

Gender differences of the Internet-related stereotypes in Russia

Olga V. Mitina [♦], Alexander E. Voiskounsky ^{♦♦}

[♦]Psychology Department, Moscow State University after M.V.Lomonosov
Moscow (Russia)

ABSTRACT

Gender stereotypes of Russians toward the Internet were investigated, using multiple identification methodology. The questionnaire (45 items) catalogued various types of Internet-related behaviors. The following characters were evaluated: Typical Russian, Ideal Person, Internet User (all – female and male), and Myself. Respondents (N = 95, 47/48 males/females, mean age 22.9, s.d. 2.8) indicated the degree of likelihood that the characters conduct behavior of each type. Eight scales of the Internet use were selected: (1) profession and business, (2) education of children, (3) entertainment, (4) realization of personal goals, (5) compensatory, (6) cognition, (7) advanced work, (8) communication. Confirmatory factor analysis and nonlinear multiple regression were used to handle data. Results show that men's and women's self-stereotypes and gender stereotypes are close, especially on the self-reported upper levels of competence in the Internet use.

Keywords: *gender divide, Internet use, Russia, gender, stereotypes, multiple identification.*

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1. «Gender divide» in the Internet use and related issues

Gender aspects of the Internet use are being widely investigated (Jackson et al., 2001; Kennedy et al., 2003; Morahan-Martin, 1998). This is due to a considerable increase of girls and women in the world-wide Internet audience. As long as a decade ago, there were rather few females competent in electronic telecommunications, as well as web-sites organized by women and/or aimed at females as the target group.

The global “gender divide” problem (i.e., uneven presentation of females and males on the Internet) is evolving. While in some agricultural zones the earliest slogans are still in use (e.g., “females are welcomed to the friendly Net”), more diverse “gender divide” problems are characterizing advanced industrial areas. In case Internet-related behaviours are subject of ideological restrictions, the regulations rarely favour females' activity in the net use. Thus, the “gender gap” is of a multi-aspect nature. It is worth to

[♦] Corresponding Author:
Alexander E. Voiskounsky
Psychology Department, Moscow State University after M.V.Lomonosov
Mokhovaya st. 8/5, 103009 Moscow, Russia
Phone: +7(095) 291-97-51
E-mail: vae-msu@mail.ru

name only briefly several aspects, which will not be discussed in the Sections of the paper to follow.

The “generation gap” problem is multi-aspect itself (older people are underrepresented, adolescents tend to outnumber grown-ups in the Internet audience, etc.). Overlapping the “gender divide”, one can expect exclusively young populations of females to be evenly presented on the Internet.

Accepting the “educational gap”, one might expect that less educated people are less likely to use computers and the Internet. In the “gender divide” perspective, the expectations are correct, taken primarily developing countries. On the contrary, in many developed countries there are more high school- and college-educated women than men, though males mostly outnumber females within the national Internet audiences.

The “demographic gap” means that members of small nations represent too limited audiences to communicate and/or to develop websites using the native tongues. Thus, participation both in global and in local Internet-related activities is the prerogative of fluent speakers and/or competent readers of foreign languages, primarily English. Back to the “gender divide”, there seems to be no universal rule: most often males are better taught, though in some ethnic groups females get better education; also, there are nations where foreign language education is not gender-bent at all.

The “life-style gap” includes obvious gender differences. For example, men are usually more mobile than women, and have a greater need for a mobile access to the Internet. Also, males tend to pursue risky behaviours, and are more likely to disobey restrictions both in accessing and developing websources containing unfriendly, illegal, or forbidden information. We will not go into details of many other life-style gender differences.

2. Gender Divide: An Overview

There are two main approaches toward bridging the gap of uneven presentation of females and males on the Internet. First, females should follow males who are many (at least several) steps ahead, and should make their best to reach the same level of the Internet use. Second, females and males execute differing and gender-specific styles on the Internet, and these styles will never be the same; moreover, gender-related styles of the Internet use are going to vary stronger and stronger. Both approaches are presented in the research literature.

2.1 Gender and Geo-Economics of the Internet Use

It is certainly useful to take a brief look at various geographical and economical areas on the globe from the perspective of the Internet use. In the USA, according to the Nielsen//NetRatings, female users outnumber male users since April, 2000. In Australia, the proportion of women and men on the Internet is nearly the same, even in rural areas (Singh, 2001). In the Western Europe and in Russia women are underrepresented in the total Internet audience: they compose 42% European users (Nielsen//NetRatings, May, 2003), and 41% Russian users – in this case, taken only adult population (see quarterly measures at www.fom.ru/projects/23.html). The number of females using the Internet slowly increases in some developing countries (for example, in India, Malaysia, or Brasil); it is reported that in Malaysia the females' attitudes towards the Internet and their willingness to learn and use information technologies is not different from that of males' (Awang & Jaffar, 2004). Contrary to that, the Internet is almost totally inaccessible for females in the most poor countries (Hafkin & Taggart, 2001). Also, it is not too widely accessible in these countries for males.

Ethnographic data show that poverty, lack of education, and dependence on men make it difficult for females in developing countries to start using computers and the Internet. In Asia, aside from the 'tiger' countries, "on the Internet, male perspectives and voices dominate over women's, who have neither taught nor trained to use this medium" (Bautista, 1999, p. 175). In Africa "it seems that women are particularly shy, even scared, of technology, and it takes quite some time before they will dare to try and use it" (Alloo, 1999, p. 157). This shyness is far from being universal: female college students in China have less access to computers than female college students in the UK, but nevertheless their expressed attitudes toward information technologies are more positive (Li et al., 2001). Progress is reported in Latin America (Burch, 1999), and especially in the Caribbean: "no significant difference in the degree of private use by males and females" was found in Trinidad (Miller & Slater, 2000, p. 49).

