on the enjoyment of playing computer games has focused on the issue of interactivity and player action during game play (Klimmt, 2003, 2005). In order to handle modern entertainment software successfully, users must stay alert for most of the playing time and be able to respond quickly and appropriately to incoming new information. Some, if not many, of these responses may be automatized (Bargh, 1997) for efficient execution and conservation of cognitive processing resources. But, in general, the use of computer games should be modeled as a complex and multifaceted kind of action. Therefore, research on the psychology of action (e.g., Gollwitzer & Bargh, 1996; Heckhausen, 1977) offers theories and empirical findings that may help explain why people play and what they do during playing. Adopting the perspective of the psychology of action means searching for motifs (and motivations) of playing.

The same holds true for the domain of selective exposure (Bryant & Davies, chap. 13, this volume; Hartmann & Klimmt, chap. 9, this volume; Raney, Smith, & Baker, chap. 12, this volume; Sherry et al., chap. 15, this volume). Compared to other kinds of media entertainment, the technical requirements and the costs of playing computer games are significant. Computer games are expensive, not only because they require high-end hardware, but also because the costs for the software itself are remarkable. Even illegally copied games are expensive to acquire because of the costs of special hardware and an Internet connection. In other words, more effort is required to supply a household with the technical equipment to use a computer game than to provide the platform for using TV or reading an enjoyable book. Similarly,
the actual consumption process of computer games is more demanding. Installing a game or simply running it takes more time and effort than activating a TV set, for example. Even more important is the effort required to learn to play a computer game. Watching a new TV program is easy compared to learning how to use a new game: Novice players must memorize the functions of different keys and input devices as well as understand the causal connections and regulatory mechanisms in the game world. Thus, before exposure to a computer game can be fun, players have to invest much more than they would have to for an enjoyable evening in front of a television set or with a book. For this reason, we should consider the process of choosing to play a computer game a well-considered and intentional action. Because of numerous obstacles to playing a game that must be overcome (i.e., costs, technical difficulties, learning requirements), players need a strong motivation to achieve an enjoyable playing session. It is reasonable to expect that people who are only weakly motivated to play a computer game will most often terminate the selection or preparation process because they are not prepared to devote the energy or resources required to begin game play or make it fun. As people may so thoroughly consider the costs and benefits of computer gaming, it is useful to apply the psychological concept of action to both the selection of games and the process of using them. Relevant psychological models incorporate such multidimensional anticipations and evaluations as important determinants of the intention formulation, action selection, and action maintenance (Heckhausen & Kuhl, 1985).

Adopting the perspective of intended actions allows us to investigate theories and concepts from this domain of psychology that may be useful for computer game research. This chapter discusses the importance of two well-established action-related constructs that promise to explain selective exposure to computer games and user activity during game play. The first is White’s (1959) notion of effectance motivation, and the second is Bandura’s (1997) concept of self-efficacy. Before these theories are connected to playing computer games, the links between the selection of computer games and the usage experience are elaborated, because this relationship is the foundation on which the function of both effectance and self-efficacy within a theory of computer game use can be explicated.

THE LINK BETWEEN ANTICIPATED PLAYING EXPERIENCE AND SELECTION INTENTIONS

The psychological perspective on play is dominated by the idea that play is a special kind of action (Oerter, 1999; Sutton-Smith, 1997). According to Heckhausen and Kuhl (1985), goals that people intend to achieve through a given action may be situated outside of the actual action (consequence orientation), on the level of the action’s result, or within the process of acting (action orientation). Most often, human actions are devoted to multiple goals that are situated at different levels (process, result, and/or consequence), even if one goal (level) dominates the original behavioral intention.

