

# Flow Experience of MUD Players: Investigating Multi-User Dimension Gamers from the USA

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**Abstract.** Playing MUDs (Multi-User Dimensions or Multi-User Dungeons, or Multi-User Domain), text-only online gaming environments, may initiate flow experience. Online survey research was administered within the sample population of 288 MUD players from the United States of America, using the specially designed questionnaire with four categories of questions related to: flow experience, experience in playing MUDs, interaction patterns, and demographics. Replies of respondents ( $N = 3350$ ) fit a six factor model. All the correlations between the factors are significant ( $p < 0.05$ ). The set of dimensions describing flow experience while playing MUDs was selected. Since players experienced flow while MUDDing, it was proposed that flow is one of the sources of the long-time attractiveness for MUD players.

**Keywords:** play, online, flow, MUD, interaction, structural equation modeling.

## 1 Introduction

Every online community embodies both technological and social choices that impact those citizens or members of the community. MUDs (Multi-User Dimension) are one such online community comprised of text-only environments that allow multiple users, or gamers, access to a shared database of rooms, exits, and other objects. MUDs have also been referred to as Multi-User Dungeons or Multi-User Domains. MUDs are virtual environments, usually in the form of an adventure game; the latter is either original or is based on fantasy books or movies. Each gamer browses and manipulates this database from inside one of those rooms, while moving from room to room through the exits that connect them.

Although we might call a MUD an electronically-generated virtual reality, it does not have any two or three-dimensional computer graphics for its users to orient themselves as they move about their description-based spaces (Curtis, 1996); as see in today's MMORPGs (Massively Multiplayer Online Role Playing Game). In the typical MUD environment, gamers type their commands through a standard computer keyboard and receive back feedback in unformatted text on their display screen. Being quite crude in

comparison to today's sophisticated highly animated computer graphic systems, the MUD graphic user interface is quite reminiscent of computer games like Adventure and Zork (Raymond, 1991).

An important point to note is that MUDs are online role-play group games in which hundreds of players are simultaneously online. The players' goals include the development to the maximal level of characters of their choosing to represent them in all the situations taking place during the game. Other goals are connected with interaction patterns within the players' communities. Strong human ties and friendly relations are common within the communities of MUDders: competitive players use the advantage of intense communications (in the text-only mode) during playing sessions.

Since their origin a quarter of century ago, the communities of MUDders have investigated in a limited way. As a result, our research focuses on the flow experience of gamers while playing MUDs. Hence, this research is a continuation of previous flow experience studies that dealt with communities of Russian and French MUD players (Voiskounsky et al., 2005; 2006).

## **2 Background Research on MUD Gaming Behavior**

This review is limited to some of the major theoretical views and empirical findings on the behavior of MUD players, and not on video and/or computer gamers in general. The earliest issues regarding MUD players investigated disinhibition, i.e., the loss or reduction of an inhibition, as well as general friendly attitudes and openness (Sempsey, 1997). Some of these problems are still of high importance for gaming researchers. For example, the effects of disinhibition have been recently discussed within the broader context of Web related behavior (Joinson, 2003). An empirical typology of MUDders developed by Bartle (1996) is based on two crossing axes, namely "acting with" (i.e., interacting) vs. "acting on", and "emphasis on players" vs. "emphasis on the environment". Bartle states that it is important for the vitality of the MUD environment that it have a balance of the four types of players in his typology.

Utz (2000) found that 76.6 % of respondents report they have had virtual relations with fellow MUDders. Using cluster analysis with three attitudinal scales (role-play, game, and skepticism), Utz (2000) was able to differentiate several types of players from diverse data related to: 1) intensity of MUD use, 2) online friendship, 3) sociability, 4) attitudes toward MUDding, 5) use of paralinguistic while exchanging messages, and 6) degrees of skepticism toward computer-mediated communication.

The work of Turkle (1997) has also brought to the fore findings that establish the phenomena of virtual relations specifically among MUD players in the areas of culture and metaphor, and interpersonal and personal relationships. These relationships include friendship and romance, intimacy and deception. She has described how online gamers find ways to construct their identities online as personae, with an extensive development of their self-concepts. She has also paid special interest to gender issues and gender swapping, i.e., the MUDders experience of gender role playing other than in real life. Turkle holds that in virtual space the boundaries between one's real life and virtual life have been significantly eroded, e.g., she depicts MUDders who simultaneously play several roles, i.e., of a courageous young man, a timid young man, and an attractive girl.