It would not be incorrect to state that one of the major tendencies of overcoming or decreasing the Internet-related problem of "gender divide" is dependent on economic growth and on progress in education of both females and males. Other tendencies deal with changing human attitudes and public stereotypes – either widely spread and in a way universal, or culture-specific. In the discussion of some of these attitudes and stereotypes to follow, we will partly refer to social norms and traditions, popular views,

or narrative descriptions of the “state of the art” in the field. The terminology should not be confusing, since social rules, prejudices and views have specific mental representations, which might be referred to under the heading of stereotypes. Our empirical research (see Sections 3 and 4) is dealing with the representations of these stereotypes.

2.2 Gender and Science/IT Education

In the developed countries the “gender divide”, or the “gender gap” is more of a qualitative nature: girls and boys, women and men use the Internet differently (Jackson et al., 2001; Kennedy et al., 2003; Wallace, 1999). To sum up the expressed views, we may tell that compared to males, females feel greater anxiety encountering high-tech facilities, are not encouraged to master computers, use less services over the Internet, tend to underestimate their own competence and overestimate males’ competence in new technologies – as a female lecturer in computer science formulated it in an interview, “I think a key problem is the attitude of women towards men, we value men more highly than ourselves and think we can’t do the job” (Adeboye et al., 2004, p. 168). Most of those who carry out gender studies regrettably note that schoolgirls express relatively little interest in sciences, including IT-related disciplines, and compared to schoolboys, are less likely to select IT as their future profession. These points have been thoroughly compiled, convincingly stressed, and negatively evaluated, in a report «Tech-Savvy: Educating Girls in the New Computer Age» (www.aauw.org/2000/).

If the problem is ignored, the gender gap will increase, and the whole field of developing hardware and software products and IT applications has all the chances to turn into a sort of a “men’s club”. Metaphorically, the efforts aimed at introducing females to the IT environments might look like that: a current “room for men” should be step by step turned into a “limited (possibly – more broad) room for women”, and finally into a “shared room for men and women” (Corneliusson, 2004). Quite a number of educational programs and mentoring initiatives have been launched, aimed at presenting exact sciences, including the IT field, as a favourable career for a female, especially a gifted one (Adeboye et al., 2004; Armaroli et al., 2004; Lupart et al., 2004). Educators try to introduce advanced technologies at high school; it is for example expected that gaining the fundamentals of technical design in the virtual reality mode, which is a rare and positively estimated experience, schoolchildren, and especially schoolgirls will become active in entering engineering colleges (see:

www.cmi.k12.il.us/~vanwalpa/vrsavvy/vrsavvy.htm). These attempts might get some support from an obvious finding, that “when women are present in any significant numbers in an occupation ... the work they do is likely to be valued less than the work undertaken in occupations or sectors of the economy in which men predominate” (Harris & Wilkinson, 2004, p. 82).

2.3 Gender Differences in the Use of Various Internet Services

Up to now, users of various services, including for example e-learning, e-communication and e-chatting, e-gaming, e-shopping, e-gambling, etc. realize that all these services are related to the Internet. Possibly, the development of the services will result in partial or full separation: communicators and gamblers, web navigators and gamers will be completely unaware that they use the same fundamental service, i.e. the Internet. Before it happens, it is possible to differentiate the gender divide problems characteristic for various Internet related services.

On the Internet, both females and males share interest to virtual communication and e-shopping; at the same time men have first hand in what might be called Internet-mediated cognition, and most certainly – in online gaming and gambling; men are the first to adopt new services, gadgets and facilities, while soon after that women follow them (Jackson et al., 2001; Kennedy et al., 2003; Morahan-Martin, 1998; Wallace, 1999). It is widely believed that males are much more likely than females to practice gender swapping (Bruckmann, 1993; Suler, 1999; Turkle, 1995), and females – gender concealment, for example the choice of a neuter or plural gender in gaming environments (Jazwinski, 2001).

Mixed-gender group discussions and chats seem to be comfortable for females (Witmer & Katzman, 1998), though their roles are most often far from opinion leaders. While males dominate, enlarge their within-group status, share information and propose themes to discuss, females undertake gender-stereotypic behavior: try to save group stability, give support, keep social ties and emotional balance (Jazwinski, 2001; Morahan-Martin, 1998; Postmes & Spears, 2002; Wallace, 1999). Less often one can come across evidences that males and females happen to exploit similar group strategies, which are not gender-specific (Wade & Fauske, 2004). Anonymity and gender concealment make it easier for females to decrease the dangers of cyberstalking and/or online harassment, which are otherwise more than likely (Morahan-Martin, 2004; Wallace, 1999). Females presenting themselves through personal webpages are also aware of high likelihood to be drawn into unwanted

contacts (Miller, Arnold, 2001). Contrary to this, female activists and cyberfeminists view the Internet as a new environment to oppose male dominance and male chauvinism (Adam, 1998; Morahan-Martin, 2004; Plant, 1996).

Research held in Singapore showed that young (before 21) females write and receive e-letters more often than males of the same age, but in the most of the other recorded activities males take first hand, namely in downloading files and computer programs, and in web navigation; no gender differences were found in web shopping patterns (Teo & Lim, 2000). The latter finding is supposedly characterizing the local culture, since it is widely believed that though females are more frequent visitors to e-shops, males are more frequent buyers, due to the two main reasons: first, the majority of e-shops sell electronics, programs and books, all of which are purchased primarily by men; second, women enjoy purchasing non-standard pieces, thus they browse e-shops to compare characteristics and prices, but prefer to visit offline shops to purchase the selected pieces.