From this perspective, one defining element of playful actions (and media entertainment alike; e.g., Klimmt, 2005; Vorderer, 2001; Vorderer, Klimmt, & Ritterfeld, 2004) is the absence of any consequence orientation. Play is performed in order to achieve goals on the level of the acting process (e.g., juggling) or on the level of results (e.g., winning a competitive game; Vorderer, Hartmann, & Klimmt, 2003). Consequences such as earning money or social status outside of the game situation are not intended by players. The absence of consequence-related action motivations has been labeled intrinsic motivation (Deci & Ryan, 1975). It distinguishes playful actions and entertainment consumption from other types of action, such as labor, which typically involve (and are dominated by) consequence-related action goals (Klimmt, 2005).
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If playful actions and the consumption of media entertainment are directed toward result-related or action-related goals, a process-based view of computer game play is most useful. Enjoyment is generated by action processes and/or action results. Therefore, it is most promising to model the complex cognitive and emotional responses and interactive operations related to enjoyment in basic psychological categories of action (Klimmt, 2005): In each stage of one action episode, specific processes influence the player’s experience. For example, most episodes in a computer game begin with the presentation of a task (e.g., an approaching enemy must be repelled). During the first step of the action process, players analyze the current situation. They identify the task and formulate a desired action goal (e.g., to defeat the enemy). Different cognitive and emotional reactions to both the situation analysis and the derived goal can be assumed, for example, fright reactions because of the enemy’s strength or curiosity about the episode’s outcome (Grodal, 2000). Similarly, a wide variety of experiential processes may arise during the subsequent stages of the action episode (action and result; e.g., Klimmt, 2003, 2005). Such processes of cognitive and emotional experience form the computer game-specific kind of enjoyment. We assume that computer game players experience multiple processes throughout game play, that the processes are involved in the formation of enjoyment, and that the anticipation of those processes is a key factor in psychological actions of media choice.

THE PSYCHOLOGY OF INTENDED ACTIONS

The psychology of action is based on a fundamental assumption that human beings are capable of reflecting on their own psychological status, for example, their mood (Mayer & Gaschke, 1988) or their behavioral intentions (Heckhausen, 1977). People can make well-informed decisions to alter their own condition and use media entertainment in order to improve their well-being. Zillmann’s (1988) mood management theory proposes that such decisions are based on reinforcement and conditional learning; that is, memory traces from past (media) experiences guide future behavior by influencing the choice of stimuli in a given situation. This perspective is rejected by action psychologists, who argue that such decisions are (or at least can be) made because of a much broader knowledge of what happens to oneself during exposure to a given stimulus arrangement (e.g., Salovey, Hsee, & Mayer, 1993).

Researchers in cognitive psychology have advanced the concept of mental models (e.g., Johnson-Laird, 1983) — cognitive representations of situations or objects based on perception (bottom-up components) and prior experience or knowledge (top-down components). They can also refer to processes and action sequences, as demonstrated in the psychology of labor (Hacker, 1996). Therefore, a mental model functions as an internal representation of what one’s own future (emotional, cognitive) condition will be if a particular action (for example, using media entertainment) is selected and carried out. Over time, such mental representations evolve through repeated exposure to the corresponding objects or processes. After each session of play, players’ ideas of what they experience during a certain type of action (computer game play) are expanded, modified, and completed. Therefore, those who reflect on a long personal playing history should have valid mental representations of their own psychological condition during game play, even if their mental models do not include every detail of each experience. They can use this knowledge for future decisions and activity choice. In actions of selective exposure, they can evaluate their anticipated experience against their current personal preferences. If the expected experience matches the desired one, the individual selects and performs the action (Klimmt, 2005). This idea of a rationally calculated media choice displays some similarities with the uses and gratifications perspective (Sherry et al., chap. 15, this volume), but differs
from this approach as it also refers to psychological categories of mental representation and mental control (Wegner & Pennebaker, 1993).

In spite of the complexity and the amount of personal cognitions involved, such decision processes do not need to be very demanding or time-consuming, in part because they become automatic over time. Using media entertainment, like playing games, is a frequently repeated activity (Vorderer, 2001). This allows individuals to learn and routinize even complex cognitive and behavioral processes over time (Bargh, 1997). Rapid and intuitive decisions for receiving a certain type of media entertainment are not considered effects of an activated memory trace, as proposed by Zillmann (1988), but as complex, intended actions that have been automatized through frequent performance. Consequently, the motivation to play computer games is the result of self-reflection; individuals compare expectations of what their own cognitive and emotional conditions will be during game play to what they would like their cognitive and emotional condition to be. As computer gamers know to a certain extent what will happen to them during game play, the strength of their motivation to begin a gaming session depends on both their current status and on personal evaluations of what they expect to occur during game play. The role of effectance and self-efficacy as factors in this decision process can be explicated within this framework. We consider how effectance influences the individual’s decisions regarding events and experiences that he or she expects during game play, whereas self-efficacy is a component of the self-evaluations connected to the game play process that also contributes to the overall playing motivation.

