

Chapter 6

Investigating Experiences and Attitudes Toward Videogames Using a Semantic Differential Methodology

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Abstract There exists a growing concern in the game design community related to the understanding of the multifaceted nature of players' experiences. This chapter addresses this relevant need by focusing on the attitudinal aspect of experiences and presents the differential semantic approach as a relevant and powerful methodology. Given the importance of attitudes orienting the cognitive and behavioral stance toward objects in general, and games in particular, researchers need to acquire the proper conceptual and methodological tools in order to investigate these significant aspects. This methodology allows researchers and designers to probe many aspects and questions related to attitudes toward games such as how do players perceive a game, a game genre, or a particular game episode. This chapter details the methodology, presents empirical results gathered using this approach, and offers fertile considerations regarding how a better understanding of attitudes toward games enlightens the gaming system and may help game designers develop innovative games tailored to their intended audiences.

6.1 Introduction

Over the past decade, videogames have blossomed into a very popular and significant leisure activity for many people. In fact, videogames have now gone mainstream and are aimed at new audiences that traditionally didn't consider videogames for spending their free time. In what can be described as the casual gamers' paradigm, designers are now challenged with the demanding task of creating games that need to be appealing, accessible, and usable to a rather different audience, and this endeavor is quite different from designing games intended for hardcore gamers (Fortugno 2008). How do gamers perceive videogames? How do

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their perceptions compare with other leisure activities? How do specific audiences like non-gamers and women feel toward gaming? What do people look for in a leisure activity? Investigating these aspects is very relevant as it can yield interesting data to help designers create innovative games and provide great gaming experience for their target audience.

With the increasing popularity of videogames, a growing number of research initiatives have been undertaken for evaluating players' experiences in games, using different frameworks (Ermi and Mäyrä 2005, Costello 2007, Apter 1991, Hunnicke et al. 2004, Lazzaro 2004, Björk and Holopainen 2005) and methodologies (Pagulayan et al. 2003, Mandryk et al 2006, Appelman 2007). These are aimed at a better understanding of the gaming system, i.e., the players, the games, and the resulting interactions and experiences (Salen and Zimmerman 2004). But more research needs to be done in order to provide designers and researchers a solid, coherent, and shared corpus of conceptual and methodological tools to assess the gaming phenomena and assist game development.

In this regard, the aim of this chapter is to present a specific methodology, the semantic differential (SD), which we consider to be helpful to designers and researchers, as it can probe many aspects and questions related to attitudes toward games. The SD methodology was initially developed by Osgood et al. (1957) to investigate attitudes toward concepts and group of objects. Attitudes are a psychological construct defined as "a sustained internal disposition that underlies favorable or unfavorable individual responses towards an object or a class of objects" (translated from Bloch et al. 1991). Attitudes are organized around three fundamental components: the *cognitive* component that includes individual beliefs about an object, the *affective* component that takes into account motivations and other subjective elements, and the *conative* component that relates to behaviors and their underlying intentions (Ajzen 1989, Ajzen et al. 1986, D'Astous et al. 2003). Investigating attitudes toward games is therefore relevant because what people think of a game can influence their purchase intention and thus their participation.

The use of the SD has been documented in many areas such as politics, architecture, environmental design, ergonomics, and various product designs (Mondragon et al. 2005). However, this kind of methodology has never been applied to videogame research. And given the importance of attitudes orienting the cognitive and behavioral stance toward objects in general, and games in particular, such approach offers an appropriate research strategy related to players' experiences and could help designers develop significant insights into their target audiences.

To illustrate the procedure for conducting SD surveys and analyzing the subsequent data, we will present a meaningful case study where attitudes toward different leisure activities, including more specifically videogames, were investigated using the SD methodology. After reading this chapter, one should grasp the fundamental concepts and tools of the methodology and understand what type of information and knowledge could be extracted.

6.2 Experiences and Attitudes

6.2.1 Experiences, the Core Concept of Gaming

The underlying goal of videogames is to generate particular experiences to players engaged in such an activity, and most often fun or pleasurable ones (Pagulayan et al. 2003, Fullerton 2008, Koester 2004). But with the growing complexity of today's videogames – in terms of content, interactions, and technology – one of the main challenges designers and researchers are facing is the defining and understanding of the elements and interactions that create a great gaming experience. And because different audiences are now drawn to games, what constitutes a great gaming experience isn't something standard across all player groups.

Recent attempts to conceptualize the gameplay experience have been very helpful with this matter by highlighting elements that take part in the formation of experiences generated by playing videogames. One of these attempts is the “SCI model” elaborated by Ermi and Mäyrä (2005), which identifies some of the fundamental components of gameplay experiences and their relation to each other. Their model is based on the immersive nature of gameplay experiences in terms of sensations, challenges, and imagination, and is the result of complex interaction processes influenced by factors such as the *game itself* (in terms of game structures, audiovisuality, and interface), the *person-engaged playing* (in terms of individuality, motivations, and experiential dimensions such as cognition, emotions, and behaviors), and the *social context* in which the gaming activity takes place. From this perspective, players do not simply engage in a “ready-to-play” game, but rather take an active part in constructing and interpreting (i.e., giving meaning to) their own gameplay experiences by bringing with them their desires, anticipations, and past experiences.

