Computers in Human Behavior 55 (2016) 251–257

Contents lists available at ScienceDirect

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh

Full length article

Cross-cultural narcissism on Facebook: Relationship between self-presentation, social interaction and the open and covert narcissism on a social networking site in Germany and Russia

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ARTICLE INFO

Article history:
Received 17 June 2015
Received in revised form
14 September 2015
Accepted 18 September 2015
Available online xxx

Keywords:
Narcissism
Self-presentation
Social interaction
Facebook
Germany
Russia

ABSTRACT

The social platform Facebook has more than one billion members in different countries. Cross-culturally, the way users behave on this platform relates to some personality traits. The aim of the present study was to investigate, whether Russian and German Facebook users differ in the extent of open and covert narcissism, self-presentation and social interaction on Facebook. Furthermore, we investigated, whether there is a comparable relationship between narcissism and Facebook use in these countries. To this end, the data of 72 Russian platform members were collected and compared with the data of 122 German members. The narcissism values did not significantly differ between the two samples. This was also the case with the overall self-presentation and interaction. In contrast, some single measures of online behaviour differ. For example, German users set more "Likes" and had more online-friends than Russian users. Russian platform members used more applications than German users. In each group, a positive association between the two forms of narcissism and online activity was found. So far, the positive relations between narcissism and self-presentation and social interaction on Facebook seem to be universal in Western and Eastern countries.

1. Introduction

In the last ten years, Internet and Web 2.0 became one of the most important ways for communication and socialization. Especially, so-called social networking sites[1] are used for this purpose (Moore & McElroy, 2012). They belong to the most visited online sites in the Web 2.0 worldwide (Kaplan & Haenlein, 2010). Daily, many users spend a lot of time on SNSs, interacting with other members, independent of their spatial distance, and presenting many private details (Tosun, 2012).

Often, the interaction takes place between people who know each other in the offline world (Ellison, Steinfield, & Lampe, 2007, 2011; Kujath, 2011; Ross et al., 2009; Wilson, Gosling, & Graham, 2012; Zywica & Danowski, 2008). However, members also use SNSs to establish new relationships (Cabral, 2011; Hsu, Wang, & Tai, 2011).

One of the most popular SNSs is the international platform Facebook (Boyd & Ellison, 2007; Mezrich, 2011). In 2015, more than 1.44 billion people use this site for their daily interactions (Protalinski, 2015).

1.1. Online behaviour and personality traits

Recently research showed that some personality traits are related to the way we behave on SNSs. Kosinski, Stillwell, and Graepel (2013) predicted a range of personality traits of Facebook members (e.g., openness and extraversion) by analysing the "Likes" on their profile pages. Similar, Back et al. (2010) showed that strangers who viewed a Facebook profile were able to predict the owner's level of extraversion and openness. Extraverted users show a high level of social interaction on Facebook (Correa, Hinsley, & de Zúñiga, 2010; Tosun & Lajunen, 2010). They have many online-friends (Amichai-Hamburger & Vinitzky, 2010; Kuo & Tang, 2014; Ong et al., 2011; Utz, 2010) and interact with them frequently by writing private messages and public status updates (Amiel & Sargent, 2004; Ryan & Xenos, 2011).

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[1] social networking sites (SNSs).

http://dx.doi.org/10.1016/j.chb.2015.09.018
0747-5632/

Much research has been carried out on the relation between the personality trait narcissism and behaviour on SNSs. Narcissism as a personality trait reflects a high level of self-love, positive and inflated self-view, sense of entitlement, self-serving bias, as well as an exaggerated sense of self-importance and uniqueness (Campbell, Brunell, & Finkel, 2006; Twenge, Konrath, Foster, Campbell, & Bushman, 2008). There is some theoretical and empirical evidence for the dual nature of narcissism (Rohmann, Neumann, Herner, & Bierhoff, 2012; Rose, 2002; Wink, 1991): grandiose or open narcissism is contrasted with vulnerable or covert narcissism.

Open narcissists have a high demand of attention, admiration and popularity. To get these, they present themselves as self-confident, extraverted and charming interaction partners. They initiate many superficial relations in a short time and use them to regulate their self-esteem and for self-enhancement in particular (Campbell & Foster, 2002; Campbell, Rudich, & Sedikides, 2002; Morf & Rhodewalt, 2001; Paulhus, 2001; Twenge & Foster, 2008).

Covert narcissists are also persuaded of their peculiarity, importance and grandiosity. However, they feel inferior to others and express a fragile self-confidence. Their social interactions are often affected by the presence of self-doubt, sensibility, dissatisfaction and social anxiety (Dickinson & Pincus, 2003; Miller & Campbell, 2008).

In recent studies, open narcissism predicted a high level of social interaction (e.g., number of online-friends, status updates) and self-presentation (e.g., number of uploaded photos) on Facebook. Narcissistic users visit their Facebook page more frequently and spend more time there than other members (Buffardi & Campbell, 2008; Mehdizadeh, 2010; Winter et al., 2014). On the German platform StudiVZ, users with high covert narcissism also showed a high level of online activity (Brailovskaia & Bierhoff, 2012). The explanation of these results rests on the assumption that covert and open narcissism show a common narcissism core. Both types of narcissists are persuaded of their grandiosity and uniqueness and have a demand for admiration (Rohmann et al., 2012). On Facebook covert narcissists get the chance to present their narcissism in an open manner, like open narcissists. However, offline they do not possess the social skills of the open narcissists to gain public approval.