EFFECTANCE: THE ENJOYMENT OF CAUSING CHANGE IN THE ENVIRONMENT, ACHIEVED THROUGH GAME PLAY

The Concept of Effectance Motivation

The concept of effectance was introduced by White (1959), who formulated a general motivational theory that was intended to overcome traditional explanations of human behavior that were based on drive concepts or anxiety reduction. White (1959) portrayed people’s motivational system as being energized by an urge toward competence, that is, making progress in the knowledge and abilities that support the individual’s struggle for survival. In evolutionary terms, the acquisition of competence is adaptive, and according to White (1959), the human motivational system is laid out to secure adaptive behavior, which means to gain new competences. However, people are not aware of this superordinated function of their activities. Rather, they perform actions that lead to competence gain because of more immediate and situation-based reasons.

White explained the difference between the evolutionary function of human actions and the subjective motivation to perform those actions by referring to the example of sexual behavior. Clearly, the key function of sexual behavior is reproduction, which holds an adaptive benefit for the individual. However, reproduction is usually not the reason why people engage in sexual activities; the enjoyment derived from performing such actions is their primary motivation. White (1959) argued that the general function of adaptive actions and the subjective motivation to perform those actions are linked because the human motivational system declares adaptive actions as rewarding. Having sex is fun because this way, the individual is sufficiently motivated to engage in adaptive behaviors that lead to reproduction. Similarly, the motivation to perform other kinds of action is explained by White’s (1959) theory. Especially in childhood, exploratory behavior and manipulation of objects in the environment are crucial to acquire competence and progress in cognitive, emotional, and motor development (Ohler
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& Nieding, chap. 8, this volume; Steen et al., chap. 21, this volume). Children often display a very strong motivation to engage in their environment, and frequently explore and rearrange their immediate surroundings. Adolescents and adults exhibit similar kinds of interest in their environment but prefer more complex objects and activities, for example, machine mechanics. In all mentioned cases, engagement in the named behavior is obviously rewarding for the agent and often leads to new insights and acquisition of competences.

According to White (1959), the subjective reward of such activities that people perceive during performance is the satisfaction of having imposed an effect on the environment. It is inherently rewarding to bring about an event, whether it is turning a light on and off again repeatedly or repairing an old car. White (1959) labeled these kinds of experiences efficacy. Achieving the gratifying experience of efficacy provides the immediate motivation to deal with one’s environment. Because this experience is rewarding, people develop a stable motivation to enter this condition, and this motivational disposition ensures that the individual continues the active exchange with his or her environment to gain new competence. White (1959) called it effectance motivation. Harter (1978, p. 35) has elaborated the concept further by deconstructing White’s general notion of effectance into “a) the organism’s desire to produce an effect on the environment, b) the added goal of dealing effectively or competently with the environment, c) the resulting feelings of efficacy.” She formulated a developmental model that can explain the emergence of effectance motivation over multiple episodes of actions and results. The model incorporates much more complexity than the original idea of effectance as the rewarding experience of imposing an effect on the environment. Harter (1978) elaborated, among other aspects, the notions of task, challenge, success, and failure, which have been employed in many other motivational theories as well. While all these concepts obviously apply to computer game play, which contains tasks, challenges, success and failure in virtually every game play session (Klimmt, 2003), we believe that White’s (1959) original and rather simple proposition of effectance motivation is especially useful in computer game research.