Another fruitful model for conceptualizing the gaming experience is the model of optimal experiences (or the “flow” model, e.g., Csikszentmihalyi 1990). Flow theory has been borrowed by the videogame research community to illustrate what players – and designers – want to achieve in a game (Salen and Zimmerman 2004, Appelman 2007, Sweetser and Wyeth 2005). Although this model is very helpful in illustrating an array of experiences a player can go through when gaming (based on the level of challenges and skills the player perceives), flow theory can help designers grasp the answer to a fundamental question about their work: “What motivates people to play?”

According to Csikszentmihalyi (1997), people are motivated to engage in leisure activities because of the satisfaction they get out of it. This usually comes through the accomplishment of goals where meaningful skills are developed and acquired. And even if the aim of this chapter is not to discern which goals are worth pursuing, we suggest that some goals supported by traditional videogames don't fit everyone. For example, not everybody agrees that spending half-a-day collecting weapons to beat a fierce boss is a goal worth pursuing, as many might think that engaging in other leisure activities might be a better investment of time and energy (like getting

fit or learning to cook). With this regard, attitudinal research in conjunction with the flow model could be useful to better characterize specific audiences like non-gamers and women, for example (Lemay, 2007a).

Another interesting aspect of the flow theory is how it may be related to impacts of leisure on the quality of life of individuals. As stated by Csikszentmihalyi (1990, 1997), even if the most positive experiences in our daily lives tend to occur in a leisure context, all leisure activities don't exhibit the same effects on the quality of experience. In this regard, this author differentiates the effects of passive and active leisure – where active leisure activities such as sports and arts, for example, tend to provide a context much more favorable for personal development and growth than the context provided by passive leisure activities such as watching TV and reading. The intrinsic rewards and feelings of gratification gained by deeply engaging in active leisure is a major factor that contributes to the quality of life in general (Csikszentmihalyi 1990). Should videogames then be considered a passive or an active leisure activity? Empirical data may provide some corresponding insights.

Fortunately, there is a growing awareness toward quality-of-life and well-being issues, upon which the design community in general is reflecting (Press and Cooper 2003). If videogames are capable of generating fun and pleasure, from a logic of *sustainable experiences* (Lemay 2007b), can videogames also lead to *well-being* and furthermore to a better *quality of life*? The relationships between flow theory and leisure activities stir up interesting issues concerning the nature and value of videogames, and flow theory can help conceptualize important aspects of the gaming experience as a whole.

To some extent, the quality-of-life shift in the design of videogames is already underway and the approach toward conceptualizing the gameplay experience in a holistic manner has already granted the gaming industry with numerous successes. Games such as *Wii Fit*, *Guitar Hero*, *Brain Age*, and even *Dance Dance Revolution* all share and integrate elements inspired from active leisure.

6.2.2 Why Attitudes Matter in Leisure Activities Such as Videogames

From a game designer's perspective, knowing what target users think of a certain game genre has always been valuable data when it comes to creating a new game. Focus groups, benchmarks evaluation, and playtests are typical research methods set forth in order to grasp information about player attitudes and preferences (Pagulayan et al 2003, Appelman 2007, Kuniavsky 2003). But since videogames are one among many other leisure activities worth taking part in, probing attitudes about other leisure activities may provide interesting data about perceptions and needs related to games per se.

Conceptually, investigating attitudes toward leisure activities, including videogames, can enrich the understanding of the dynamics of engagement in an activity. This dynamic can be referred to as the causal chain of motivation/participation/satisfaction as suggested by Crandall (1980). Therefore,

answers to question such as why people engage in videogames, what motivates them to play, and what satisfaction they get out of it could help conceptualize gameplay experiences in a more profound manner and help designers create more engaging and compelling games from a practical point of view.

From a leisure research perspective, attitudes toward leisure activities are relevant because of their positive effect on participation (Ragheb and Tate 1993). Said in a straightforward fashion, what people think of an activity influences whether they will engage in it or not. But other factors can also influence leisure participation such as availability, affordability, and social acceptance (Argyle 1987).

Similar to other leisure activities, players interpret their engagement in videogames by means of referral to the cultural and social context (Ermi and Mäyrä 2005). Although videogames have grown over time to be a very popular and significant leisure activity, many social concerns have been addressed toward this form of entertainment (Barnett et al. 1997). That alone justifies the need to probe the attitudes of people and groups of people about it.

For the reasons mentioned above, attitudinal research in the videogame domain represents a relevant and significant approach to grasp valuable information about the underlying players – and non-players – experiences. Knowing that attitudes toward a particular game genre or simply toward a general leisure activity can have a distinct impact on engagement, the acquired information could help game designers create more compelling games and help them tackle the challenge of creating user-friendly and quality-of-life-oriented games.

6.3 Case Study

The authors present here how they have used and tested the semantic differential (SD) approach in the videogame domain. How are videogames affectively perceived? How do they compare with other popular leisure such as Internet surfing and communication, watching TV, reading, and playing a musical instrument? While there exists an abundance of literature regarding how people organize their free time and how their leisure activities are construed, playing videogames as an activity has not been described in such a fashion. The aim of the study was to compare the perceptions of videogames with other leisure activities and investigate if we could pinpoint specific positive and negative perceptions.

6.3.1 Research Objectives

Mainly because this kind of approach was never used in this domain and because no other data were available to compare the results, no specific hypotheses were explicated in the research protocol. Data analyses were subsequently performed from a more descriptive stance rather than an inferential one.

