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FLOW EXPERIENCE AND INTERACTION IN ONLINE GAMING

Comparative study of Russian and Chinese MUD players

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Abstract. Flow experience (as introduced by M.Csikszentmihalyi) and patterns of interactive behavior were investigated in an online surveys administered within samples of Russian (N = 347) and Chinese (N = 133) online role-playing gamers. Three main hypotheses were stated: (1) both Russian and Chinese MUD players experience flow; (2) flow is positively correlated with interaction patterns for both Russian and Chinese samples of MUD players; (3) patterns of flow experience and interaction patterns characteristic for the Russian and the Chinese samples of MUD players differ. All the hypotheses proved to be true. The following methods of data analysis were used: comparative demography, path analysis, explorative and confirmatory factor analyses. The paper presents the full results of the study and justification of the hypotheses.

Résumé. L'expérience optimale (le 'flow', tel que l'introduit M.Csikszentmihalyi) et les schémas interactifs de comportement ont fait l'objet d'une investigation dans des études en ligne auprès d'un public engagé dans des jeux de rôle : Russe (N=347) et Chinois (N = 133). On avance les hypothèses principales : (1) les joueurs russes comme les chinois vivent une expérience optimale (2) le 'flow' est corrélé positivement avec les schémas d'interaction pour les joueurs russes et chinois (3) il y a des différences entre les Russes et les Chinois pour les schémas de l'expérience optimale et les caractéristiques des interactions. Toutes les hypothèses se sont avérées exactes. Nous avons utilisé les méthodes d'analyse suivantes : comparaison démographique, analyse des choix opérés, analyse des facteurs pour l'exploration et la confirmation. Cet article présente les résultats de ces travaux et justifie les hypothèses.

1. Introduction

Steady long-living communities with strong human ties and (often) friendly relations characterize many communities of online role-play gamers, particularly MUD (Multi-User Dungeon, or Multi-User Dimension) players. Since the time of the origin of MUDs, over a quarter of century ago, online communities of gamers have not once been investigated. Most of the studies have been done within English-speaking communities

of online gamers; some research has also been done within Eastern Asian communities as well. The current study deals with the communities of Russian and Chinese players, and these groups that have not been comparatively investigated before.

This study is a part of a multi-cultural project in which Chinese, French, English and Russian online gamers have been studied comparatively. The methodology has been first worked out in Russia and then spread to be administered within diverse populations speaking languages other than Russian. The results of the studies done in Russia have been published elsewhere (Voiskounsky e.a., 2004; 2005); to the best of the authors' knowledge, the study of online MUD gamers have never before been done in the continental China. Though cross-cultural comparison of the games which are popular in the East (resp. China) and in the West cannot be done in a straightforward manner, partly due to diverse attitudes, including nationalism (Qiu, 2006), active regulation (Qiu, Liuning, 2005; Zhang, 2006) and censorship (Tsui, 2005), games related to MUDs are known to be played in the continental China, thus giving scholars a chance to do a comparative investigation. This part of the study has been carried out by Huang Wenjie as a part of his diploma work at the Psychology Department, Moscow University. The following is the first publication of the comparative results.

2. MUD: A typical online game

One of the components of the variety of computer-human interactions are online games. Players allocate long time periods to playing online, enjoying a peculiar mixture of competitive gaming and computer-mediated encounters. Apart from being a popular hobby and a mode of recreation, playing online games might be a way of learning and professional training, a business-like family support, an escape from personal problems, a competitive occupation, or a therapy source. Gaming is a complex activity that is evidently dependent on advances in technologies and on business decisions, and at the same time it has important educational, psychological and medical aspects.

An example is a class of online role-play group games known as MUDs. Basically, MUDs are text-only virtual environments, usually in a form of an adventure game; the plot is most often based on fantasy books or movies. Non-adventurous social MUDs are less numerous, and will not be analyzed. Full-graphic (i.e. not text-only) MUDs, known as MMORPGs are now being intensely studied; this study does not relate to this class of online games.

Taken a popular MUD game, there are usually hundreds or thousands of simultaneous players. The player's goal is to develop the chosen character, representing the gamer within the game environments, to the maximal level; also, players' goals refer to interactions with other players. Intense interactions (in the text-only mode) are common within the communities of MUDders during playing sessions.