The Experience of Interactivity in Computer Games

The explanatory value of White’s (1959) theory is related to the key characteristic of computer game usage that has been labeled “interactivity” (Steuer, 1992; Vorderer, 2000, and introduction of this chapter). It is difficult to formulate a comprehensive definition of interactivity (Vorderer, 2000). Nevertheless, we can explicate its typical components, especially in the realm of computer game usage. Interactivity is the possibility of a continuous exchange between players and the game software. Each allowable action or input from the players is received and processed by the game software and contributes to change in the game system’s condition. Thus, the program automatically generates a certain response to the players’ input, which, in turn, the players can consider as they plan and perform their next input. Over time, a sequence of action–reaction loops between players and the computer game emerges (so called input–output-loops or I-/O-loops; cf. Klimmt, 2003). Imagine this sample I-/O-loop: In a first-person shooter game, a new I-/O-loop is activated by the program, which “sends out” an autonomous agent programmed to attack the player’s character. As a result, the computer screen shows players an approaching enemy. This situation already has implications for the player’s entertainment experience (see above), but for the progress of the situation, the game’s interactivity is the most important factor. This is because the players are able (and, in fact, are forced) to respond to the current threat. They may decide to defend themselves (or their character, which does not make a difference in experience; cf. McDonald & Kim, 2001), which means that they aim at the enemy and begin to fire.

The computer game’s interactivity permits these reactions. The software transforms the player’s inputs into comprehensive actions, for example, body movements of the player’s
character or firing a weapon. The display of those actions represents the second stage of the I-/O-loop, that is, the game’s output, which is based on the players’ input and at the same time presented to the players, allowing them to incorporate the new information (e.g., “weapon has been fired”) in their further decision making. A typical computer game session contains a very large number of such simple I-/O-loops. For example, the conflict and resolution with one single enemy mentioned above may comprise dozens or even hundreds of single I-/O-loops, as each input (e.g., each small movement of the computer mouse) that produces an output (e.g., shift of the player’s crosshair by a few millimeters) is considered one loop. Because playing a combat game means fighting hordes of enemies, the overall number of I-/O-loops during the course of one session of game play is substantial. From a process perspective, the interactivity of computer games causes a continuous sequence of player actions and game software responses, each related to the other (Klimmt, 2003).

**Implications of Game Interactivity for Efficacy Experiences**

White’s (1959) concept of effectance allows a theoretical connection of this important characteristic of computer game usage to the players’ entertainment experiences. As computer games automatically respond to every single input, the perception of creating an effect within the game environment is especially salient. Players experience themselves as causal agents within the game environment — a state that is sustained by the regularity of the game’s responsiveness to incoming inputs. Thus, computer game play addresses the player’s effectance motivation; it produces many individual experiences of efficacy and causal agency. The temporal stability of the game’s responsiveness allows the player to continue the rewarding experience for long periods of time.

With respect to the quality of the efficacy experience, two characteristics of computer games are important. The first is the *immediacy* of the game’s response to the player’s input. If there is no delay between a player’s action and the game’s response, the temporal congruency between action and result provides a very strong sense of effectance, as the outcomes of one’s own actions are transparent and easy to comprehend. The importance of temporal congruency between action and effect has been stressed very early as factor in the perception of causality (e.g., Hume, 1739/2003). The immediacy of response removes ambiguity from the perception of causal agency, making the experience of effectance intuitive and requiring little cognitive effort.

The second relevant game characteristic that facilitates a forceful effectance experience is the *ratio between input and output*. Most games allow players to modify the game world substantially through only a few inputs. For example, in a combat game, players often need only a few mouseclicks to fire a powerful weapon and cause spectacular destruction. The ability to cause such significant change in the game environment supports the perception of effectance, as players can regard themselves as the most important (if not the only) causal agent in the environment. Computer games utilize their interactivity to offer a continous and “high-quality” experience of effectance through these properties (immediacy of response and an attractive input–output ratio). They allow players to perceive clearly and unambiguously the effects they impose on their environment. As White (1959) argued, the resulting feelings of efficacy are very pleasurable and rewarding. Therefore, effectance is valuable for explaining the enjoyment of playing computer games (Klimmt, 2003, 2005; Landauer, 1995).