Online gaming has always been a “boy’s club”. Some time ago game developers and providers turned their special attention to female gamers. The latter group is growing, though females are far from being half of online gamers. The exact statistics is not exact and is a bit misleading: indeed, females buy games, but often for brothers, sons, husbands and boyfriends, mates, etc.; interesting, all girls report playing group games with boys, though boys never report they play with girls (Jenson, de Castell, 2004). Game developers make various attempts to produce “chess for girls” (Cassell & Jenkins, 1998), or a “girls’ game”: minimally competitive (e.g., soap opera like); with a brave female character (Lara Croft like); traditional or non-complicated, taking short time to master and to enjoy the gained results; ensuring dialogues and polilogues between gamers; with easy-to-use tools to select/construct pretty-looking avatars, etc. No one can tell for certain which of the directions is the most fruitful; moreover, unequal decisions might correspond to females of different age groups: researchers warn that “unlike boys who play ‘for fun’, girls who continue to play beyond adolescence aren’t really, by their own accounts, ‘playing’ at all, they are ‘de-stressing’, relaxing, or passing the time when they are bored’...” (Jenson, de Castell, 2004, p. 232). To meet this continuity of females’ attitudes towards computer/video/online gaming is a challenge indeed.

In a sense, the Internet is an “identity game” – it is sometimes tempting to transform one’s identity, moving closer to either ideal, or fantastic, or anyway an alternative Ego. Also, it is easy, and it is only rarely blamed. Among the most popular identity games is

the so-called gender swapping (Bruckman, 1993), or gender bending (Jazwinski, 2001). Researchers, including also Turkle (1995) and Suler (1999), believe that it is mostly a males' game; females rarely dare to present themselves as males. Gender swapping has been a common enough game at earlier periods of the Internet use; hypothetically, it is less common nowadays. Anyway, "the motivations for gender bending are not well known" (Jazwinski, 2001, p. 183). A pilot survey has been held recently by Kathryn Wright (see: www.womengamers.com/articles/gender.html, and www.womengamers.com/articles/gender2.html): male gamers were anonymously questioned, if they ever created female heroes/characters, and why. All the open-end reports (full replies gave about 30 respondents) have been interpreted and classified, resulting in about a dozen supposed motivations. To sum up, it is easy to note that the studies held up to now are not numerous, and this is not a surprise, since current research methods are restricted to tiresome interviews and surveys; thus, it is difficult to deny that the gender swapping phenomena have not yet been thoroughly investigated.

2.4 Culture-Dependent Attitudes toward the Internet Use

Dependent on culture, educational settings and occupational perspectives, gender attitudes toward the IT use differ (Durndell et al., 1997; Durndell et al., 2000; Houle, 1996; Li et al., 2001; Wallace, 1999). According to some findings, gender differences in attitudes towards the use of computers and IT gadgets are not significant within populations of primary/secondary school pupils (North & Noyes, 2002; Subrahmanyam et al., 2000); thus, mechanisms of socialization might include older females' (probably, adolescents') disinterest, and obvious adolescent males' interest, in competent use of information technologies. This sort of interest and disinterest may be referred to "gender divide" stereotypes.

Australian researchers investigated pictorial gender-related representations in two types of printed media: they report, first, that computer magazines have now, unlike earlier times, become gender-balanced, and second, that in popular girls' magazines there are few or no ads, in which the IT use had been depicted; since the majority of young girls are not likely to look systematically through IT periodicals, they are equally not likely to pursue IT-related careers (Lang & Hede, 2004). Besides, both at home and at school females are known to yield to schoolboys, fathers, brothers, husbands, boyfriends, etc. who enjoy priority in access to computers (Burke, 2001). In anonymous mixed-gender group discussions gender stereotypes are easily activated, partly

dependent on the masculine vs. feminine nature and content of group tasks (Postmes, Spears, 2002).

Culture specifics of the Internet related behavior has not yet been thoroughly investigated. Besides, a probable culture/gender matching may undergo transformations, which follow the change of the female/male ratio within the community of users. Thus, at the every stage of culture/gender matching this is a promising field of research. It looks even more promising, taken Russia with its rapidly growing Internet audience (Voiskounsky, 2002). Up to now, no thorough work has been done on gender aspects of the Internet use in Russia. In this paper we present research on gender stereotypes of Russians toward the Internet use. It seems to be the first empirical research on the theme, thus the results can hardly be compared to any other previously gained data.

3. Research Goals, Method and Procedure

The aim of research was to reveal stereotypes and self-stereotypes pertaining to females and males, and related to the use of the Internet by people of both sexes. Since stereotypes may depend on the respondent's competence in the Internet use, one of the aims was to investigate this possible dependence. The target group was all those who already have some experience in using the Internet. Also, an adequate method of carrying out this sort of research had to be worked out.

To do the research, the psychosemantic technique of "multiple identification" was used (Petrenko, 1997). The method is widely enough exploited in Russia, and it has proved earlier to fit well the investigation of public consciousness and public stereotypes (Petrenko, 1997; Petrenko & Mitina, 1997; Petrenko & Mitina, 2001). In practice, it consists of respondents' assessments of the degree of involvement of the proposed characters, often including the respondents themselves, into this or that sort of activity, or identification of characters with these or that ideas, slogans, social movements, etc.

The questionnaire revealing gender stereotypes related to the Internet use (see Table 1) was based on the pilot studies carried out earlier. It included 45 questions comprising 45 different kinds of Internet-related activities.