The following analyses were planned: the descriptive analysis of the participants, the descriptive analysis of the perception of each leisure activity, the multivariate comparison of the leisure activities, and finally comparisons between

our sample subgroups (male *versus* female, videogame players *versus* non-players). From a game design point of view preoccupied by the accessibility of videogames, these last two analyses would provide interesting information about the underlying engagement toward videogames – or the lack thereof – of these subgroups.

6.3.2 Methodological Procedures

Students and employees from the Faculty of Environmental Design of the University of Montreal and other people were invited to answer an online survey through emails, posters, and word-of-mouth contacts; people finishing the survey were asked to freely provide names and email addresses of people susceptible to be interested in the survey participation.

The survey was organized in three parts. The first part stated the research objectives and instructions. The second part consisted of the main section regarding the attitude toward leisure and a section regarding the socio-demographic profile of participants. Finally, the third part warmly thanked the participants for completing the survey.

6.3.3 Choice of Concepts and Adjectives

Semantic differential is a particular approach for probing the connotative meaning of objects, class of objects, or concepts, through the use of a list of bipolar adjectives (Osgood et al. 1957). Pairs of adjectives were chosen according to attitude theories and models as well as knowledge of the game domain. Because this is the first endeavor using the SD methodology in the game domain, no predefined or tested set of adjectives was available. Therefore, an iterative process of corpus delimitation, adjective generation, set discussion, and validation was undertaken.

Many sets of pairs of adjectives were developed throughout the research project, at some point reaching over 500 pairs. Some pairs originated from a multidimensional framework approach to experiences (Lemay 2008, Shedroff 2001, Schmitt 1999), including the sensorial, emotional, cognitive, behavioral, and social dimensions. Some pairs came from leisure literature (Argyle 1987) and were inspired by flow theory (Csikszentmihalyi 1990). After a lengthy period of discussion, refinement, and testing among researchers and pretest volunteers (where criteria of relevance, interest, and non-redundancy led our selection process), a set of 26 pairs of dichotomous adjectives were established and deemed satisfactory for the main survey.

In order to facilitate the analysis, the final set of adjectives was structured around four categories inspired by leisure attitude components (Ragheb and Beard 1982):

1. *global evaluation* of the leisure activities, related to the cognitive dimension of attitudes, such as beliefs, knowledge, virtues, and features and benefits associated to the activities;

2. *experiential nature* of leisure activities, related to how people may experience leisure;
3. *affective evaluation* of activities, related to the affective dimension of attitudes;
4. *miscellaneous evaluation*, related to various aspects of leisure and hors-champ adjectives, as suggested in SD literature (Osgood et al 1957).

The pairs of adjectives consist in the following (translated from French): *Healthy – Unhealthy, Affordable – Costly, Slow – Fast, Developing – Devaluing, Stressful – Relaxing, Easy – Difficult, Demotivating – Motivating, Popular – Unpopular, Exciting – Boring, Funny – Serious, Good – Bad, Distressing – Reassuring, Pleasant – Unpleasant, Clear – Obscure, Useful – Useless, Peaceful – Violent, Passive – Active, Sad – Happy, Social – Antisocial, Disgusting – Attractive, Satisfying – Unsatisfying, Familiar – Strange, Harmful – Beneficial, Instructive – Thought-destroying, Physical – Mental, Calm – Agitated.*

The choice of concepts – in our case, of leisure activities – was based on reviewing the leisure research literature. Beside the inclusion of the *videogames* activities, those activities that were frequent for adults and important in the literature (either for their active or for their passive connotations) were kept in the final choice: *Physical activities, Reading, Watching TV, Practicing a musical instrument, Internet surfing and communicating*, and finally *doing Crosswords/sudokus*.

Regarding the choice of concepts (here, the leisure activities), the number of concepts was kept to a reasonable number with respect to the length of the survey. Because surveys that are too long are often not completed or even not answered firsthand, we tried to keep the total number of questions to approximately 250, leading to a 20–25 min survey (multiplying the number of activities times the number of pairs of adjectives, i.e., $7 \times 26 = 182$, plus the other questions about socio-demographic and patterns of leisure activity use). This would help to minimize the number of incomplete questionnaires during the survey.

6.3.4 The Differential Semantic Questions

Specifically regarding the semantic differential questions, participants had to answer the same kind of questions for each activity, for example, “How do you perceive videogames?” Pairs of adjectives were then presented on both side of a 7-point Likert scale and participants were asked to rate the activity (cf. Fig. 6.1). Number 3 on the left meant that the left adjective was *very representative* of the activity, number 2 on the left meant the left adjective was *representative* of the activity, and number 1 on the left meant the left adjective was *a little bit representative* of the activity. This reasoning applied for the right adjective in a similar way. Number 0 at the center of the scale meant both adjectives were either *not representative* or *equally representative*. Some negatively connotated adjectives were put on the left side of the scale and some were put on the right, in order to minimize one-sided perception of the scales.