More complex aspects of the gaming experience, such as the pride of success or the identification with a certain role (Sherry et al., chap. 15, this volume; Raney et al., chap. 12, this volume; Salisch, Oppl, & Kristen, chap. 11, this volume), build on the basic experience of
effectance. For example, the belief that one causes observable changes in the game environment allows the player to attribute positive events (e.g., death of an antagonist) to him or herself, which leads to pleasurable emotions like joy and pride (Weiner, 1985). Moreover, feeling one’s direct influence on the objects and characters of a game adds to the perceived completeness, realism, and pervasiveness of the narrative world depicted on the screen. Effectance therefore facilitates player involvement with the global structures of a game (such as the underlying plot) and stimulates the experience of being part of the game world, which is called presence (Tamborini & Skalski, chap. 16, this volume). In sum, effectance is both rewarding in itself and an important foundation for other parts of the entertainment experience (for more elaborate connections between effectance and other dimensions of game enjoyment: Klimmt, 2005).

Due to the very basic nature of efficacy experiences in computer game play, players may not be aware that the enjoyment they feel is partly derived from effectance. In fact, it is reasonable to expect that experienced players understand effectance as a matter of course because it occurs in every computer game, at each input–output loop. Examining the link between a person’s anticipation (or mental representation) of a future media experience and his or her motivation to use that medium, we find that people do not appear to consider effectance intentionally in their decision making. It is conceivable, however, that certain circumstances could highlight the importance of effectance for enjoyment, namely, if effectance seems absent. Imagine running a brand-new computer game on an old computer. From time to time, the computer’s processing capacities are overwhelmed by the tremendous amount of data that the game software produces. Consequently, the game’s audio and video are choppy. In addition, the game is unable to respond immediately to player input, and the playing experience begins to “splutter” as the continuity of events is broken up. In such cases, players will lose the perception of causality between their actions and the results produced in the game environment, because of the unexpected delay between input and output. This is striking, because there are never delays in normal game play. Nonsystematic observations suggest that players react negatively to such incidents, which extinguish the entertainment experience. In this way, computer problems may eliminate a player’s sense of effectance within the game and destroy the fun of playing. Thus, even if the effectance dimension of enjoyment is not among the player’s intentional considerations that precede selection decisions, the playing experience that lacks effectance is so strikingly unenjoyable that players will remember it and keep it in mind when selecting between computer games in the future.

Efficacy Experiences and the Motivation to Play Computer Games

Even if a person’s anticipatory mental representation of the enjoyment derived from game play does not include the basic principle of effectance, it may contain more complex forms of experience that rely on effectance (see above). If someone is asked why computer games are fun, a typical response might be, “because I can do something, move around, and try things out” (e.g., Mallon & Webb, 2000). Most players seem to reflect the perception of their own activities and the opportunity to manipulate the game world, and this awareness is often combined with notions of control, power, or dominance (e.g., Jantzen & Jensen, 1993; Grodal, 2000). Schlütz (2002) has used the term “agency” to describe this kind of experience, one that most players are obviously aware of.

If the decision for or against playing a computer game is modeled as a psychological action that takes the anticipated experience during game play into account (see above), effectance may play a crucial role when the final motivational disposition is “computed.” When positive and negative facets of experience are anticipated or mentally “simulated” (Taylor & Pham,
1996), effectance will certainly be an important factor if its absence in game play is likely (e.g., if the computer to be used is too old for the game under consideration). Effectance (or related, more complex phenomena such as agency, control, etc.) should also appear in the motivational calculation if its absence is improbable. The individual may, for example, decide that a given computer game does not offer “enough things to do,” which would mean that the assumed input-to-output ratio is not sufficiently attractive. In this case, considering effectance could cause an individual to select a modern 3-D combat game with stunning visual, auditory, and narrative outputs over an old-fashioned game like Tetris, which is unimpressive in terms of player-produced output. So there are good reasons to assume that effectance is an important factor for enjoyment during game play and a crucial element in computer game selection. Consequently, effectance should be considered an important factor in explaining the motivation to play computer games.