The following characters were to be scaled by respondents: *Myself*, *Female – Permanent Internet User*, *Male – Permanent Internet User*, *Typical Russian Woman*, *Typical Russian Man*, *My Ideal of a Woman*, *My Ideal of a Man*. Most of these characters/roles (for example, *myself* and *typical man/woman*) are usual for research

done within the “multiple identification” paradigm. The latter two characters (i.e., the *ideals*) are often included in order to reveal prospective stereotypes, in this case – prospective gender stereotypes relating to the Internet use. Behaviour specific characters (i.e., *permanent Internet users*) are usually included when respondents distance themselves (*myself* character) from exclusively competent experts in the field.

The list of characters was restricted to the mentioned above ones in order to keep the duration of respondents’ work reasonably short – less than an hour and a half. The respondents were to assess the degree of involvement of a given character, including themselves (the *Myself* character), into Internet-related activities by ascribing integer ranks from 0 to 6. The range of these ranks was defined as follows: 6 – *always*, 5 – *usually*, 4 – *often*, 3 – *occasionally*, 2 – *sometimes*, 1 – *very seldom*, 0 – *never*.

The respondents were 95 college students in Moscow, 47 men and 48 women (mean age 22.9, s.d. 2.8), recruited as volunteers. Research was administered in person (no groupwork was accepted) either at colleges during the breaks in classes, or in dormitories. The experimenter provided the respondents with a short instruction and replied possible questions; after that the experimenter provided the questionnaire check-list and refused to give any additional comment or advice. The survey was administered by Olga V. Nelipa, a graduate student of the Psychology Department, Moscow State University, in 2003.

To process the obtained data, the confirmatory factor analysis and multivariate nonlinear regression were used. The confirmatory factor analysis is a further development of factor analysis. It allows to decrease the dimension of the space of observed variables (the items of the questionnaire) due to their grouping in the more capacious latent factors (scales), and also to test the statistical significance and psychometrical validity of such a reduction. The analysis of respondents’ replies in the terms of scales/factors retains the basic information of the primary data. The use of nonlinear regression permits to reveal the effect of the interrelations of different independent factors in their influence on the variables that they determine (Aiken, West, 1991).

4. Results and discussion

All the materials provided by individual respondents contained the full list of ranks and were accepted for subsequent work. Thus, we had 95 sheets, each containing 45 ranks pertaining to the each of 7 different characters.

4.1 Analysis of the adequacy of the questionnaire

We refused to factorize the averaged response matrix, to escape the loss of information. Indeed, every respondent fills in his/her individual matrix, and thus the set of all answers represents a three-dimensional data cube (Petrenko, 1997). The averaging of the response matrix leads to a reduction from a cube to a two-dimensional array, one dimension less. To avoid the loss we analyzed the replies of the respondents by columns, separately for each character. As a result we obtained seven different matrices corresponding to respondents' ranks for each character.

Having combined the first columns of individual matrices corresponding to the *Myself* character, we composed the matrix of self-assessments (SA), i.e. the answers of the respondents about themselves. This aggregated array was subjected to confirmatory factor analysis.

Building up confirmatory factor analysis model it turned out to be possible to distribute all the questionnaire items over the following scales (see Table 1): *Professional and business uses of the Internet, Internet-based education of children, Entertainments, Competent Internet use in order to realize personal goals, Compensatory Internet use, Cognitive uses of the Internet, Highly qualified use of the Internet, Internet-mediated communication*. The results show that all factor loadings are significant, and the theoretical model corresponds quite well to experimental data: in our case chi-square ratio to the degrees of freedom was equal to 1.91.

Scales: titles and content	Factor loads
Scale 1. Professional and business uses of the Internet (Cronbach's $\alpha = .94$)	
1. Be employed at a company supporting Internet-interactions between the employees	.683
2. Use e-mail at the workplace to communicate with colleagues and clients	.851
3. Search on the Internet information relevant for the current work	.860
4. Organize web-presentations of one's professional activity or the activity of the company one is employed at	.744
5. Use of the Internet to realize one's professional activity (e.g., distant trade, education, consulting service, etc.)	.849
6. Search professional contacts with persons and organizations through the Internet	.723
8. Recruit new employees using the Internet	.496
9. Systematically visit educational web-sites	.617
10. Whenever information is needed, prefer web encyclopedia over printed copies	.742
11. Give preference to the Internet instead of visiting a library, whenever there is a need to find something out	.718
12. Use the Internet to get access to media	.741
13. Use educational web sources to enhance the level of one's education	.537
17. Correspond with friends and personal acquaintances via e-mail	.816
25. Read books on the web	.461
29. Use the Internet for planning out a tour	.430
Scale 2. Internet-based education of children (Cronbach's $\alpha = .91$)	
40. Use of the Internet to assist one's child in writing an essay, a control work, etc.	.735
41. Train one's children to use the web-based educational resources	.962
42. Train one's children to use the Internet to gain any information	.925
43. Train one's children to use the Internet	.733
Scale 3. Entertainments (Cronbach's $\alpha = .57$)	
26. Read humorous web-pages	.434
45. Use the Internet for entertainment	1.000
Scale 4. Competent Internet use in order to realize personal goals (Cronbach's $\alpha = .65$)	
23. See movies on the Internet	.419
24. Listen to music on the Internet	.994
28. Use the Internet to make reservations for plane or train tickets.	.467
Scale 5. Compensatory Internet use (Cronbach's $\alpha = .74$)	
30. Use the Internet to overcome real-life deficiencies and to realize the needs which can hardly be realized in real life	.270
31. Play various games on the Internet	.345
35. Visit religious web-sites	.893
36. Visit personal web pages of movie/show-business stars	.731
Scale 6. Cognitive uses of the Internet (Cronbach's $\alpha = .70$)	
15. Be a distant student in a licensed Web college, school, etc.	.511
21. Visit museum web-sites	.980
22. View pieces of art on the Internet	.476
Scale 7. Highly qualified use of the Internet (Cronbach's $\alpha = .71$)	
27. Go shopping over the Internet	.420
33. Have one's own web-page	.477
34. Track real events in sports, science, culture and politics, etc. over the Internet	.718
37. Visit web-sites to update the software	.609
44. Communicate over the Internet to the members of your own family living with you	.375
Scale 8. Internet-mediated communication (Cronbach's $\alpha = .58$)	
16. Spend time chatting	.188
18. Use the Internet to gain new acquaintances	1.000
19. Seek on the Internet the one to become your future spouse	.616
32. Send out web cards	.377