Fig. 6.1 Example of the semantic differential question sheet

	3	2	1	0	1	2	3	
Healthy	o	o	o	o	o	o	o	Unhealthy
Affordable	o	o	o	o	o	o	o	Costly
Slow	o	o	o	o	o	o	o	Fast
Developing	o	o	o	o	o	o	o	Devaluing
Stressful	o	o	o	o	o	o	o	Relaxing
Easy	o	o	o	o	o	o	o	Difficult
Demotivating	o	o	o	o	o	o	o	Motivating
Popular	o	o	o	o	o	o	o	Unpopular
Exciting	o	o	o	o	o	o	o	Boring
Funny	o	o	o	o	o	o	o	Serious
Good	o	o	o	o	o	o	o	Bad
Distressing	o	o	o	o	o	o	o	Reassuring
Pleasant	o	o	o	o	o	o	o	Unpleasant

6.3.5 Description of Participants (Descriptive Analyses)

From the 105 participants who begun the online survey, 80 completed it during spring 2007. Participants' profiles were as follows: there were slightly more women (44) than men (36). Thirty-seven participants were in the 18–25 years old category, 23 were 26–35 years old, 12 were 36–45 years old, 5 were 46–55 years old, and 3 were 56 years old and over. Fifty participants were students at the time, 27 were employed, and 1 was unemployed; 2 specified the “other” category.

Regarding the participants' use of their free time, the participants' four most frequent leisure activities were reading (92.5%), Internet use (87.5%), watching TV (86.2%), and doing physical activity (78.8%). Playing videogames was an activity that reached 48.8% of the participants. The least frequent leisure activities were doing crosswords/sudokus (32.5%) and practicing a musical instrument (20%).

Delving into the patterns of use of videogames, 24 out of the 39 participants who indicated that they play videogames played less than 5 h a week, while 9 participants played from 5 to 9 h a week, 2 played from 10 to 14 h. Four of them enjoyed videogames for 15 h and more.

6.3.6 Multidimensional Analyses of Attitudes Toward Leisure and Games

Once the global profile of the population sample was performed and the pattern of leisure use was established, the basic semantic profile for each leisure activity and for each pair of adjectives was computed. Medians were used as a descriptive statistic instead of the typical average because answers must be considered as ordinal data, not continuous ones.

How did participants perceive the seven leisure activities? The statistical median for each pair of adjectives and each activity was computed and plotted on graphics. When all seven activities are plotted together, some patterns could be detected, but they are more difficult to perceive. There seems to be a general trend for which most leisure activities were evaluated. Graphically, no activity seems to be perceived radically different from the others. A very few activities have gathered medians of ± 3 , which means that more than 50% of the participants evaluated the leisure in a strong manner; those activities that gathered such high marks are physical activities, reading, and watching TV.

In order to make sense of a particular activity, it can be plotted individually. Let's use the videogame activity as an example, as shown in Fig. 6.2.

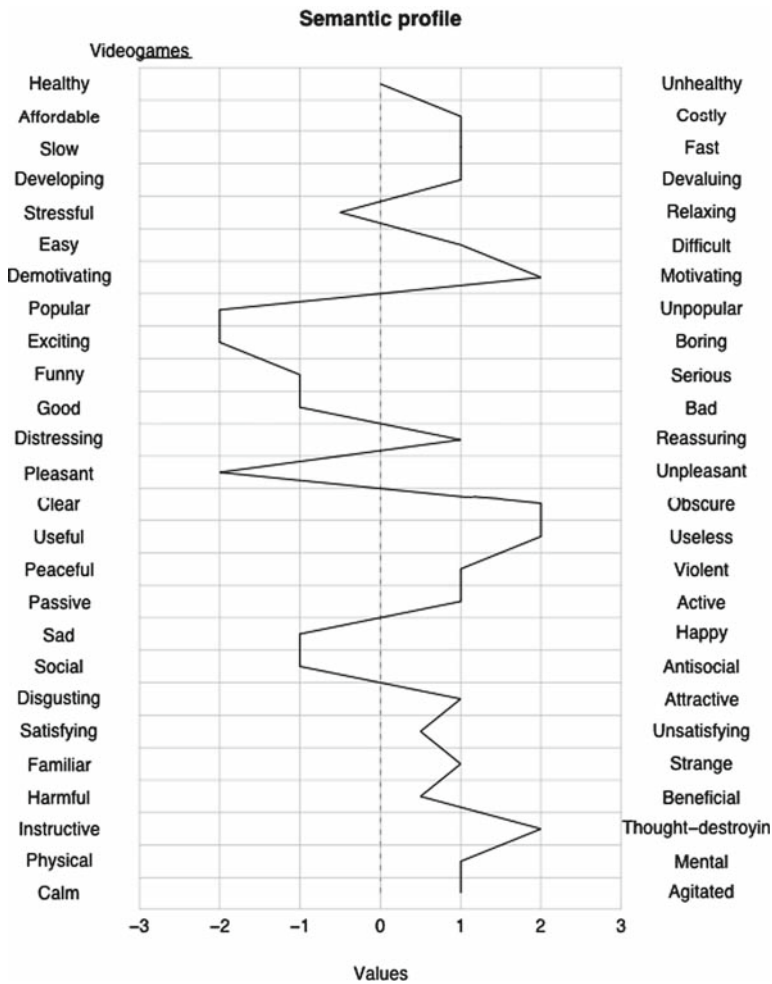


Fig. 6.2 Semantic profile for the videogame activity

Those adjectives whose median is highest (either +2 or -2) are considered as the meaningful ones. The next figure clearly illustrates that videogames were evaluated as: motivating, exciting, pleasant, and popular, but also useless, thought-destroying, and obscure.

