Psychological Determinants of Cyber-aggression in Institutionalized Adolescents

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Abstract. The article presents the results of a study aimed at the analysis of psychological determinants of cyber-aggression in institutionalized adolescents, in comparison with peers who live in parental families. Data collection was carried out with Cyber-Aggression Typology Questionnaire, Strengths and Difficulties Questionnaire, Buss-Perry Hostility Inventory, Questionnaire for assessment of the adolescents' experience of online communication. The study involved 248 adolescents aged 13-16 years, 32.6 % institutionalized adolescents from orphanages. The results suggest that the institutionalized adolescents more distinctly tend to cyber-aggression, which is more closely correlated with problem behavior, in comparison with their peers. At the same time, cyber-aggression of girls-orphans is hardly determined by emotional and behavior problems, while institutionalized boys' cyber-aggression could be a manifestation of hyperactivity.

Keywords: institutionalized adolescents, orphanages, cyber-aggression, predictors of cyber-aggression, problem behavior, aggression.

Introduction

Despite the efforts for the family placement of children living without parental care, nowadays more than 70000 children and adolescents live in orphanages in Russia (according to Ministry of labour and social protection of the Russian Federation for 2019). Psychological studies of the development of institutionalized adolescents who deprived of parental care indicate the hardships in their socialization, as well as various difficulties of adaptation to independent life at post- institutionalized stage. Orphaned adolescents often have poor experience and deficient communication skills. The Internet provides great opportunities for communication, socialization in different groups, expansion of social experience, so it could be an important resource for developing of orphans' social skills [6; 26]. Today institutionalized adolescents usually have daily access to the Internet and actively use the opportunities of the Internet, mainly for leisure and communication [1]. However, there are no studies aimed at analyzing the quality of orphans' online communication, despite of the fact that or-

phans' psychological traits could contribute to decrease the benefits of using the Internet and increase its negative effects [19]. According to recent research, one of the main online risks for Russian adolescents is online aggression [36]. Adolescents often become victims of cyber-aggression as well as they actively use aggressive communication in the Internet themselves. Therefore, our study examines the spread of cyber-aggression in online communication of institutionalized adolescents and its psychological causes, in comparison with adolescents from parental families.

1 Psychological determinants of cyber-aggression in adolescents

1.1 Cyber-aggression as a form of online behavior in adolescence

Cyber-aggression is the deliberate harm to other Internet users to assert one's own personal significance [15, 39]. Cyber-aggression differs from "face-to-face" aggression significantly, On the one hand, this difference is determined by the peculiarities of the Internet space. Cyber-aggression can be initiated by aggressor from anywhere and at any time [25]. A wide audience witnesses cyber-aggression, and the actions of the cyber-aggressor can be supported by the activity of other users voluntarily or unwittingly [23]. On the other hand, there are several psychological peculiarities of online communication such as the anonymity and distorted feedback, which contribute to decreasing self-censorship and to increasing the number of aggressive actions as well as underestimating the harm for a victim [5; 28; 37]. Moreover, cyber-aggression is less visible for parents and teachers, and adolescents feel freer to demonstrate aggressive actions in the Internet [16, 36].

Cyber-aggression manifests in various forms of online behavior such as sending humiliating messages, public insults, spreading rumors, damaging personal photos, etc. [10]. These actions could be aimed at causing victim to have negative emotions (proactive cyber-aggression) or at responding to victim's provocative behavior (reactive cyber-aggression) [11]. According to K. Runions [31], it is possible to describe cyber-aggression of adolescents by clarifying their motivational goals (appetitive or aversive cyber-aggression) and abilities to behavioral self-control (impulsive or controlled cyber-aggression). This model suggests four forms of cyber-aggression in adolescence: rage (impulsive-aversive form of cyber aggression), revenge (controlled-aversive form of cyber aggression), rest (impulsive-appetitive form of cyber-aggression) and waiting for a reward (controlled-appetitive form of cyber-aggression) [30]. Impulsive forms of cyber-aggression probably decrease with adolescents' growing up, while controlled forms of cyber-aggression persist and obtain defensive functions [36].

Special attention should be paid to the psychological prerequisites of cyber-aggression in adolescence. Empirical studies suggest that cyber-aggression is associated with high rate of aggression "face-to-face" [28], as well as low level of empathy [7], emotional intelligence [42], self-control [38] and moral awareness [8].