Table 1: Content of scales and factor loads.

Reliability indices (Cronbach's alpha) for the scales of the matrix of *Myself* self-assessment can be considered satisfactory (see Table 1). Scales 1 and 2 are the most reliable ($\alpha > .90$), and scales 3 and 8 – the least reliable, but even for these scales $\alpha > .50$. Reliability indices for the rest of six matrices corresponding to the ratings of different characters are even higher. This fact can be interpreted in the following way: subjects' assessments of the alien characters are rather stereotypical and devoid of the elements of individuality; at the same time, in self-assessments these elements are supposedly inevitable.

Thus, the questionnaire was proved to be an adequate measuring tool.

4.2 Analysis of gender stereotypes and self-stereotypes related to the Internet use

The results of the analysis of gender differences in self-assessments of one's Internet-related activity and in stereotypical representations of various degrees of involvement of men and women into the activity connected with the Internet use are given in the Table 2. The means and standard deviations of respondents' replies on every character and every scale are given. The total score is the sum of ratings by all eight scales.

Scales titles	I myself				Internet-user Female				Internet-user Male			
	Females		Males		Females		Males		Females		Males	
	Means	Std.Dev	Means	Std.Dev	Means	Std.Dev	Means	Std.Dev	Means	Std.Dev	Means	Std.Dev
1. Professional and business uses of the Internet*	3.30	1.16	2.66	1.40	4.60	0.60	4.32	0.81	4.70	0.69	4.44	0.71
2. Internet-based education of children**	1.59	1.23	2.43	1.68	* 3.66	1.05	4.18	1.42	3.67	1.15	4.15	1.46
3. Entertainments	2.54	1.02	2.20	1.40	4.07	1.25	4.19	1.17	4.40	1.12	4.49	0.99
4. Competent Internet use	1.28	1.16	1.06	0.82	3.55	1.10	3.33	1.55	3.74	1.15	3.45	1.41
5. Compensatory Internet use	0.92	0.85	1.14	1.05	3.07	1.06	3.36	1.04	3.20	1.01	3.36	1.03
6. Cognitive uses of the Internet*	0.54	0.65	0.97	1.09	2.94	1.06	3.04	1.41	2.92	1.08	2.88	1.40
7. Highly qualified use of the Internet	1.57	1.08	1.98	1.13	3.62	1.02	3.67	1.12	3.92	1.08	3.86	1.03
8. Internet-mediated communication	1.39	1.00	1.36	0.95	4.19	0.85	4.12	0.96	4.13	0.90	3.85	1.06
Total score	13.13	4.91	13.80	5.57	29.70	6.65	30.20	8.05	30.65	6.74	30.47	7.62

Scales numbers		Typical Russian Woman				Typical Russian Man				My Ideal woman				My Ideal man			
		Females		Males		Females		Males		Females		Males		Females		Males	
		Means	Std.Dev	Means	Std.Dev	Means	Std.Dev	Means	Std.Dev	Means	Std.Dev	Means	Std.Dev	Means	Std.Dev	Means	Std.Dev
1	**	2.04	0.88	1.57	0.84	** 2.23	0.99	1.66	0.82	* 3.94	0.93	3.34	1.39	3.97	0.91	3.55	1.28
2	**	1.34	0.93	1.87	1.24	1.73	1.04	1.88	1.23	3.16	1.10	3.25	1.30	3.14	1.09	3.25	1.36
3	+	1.88	0.87	1.90	1.10	2.27	1.10	2.02	1.07	* 3.06	1.11	2.46	1.26	3.09	1.10	2.61	1.31
4		1.13	0.83	1.00	0.96	1.36	0.84	1.05	0.95	** 2.96	0.72	2.30	1.27	** 3.03	0.72	2.29	1.26
5		1.26	0.69	1.21	0.89	1.53	0.82	1.18	0.89	1.61	0.78	1.44	1.10	1.62	0.76	1.45	1.09
6		0.99	0.73	0.82	0.80	1.00	0.74	0.79	0.82	* 2.65	0.93	2.10	1.61	* 2.64	0.98	2.04	1.48
7	+	1.21	0.69	1.20	0.89	1.58	0.87	1.25	0.89	3.09	0.95	2.84	1.44	3.13	0.95	2.93	1.41
8	**	1.92	0.97	1.35	0.82	** 2.01	1.10	1.26	0.83	** 2.80	0.92	1.74	1.14	** 2.78	0.93	1.73	1.10
Total score		11.77	5.40	10.92	6.60	13.70	6.43	11.10	6.50	* 23.26	5.22	19.47	8.40	* 23.41	5.26	19.86	8.17

* level of significance between samples means $p < 0.05$, ** $p < 0.01$, + level of significance between characters of different gender means $p < 0.05$

Table 2: Values for every character (average, all the scales of the questionnaire).