Questions arise as if these adjectives that were graphically extracted correspond to statistically meaningful results. Wilcoxon tests¹ were performed comparing empirical medians for each pair of adjectives and each activity in order to pinpoint the statistically significant adjectives; as a metric for this information, those values which differ from the neutral evaluation (0) and the weak perception (-1 or +1) were chosen; stated otherwise, this implies a median inferior or equal to -2, or a median superior or equal to +2. The reference p -value was 0.00027 (i.e., $0.05/(7 \times 26)$), which corresponds to a 0.05 level, with a Bonferroni correction applied because the numerous statistical tests performed on the 7 activities and 26 pairs of adjectives could randomly trigger false positive results. Wilcoxon tests were symmetrically performed on the other side of the pairs of adjectives, for each pair of adjectives and each leisure activity, comparing medians inferior or equal to -2. The reference p -value was also $p < 0.00027$ because of the Bonferroni correction.

Making sense of the resulting tables is easy when the significant adjectives are extracted.² The statistically significant adjectives are taken out and put into a table (cf. Table 6.1), showing the leisure on one column and the predefined categories on each row.

From the table it can be summarized that leisure such as physical activities, reading, and the practice of a musical instrument are globally associated to much more positive perceptions, like being healthy, good, developing, and pleasant. The leisure activities having more negative perceptions (such as useless, harmful, and thought-destroying) are videogames, watching TV, and Internet activities.

6.3.7 Comparisons Between Subgroups

Other informative analyses can be undertaken using the rich data gathered with such methodology. The comparisons between subgroups of our population sample are explored here. Because other researches have demonstrated differentiated patterns of game engagement between men and women (Barnett et al. 1997), we wanted to know if the underlying perceptions for these two groups followed this trend. Graphically the two profiles are represented in Fig. 6.3 and summarized in Table 6.2.

¹ The R statistical package was used to perform both graphical and numerical procedures; available at www.r-project.org, it is an open-source software similar to Splus.

² The exact statistical results are not shown for the two 7×26 tables, for a matter of concision; they are available on request.

Table 6.1 Statistically significant adjectives describing seven leisure activities. Symbol “–” indicates that no adjective was statistically significant for the activity

	General	Affect	Experience	Miscellaneous
Videogames	Useless, thought- destroying	Motivating	Exciting, pleasant	Popular
Physical activities	Useful, good, healthy, instructive	Developing, satisfying, attractive	Exciting, pleasant	Physical, social, calm, sad, peaceful, popular, fast
Reading	Instructive, healthy, good	Developing, attractive	Pleasant, easy	Physical, peaceful, calm, social, sad, affordable
Watching TV	Harmful	–	Pleasant, relaxing, easy	Popular, sad
Practicing a musical instrument	Healthy, instructive, beneficial, good	Attractive, motivating, developing	Pleasant, difficult, relaxing	Physical, social, active, peaceful
Internet	Useless	Attractive, motivating	Easy	Popular, sad, active
Cross-words/ sudokus	Instructive	Motivating	–	Affordable, active, clear

There are similarities between the two genders, but there are quite a few dissimilarities. While both genders perceived videogames as useless, thought-destroying, exciting, popular, and obscure, they differed on affective aspects: men perceived games as motivating and attractive, while women did not find any such things. Also both genders perceived games as exciting, but men thought they were pleasant and women thought they were difficult. On other aspects, women perceived games as costly and fast. These results corroborate data from other sources and may explain why women engage less with games than men (ESA 2008).

The second main finding concerns the comparison of players' and non-players' attitudes toward games. The question we wanted to answer was whether there exist important attitudinal differences between these two groups. Previous studies using this methodology have shown that attitudes differ between people who participate in an activity or interact with an object and those who don't (Cardoso 2007, Bonapace 1999). The comparison yields the following results (cf. Table 6.3) and the graphical representation using the semantic profile (cf. Fig. 6.4).

Results are rather interesting and show the full potential of the methodology. Even if overall the participants perceived videogames as useless, non-players