Adolescents who demonstrate cyber-aggression often tend to deviant behavior and other behavioral problems [9] as well as Internet addiction [42].

The number of cyber-aggressive actions increases with emotional stress [41]. In addition, the psychological background of cyber-aggression differs for boys and girls, while the number of cyber-aggressive actions is about the same level [33; 40; 42]. Every form of cyber-aggression is probably determined by specific psychological factors [30] but empirical data are too generalized, therefore the psychological prerequisites of different forms of adolescent cyber-aggression are not still identified.

1.2 Psychological characteristics and online behavior of institutionalized adolescents

Today, there are no psychological studies of the cyber-aggression of institutionalized adolescents. At the same time, there are enough information about those psychological characteristics of orphans, which are usually considered as psychological prerequisites for cyber-aggression. This information suggests that the determinants of orphaned adolescents' cyber-aggression probably differ from their peers.

Thus, researchers identify a special type of personality of institutionalized adolescents. These adolescents demonstrate poor development of self-control, predominance of reactive behavior, orientation to external control, tendency to overly emotional response, resentment [29]. They differ from their peers by a high level of aggression [27] as well as tendencies to anger [4] and depression [24]. At the same time, their emotional intelligence and self-control are often poorer in comparison with adolescents from parental families [34]. The prevalence of behavioral and emotional problems among institutionalized adolescents exceeds the problem level among their peers by 2-5 times. The similar data are obtained by surveys of adolescents-orphans in India [20], Egypt [13], Turkey [35], Pakistan [2].

Russian researchers note that online communication is one of the main forms of institutionalized adolescents' online activity [1], although their needs for online communication are lower than among their peers, probably because their social circles are more narrow, and most of their friends are available "face-to-face" [21]. Orphaned adolescents are at risk of problematic Internet use, since the Internet often becomes a source of compensation for the orphans' specific needs such as emotional discharge, self-affirmation, formation of attachments, etc. [12]. However, they usually do not have sufficient communication skills and choose non-constructive ways of communication associated with manipulation and pressure, which often appear in the aggressive actions [3]. Thus, we can assume that these psychological characteristics of institutionalized adolescents contribute to developing cyber-aggression in online communication, but this hypothesis requires empirical testing.

2 The present study

This study was aimed at analyzing the psychological determinants of cyber-aggression of institutionalized adolescents, in comparison with peers who live in pa-

rental families. The first hypothesis posited the prevalence of cyber-aggression in orphaned adolescents. We hypothesized that adolescents-orphans more often show aggression in online communication as well as become victims of cyber-aggression. According to the second hypothesis, the severity of appetitive and aversive cyber-aggression in orphans persists throughout adolescence, while in their peers it decreases as they become older. Finally, we predicted that cyber-aggression of institutionalized adolescents is stronger determined by emotional and behavioral problems than of their peers.

2.1 Participants and procedures

248 adolescents aged 13-16 participated in the study (M=14.56; SD=0.79, 51.2 % female), among them 81 institutionalized adolescents-orphans *IA* (M=14.24; SD=0.61, 43.2 % female) and 167 adolescents who live in parental families *FA* (M=14.79; SD=0.72, 54.5 % female). Institutionalized adolescents lived in orphanages and studied at ordinary schools. The study was realized in St.-Petersburg and Leningrad region in 2019. Participants took part in the study voluntarily, everyone had informed consents of parent (for adolescents from parental families) or director of the orphanage (for institutionalized adolescents). The survey took them about 40 minutes.

2.2 Measures

2.2.1. Cyber-Aggression Typology Questionnaire

Cyber-Aggression Typology Questionnaire was developed by K. Runions et al. for assessment of the tendency to cyber-aggression and its leading motives [30]. The questionnaire takes into account two dimensions of cyber-aggression (aversive/appetitive and controlled/impulsive) and provides to assess different motives of cyber-aggression such as impulsive-appetitive, impulsive-aversive, controlled-appetitive and controlled-aversive cyber-aggression as well as the general tendency to cyber-aggression. The authors' version of the questionnaire includes 29 items which requires the assessment with 5-point Likert scale (from 1 – "almost never" to 5 – "constantly"). For current study, this questionnaire was translated into Russian and its structure was verified by exploratory factor analysis. Factor analysis did not confirm the four-component structure of the questionnaire for our sample. Attempts to allocate four factors produced unsatisfactory resulting factor loads ($\geq$0.27 for first and second factors but $\leq$0.06 for third and fourth factors). Finally, two factors were identified. These factors combined 20 items of the questionnaire (see Table 1).