In addition to role playing, Salvay (2002) also compared MUDs with virtual environments for psychodrama. Both promote personal and social growth, largely due to the effect that is gained by changes in players' positions, roles, characters, ways of behavior and related changes in feelings, affects and emotions. As part of social learning theory, Lee (2000) suggested that self-efficacy, i.e., self-realization of one's capabilities to deal with and to oppose real-life problems, is a major psychological dimension inherent of MUD-related behavioral analysis. Lee argues that according to the effects of the MUD experience, certain parameters of self-efficacy can be measured.

### **3 Flow Experience in the MUD Environment**

Although MUD communities are not a new form of online gaming, there is still much that can be learned from the way their members interact and communicate. Additional research is needed to investigate how these communities function as precursors to today's more advanced MUDs and MMORGs (massively multiplayer online role-playing game) that consist of sophisticated three-dimensional (3D) graphics.

Flow experience, initiated by Csikszentmihalyi (1990; 2000), has been heavily used by researchers such as McKenna and Lee (1995) in investigating MUDs. As Csikszentmihalyi notes, processes of pursuing a desired or cherished result are sometimes more pleasing and self-rewarding than the result itself, i.e., when and if it is gained. Csikszentmihalyi described this "positive experience" as one's "flowing from one moment to the next, in which he is in control of his actions, and in which there is a little distinction between self and environment, between stimulus and response, between past, present, and future" (Csikszentmihalyi, 2000, p. 34).

The researchers also found that flow might accompany almost every type of human behavior. Major characteristics of flow are: temporary loss of self-consciousness and sense of time; high concentration on the task and high level of control over it; objectives becoming clear and distinct; actions merging with awareness, experiences bringing full satisfaction and worth doing for their own sake (or motivated intrinsically); and immediate feedback. What is especially important is that flow rests upon the precise matching between the available skills and the task challenges (Csikszentmihalyi, 1990).

The dimensions listed above make it tempting to find out whether the overwhelming devotion of MUDders to the process of playing might be partly or fully explained in terms of their positive psychology. Indeed, gamers usually feel satisfaction while MUDding. Moreover, during their MUDding experience they often keep control over the gaming tasks while the complexity of those tasks might be dynamically changing. In addition, gaming task objectives might be quantified, feedback is close to immediate, the sense of time is most often altered, concentration and awareness are reportedly very high, and motivation is certainly intrinsic.

McKenna and Lee (1995) have shown that MUDding fits the flow model and that social interaction while playing MUDs is inseparable from the flow experience. Researchers have also shown that flow experience and interaction patterns collaborate in forming long-term attachments to certain online games (Choi & Kim, 2004). The highest level of involvement in MUDding was noted to take place at the moment when the gaming environment is neither too simple nor complex (Reinberg et al., 2002). Decisions

made in these environments tend to be optimal due to a balance between the players' skills and task challenges. According to Csikszentmihalyi (1990), such a balance is both effective and welcomed as a means of experiencing flow.

The construct of flow experience is being increasingly investigated within ICT research, but to the best of our knowledge, there are only a few studies of flow patterns within communities of MUD players. McKenna and Lee (1995) supported the view that MUDders experience flow, and that flow is positively related to the players' communicative patterns. Supposedly, these findings might provide a valid explanation of the long (lasting over a quarter of century) popularity of MUDs among gamers. In a recent paper it is shown that flow is one of several constructs (along with personal and social communication patterns, and loyalty) explaining behavior of those who play the same online games over a long period of time(Choi, Kim, 2004). Although the process of text-only MUDding has not changed that much over the last two decades, with thousands of devoted MUD players, an updated investigation is still warranted to compare with past studies done by McKenna and Lee (1995) ten years ago and others (Voiskounsky, Mitina, & Avetisova, 2006 and 2005).

The goal of the current research was first to determine the factors influencing behavior patterns of MUD players from the United States of America (USA), flow experience being one of several factors observed. Based on past findings related to MUD flow experiences (outlined above), we selected a set of dimensions that we refer to as a "flow dialect," which describes a flow pattern typical of MUD player.

## **5 Methodology**

There are currently thousands of MUDs available online, with new MUDs being added and old ones closing annually. Yahoo Groups alone has 825 different MUD groups that range in membership from five to over 2000 members. From our computation, we estimated that there is a total population of MUD users that exceeds 100,000 players worldwide. We define MUD players or gamers as individuals who login at their favorite MUD site, communicate by means of online chat with other members of that MUD environment, explore the areas, solve puzzles or other challenging riddles, and/or create new items, as well as reshape their own online characters. Although English is the official language in the majority of MUDs among MUDders from diverse geographic location, more and more MUDs are developing in other European and Asian countries.