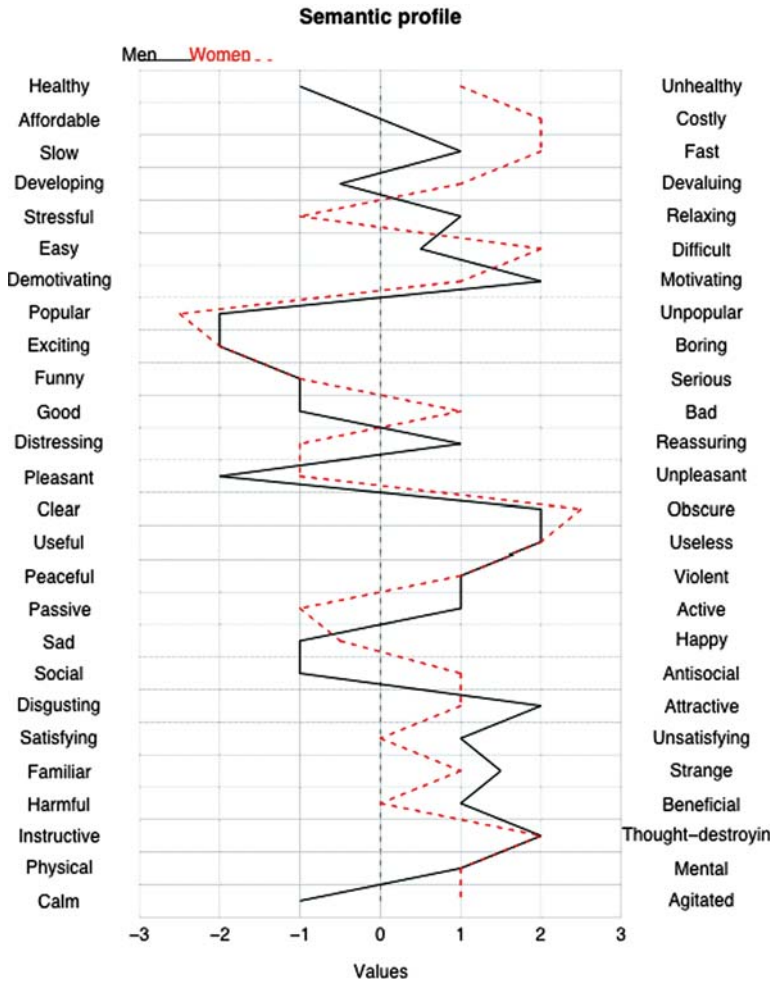


Fig. 6.3 Semantic profile for the videogame activities, comparing men and women (men: *full lines*, women: *dotted lines*)

Table 6.2 Comparison between men and women for the videogame activity. Symbol “–” indicates that no adjective was statistically significant for the subgroup

Dimension	Men	Women	Combined groups
General	Thought-destroying, useless,	Thought-destroying, useless	Thought-destroying, useless
Affect	Motivating, attractive	–	Motivating
Experience	Exciting, pleasant	Stressful, difficult	Exciting, pleasant
Miscellaneous	Popular, obscure	Popular, obscure, costly, fast	Popular, obscure

Table 6.3 Comparison between players and non-players for the videogame activity

Dimension	Players	Non-players	Combined groups
General	Useless	Useless, thought-destroying	Useless, thought-destroying
Affect	Motivating, attractive	–	Motivating
Experience	Exciting, pleasant	Stressful, difficult	Exciting, pleasant
Miscellaneous	Popular, obscure, sad, fast, strange	Popular, obscure, costly	Popular, obscure

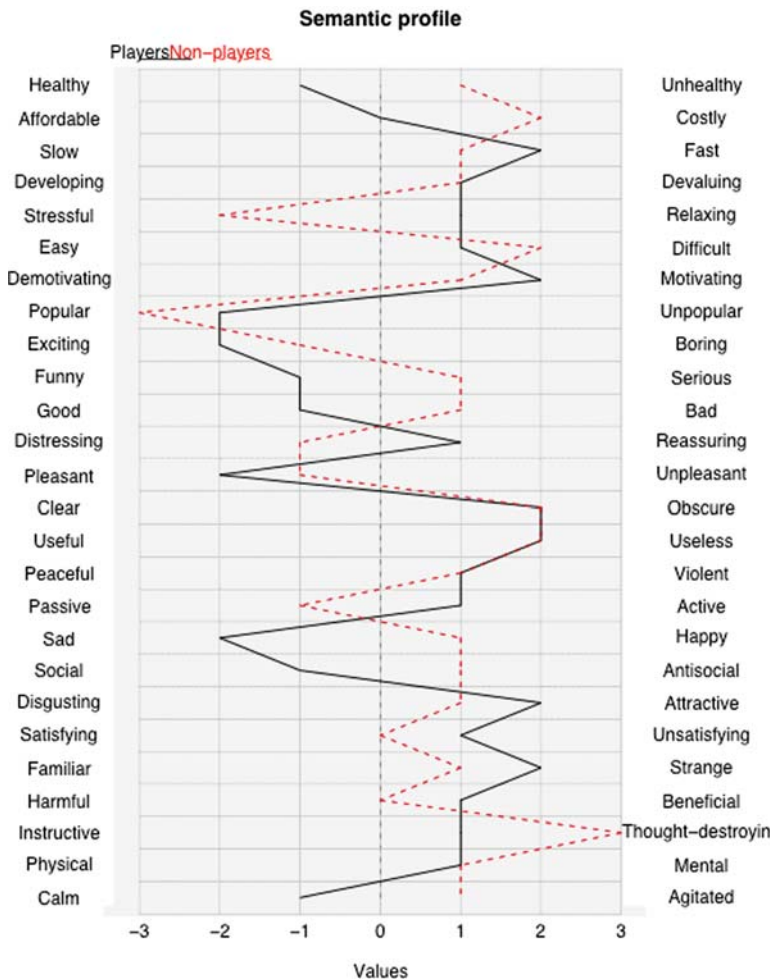


Fig. 6.4 Semantic profile for videogame activities, comparing players and non-players (players: full lines, non-players: dotted lines)

were even more critical, their attitude toward games being that such activity is thought-destroying. This is rather harsh and probably explains their reluctance to engage in this kind of activity. Other results show that on the affective side, players feel that games are motivating and attractive (that's why they perform such activity), whereas non-players do not have any feeling toward games. While players find this leisure exciting and pleasant (thus having close relationships with flow experiences, e.g., Csikszentmihalyi 1990), non-players see games as stressful and difficult, thus pointing to anxiety experiences according to the flow model. Another result worthy to mention is the fact that non-players perceive games as costly, adding another reason why they do not engage in games.