SELF-EFFICACY: THE EXPECTATION OF MASTERY, CONTINUOUSLY CHALLENGED BY GAME OPPONENTS

Bandura’s Concept of Self-Efficacy

Bandura (1977a, p. 193) defined self-efficacy as “the conviction that one can successfully execute the behavior required to produce the outcomes” that are expected to be caused by that behavior. The concept was originally formulated in the context of psychotherapy and behavioral change and was intended to guide the development of more effective interventions. An integral part of Bandura’s social-cognitive framework (Bandura, 1977b, 1986, 2001), it has also been applied in nontherapeutic contexts, for example, the modeling and improvement of student performance (Schwarzer, 1992). Bandura’s central proposition is that the more individuals believe they are able to deal with given tasks or situations successfully, the stronger their motivations to engage in those situations and the more effort they will invest to resolve them. Individuals with low self-efficacy, that is, those who believe they cannot handle their current situation, will try to escape the situation or, if they engage in the task at hand, will not display strong or sustained engagement. Many empirical studies have demonstrated the explanatory power of self-efficacy in numerous domains of human behavior (Bandura, 1997). These investigations indicate that self-efficacy not only varies in strength, but also in generalizability. With respect to different domains of life (e.g., intellectual versus sports performance), people may hold very different self-efficacy expectations. For example, the effective use of computer technology depends heavily on users’ computer-related self-efficacy (e.g., Wang & Newlin, 2002). Nevertheless, people with high levels of computer-related self-efficacy do not necessarily hold high efficacy beliefs in other domains of life (cf. Hartmann & Klimmt, chap. 9, this volume).

When an individual is confronted with a task, his or her self-efficacy convictions affect the decision-making process. Compared to other forms of media entertainment, computer games include many tasks and stressful events, and they demand various skills to be used effectively for entertainment. If players do not overcome at least a few opposing forces in a game, game play is not enjoyable; frustration and other negative emotions dominate the experience (Klimmt, 2005). Therefore it is reasonable to assume that people evaluate their own chances of success in a given computer game when they decide whether they want to use it (Vorderer et al., 2003). Applying the notion of computer-related self-efficacy as a domain-specific efficacy expectation, one could presume the existence of still more specific kinds of self-efficacy, that is, computer game-related self-efficacy or even efficacy convictions limited
to a particular game product. The motivation to play computer games or one single game under consideration would then be influenced by the individual’s deliberations on self-efficacy.

The same is true for engagement in playing once the decision for selecting a computer game has been realized. People who believe in their competences will invest more effort to overcome opposing forces in a game and to master the game, whereas players who doubt their skills will be more reluctant to devote as much energy to playing. As a consequence, the motivation to sustain the activity of computer game play will be higher in people with stronger game-related efficacy beliefs, as they would not withdraw from the activity when difficulties (e.g., powerful opponents) occur. Self-efficacy is therefore an important motivational factor in both selection processes and gaming activity itself.

Bandura (1977a, 1997) has posited that self-efficacy is shaped by numerous factors, the most important one being the experience of mastery. Successful coping in a situation increases the conviction that one will be able to deal effectively with similar situations in the future. In contrast, failures will decrease efficacy expectations. Observing another person successfully master a challenge may also contribute to one’s self-efficacy, but Bandura (1977a) demonstrated empirically that personal mastery experiences are the most effective way to affect efficacy beliefs.

Self-Efficacy and Computer Game Selection

If self-efficacy determines much of the motivation to play computer games, the playing activity must offer sufficient opportunities to sustain and enhance efficacy beliefs (Lee, 2000), or at least avoid substantial decreases in self-efficacy. Otherwise, people would have a lower motivation to play, and alternative pursuits would become more attractive. Hence, a reasonable number of mastery experiences is a precondition for game enjoyment (see above) and the efficacy-based playing motivation. On the other hand, it has been demonstrated that the enjoyment of playing games partly depends on emotional reactions to challenges (Klimmt, 2003; Malone, 1981; Vorderer, Hartmann, & Klimmt, 2003). Playing task-based or competitive games is fun only as long as the resolution of the given tasks remains uncertain. If the game is too easy and mastery of game situations is predictable, important components of the entertainment experience, such as suspense and curiosity, will not be present (Friedman, 1995). To be enjoyable, computer games offer a carefully designed balance between challenge and mastery. Players should be able to achieve goals and perceive themselves as successful, but at the same time feel suspense and curiosity that is generated from the uncertainty of whether they will be able to cope with challenges as they arise (Klimmt, 2003). As a player’s skills increase during game play (through automatization of motor activities and learning processes), the difficulty level of the game increases continuously in order to preserve the balance between mastery and challenge (Greenfield, 1984).