Thus, for our sample, only one dimension of cyber-aggression was relevant, which allowed distinguishing its appetitive and aversive forms. These factors were used as the scales of the questionnaire for current study: the scale of appetitive cyber-aggression (min=10, max=50; Cronbach alpha 0.95; d=0.12, p>0.20) and the scale of aversive cyber-aggression (min=10, max=50; Cronbach alpha 0.94; d=0.13, p>0.20).

2.2.2. Strengths and Difficulties Questionnaire

Strengths and Difficulties Questionnaire is aimed at assessment of problem behavior in children and adolescents [17]. This questionnaire was adapted and validated for Russian sample [18]. It includes 25 items evaluated with 3-point scale (from 0 – "not

about me@ to 2 – "exactly about me"). The items are equally distributed to five scales: "Emotional symptoms", "Behavior problems", "Hyperactivity / inattention", "Problems at communication with peers" and "Prosocial behavior" (min=0, max=10). The total indicator of problem behavior is calculated by summarizing of "Emotional symptoms", "Behavior problems", "Hyperactivity / inattention", "Problems at communication with peers" (min=0, max=40). For current study, we used a version for adolescents' self-assessment. This questionnaire is widely used in different countries and it shows its relevance to survey problem behavior of institutionalized adolescents who could have hardships with behavioral self-assessment [20; 13].

Table 1. Factor loading and factor structure of Cyber-Aggression Typology Questionnaire (Note: F1 – appetitive cyber-aggression, F2 – aversive cyber-aggression)

Items	F1	F2
If I get teased or threatened, I get angry easily and strike back online right away	0.36	**0.70**
If someone makes fun of me on the internet, I get frustrated and respond angrily online right away	0.36	**0.71**
I overreact before I have a chance to think about the consequences when someone says something mean online	0.25	**0.81**
If someone says something online to hurt me, I post something back right away to get back at them	0.26	**0.78**
If somebody criticizes me online or in a text, I often react aggressively without thinking of the consequences	0.40	**0.75**
I hastily respond to something written online and regret it later	0.33	**0.75**
I respond very quickly to a message or post that is disrespectful to me	0.36	**0.65**
I get back at people who make fun of me on the internet because their posts hurt more the more I think about them	0.25	**0.75**
I like using my ICT device(s) to plan my revenge when I feel angry at someone	0.44	**0.63**
If I need to get revenge on someone, I would rather strike back using my ICT device(s) where I can plan out how to do it	0.48	**0.66**
Sometimes I'll team up with my friends to bring someone down online	**0.76**	0.38
Sometimes I can be mean to people online to get what I want	**0.82**	0.36
When I don't like a person, I use the internet to make them feel like they do not belong in my group	**0.64**	0.53
I pretend to be someone else online to ruin somebody else's friendships	**0.69**	0.51
I have at times used the internet to make someone look like bad	**0.79**	0.33
I get carried away having fun online and others think I'm being a cyberbully or a troll	**0.77**	0.41
I make fun of people I don't know on the internet without thinking about whether they will see it or not	**0.72**	0.42
If I'm having fun and joking online, I don't care if someone's feelings get hurt	**0.80**	0.17
I repeatedly annoy people online because I think it's funny	**0.68**	0.45
Joking online is so much fun that I don't worry about whether someone might be bothered by what I say	**0.76**	0.29
Explored variance	6.87	6.78
Unique Variance Accounted for by Factors	0.34	0.34

2.2.3. Buss-Perry Hostility Inventory

Buss-Perry Hostility Inventory (adopted by S. N. Enikolopov and N. P. Tsibulsky [14]) allows evaluating three components of aggression: instrumental (physical aggression), affective (anger) and cognitive (hostility). This questionnaire contains 24 items assessed with 5-point Likert scale. In general, the questionnaire can be scored from 24 to 120 points, including 9-45 points for "physical aggression", 7-35 points for "anger" and 8-40 points for "hostility". This questionnaire is relevant to vulnerable groups of adolescents, including adolescents-orphans.