6.4 Discussion

6.4.1 *Discussion of the Results*

The gathered data prove to be rich in information and suggest various thoughtful avenues to investigate. How do we explain differences in attitudes toward videogames between men and women? Why do videogame players and non-players perceive the game differently? Is there a really profound gulf in the way these leisure activities are perceived and organized on the cognitive, affective, and conative dimensions?

One of the questions we were curious to investigate was if videogames should be considered a passive or an active leisure activity. From a dynamical systems point of view, videogames should be considered as an active leisure; players actively engage in the game, investing time, physical and mental energy into it; all the interactions that occur, the informational and physical feedback loops that happen every second of the game episode pinpoint toward an active leisure interpretation.

But from a classical leisure analysis point of view, this kind of leisure should be considered a passive activity. The basic tenant of this interpretation holds that passive activities do not bring the individual to develop or actualize himself and do not concur to the quality of life of the individual. Data suggest that videogames are perceived in a similar way as other passive leisure activities. Empirical results show that people perceive videogames as a useless, thought-destroying, and obscure activity, which is similar to watching TV or Internet surfing and communicating.

While we cannot disagree with these findings, we cannot help ourselves thinking about how seemingly contradictory these results suppose. The most popular entertainment activities such as playing videogames, watching TV and movies, and Internet surfing/communicating are negatively perceived, yet they are some of the most sought-after forms of entertainment. But when examined through the lenses of flow theory and leisure practice, these results find a rational explanation. As mentioned by Csikszentmihalyi (1990), engaging in active leisure is something that requires a lot of energy and determination. Therefore, it seems that a lot of people turn toward passive leisure activities as a compromise to occupy their spare time.

Videogames offer a lot of qualities similar to other passive leisure: they are easily available and they don't require much activation energy (one doesn't have to prep for the activity very much or travel to a specific facility); they are affordable and most of all they offer great entertainment value. So from this point of view, it's reasonable to assess that videogames are popular even if to some extent negatively perceived.

6.4.2 Discussion of the Semantic Differential Methodology

The semantic differential methodology has brought about some very interesting findings related to how videogames and other leisure activities are perceived. As such, it has proven itself a relevant methodology for the investigation of attitudes toward leisure such as videogames.

Benefits and limitations of this methodology must nevertheless be expressed. One of these issues relates to the choice of descriptors (pairs of adjectives). Because there is no well-defined or accepted corpus of such adjectives, each research project has to define their own set. On the one hand, this has the advantage of flexibility, allowing researchers to tailor their set to their specific needs; on the other hand, empirical research results are then difficult or even impossible to compare. This alone may slow the adoption of this methodology in the community.

One of the disadvantages of having to elaborate a set of adjectives is that some pairs of adjectives may yield sound and interesting responses, while others may not be useful for the subsequent analyses. For example, adjectives where answers are too much concentrated or too skewed on one side of the scale are difficult to integrate in the analyses; true, they provide meaningful interpretation as how people perceive a particular activity, but the lack of variations is undesirable in statistical analyses, even if the use of ordinal data and medians alleviates problems associated with non-normal distributions. In our results, pairs of adjectives like “distressing–reassuring,” “familiar–strange,” and “peaceful–violent” were diverging from a normal distribution (using QQplots), but were kept in the analyses.

6.5 Conclusion

This first survey regarding the attitudes toward videogames and other leisure activities using a semantic differential has provided interesting results and has proven the methodology to be relevant for this kind of research endeavor. The methodology is firmly established in other disciplines, online questionnaires are well suited for the data collection, the statistical analyses are well known, and the graphical representations are easily understood and facilitate communication of its content. Attitudes per se are worthy constructs to be investigated, and the associated three-dimensional framework (using the cognitive, affective, and conative dimensions) provides a solid and coherent basis for further investigations in the videogame domain.

We have shown that videogames were in part negatively perceived by this sample, so were watching TV and surfing and communication on the Internet. In this regard, these kinds of leisure activities adhere more closely to a passive leisure interpretation, in the line of leisure science researches. We also found fundamental differences of attitudes between men and women and between videogame players and non-players.

This innovative approach for the game community should be complemented by other researches in order to consolidate its relevance and usefulness. In order to be more widely adopted, the foreseen challenges for this methodology are to elaborate a standardized corpus of adjectives and to test it across various projects (games, types of games, players, etc.) and being much language sensitive, across different cultures. The knowledge then gained could lead to a better appreciation of this ever-popular form of entertainment.

From the empirical results, a few key points are worthy to consider for the design of videogames. First, an effort should be undertaken in order to develop and market games as a constructive form of entertainment, a leisure activity that helps to develop oneself and one's quality of life. The potential benefits on the physical, emotional, cognitive, behavioral (physical), and social levels should be addressed by both design and marketing departments. Beside the useful ludic and entertainment value of videogames, they should strive at least in part to provide the pursuit of individuals' meaningful objectives, where the developed abilities in the games could be transposed in daily life and vice versa. This would have an incidence on how society as a whole perceives this kind of leisure.