The design of typical computer games is therefore able to address the self-efficacy factor in players’ motivation processes: They offer mastery experiences even to novice players and thus support the development of game-specific efficacy expectations, which in turn increase the players’ motivation to sustain the activity even when they face opposition and obstacles, and to return to the game later when the current session is terminated. At the same time, players are most often left with uncertainty about whether they will be able to cope with the challenges ahead, and must deliver their optimum performance to achieve their goals within the game. Thus, computer game play establishes a cyclic relationship between self-efficacy and mastery: Initial mastery experiences facilitate the increase of game-specific self-efficacy, while this efficacy conviction is a motivational precondition of the maximum performance that is required for new and enjoyable mastery experiences.
These considerations demonstrate the importance of self-efficacy for explaining the motivation to play computer games. The interactivity of game use implies exposure to numerous tasks of variable difficulties. In contrast to the audiences of noninteractive entertainment, such as crime drama on TV, computer game players' own abilities to deal with the tasks presented are crucial if the desired entertainment experience is to occur. Mastery is a key component of both game players' experience and motivation, and it is reasonable to predict that people will select only those computer games for enjoyment that they believe they can master to a satisfying degree. Someone may expect a game to be too difficult, for example, because a game review indicates a mismatch between the game's average task complexity and his or her perceived capabilities. If this is the case, he or she is less likely to select the game, because his or her self-efficacy does not recommend the product under consideration. On the other hand, players who hold a very strong efficacy belief, those convinced that they can easily master the game at hand, may refuse to play because they anticipate mastery experiences that are not preceded by real challenges. Such success is not considered as enjoyable (Klimmt, 2003, 2005). From this perspective, computer games continuously call players' efficacy beliefs into question and, at the same time, offer opportunities for players to demonstrate that their level of self-efficacy is appropriate. Thus, the enjoyment of performance-based interactive entertainment such as computer games appears to be a complex process in which changes of efficacy beliefs are closely linked to the motivational determinants of selecting a computer game and sustaining the engagement in a selected game.

**SUMMARY AND OUTLOOK: COMPUTER GAMES AS TESTBED OF PERFORMANCE ORIENTATION**

This chapter has illuminated two concepts of the psychology of action that can explain the motivation to play computer games. Both effectance (White, 1959) and self-efficacy (Bandura, 1977a) are relevant to a player's experience and enjoyment. Because anticipated enjoyment and activity selection are closely linked, effectance and self-efficacy contribute to the formation of action intentions concerning selective exposure to computer games. Although a more complete formula of all the variables that people may consider when choosing whether to play a computer game or engage in another activity would have to include much more information than deliberations on effectance (or related experiences like agency, control, power, or dominance) and self-efficacy (see the various related chapters in this volume), effectance and self-efficacy would be very prominent entries in the list of those factors. Evidence for this assumption stems from the often repeated insight that girls and women display less interest in computer games, devote less time to playing, and on average achieve lower levels of mastery in computer games (Brown, Hall, Holtzer, Brown, & Brown, 1997; Cassell & Jenkins, 1998). Gender differences in computer game playing have often been explained through variables of narrative content (e.g., Dietz, 1998; Jansz & Martis, 2003), but perhaps the very nature of the gaming experience itself causes a gender difference in playing motivation. One may argue that girls are (for various reasons, including parental gender stereotypes) less likely to be familiar with computer use and thus establish lower average self-efficacy beliefs with respect to computer games than boys (Dickhäuser & Stiensmeier-Pelster, 2003; Hartmann, 2003). The perception that one cannot cope with the challenges of a particular game would then weaken the motivation to play the game and to sustain engagement in order to deliver optimal performance, which could explain the findings reported by Brown et al. (1997). Players who never enter the cyclic process of mastery, increase of efficacy beliefs, performance gain, and new mastery experiences will not display a strong general disposition that favors engagement in the given activity. For this reason, new sorts of games have recently been published that explicitly invite girls to get familiar
with gaming. This way, girls may raise their low levels of computer-game-related efficacy convictions step by step, and initial experiences of success may increase their motivation to play computer games.