### **5.1 Participants**

To recruit MUD players for our study we placed an invitation for volunteers on five Yahoo MUD User Groups, having a total membership of 3662 members. Because Yahoo lists the groups according to size, with the largest first, we selected the five largest. Next, we sent invitations for volunteers to members located at twelve MUD sites, which we

estimated to have approximately 10,000 members.<sup>1</sup> We selected these twelve as they appeared through a Google search for MUD sites. In sum, approximately 13,662 MUD players received our invitation. From this population, 650 took the survey, with 520 completing the survey, i.e., 4% of the total approximated recipients of the invitation. Of those that completed the survey, 375 were players from the USA, which was the focus of our data analysis. Of the 375 from the USA 87 responses were found to be corrupted, leaving us with 287 good responses. Interesting to note is that when comparing male to female respondents to the invitation, 15% of USA respondents were female as opposed to outside the USA, which was 21%. We opened our survey on January 30, 2007 and closed it on February 7, 2007, because we reached our target goal of 350 MUD participants from the USA. The age of respondents ranged from 14 to 50+, with the greatest group being 21-25 at 52%, and the remaining groups at: 19% (15-20), 20% (31-40), and 9% (41-50+). The highest reported amount of regular time spent per week was 25 hours among 17% of the participants, with the least reported number of hours being under three hours at 21% of the participants.

## 5.2 Questionnaire and Data Analysis

The main method for collecting data on flow experience is putting questions to the members of selected samples. Asking open-ended questions means interviewing respondents, which includes retrospective reports about flow-like experiences within any type of a respondent's behavior. When multiple-choice questionnaires are used, there are two main approaches. The first is using questions that refer to possible dimensions of flow-like experiences, reported retrospectively. The other is in the form of a questionnaire that is administered at random moments in an attempt catch respondents in the act of experiencing flow, i.e., when connected with the distant game server. At this time they are able to respond according to their instantaneous experience. This is the Experience Sampling Method, used by Csikszentmihalyi and his colleagues.

We used neither of these methods because they usually allow only a limited sample of users to be contacted. We preferred to increase the number of possible respondents (sample size) to be more representative of the population. Moreover, one of our research goals was to investigate a range of factors influencing the behavior of MUD players. Thus, the questionnaire included questions on flow, as well as issues which stand outside the flow experience. The online questionnaire was composed of 39 multiple-choice questions based on information gained from formative research. Specifically, we designed our questionnaire by reviewing the work of other MUD studies on flow experience (McKenna & Lee, 1995; Novak et al., 1997; Voiskounsky et al, 2005; 2006).

Thirty-one questions were asked in order to gain greater understanding of the dynamics of player perception involved in MUDding, with the remaining questions being demographic. Specifically, our questionnaire was composed of four categories of questions: flow experience (12 Likert questions), experience in playing MUDs (12 questions), interaction patterns within the game (9 Likert questions), and demographics (3

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<sup>1</sup> Yahoo User Groups: DRauctioneer, DRPlats, codersclub, retromudclub, DRList; and MUD sites: hsoi.com, topmudsites.com, hexonyx.com, topsmaugmuds.com, game.org, mudmagic.com, mudconnect.com, saugus.net, coremud.org, dartmud.com, armageddon.org, mudconnector.com

questions).<sup>2</sup> The questionnaire was delivered using the online survey service Zoomerang.

Regarding our data analysis, our study we used the traditional method of handling survey data with factor analysis. Thus, our research was entirely quantitative. Processing of research results involved four stages: 1) Analysis of demography and parameters referring to online gaming experience in the samples of MUD players, 2) Statistical analysis of the questionnaires' items (calculation of the means for each item), 3) Explorative factor analysis, targeted at stemming all the parameters into factors, and 4) Scale reliability analysis for each determined factor.

## 6 Findings

The total number of the USA (self-selected) respondents from the USA was 375; 88 of them provided incorrect data by selecting several reply variants; thus, the replies of 287 USA respondents were analyzed. The average MUD player respondent was male (78.75%), age 26, a college student (62.37%), with eight years of experience in playing MUDs, and playing about seven hours per week.