3. The Areas of MUD Research

There are several directions of gamers' behavior which are continuously investigated since the time of the MUD's appearance till now: namely, such phenomena as

disinhibition, friendly attitudes, and openness in expressing emotions (Sempsey, 1997; Joinson, 2003). These processes have evidently rather little correspondence to the real-life group dynamics, and help to explain the MUDders' devotion to the game, their sometimes addictive attitudes toward the play sessions.

Analyzing the problems of identity and consciousness inherent in the MUD-playing environments, Bromberg (1996) puts, among others, a question of whether MUD experiences have anything in common with altered states of consciousness. One of her respondents marks, for example: "…I become detached from my physical self. …I lose track of time, and don't feel hungry or tired" (Bromberg, 1996, pp. 149-150). In discussions of the Internet addiction disorder some authors state that online gaming, including playing MUDs, represents cases of addiction (Chou and Ting, 2001), while others refute this supposition (Voiskounsky, 2007).

There is a serial of investigations of the development of virtual friendship in MUD (Utz, 2000). Turkle (1997) has done an influential qualitative study of cultural, metaphorical, interpersonal, and personal aspects of MUDding, including friendship, intimacy, deception construction virtual identities. One of her conclusions is that the boundaries between one's real life and his/her virtual lives erode in online environments. Lee (2000) stated that self-realization is another psychological dimension inherent of MUD-related behavior.

4. Typology of MUDders

One of the facts that attracts researches to MUD investigation if the fact that this type of games was established over 25 years ago but is still popular in online societies. There are different types of MUD players (Bartle, 1996). His point of view is based on two crossing axes, namely "acting with" (i.e., interacting) vs. "acting on", and "emphasis on players" vs. "emphasis on the environment". Thus, the typology includes "achievers" (acting on / emphasis on environment), "killers" (acting on/emphasis on players), "socialisers" (acting with/emphasis on players), and "explorers" (acting with/emphasis on environment). Four types of MUD players, explains Bartle (1996), are equally important to keep a sort of a balance of interests within any community of simultaneous players.

Utz (2000) developed a typology which also consists of four types: "Role-players" – interested in playing roles; "Gamers" – interested in adventurous games; "Virtuals" – interested either in online meetings with virtual partners and in chatting with them, or in development of virtual environments; "Sceptics" – disinterested in most of the features of MUDs, never playing hard and never identifying themselves with any group of MUDders. The typologies introduced by Bartle (1996) and Utz (2000) match well enough.

5. Flow Experience while Playing MUDs

The flow platform in the studies of MUDs was introduced by McKenna and Lee (1995). Their research is strongly based on the theory of flow experience, initiated by

Csikszentmihalyi (2000). This theory rests on an analysis of subjective positive experience: processes of pursuing a likely or a cherished result seem sometimes to be more pleasing and self-rewarding that the result itself. The researcher himself describes this experience as a "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).

Csikszentmihalyi and his followers have found that flow accompanies almost every type of human behavior. The major characteristics of flow are the following: temporary loss of self-consciousness and of sense of time, high concentration on the task and high level of control over it, objectives become clear and distinct, actions merge awareness, immediate feedback, experience brings full satisfaction and seems worth doing for its own sake (usually, that means intrinsic motivation). What is especially important, flow means a precise matching between the available skills and the task challenges.

This description shows that it is tempting to check whether the immersive interest of MUDders to the process of playing might be explained in terms of flow. Indeed, McKenna and Lee (1995) have shown that MUDding fits the methodology of flow, and that social interaction while playing MUDs is inseparable from the flow experience. Not too many further empirical data on flow in the online gaming experience are available. For example, it has been shown that, in accordance with Csikszentmihalyi's important general statement, the highest level of involvement into MUDding is experienced when the level of complexity of the game is medium – not too simple and not too complex (Reinberg e.a., 2002). Analogously, it was shown (Cho e.a., 2003) that the level of cognitive conflict is an important source of the interest the human beings pay to playing computer games (not necessarily online games) – and it is very likely that it is correlated with the level of task challenges, too.

Influential results have been gained on flow experience inherent of human-computer interaction and computer-mediated communication, web related activities, computer hacking, learning to use professional resources on the Web, and of course playing video and online games (Voiskounsky, 2008, in press). All these environments seem to be very promising for research on flow experience: simple observation, along with empirical data show that human beings in the IT systems might feel inspiration, very often they keep control over the tasks, the complexity of the tasks might be dynamically changed, task objectives might be quantified, the feedback is close to immediate, the sense of time periods is altered, concentration and awareness are high, work motivation is often intrinsic. The broad IT-related problem area seems to be promising for doing research within the flow paradigm.