Significant differences on two factors are connected with the *Myself* self-stereotype: female ratings exceeded male ratings in the *Professional and business use of the Internet*; men rated higher the *Internet-based education of children*. To explain the latter we may suggest that mothers are often anxious about their children's health, and computer is believed to affect negatively health status; fathers are attracted by non-standard educational applications of new technologies – perhaps, it is the new experience that men assessed higher than women.

Significant gender differences were found, taken the evaluation of the characters by the *Educational use of the Internet* scale. The differences might be referred to the men's tendency to domesticity. However, this result needs additional testing due to low absolute means (less than 1, which implies that the answers swing between "never" and "very seldom"), both in male and female samples.

The ratings of the character *Female – Permanent Internet user*, given by men and by women, were similar; there was only one significant difference on the mentioned above factor (i.e., *Internet-based education of children*). To a greater degree than women, men believed that a woman, competent in the Internet applications, should regularly use the Internet to educate children. The difference may be explained by the mechanism of identification of female respondents with the character being assessed, and their anxiety over the health of children, mentioned above.

There were no gender differences in the assessment of the *Male – Permanent Internet user* character. As one should expect, all kinds of the Internet-related activities were ascribed to this character in the greatest degree. Moreover, we revealed no gender differences in the assessments of a *Permanent Internet user* – both *male* and *female*. Though in average respondents ascribed lesser activity to *Female Internet user*, the difference is statistically insignificant.

According to our respondents, *Typical Russians* rarely go online. Once again we revealed significant differences in the assessment of the female character. Women ascribed to a *Typical Russian woman* greater activity in the *Professional and business use of the Internet* and lesser activity in the *Internet-based education of children* than male respondents. Possibly, the explanation is again close to self-identification. Assessing *Typical Russian man*, women respondents ascribed him greater (compared to males) activity in the *Professional and business use of the Internet*. Female respondents evaluated the involvement of both typical characters, irrespective to gender, in the *Internet-mediated communication* higher than male respondents. Generally, gender of a character in this case (*typical Russian*, be it *man* or *woman*)

was not important for male respondents, while taken female respondents we revealed significant differences on three scales: they ascribed to a typical man greater Internet-activity in *Internet-based education of children*, in *Entertainment* and in *Internet-mediated communication*.

The greatest differences depending on the gender of respondents were revealed in the assessment of the character *My ideal of a woman*. Women ascribed to this character greater Internet-related activity than men did; on five factors from eight and on the Total score these differences were statistically significant (see Table 2). Women also ascribed greater Internet-related activity to an *Ideal man* (there was a non-significant exception on the scale *Internet-based education of children*). Therefore, judging on the basis of the ratings which respondents gave to the *ideal* characters of both genders, we may ascertain that women regarded activity in the Internet use a more positive feature than men did. Assessing *ideal* characters, respondents made no gender distinctions, i.e. from the standpoint of the Internet-related activity the representations of an *ideal man* and an *ideal woman* were close.

On the basis of the ratings of all scaled characters we see that the respondents approved of regular, but moderate Internet use. In their opinion, the activity of Russians on the Internet remained low. Even self-assessment (SA) of their own activity on the Internet was far from their subjective ideal, though respondents, being students of Moscow colleges, were able to use the Internet more often than an average Russian.

Speaking about gender differences we would like to note their presence, though not on a very high level: there were only 19 positions of difference from 63 (i.e. less than 30 %). However, these differences are characterized by rather strong stability and in 12 cases were attributed to 3 scales out of 9, so we may state a revealed regularity. Women in the larger degree were involved in the *Professional and business use of the Internet*, while men were more inclined to the *Internet-based education of children* and to the *Internet-mediated communication*. Gender of the character being assessed exerted significant influence more seldom – only in 3 cases from 27 (i.e. nearly 10 %). As for the differences in the ratings of a *typical woman* and a *typical man*, the Table 2 shows that these differences were revealed only in female respondents.

4.3 Analysis of gender stereotypes' dependence upon self-assessments of the Internet use

To perform this type of analysis we used the model of multivariate nonlinear regression. It allows to determine the extent to what gender of respondents influenced

their representations about the degree of involvement of themselves and other characters in the Internet-related activities. Bearing in mind that gender of the character being assessed influenced the answers of the respondents less significantly than their own gender, we used the following regression formula:

$$Y = a_0 + a_1X_1 + a_2X_2 + a_{12}X_1X_2 \quad (1)$$

X_1 – gender of the respondent ($X_1 = 1$ for females и $X_1 = 2$ for males),

X_2 – self-assessment (SA) of the activity in the Internet use; it is calculated as the sum by all scales in the *Myself* column of the questionnaire.

Y – the rating given by the respondents to the specified character by the selected scale.

The formula (1) turned out to be adequate; we also analyzed the model

$$Y = a_0 + a_1X_1 + a_2X_2 + a_3X_3 + a_{12}X_1X_2 + a_{13}X_1X_3 + a_{23}X_2X_3 \quad (2)$$

X_3 – sex of the character being assessed.

We found that the coefficients a_{13} and a_{23} were insignificant. The quotient a_{12} reflects the effect of the interaction of the independent variables X_1 and X_2 (i.e. gender of the respondent and his/her SA) in the influence upon the dependent variable Y . Thus, if the regression model fits empirical data and the coefficient a_{12} significantly differs from zero, we can state interaction of the corresponding independent variables. If only quotients a_1 and a_2 are significantly different from zero, then one may conclude that there is no interaction effect of the independent variables affecting the result, and each of these variables influences (or doesn't influence) the dependent variable Y per se. As there are three characters and nine scales (including the index of the Internet-related activity in general counted as the sum of all the Internet-related activities), it is necessary to analyze 27 equations. We are interested now in cases when the regression model fits empirical data and a_{12} is significantly different from zero. We obtained 13 such equations from 27 (see Table 3).