All the questionnaire items were analyzed referring to the parameters of flow at the second stage of the analysis. The calculated means are presented in Table 1. Based on these means, we are able to characterize briefly the sample of the USA respondents. The sample consists of players who are interested in MUDs, feel inspiration and enthusiasm while playing, investigate unknown areas of a game, are active and do not feel constant pressure. They are fond of interaction with other players and frequently establish close relations. They often lose sense of time, and find themselves engaged in gaming sessions longer than they planned. They prefer to achieve success while playing, most often believe that MUD is nothing more than a game, although some respondents report that they mix real-life and within-game situations. Their attention is focused on a game; they control messages coming from other players. They do their best to supervise the situations in which their characters are acting and often reflect on the play after it is finished.

#	Question	Mean
1	I often feel anxious while MUDding.	2.26
2	While MUDding I often feel (active/passive)	2.27
3	I frequently lose track of time while MUDding.	3.79
4	When interacting with other MUD players, I lose track of time.	3.74
5	I always control the situation while MUDding.	2.86
6	While MUDding I am always in high spirits.	2.97
7	I take MUD as a game, i.e., I stay in reality while playing	3.89
8	I am extremely interested in playing MUDs.	4.00
9	I sometimes spend more time in the MUD than planned.	4.10
10	The possibility of interacting with other players attracts me to MUDding.	4.01
11	Nothing can distract me from MUDding.	1.82
12	I am interested in exploring new areas of the MUD, that I have not experienced before.	4.14

<sup>2</sup> Flow experience, included question numbers: 1-7, 11, 13-14, 17, 28; experience in playing MUDs, included question numbers: 8-9, 12, 15, 18, 27, 29-31, 37-39; interaction patterns within the game, included question numbers: 10, 19-26; demographics, included question numbers: 33-35.

13	When in the MUD, my attention is focused on the game.	3.89
14	I feel constantly stressed while MUDDing.	1.66
15	My aim is to be successful in MUDDing.	3.33
16	I experience negative emotions connected with situations within a MUD.	2.70
17	I am so involved in MUDDing that I take it as reality.	1.55
18	My aim in MUDDing is to develop the chosen character to its possible extreme.	3.54
19	I often replay the same episode of the MUD (with the same character) several times just for pleasure.	2.76
20	I often replay the same episode of the MUD (with the same character) several times for reaching the result.	2.97
21	When grouping with other players in MUD I often take a position of a leader.	3.40
22	While interacting in MUD I often make close friends.	3.74
23	I play MUDs because it's important for me to be in a group of people sharing the same interest.	3.01
24	While interacting with other players in MUD, I feel confident.	3.92
25	I pay particular attention to chatting and messages from other MUD players.	3.78
26	Talking to other players adds interest to MUDDing.	4.36
27	After MUDDing I often think over the game.	3.39
28	It's difficult for me to stay focused on the game while MUDDing.	1.95
29	While playing MUD I prefer to use familiar behaviors.	3.59
30	I choose MUD games in which I know how to succeed.	2.98
31	I don't replay the same episode several times.	2.97

Table 1. Survey question with means.

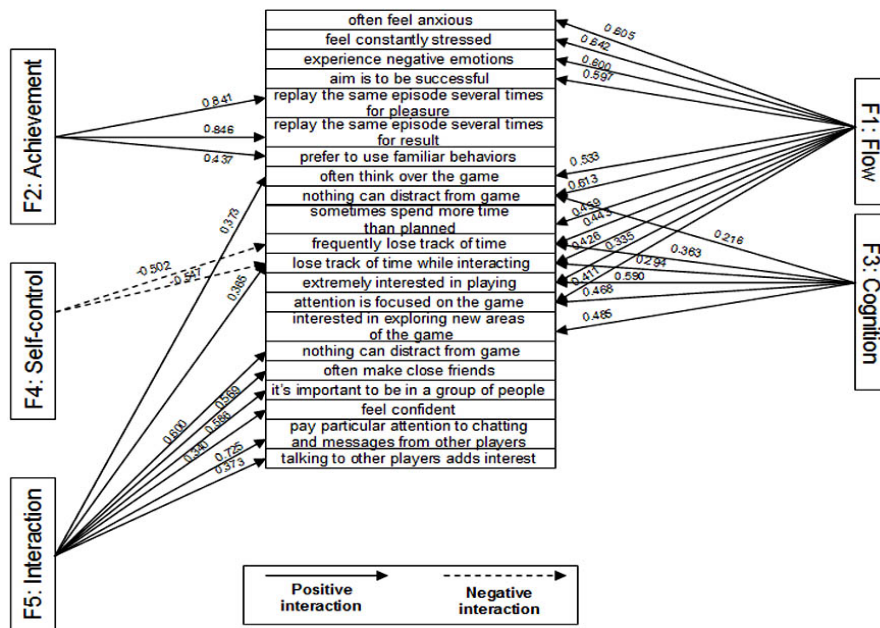


Figure 1. Factor Analysis Schematic.