6. MUD Investigation

6.1. METHODOLOGY AND PROCEDURE

The *purpose* of the present research was to carry out a cross-cultural comparison of the Russian and the Chinese samples of MUD players' activity. The main *object* was to

compare the two samples, using two psychological measures: namely, flow experience and patterns of interaction while MUDing. The analysis of results was intended to provide valuable cross-cultural data pertaining to a comparison of the Russian and the Chinese samples of MUD players.

The following *hypotheses* were formulated. Hypothesis 1: Russian MUD players experience flow during game sessions. Hypothesis 2: In the Russian sample of MUD players' parameters of flow experience and interactive patterns correlate. Hypothesis 3: Chinese players experience flow while MUDing. Hypothesis 4: In the Chinese sample of MUD players' parameters of flow experience and interactive patterns correlate. Hypothesis 5: The Russian and the Chinese samples of MUD gamers differ in respective patterns of flow experience and interaction.

Methodology. The same questionnaire was used in the survey research administered within the Russian and the Chinese samples. Questions constituted three obviously different blocks: a block on demography and gamers' experience in playing MUDs (eight questions), a block on flow experience (32 Likert-type questions for Russian sample and 31 Likert-type questions for Chinese) and a block on interaction patterns within the game sessions and after the game (eight Likert-type questions). All Likert-type questions were five-scaled; questions on demography and experience in playing MUDs contained various numbers of scales. The difference between he numbers of question in the block of question according flow deals with research on Russian players that showed that one question could be removed from the questionnaire. The question 5 was removed from Chinese questionnaire, because its meaning is totally opposite the question 30 (see Table 1). Thus, the total number of questions in Russian questionnaire was 40, in Chinese – 39.

The Russian version of the questionnaire has passed a pre-study stage of approbation and adaptation within a sample of 54 online gamers (Voiskounsky e.a., 2004; Voiskounsky e.a., 2005). The Chinese version of the questionnaire was translated from Russian and adapted to the Chinese audience, first by questioning native speakers of Chinese, not necessarily online gamers, and second by doing backtranslations and correcting the Chinese version.

The *procedure* was that of an online survey. The questionnaires were placed on MUD-related sites: the Russian .ru zone, the Chinese .cn zone. Invitations to fill out the questionnaire were systematically posted on many other websites and homepages visited by MUD gamers. The survey of the Russian players was administered in Spring, 2003 and lasted about two months, of the Chinese players – in Autumn, 2006 and lasted about five months.

*Methods of data handling and analysis***.** Processing of research results passed seven stages: (1) analysis of demography and parameters referring to online gaming experience in the samples of the Russian and the Chinese MUD players; (2) statistical analysis of the questionnaires' items: calculation of the means for an each item in the two respective questionnaires; (3) explorative factor analysis, targeted at stemming all the parameters into factors; (4) confirmatory factor analysis, aimed to find the intercorrelation between the factors; (5) qualitative analysis of the factor models allocated to the Russian and the Chinese samples of MUD players.

6.2. RESULTS AND DISCUSSION

The total number of the Russian (self-selected) respondents was 352; five of them provided incomplete data; thus, the replies of 347 Russian respondents were analyzed. Totally, 136 Chinese respondents took part in the survey. Three respondents provided incomplete data and were excluded from the analysis. Thus, the replies of 133 Chinese respondents were analyzed.

Characteristics of the two samples - demography and experience in playing MUDs – were analyzed at the *first stage*. An average Russian MUD player was male (89.6%) of 21, living mostly in Moscow and/or in European regions of Russia (53.3 %), a college student (47.8 %), with a 3-year experience in playing MUDs, playing about 16 hours per a week. While an average Chinese MUD player was also male (90.2 %) of 26, living mostly in the central China (39.8 %), a college student (64.7 %), with a 5-year experience in playing MUDs, playing about 16.5 hours per a week.

All the questions were analyzed referring to the parameters of flow and interactive patterns 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 samples of Russian and Chinese respondents. The Russian 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.