To estimate the slope angle of regression line reflecting the dependence of the variable Y from the variable X_2 under the fixed values X_1 , the equation (1) can be rewritten in the following way

$$Y = (a_0 + a_1X_1) + (a_2 + a_{12}X_1)X_2 \quad (3)$$

On the other hand, fixing the meaning of X_2 we may estimate the angle of inclination of the regression line for the dependence of the variable Y from the variable X_1 and rewrite the same equation as follows:

$$Y = (a_0 + a_2X_2) + (a_1 + a_{12}X_2)X_1 \tag{4}$$

Table 3 contains numerical results of general and partial regression under the fixed values of independent variables. The interpretation might be the following.

Roles	Scales	Significant coefficients of interaction	Partial Regression on SA of the Internet use (respondent's gender is fixed)		Partial Regression on respondent gender (respondents' SA of the Internet use is fixed)		
			women	men	Low SA	Medium SA	High SA
Internet user	4. Competent Internet use in order to realize personal goals*	$a_{12} < 0^{**}$	$Y = 0.11 + 0.30^{**}X$	$Y = -0.02 - 0.14^{**}X$	$Y = -0.43 + 0.24X$	$Y = 0.32 - 0.20X$	$Y = 1.06 - 0.64^{**}X$
Internet user	7. Highly qualified use of the Internet*	$a_{12} < 0^*$	$Y = 0.02 + 0.35^{**}X$	$Y = 0.00 + 0.04X$	$Y = -0.60 + 0.28X$	$Y = 0.05 - 0.03X$	$Y = 0.71 - 0.33X$
Typical Russian	1. Professional and business uses of the Internet**	$a_{12} > 0^*$	$Y = 0.26 - 0.22^{**}X$	$Y = -0.30 + 0.24^{**}X$	$Y = 1.50 - 1.02^{**}X$	$Y = 0.83 - 0.56^{**}X$	$Y = 0.16 - 0.11X$
Typical Russian	8. Internet-mediated communication**	$a_{12} > 0^*$	$Y = 0.32 - 0.20^{**}X$	$Y = -0.35 + 0.15^{**}X$	$Y = 1.54 - 1.02^{**}X$	$Y = 0.98 - 0.67^{**}X$	$Y = 0.43 - 0.31X$
Ideal	1. Professional and business uses of the Internet**	$a_{12} > 0^{**}$	$Y = 0.24 + 0.46^{**}X$	$Y = -0.27 + 0.83^{**}X$	$Y = 0.68 - 0.89^{**}X$	$Y = 0.76 - 0.52^{**}X$	$Y = 0.85 - 0.15X$
Ideal	2. Internet-based education of children**	$a_{12} > 0^{**}$	$Y = -0.02 + 0.27^{**}X$	$Y = -0.01 + 0.75^{**}X$	$Y = 0.18 - 0.47^{**}X$	$Y = -0.04 + 0.02X$	$Y = -0.26 + 0.50^{**}X$
Ideal	3. Entertainments**	$a_{12} > 0^{**}$	$Y = 0.22 - 0.05X$	$Y = -0.26 + 0.54^{**}X$	$Y = 1.33 - 1.07^{**}X$	$Y = 0.70 - 0.48^{**}X$	$Y = 0.06 + 0.11X$
Ideal	4. Competent Internet use in order to realize personal goals**	$a_{12} > 0^*$	$Y = 0.34 + 0.33^{**}X$	$Y = -0.37 + 0.58^{**}X$	$Y = 0.97 - 0.95^{**}X$	$Y = 1.06 - 0.71^{**}X$	$Y = 1.14 - 0.47^{**}X$
Ideal	5. Compensatory Internet use**	$a_{12} > 0^*$	$Y = 0.69^{**} + 0.22^{**}X$	$Y = 1.03^{**} + 0.69^{**}X$	$Y = 0.59 - 0.12X$	$Y = 0.34 + 0.34^{**}X$	$Y = 0.10 + 0.81^{**}X$
Ideal	6. Cognitive uses of the Internet**	$a_{12} > 0^{**}$	$Y = 0.24 + 0.29^{**}X$	$Y = -0.26 + 0.63^{**}X$	$Y = 0.78 - 0.83^{**}X$	$Y = 0.73 - 0.50^{**}X$	$Y = 0.69 - 0.16X$
Ideal	7. Highly qualified use of the Internet**	$a_{12} > 0^{**}$	$Y = 0.12 + 0.47^{**}X$	$Y = -0.15 + 0.86^{**}X$	$Y = 0.30 - 0.66^{**}X$	$Y = 0.39 - 0.27^{**}X$	$Y = 0.48 + 0.11X$
Ideal	8. Internet-mediated communication**	$a_{12} > 0^{**}$	$Y = 0.45 - 0.12X$	$Y = -0.50 + 0.58^{**}X$	$Y = 2.21 - 1.65^{**}X$	$Y = 1.39 - 0.95^{**}X$	$Y = 0.57 - 0.25X$
Ideal	Total**	$a_{12} > 0^{**}$	$Y = 0.28 + 0.31^{**}X$	$Y = -0.32 + 0.80^{**}X$	$Y = 1.15 - 1.18^{**}X$	$Y = 0.87 - 0.59^{**}X$	$Y = 0.59 - 0.01X$

* and ** significant level (0.05 and 0.01), the regression model satisfies experimental data (column 2), coefficient a_{12} not equal 0 (column 3), the coefficients for partial regression are not equal 0 (columns 4-8).