On the third stage of the analysis while using explorative factor analysis (with the Direct Oblimin and the Cronbach's alpha), we developed a factor model for the USA

sample presented, which shows the factor loadings for each question. (See Figure 1.) This figure also shows a five-factor model.

- Factor 1 (F1) can be called **Flow**. This factor includes the following parameters: spending more time in game than planned due to losing track of time while gaming and within-play interacting, feeling that nothing can distract from the game, taking MUD as reality, thinking over the game, feeling deep interest in the processes of playing and focused attention. Also, quite often, this factor includes heavily loaded parameters referring to negative affects from MUDding, such as anxiety, constant stress, and an experience of negative emotions. These affects may be referred to as the high responsibility the respondents feel toward within-game situations: the greater the experience, the higher the responsibility. Indeed, the question sounds like that: “negative emotions connected with situations within a MUD.” That means, negative feelings and anxiety are situational.
- F2 might be called **Achievement**. The parameters included in this factor are: the replay of the same episode for pleasure and for reaching the result by choosing familiar behaviors.
- F3 might be called **Cognition**; it includes parameters of being extremely interested in playing and interested while exploring new areas of the MUD, being focused on the game, losing track of time while exploring and while interacting with other players so that nothing can distract from the gaming behavior.
- F4 might be called **Self Control**; it includes parameters such as not losing track of time while playing and while interacting with other players in MUD.
- F5 might be called **Interaction** – it includes parameters of interest toward interaction with other players, frequent establishment of close connections and making friends, feeling confident, being in constant control over messages coming from fellow players, the desire to find oneself united in a group of people sharing the same interests, having lost the sense of time while communicating within MUDs and keeping interest while interacting and thinking over the game when the game session is over.

## 7 Discussion and Conclusion

As a type of an online game, it would be expected that text-only MUDs would eventually be replaced by much more technologically up-to-date MMORPGs, as mentioned above. This is because their worlds are enriched with three-dimensional graphics that provide a far more comprehensive cognitive stimulation. However, the current study shows this is not the case. During only a few days as many as 520 survey responses were received (although only 287 were analyzed in the paper); this indicates that MUDs have remained popular in the USA.

Moreover, our findings showed that the sample of respondents were non-traditional, i.e., the overwhelming majority reported playing MUDs five years or more (with a median of eight years), and for relatively short periods of time (with a median of one hour per day, with 70% playing less than two hours per day). Thus, we suggest that the respondents in this sample are experienced gamers who have continued to play MUDs for many years as a challenging form of sport or hobby. This, we hold, corresponds to the findings of McKenna and Lee (1995), who found that experienced

MUD players were not hard players, i.e., playing for long periods of time each day.

In summary, we found that factors, F2 (Achievement), F3 (Cognition) and F5 (Interaction) were common for almost any reasonable sample of MUD players. For example, these factors were also characterized by Russian and French MUDders, as observed in earlier studies by the second author and his colleagues. However, it was not the same with the rest of the factors. The Self Control (F4) factor may be thought of as being peculiar to this unusual sample of high-level players who keep constant control of the time intervals allocated to MUDding. Flow as factor F1, was expected (based on the Russian sample of MUDders), however, F1 also included parameters that referred to both the (positive) flow experience and to negative emotions. The latter is, as we have already suggested, situational. Since flow is a major factor, the respondents are believed to go on MUDding for years in order to keep and to renew the feeling of their flow experience. We suggest that this feeling is habitual and desired. At the same time, it does not appear to save respondents from situational stress or negative emotions that might emerge while MUD playing. Perhaps, one could surmise that they feel guilty allocating time to a well-known game. Whatever the exact nature of the negative emotions, when combined with the parameters of flow, they represent a very special “dialect” of the flow experience. It is also possible that this “dialect” does not transpire that often and might be peculiar to this unusual sample of experienced players.

Finally, the instrument used in the study proved to be valid, and the chosen procedure has also proven capable of providing meaningful results. This study supports the assertion that flow experience, as well as achievements, cognition and interaction, are among the strongest reasons for the long-term playing of MUDs by thousands of players throughout the USA.

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