Table 1. Means

#	*Questions*	
	Means on each point	
	Russian players	*Chinese players*
1	Feel pleasure while playing MUD	
	4.01	2.79
2	Constant control over messages coming from fellow players	
	3.79	3.96
3	Replay of the same situation with the same presenting character to gain the best result	
	3.70	3.95
4	Passivity during the game	
	1.97	2.14
5	Orientation towards not being the leader when forming teams with other players	
	2.87	No such question in Chinese questionnaire

6	Loss of the sense of time	
	3.41	3.68
7	Infrequent attempts to play the same situation several times	
	2.25	2.52
8	Interest expressed toward communication with other players	
	4.07	4.39
9	Experience negative emotions while MUDding	
	2.96 (=3)*	3.17
10	Loss of sense of time while communicating	
	3.34	3.21
11	Perception of full reality of the situations happening in the game	
	2.53	2.17
12	Constant strict control over game situations	
	3.54	3.10 (=3)*
13	Interaction adds interest to the game	
	4.44	3.52
14	Inspiration and enthusiasm toward the play itself	
	3.69	4.06
15	Feel difficulties when focus on the game	
	2.03	2.02
16	Reflections about the situations within the game sessions after these sessions have already ended	
	3.91	3.63
17	Frequent establishment of close acquaintances	
	3.47	3.79
18	Perception of MUD as a game	
	3.32	3.76
19	Orientation on results	
	3.14	3.09 (=3)*
20	Players find interest while playing	
	4.31	4.17
21	Overuse of time allocated to the playing sessions	
	3.95	4.18
22	Feel confidence while interacting with other players	
	3.48	3.73
23	Indifference to all the out-of-play problems	
	2.91 (=3)*	2.17
24	Preference of investigating the areas of MUD which were unknown earlier	
	4.45	4.08
25	Replay of the same episode with the same presenting character for pleasure	
	3.19	3.24

26	Choice of familiar MUD games in which know how to gain the success	
	3.03 (=3)*	3.05 (=3)*
27	Specific focusing of attention on the game	
	3.01 (=3)*	3.77
28	Desire to feel oneself united in groups	
	2.64	3.68
29	Feeling of pressure and mobilisation	
	2.32	2.52
30	Orientation towards being the leader when forming teams with other players	
	2.82	2.59
31	The use of previously known ways and routes of playing	
	3.77	4.25
32	Orientation on success in MUD	
	3.51	3.38

*Difference is non-significant ($\alpha > 0.05$).

The sample of Chinese players could be briefly characterized in the following way. The respondents feel interest while playing and interaction with other players, they often take longer sessions while playing than planned, are interested to investigate unknown areas of a game, but also prefer to use previously known ways of behavior in a game, and control messages coming from other players. Their attention is focused mostly on a game, they constantly supervise game environments, are active, often experience inspiration and enthusiasm. They are interested in interactions during game sessions, often acquire close acquaintances (i.e., frankly and openly tell about themselves), but feel confident while communicating and practice group forms of behavior. They replay the same episodes in order to reach better result. The Chinese players often reflect their gaming behavior after a game is finished; they consider MUD to be only a game, rarely mix it to reality.

On the *third stage* of the analysis while using explorative factor analysis (with the Cronbach's alpha), we got factor models for the Russian and the Chinese samples.

We received six-factor model for the Russian sample. Factor 1, or F1, is called Flow. It includes the following parameters: inspiration and enthusiasm toward the play itself, specific absorption of attention on the game, loss of the sense of time, perception of full reality of the game situations and environments, feeling of pressure and mobilization, indifference to all out-of-play problems, overuse of time allocated to the playing sessions. With F1 we prove the Hypothesis 1, i.e. that the Russian MUD players experience flow during game.

F2 might be called Achievement. The parameters included in this factor are: orientation on successful results, replay of the same episode, and frequently with the same presenting character, choice of familiar MUD games.

F3 might be called Activity/Passivity, it includes parameters of constant strict control over game situations, orientation toward being the leader when forming teams with other players, or the opposite parameters in the case of passivity.

F4 might be called Interaction – it includes parameters of interest toward interaction with other players, frequent establishment of close acquaintances, constant control over messages coming form fellow players, desire to feel oneself united in groups, and loss of sense of time while communicating within the MUD playing.

F5 might be called Thoughtfulness/Spontaneity - it is connected with an orientation toward achievement of success; this factor includes the use of previously known ways and routes of playing, reflections about the situations within the game sessions after these sessions end, frequent – or the opposite, i.e. infrequent - attempts to play the same playing situation several times, constant interest toward messages from the other players.

F6 might be called Cognition, and it assumes that players find interest and feel pleasure while playing MUD; they prefer to investigate the areas of MUD, which were unknown to them earlier.