2.2.4. Questionnaire for assessment of the adolescents' involvement in online communication

Questionnaire for assessment of the adolescents' involvement in online communication was developed for current study. It includes 4 questions: 1) How many hours a day are you online? ("less than one hour"; "1-3 hours"; "4-8 hours"; "8 hours or more"); 2) How many hours do you spend for online communication in social networks, chats, forums? ("less than one hour"; "1-3 hours"; "4-8 hours"; "8 hours or more"); 3) How often do you demonstrate aggression in online communication? ("never"; "rarely"; "sometimes"; "often"; "constantly"); 4) How often do you receive aggression from other Internet users? ("never"; "rarely"; "sometimes"; "often"; "constantly").

2.3 Data Analysis

Data analysis included comparison of the IA and FA samples by Fisher's test ϕ^* and Student's test, t (with a preliminary estimate of the distribution by the Kolmogorov-Smirnov criterion, d), as well as correlation analysis (Spearman's correlation coefficient, r_s) and multiple regression analysis to assess the impact of psychological factors to cyber-aggression in institutionalized and non-institutionalized adolescence. These calculations were computed by IBM SPSS Statistics.

3 Results

The results show that institutionalized adolescents, according to their own assessment, spend about the same amount of time on the Internet as their peers who live in parental families (see Table 2). At the same time, girls in both groups use the Internet for communication significantly more often than boys. Institutionalized girls choose the answer "1-3 hours" twice often in comparison with boys (55.6 % and 26.7 % in the samples of girls and boys, $\phi^*=4{,}13$, $p<0.01$), while boys prefer the point "less than 1 hour" (19.4% and 48.9% correspondingly, $\phi^*=4{,}47$, $p<0.05$), a similar situation is observed among adolescents from parental families.

The self-assessments of cyber-aggression experience in institutionalized adolescents and their peers have no significant difference. Adolescents of both groups declare that they do not usually become the victims of cyber-aggression as well as cyber-aggressors (see Table 3).

However, the Cyber-Aggression Typology Questionnaire revealed that rates of appetitive and aversive cyber-aggression in adolescents-orphans surpass the similar

indicators in their peers significantly (t=2.59, p<0.01and t=3.02, p<0.01correspondently). Institutionalized adolescents were characterized by higher rates of problem behavior (t=4.23, p<0.001) and aggression (t=3.19, p<0.01) with lower rates of prosocial behavior (t=3.14, p<0.01).

Table 2. Online daily time (%)

Sample	<1 hour	1-3 hrs	4-8 hrs	>8 hrs
How many hours a day are you online?				
IA	17.3	55.6	23.5	3.6
FA	17.4	48.5	26.3	7.8
How many hours do you spend for online communication?				
IA	35.8	39.5	22.2	2.5
FA	41.3	42.5	13.2	3.0

Table 3. Experience of cyber-aggression (%)

Sample	Never	Seldom	Sometimes	Often	Constantly
How often do you demonstrate aggression in online communication?					
IA	30.8	49.4	12.5	7.3	-
FA	31.1	52.7	14.3	1.9	-
How often do you receive aggression from other Internet users?					
IA	27.2	50.6	17.3	3.7	1.2
FA	29.3	49.2	19.1	1.2	1.2

Moreover, there are multiple positive correlations between indicators of cyber-aggression, problem behavior and aggression in the sample of adolescents-orphans, while in the sample of their peers similar correlations are absent (see Table 4).