An observation of gender differences also provides evidence for the importance of effectance motivation in explaining the preference for playing computer games. Men exhibit more interest in other activities that provide effectance experiences through immediate and/or spectacular feedback, such as driving cars at high speed (Krahé & Fenske, 2002) or using firearms (e.g., Simon, Crosby, & Dahlberg, 1999), than women do. This does not necessarily mean that there is a general gender difference in effectance motivation, but there may be specific characteristics of effectance experiences (for example, types of experiences related to immediacy of feedback or perceptions of being in control) that are more appealing to males than to females. Playing computer games might provide effectance qualities that are of differential preference value (that is, they are more appealing to males than to females). This speculation remains to be tested empirically, of course, but should be considered a plausible argument for the importance of effectance in explaining the motivation to play (and the enjoyment of playing) computer games.

The general conclusion of this chapter is that both effectance motivation and self-efficacy are presumably variables that explain a recognizable portion of variance in the motivation to play computer games. Effectance as a very basic experience occurs during the use of any computer game, as it is directly generated through interactive media consumption. It facilitates more complex dimensions of game enjoyment because it serves as foundation for attribution, immersion, and comprehension processes that make players feel triumphant as part of the game-world and as heroes of great stories (Klimmt, 2003, 2005). The concept of self-efficacy appears to be in effect at various levels of analysis as well, because there are efficacy convictions of varying generalizability. A person’s belief about her/his ability to deal with computers in general will affect her/his general tendency to play any computer game, but even a very self-confident computer user may feel insecure about her/his capabilities to handle a specific game. A general computer-related (and maybe computer-game-related) self-efficacy is an important prerequisite for the overall motivation to play computer games, whereas more specific efficacy convictions (e.g., those beliefs related to a game genre or one concrete product) explain preferences within the landscape of available computer games. So theoretical and empirical assessments of the motivation to play computer games should refer to both effectance and self-efficacy but also carefully consider which specific mechanisms are in operation at the chosen level of analysis.

Given the portrayed properties of the process of selecting and playing computer games, namely the perspective of such games as complex environments that deal with performance, victory and defeat, the broader perspective on future games research should consider interactive entertainment a test environment for skill-related and action-related facets of the user’s self-concept. Games in general function as coping activities that enable subjects to deal with their real life (Ohler & Nieding, chap. 8, this volume; Vorderer, Steen, & Chan, in press). Computer game playing specifically targets performance-related issues of life — sustained engagement, excellence orientation, motivational self-control, and so on. As the social environment of Western societies imposes more and more performance-related pressures onto adolescents’ development (e.g., in terms of school performance, social acceptance through peer groups), the need for coping with motivational and performance-related issues may have become more important. This would explain the enormous and still growing motivation (especially among young people) to play computer games (Raney et al., chap. 12, this volume): Playing allows for active coping through actualization and individualization of tasks, challenges, and skills (e.g., personalization of computer games’ difficulty level). Moreover, computer games provide a complex environment in which the performance-related parameters can be defined in such a way that engagement is rewarding and functions as compensation for frustrating performances.
in real life: For people who suffer from failure or performance-based social rejection, gaming offers escape into simulated worlds with challenges, a substantial number of victories and controllable number of defeats. It produces competence gains, elevates (domain-specific) self-efficacy, and restores subjects’ feelings of being able to influence the environment (effectance). Although one must not neglect the narrative facets of game play and its implications for playing motivation (see the according chapters of this volume), effectance and self-efficacy appear to be dominating determinants of the motivation to play computer games that fit well into the broader personal and social contexts that breed motivational dispositions and tendencies.

REFERENCES

10. EFFECTANCE, SELF-EFFICACY, AND THE MOTIVATION TO PLAY VIDEO GAMES


Perceived self-efficacy refers to beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments (3). Efficacy beliefs influence courses of action. Efficacy judgments are judgments of capability, not judgments of self-worth. Effectance Motivation. This motive is conceptualized as an intrinsic need to deal effectively with the environment. The effectance motive presumably develops through cumulative acquisition of knowledge and skills in managing the environment. Efficacy beliefs vary and are more conditional and contextual. Proxy Control. In this socially mediated mode of control, people try to get those who wield influence and power to act on their behalf to effect the changes they desire. (17).