A four-factor model was received, characterizing the Chinese sample. Factor F1 shows that players experience Flow while gaming. This factor includes the following parameters: players often loose the track of time while playing and while interacting with other players, they think about the game when it is finished, it is very interesting for them to play MUD, out-of-game situations do not disturb them from the game, the attention is focused on a game and they always choose familiar ways of behavior. Chinese players often take MUD as a reality.

F2 might be called Achievement. The parameters included in this factor are: orientation on successful results and pleasure while gaming, but players also report they experience negative emotions and pressure in MUD, feel active while playing. The Chinese players like to investigate the known routes while gaming. They prefer to feel themselves as being in a group of people, but do not establish close relationships with other players.

F3 might be called Spending time, this factor includes the following parameters: players do not strive to reach a positive result, sometimes they replay the same episode several times, the game is not just a game, it is hard for players to stay focused on a game. Players often tend to tell personal information about themselves to other players.

F4 - orientation on Interaction – means that the Chinese players are very interested in interaction with other players, interactions are of special interest to them, they like to interact while playing MUD, often acquire close acquaintances, constantly control messages from other players and always tell truth about themselves, aspire to be united in groups and try to become leaders in the groups of players. Player's behavior in a game is active, they do not report of experiencing negative emotions. Chinese MUDders constantly control the game situation.

Factor models received on Russian and Chinese players proves the Hypothesis 1 (Russian MUD players experience flow during game sessions) and Hypothesis 3 (Chinese player experience flow while MUDding).

At the *fourth stage* we used confirmatory factor analysis to check intercorrelations (Pearson) between the factors.

Taken the Russian players' factor model, the Flow experience (F1) is strongly correlated with the factor Cognition. Besides, such factors as Achievement, Interaction, Activity/Passivity, Thoughtfulness/ Spontaneity are distinctly recognized. We can also conclude that F1 (Flow) is correlated (.357) with F4 (Interaction). This correlation

proves the Hypothesis 2 that among the sample of the Russian MUDers flow experience is closely connected during a game to the interactive patterns.

From the Chinese players' factor model the factor F1 - Flow - correlates with the factor F2 – Achievement; factor Spending time is strongly correlated with Achievement, and factor Spending time is correlated with the factor Interaction. F1 (Flow) also correlates with the factor F4 – Interaction (.656). The given correlation assumes that flow experience is connected with interaction patterns while MUDding, i.e. this result confirms the Hypothesis 4 that the Chinese MUDers experience flow while interacting during a game.

Qualitative analysis of the factor models is the *fifth stage* of analysis. During the explorative factor analysis 6 factors were shown to characterize the Russian sample and 4 factors – the Chinese sample. Hence, it is possible to conclude that the structure of attitudes and behaviors while gaming, characteristic for the Russian MUDers, is more complex, than the structure of attitudes and behaviors of the Chinese sample.

The following six factors refer to the Russian sample: Flow (Factor 1), Achievement (Factor 2), Activity/Passivity (Factor 3), Interaction (Factor 4), Thoughtfulness/Spontaneity (Factor 5) and Cognition (Factor 6). The following four factors refer to the Chinese sample: Flow (Factor 1), Achievement (Factor 2), Spending time (Factor 3) and Interaction (Factor 4). Hence, the factor models characterizing the Russian and the Chinese samples are partly similar: such factors, as Flow, Achievement, and Interaction are common for the both samples. Alternatively, such factors as Cognition, Activity/Passivity and Thoughtfulness/Spontaneity do not characterize the Chinese sample and Spending time do not characterize the Russian sample.

Necessary to note, the Flow is the strongest factor (Factor 1) characterizing both Russian and Chinese samples of MUDers. The difference between the positions of the Flow factors in factor structures pertaining to the each sample of online gamers proves the Hypothesis 5: there is a certain psychological specifics among the Russian and the Chinese samples in the way they experience flow and interact in MUD environments.

Also, the Russian and the Chinese factor models have two more common factors: Achievement and Interaction. Achievement is the second factor for the Russian and for the Chinese samples, but the content of those factors is a little different for the two samples. But Interaction factors that are the fourth factors in factor models of the both samples are very similar.

The Russian factor model includes two more factors such as Activity/Passivity (F3) and Thoughtfulness/Spontaneity (F5), and Chinese factor model – a factor named Spending time (F3). Those factors include some equal parameters but still are very different that adds specification to Russian and Chinese players.

Conclusion

Cross-cultural survey of Russian and Chinese samples of MUD players has been carried out. The work consisted of: development and approbation of a methodology and a procedure of the research; carrying out empirical research; statistical analysis of the received data and a qualitative comparative analysis of interaction patterns and flow

experience patterns pertaining to the Russian and the Chinese samples of players in group role online games, known as MUDs.