Table 4. Means, SD and correlations of cyber-aggression, aggression and problem behavior for the samples of institutionalized adolescents and their peers (Note: * – p<0.05)

Indicators	M	SD	2	3	4	5
Institutionalized adolescents						
1. Aversive cyber-aggression	30.83	6.89	0.66*	0.08	0.35*	0.39*
2. Appetitive cyber-aggression	35.63	7.19	1.00	-0.30*	0.37*	0.32*
3. Prosocial behavior	6.85	2.11		1.00	-0.18	0.06
4. Problem behavior (total)	17.17	5.35			1.00	0.42*
5. Aggression (total)	63.93	11.24				1.00
Adolescents from parental families						
1. Aversive cyber-aggression	26.21	9.74	0.86*	0.07	-0.07	0.14
2. Appetitive cyber-aggression	30.73	12.32	1.00	0.08	-0.11	0.10
3. Prosocial behavior	7.83	1.73		1.00	-0.30*	0.04
4. Problem behavior (total)	13.22	5.59			1.00	0.07
5. Aggression (total)	60.45	9.89				1.00

Pairwise comparison of the samples of institutionalized girls and boys proved that the rate of aversive cyber-aggression is similar, while the rate of appetitive cyber-aggression is significantly higher in boys-orphans (t=3.31, p<0.01). In addition, there were positive correlations between indicators of aversive and appetitive aggression

in the sample of girls-orphans, while in the sample of orphaned boys these indicators are related to appetitive cyber-aggression only (see Table 5). We did not find significant differences between rates of cyber-aggression, problem behavior and aggression in the samples of boys and girls who live in parental families. The structure of correlations in these samples did not differ. However, in contrast to the samples of institutionalized adolescents, there were negative correlations between cyber-aggression rates (both forms) and age ($0.35 \leq rs \leq 0.47$) for boys and girls living in parental families. For the samples of institutionalized boys and girls, similar relationships were not found.

Table 5. Means, SD and correlations of cyber-aggression, aggression and problem behavior for the samples of institutionalized girls and boys. Note: * – $p<0.05$

Indicators	M	SD	2	3	4	5
Institutionalized girls						
1. Aversive cyber-aggression	30.60	63.83	0.32*	0.16	0.45*	0.47*
2. Appetitive cyber-aggression	32.67	7.08	1.00	-0.20	0.37*	0.32*
3. Prosocial behavior	8.00	1.68		1.00	-0.23	-0.13
4. Problem behavior (total)	17.72	7.04			1.00	0.33*
5. Aggression (total)	63.14	9.88				1.00
Institutionalized boys						
1. Aversive cyber-aggression	31.97	6.90	0.87*	0.13	0.22	0.27
2. Appetitive cyber-aggression	37.17	6.23	1.00	-0.44*	0.58*	0.52*
3. Prosocial behavior	6.17	2.07		1.00	-0.04	0.17
4. Problem behavior (total)	16.83	4.14			1.00	0.60*
5. Aggression (total)	64.45	10.43				1.00

According to regression analysis, emotional problems were identified as a predictor of aversive cyber-aggression for girls-orphans ($R2=0.85$, Adjusted $R2=0.69$, $F(9.8)=5.19$, $p<0.02$). The problems in communication with peers, behavior problems and aggression explained over 50% of variance in their appetitive cyber-aggression ($R2=0.51$, Adjusted $R2=0.29$, $F(9.20)=2,29$, $p<0.05$). In the case of institutionalized boys, hyperactivity was defined as a predictor of aversive cyber-aggression ($R2=0.45$, Adjusted $R2=0.29$, $F(9.20)=2.26$, $p<0.05$), and behavior problems predicted appetitive cyber-aggression ($R2=0.29$, Adjusted $R2=0.18$, $F(9.61)=2.76$, $p<0.01$). Similar regression model for appetitive cyber-aggression was obtained in a sample of boys from parental families ($R2=0.16$, Adjusted $R2=0.04$, $F(9.45)=0.96$, $p<0.14$), but the significance of this model was very low (see Table 6). Regression models for cyber-aggression in other samples were insignificant. Thus, cyber-aggression of institutionalized adolescents is more closely related to problem behavior than in adolescents from parental families. This tendency is particularly evident in the sample of the girls-orphans.

Table 6. Summary of multiple regression analysis for predicting cyber-aggression.