References

- Ajzen I (1989) Attitude structure and behavior. In: Pratkanis AR, Breckler S, Greenwald AJ (eds) *Attitude Structure and Function*. Lawrence Erlbaum Associates, Hillsdale.
- Ajzen I, Madden TJ (1986) Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control. *Journal of Experimental Social Psychology* 22(5): 453–474.
- Appelman RL (2007) Experiential modes of gameplay. In: *Proceedings of DIGRA 2007, Tokyo*.
- Apter MJ (1991) A structural phenomenology of play. In: Kerr JH, Apter MG (eds) *Adult Play: A Reversal Theory Approach*. Swets & Zeitlinger, Amsterdam.
- Argyle M (1987) *The Psychology of Happiness*. Menthuen & Co Publishing, New York.
- Barnett MA et al. (1997) Late adolescents' experiences with and attitudes towards videogames. *Journal of Applied Social Psychology* 27(15): 1316–1334.
- Björk S, Holopainen J (2005) *Patterns in Game Design*. Charles River Media, Hingham, MA.
- Bloch H et al. (1991) *Grand Dictionnaire de la psychologie*. Larousse, Paris.
- Bonapace L (1999) The ergonomics of pleasure. In: Green WS, Jordan PW (eds) *Human Factors in Product Design*. Taylor and Francis, London.
- Cardoso S (2007) The development of the affective value in the entertaining interaction. In: *Proceedings of Kansei Engineering (Managing Emotion & Feeling) for Services and Products 2007*, Lund.
- Costello B (2007) A pleasure framework. *LEONARDO* 40(4): 370–371.
- Crandall R (1980) Motivations for leisure. *Journal of Leisure Research* 12(1): 45–54.
- Csikszentmihalyi M (1990) *Flow: The Psychology of Optimal Experience*. Harper and Row, New York.

- Csikszentmihalyi M (1997) *Finding Flow: The Psychology of Engagement with Everyday Life*. Basic Books, New York.
- D'Astous A et al. (2003) *Comportement du consommateur*. Chenelière/McGraw-Hill, Montreal.
- Entertainment Software Association (2008) Essential facts about the computer and video game industry. http://www.theesa.com/facts/pdfs/ESA_EF_2008.pdf. Accessed 7 December 2008.
- Ermi L, Mäyrä F (2005) Fundamental components of the gameplay experience: Analyzing immersion. DIGRA. <http://www.digra.org/dl/db/06276.41516.pdf>. Accessed 21 March 2007.
- Fortugno N (2008) The strange case of the casual gamer. In: Isbister K, Schaffer N (eds) *Game Usability: Advice from the Experts for Advancing the Player Experience*. Morgan Kaufmann Publishers, Burlington.
- Fullerton T (2008) *Game Design Workshop: A Playcentric Approach to Creating Innovative Games*, 2nd edn. Morgan Kaufmann Publishers, Burlington.
- Hunicke R, LeBlanc M, Zubek R (2004) MDA: A formal approach to game design and game research. Northwestern University. <http://www.cs.northwestern.edu/~hunicke/MDA.pdf>. Accessed 16 January 2007.
- Koester R (2004) *Theories of Fun for Game Design*. Paraglyph, Scottsdale, AZ.
- Kuniavsky M (2003) *Observing the User Experience: A Practitioner's Guide to User Research*. Morgan Kaufmann Publishers, San Francisco, CA.
- Lazzaro N (2004) Why we play games: Four keys to more emotion in player experiences. In: *Proceedings of GDC 2004*, San Jose. http://www.xeodesign.com/whyweplaygames/xeodesign_whyweplaygames.pdf. Accessed 28 December 2005.
- Lemay P (2007a) Developing a pattern language for flow experiences in video games. In: *Proceedings of DIGRA 2007*, Tokyo.
- Lemay P (2007b) Course notes. Jeux, expériences et interactions. Tuesday 11 September 2007. DESS en design de jeux. Université de Montréal.
- Lemay P (2008) Game and flow concepts for learning: some considerations. In: McFerrin K, et al. (eds) *Proceedings of Society for Information Technology & Teacher Education International Conference 2008*, pp. 510–515. Chesapeake, VA: AACE.
- Mandryk RL, Atkins MS, Inkpen KM (2006) A continuous and objective evaluation of emotional experience with interactive play environments. In: *Proceedings of SIGCHI 2006*, Montreal.
- Mondragon S, Company P, Vergara M (2005) Semantic differential applied to the evaluation of machine tool design. *International Journal of Industrial Ergonomics* 35(11): 1021–1029.
- Osgood CE, Suci G, Tannenbaum P (1957) *The Measurement of Meaning*. University of Illinois Press, Urbana, IL.
- Pagulayan RJ, Keeker K, Wixon D, Romero RL, Fuller T (2003) User-centered design in games. In: Jacko JA, Sears A (eds) *The Human-Computer Interaction Handbook: Fundamentals, Evolving Technologies and Emerging Applications*. Human Factors and Ergonomics Society, Hillsdale.
- Press M, Cooper R (2003) *The Design Experience – The Role of Design and Designers in the Twentieth Century*. Ashgate Publishers, Burlington.
- Ragheb MG, Beard GB (1982) Measuring leisure attitudes. *Journal of Leisure Research* 14(2): 155–167.
- Ragheb MG, Tate R (1993) A behavioural model of leisure participation, based on leisure attitudes, motivation and satisfaction. *Leisure Studies* 12(1): 61–70.
- Salen K, Zimmerman E (2004) *Rules of Play – Game Design Fundamentals*. MIT Press, Cambridge.
- Schmitt B (1999) *Experiential Marketing*. The Free Press, New York.
- Shedroff N (2001) *Experience Design*. New Riders Publishing, Indianapolis, IN.
- Sweetser P, Wyeth P (2005) *GameFlow: A Model for Evaluating Player Enjoyment in Games*. ACM Press, New York.