It is shown that both the Russian and the Chinese MUD players experience flow during a game, and this experience correlates with within-game interaction patterns with other players. Besides, it is shown that flow experience and correlation between flow experience and interaction patterns differ within the Russian and the Chinese samples of MUD players. Using explorative factor analysis it is shown, that the models allocated to the Russian and the Chinese samples vary: the Russian MUDers can be characterized as reporting more complex attitudes to online gaming, compared to the Chinese MUDders. It is necessary to note that parameters of activity/passivity and thoughtfulness/spontaneity expressed during game sessions are not present in the Chinese sample and a parameter named Spending Time characterizes only the Chinese players.

References

Bromberg, H. (1996). Are MUDs communities, identity, belonging and consciousness in virtual worlds. *In Shields, R. (Ed.): Cultures of Internet: Virtual Spaces, Real Histories,Living Bodies, Thousand Oaks, SAGE, California* (pp.143–152).

Cho, K.S., Kang, S., Ham, K.H. (2003). Cognitive conflict and interest in a computer game. Available: http://psylab.yonsei.ac.kr/~skang/main/skang01/down/paper.pdf

Chou, T.J. & Ting, Ch.Ch. (2003) The role of flow experience in cyber-game addiction, *CyberPsychology & Behavior, Vol. 6, No. 6* (pp. 663–675).

Csikszentmihalyi, M. (2000). *Beyond Boredom and Anxiety: Experiencing Flow in Work and Play*, Jossey-Bass, San-Francisco (first published in 1975).

Joinson, A.N. (2003). *Understanding the Psychology of Internet Behavior. Virtual Worlds, Real Lives*. Palgrave Macmillan.

Lee K.M. (2000). MUD and Self efficacy. *Education Media International*, 37(3) (pp.177-183).

McKenna, K. and Lee, S.: (1995). A Love Affair with MUDs: Flow and Social Interaction in Multi-User Dungeons. Available: http://www.fragment.nl/mirror/various/McKenna_et_al.nd.A_love_affair_with_muds.html

Qiu, J.L. (2006). The changing web of Chinese nationalism. *Global Media and Communication*. 2, 1, 125-128.

Qiu, J.L., Liuning, Z. (2005). Through the prism of the Internet café: Managing access in an ecology of games. *China Information*. 19, 2, 261-297.

Reinberg, F., Engeser, S., Vollmeyer, R. (2002). *Measuring components of flow: the flow-shot-scale. Paper presented at the 1st International Positive Psychology Summit. Washington, D.C.*

Sempsey, J.J. (1997). Psyber psychology: a literary review pertaining to the psycho/social aspects of multi-user dimensions in cyberspace. *Journal of MUD Research*, 2(1NY). http://www.brandeis.edu/pubs/jove/HTML/v2/sempsey.html

Tsui, L. (2005). Introduction: The sociopolitical Internet in China. *China Information*. 19, 2, 181-188.

Turkle, Sh. (1997). *Life on the Screen: Identity in the Age of the Internet*, New York: A Touchstone Book.

Utz, S. (2000). Social information processing in MUDS: the development of friendships in virtual worlds. *Journal of Online Behavior*, l(1). Available: http://www.behavior.net/JOB/v1n1/utz.html

Voiskounsky A.E. (2007). Two Types of Repetitive Experiences on the Internet. *INTERFACE: The Journal of Education, Community and Values* l, 6. http://bcis.pacificu.edu/journal/2007/06/voiskounsky.php.

Voiskounsky A.E. (2008, in press). Flow Experience in Cyberspace. *Psychological Aspects of Cyberspace: Theory, Research, Applications,* Ed. by A.Barak. Cambridge University Press, Cambridge, UK, 70-101.

Voiskounsky A.E., Mitina O.V., Avetisova A.A. (2005). Communicative Patterns and Flow Experience of MUD players. *International Journal of Advanced Media and Communication, Volume 1, 1* (pp. 5-25).

Voiskounsky A.E., Mitina O.V., Avetisova A.A. (2004). Playing Online Games: Flow Experience. *PsychNology Journal, Volume 2, 3* (pp. 259 – 281).

Zhang, L. (2006). Behind the 'Great Firewall': Decoding China's Internet media policies from the inside. Convergence: The International Journal of Research Into New Media technologies. 12, 3, 271-291.