	Variable	B	SE B	β	Sig.(p)
	Aversive cyber-aggression				
IA (girls):	Emotional problems	3.27	1.11	2.95	0.02
IA (boys):	Hyperactivity	2.54	1.34	1.89	0.05
	Appetitive cyber-aggression				
IA (girls):	Behavior problems	6.98	3.04	2.29	0.03
	Problems in communication	6.91	3.09	2.24	0.03
	Aggression (total)	6,98	3.00	2.32	0.02
IA (boys):	Problems in communication	1.24	0.79	1.58	0.05
FA (boys):	Problems in communication	4.37	2.01	2.17	0.03

4 Discussion

The results of our research demonstrate the relevance of studying the features of online communication and, particularly, cyber-aggression of institutionalized adolescents. According to orphaned adolescents' self-assessments, their time for the Internet is similar to the adolescents from parental families (at least within one region). Moreover, adolescents-orphans are just as interested in online communication as their peers, and this fact does not fully correspond to the previous information [21]. Meanwhile girls-orphans are more focused on online communication (in comparison with boys), and this trend is typical for adolescence [32]. Institutionalized adolescents and adolescents from parental families evaluate their experience of online aggression as quite rare (both as an aggressor and a victim), however adolescents-orphans manifest appetitive and aversive cyber-aggression more frequently. We suggest that the similarity of self-assessing the cyber-aggression experience of institutionalized adolescents and their peers (taking into account predominance of cyber-aggression among them) means underestimate of cyber-aggression, its impact on other people and the consequences for interaction with them. Probably orphans tend to consider cyber-aggression as normative behavior on the Internet more than their peers. Therefore, the first hypothesis of our investigation was partially confirmed: institutionalized adolescents are more likely to show aggression in online communication. However, we cannot conclude anything unequivocally about the prevalence of their experience of victimization in online communication, since their assessments do not seem to be fully adequate to the real situation. This issue needs to be clarified in further research. At the same time, the prevalence of cyber-aggression in online behavior of institutionalized adolescents highlights the importance of studying its psychological determinants in this subgroup of adolescents.

The study also confirmed the hypothesis about persisting the severity of appetitive and aversive cyber-aggression in orphans throughout adolescence as well as declining cyber-aggression in their peers by growing up. According to results of correlation analysis, for adolescents from parental families maximal rate of cyber-aggression are observed in younger adolescence. This is largely consistent with the results of other studies, which suggests that mainly protective cyber-aggression persists as adoles-

cents grow up, while other forms of cyber-aggression lose their relevance [36]. The decrease of cyber-aggression could be the result of a general tendency to reduce aggression from younger to older adolescence [22]. Thus, the absence of similar correlations could prove much closer relationship between cyber-aggression and problem behavior in adolescent-orphans, which was found in our study.

According to the third hypothesis of our study, we found a higher rate of emotional and behavioral problems in institutionalized adolescent (in comparison with peers), as it had been shown by other researchers previously [2; 13; 20; 35]. The results of our study suggest that the most significant determining factor for the appetitive cyber-aggression of institutionalized adolescents (both boys and girls) is problems in communication with peers. Taking into account a similar regression model in the sample of boys from parental families, this relation could demonstrate a general direction of communicative development in adolescence. In addition, behavioral problems and aggression were identified as predictors of appetitive cyber-aggression in a sample of girls-orphans. This fact allows us to assume that the appetitive cyber-aggression in girls-orphans is a much more serious problem, in comparison with boys. Institutionalized girls are less likely to demonstrate cyber-aggression than boys are, so the high-tailed aggression in online communication of girls-orphans probably reveals various emotional and behavioral problems. Aversive cyber-aggression of girls-orphan is also determined by emotional problems, while in boys it is caused primarily by hyperactivity, which indicates low self-control. In general, cyber-aggression of girls-orphans is significantly more loaded with emotional and behavioral problems.

Conclusion

Nowadays, institutionalized adolescents use the Internet widely, but information about their online behavior is fragmentary. In the current study, we examined such form of online behavior of adolescents-orphans as cyber-aggression, as well as its psychological determinants. The results showed that the determinants of cyber-aggression in adolescence are different for institutionalized adolescents and adolescents from parental families. Psychological determinants of cyber-aggression in adolescence are emotional and behavioral problems (especially for girls) as well as insufficient self-control skills (primarily for boys).

The findings of our study could serve as a frame for developing the effective programs aimed at psychological and pedagogical support of cyber-socialization of institutionalized adolescents. We also expect that this study will be developed in a more detailed investigations which will be targeted to online behavior of institutionalized adolescents. In addition, it will be appropriate for future research to move from studying the cyber-behavior of adolescents by self-assessment questionnaires to survey of their actual Internet activity.

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