Table 3: Significant results of multidimensional and partial regression by scales.

When self-assessment of the Internet use grew, women evaluating the *Permanent Internet user* by the scales *Competent application of the Internet* and *Highly qualified use of the Internet* gave higher ratings; men gave lower ratings on the first scale, and on the second scale their own SA did not affect the evaluation.

The assessment of a *Typical Russian* by the scales *Professional and business use of the Internet* and *Internet-mediated communication* was completely the opposite. With SA of the Internet use growing, men evaluated the characters by these scales higher, and women lower.

In the assessment of an *Ideal* the situation was different again. The higher was the male respondent's SA, the higher rating he gave in evaluating an *ideal* character of either gender. Women showed a similar trend, with the exception of two scales – *Entertainments* and *Internet-mediated communication*. However, the ratings given to an *ideal* character by men grew substantially faster with the increase of the SA, than

the ratings given by women, which grew slower. In the two cases when women's regression quotient was negative, it was insignificant. That's why we can consider it negligible, and thus it did not violate the general view of relations between male and female ways of assessing ideal characters.

Now let us consider the relation of gender stereotypes under the fixed level of the SA in the use of the Internet. As such levels we chose medium (defined on the basis of belonging to the interval "the mean plus or minus the standard deviation"), low (the value was located to the left of this interval) and high (the value was located to the right of the interval). Most frequently (in 8 cases from 13) we face the situation when the dependence of character's ratings upon gender of the respondent was significantly negative under low and medium SA, and non-significant (i.e. slightly greater or slightly less than zero) under high SA. It means that under low SA men tended to evaluate all characters on every scale lower than women did. Nevertheless, the higher was the SA level, the less noticeable was the difference between genders, and it ceased to exist under high SA.

Such a relationship was revealed in the assessment of a *Typical Russian* by the scales *Professional and business use of the Internet* and *Internet-mediated communication*, and in the evaluation of an *Ideal* by the scales *Professional and business use of the Internet*, *Entertainments*, *Internet-based education of children*, *Highly qualified use of the Internet*, *Internet-mediated communication*, and *Total score*. There was the same trend in the evaluation of an *Ideal* by the scale *Highly qualified use of the Internet* (men gave lower ratings, and the difference between genders was diminishing with the growth of the SA), but the difference remained significant under high SA. The scale *Compensatory use of the Internet* revealed a different pattern for an *Ideal*: differences grew with the increase of SA, men gave higher ratings than women. With the growth of SA the two genders differed also in the assessment of a *Permanent Internet user* by the scale *Highly qualified use of the Internet*: men with high SA gave lower rates than women with high SA.

Therefore we have the reasons to ascertain that as far as SA grew (i.e. the activity in the use of the Internet increased) men formed a positive image of this quality faster than women. Men regarded mastering any skill connected with the Internet as the approach to their ideal and thus a useful acquisition. Women were more skeptical in this respect. We may suggest that from their standpoint the activity in the application of the Internet, though useful, was far from the real approach to the ideal.

We can also make certain conclusions about the *ideal* that was characteristic for the respondents (in relation to the Internet use). Thus, for instance, on the General scale the ideal position was significantly close to the middle of a conditional segment between a *Typical Russian* and a *Permanent Internet user* (.54). However, on the majority of other scales (seven out of eight) the ideal position divided the segment “*typical Russian – permanent Internet user*” in the ratio which was close to the “golden mean” (values from .61 to .74). In five cases the ideal position was closer to the right end, i.e. reflected the readiness to take more active position in the application of the Internet, and in three cases it was nearer to the left end; these results confirm the disinclination of the respondents to substitute traditional and familiar “technologies” by the new ones, connected with the Internet. It applies to the sphere connected with communication, entertainment and especially with the compensatory use of the Internet (the position of the ideal is clearly shifted to the left). This result can be interpreted as respondents’ disinclination to include information technologies fully into their life. The respondents preferred to leave room for the familiar ways of communicating with people, traditional entertainment and customary means of achieving personal goals.

5. Conclusions

In Russia, men’s and women’s stereotypes towards the Internet, as investigated in the paper, did not differ too much, especially on the self-reported upper levels of competence in the Internet use. Assessments of heavy Internet users were close to be gender-neutral. Self-stereotypes were far from traditional: women rated high business applications, while men rated high communicative and educational applications. These data contradict to the findings relevant for other geo-economic areas. We might think of a following tentative explanation. New culture of the Internet use, being formed in Russia, is oriented towards competence and mastering. Gender specifics in the use of new technologies, including the Internet and its applications and services, might get projected on later developmental stages, when the audience becomes more advanced and tending to variegate the Internet-related behaviours.

With possible separation of differing Internet-related services (cognition, communication, entertainment, shopping, etc.) into independent human activities connected with the Internet only indirectly, gender specifics in the Internet related stereotypes is expected to become more evident and more standard. Since there are some significant differences corresponding to the scales that we selected and discussed in the paper, and the scales refer to possibly separate services, we may

expect that in perspective it will be possible to find important gender differences in stereotypes related to these would-be independent services.

The research methodology worked out in the study proved to be adequate and reliable. We have used several elaborated techniques of handling empirical data in order to find some “digital divide” stereotypes characteristic for the Russian Internet users. The result shows that the stereotypes pertinent to the “digital divide” problem are currently not too important and essential in Russia.

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