Research of personality traits as predictors of online behaviour takes place mostly in English speaking countries (e.g., the USA) or Western Europe (e.g., Germany). Studies from other countries on this topic are rare. However, a recent study showed that in Singapore narcissism is also positively correlated with self-presentation on Facebook (e.g., status update frequency; Ong et al., 2011). This positive correlation was also observed on the Chinese platform Renren (Wang, Jackson, Zhang, & Su, 2012). We also looked for such studies in Eastern Europe (e.g., Russia). However, our search in international databases like PsycINFO showed no results.

To reduce this lack of cross-cultural research on the relationship between personality and online behaviour, the aim of the current study is to investigate cross-culturally the use of the platform Facebook and its relationship to the personality trait narcissism in Germany and Russia.

Why did we compare Russian and German Facebook users in particular?

Firstly, both countries diverge regarding their cultural, historical, social and geographical conditions which is no surprise given their independent cultural traditions which go back to the middle ages and beyond.

Culture represents a summary of shared attitudes, norms, values, procedures and assumptions within a community or society (Triandis & Suh, 2002). In general, culture is defined as shared life style of a group of people (Berry, Poortinga, Breugelmans, Chasiotis, & Sam, 2011). Cultural similarities and differences are represented on cultural dimensions. Triandis (1995) emphasizes the cultural dimension of collectivism/individualism as especially relevant. In a collectivistic society attachment to the ingroup (e.g., the extended family) is favoured. The interdependence of group members is strongly emphasized. In contrast, in individualistic cultures personal independence, individual freedom, and individual peculiarity are emphasized. Family attachments are less important and are focused on the nuclear family.

Russia is a large country between Europe and Asia. The Russian culture includes collectivistic but also individualistic elements. From the study of Latova and Latov (2007) the conclusion is justified that Russian society represents an attenuated collectivistic culture which is positioned between Asian and Western countries. Depending on the region values and norms may differ considerably. While in smaller cities and villages the family plays an important role, in larger towns, especially in Moscow, the expression of one's peculiarity is significant (Stadelbauer, 2010). However, Russia as a whole has undergone significant political and economic changes since 1990 (e.g., Höhmann, 2004). In contrast, Germany represents a Western European country with a predominantly individualistic culture. Germany is deeply committed to its democratic tradition and technological excellence (e.g., Rödder, 2011).

Secondly, both countries seem to have the readiness to introduce new information technologies in common (e.g., Pokatzky, 2014). For example, many experts in information technology have a Russian or German background. Prominent information scientists include Georgy Adelson-Velsky, Andrey Kolmogorov, Leonid Levin, and Mark Semonovich Pinsker on the Russian side and Rudolf Ahlswede, Joachim Hagenauer, Peter Schirmbacher, and Konrad Zuse on the German side. In addition, Russians and Germans were in close contact across the centuries influencing each other (e.g., Horn, 2014). Therefore, in both cultures differences and similarities coexist and it is not at all clear from the beginning whether the differences or the similarities will characterize cross-cultural comparisons on the link between personality and online behaviour.

To our knowledge, this is the first cross-cultural study including Russia and Germany on the effect of narcissism on Facebook use. Furthermore, until now there is almost no research on open and covert narcissism and its relevance for online activities in Russia, although Russia is one of the important joint partner of the Internet.

According to earlier results, we assume a positive relation between open and covert narcissism in both Germany and Russia (hypothesis 1). Also in both countries we expect a positive relation between narcissism and level of self-presentation and amount of social interaction on Facebook (hypothesis 2). Furthermore, we expect to find no significant differences of narcissism and online behaviour on Facebook between Germany and Russia (hypothesis 3).

2. Materials and methods

2.1. Participants

Flyer, which informed about our study and included the URL of the online questionnaire were distributed in several German Universities and placed online in groups of different SNSs (e.g., Facebook, VK). A sample of 122 German Facebook users (52 male, 70 female) with a mean age of 23.33 (SD = 5.09, range: 18–53) participated in the current study. The second sample consisted of 72 Russian Facebook users (35 male, 37 female) with a mean age of 25.18 (SD = 5.81, range: 18–51).

2.2. Procedure

The study was conducted at the Ruhr-Universität Bochum, Germany. Questionnaires on personality traits and Facebook use were administered to the participants who could choose the format of the questionnaire as paper-and-pencil or online (online survey: Germany: *http://www.unipark.de/uc/bo_uni_sozialpsychologie/d601/* ; Russia: *http://www.unipark.de/uc/bo_uni_sozialpsychologie/a2dd/*). Furthermore, participants sent us their Facebook profiles (html format). We got the completed questionnaires, profiles and the permission to analyse and match the questionnaires with the profile of all participants in both samples.

2.3. Materials

Personality traits of German Facebook users were collected with standardized and validated questionnaires. The Russian version of the questionnaires was translated from the German by the customary translation-backtranslation-modification procedure (Berry, 1989).

Open narcissism was assessed by the Narcissistic Personality Inventory (NPI; Schütz, Marcus, & Sellin, 2004). This forced-choice format questionnaire contains 40 items. The original scale reliability is .82 (Cronbach's alpha).

For the measurement of covert narcissism, the Narcissistic Inventory-Revised (NI-R; Neumann & Bierhoff, 2004) was used. The NI-R contains of 43 items, which are rated on a 5-point Likert scale. The NI-R has a scale reliability of .93 (Cronbach's alpha).

For the measurement of Facebook use, we asked about the user's frequency (6-point Likert scales) of writing and commenting status updates, writing and getting online messages, writing in discussion groups and also the frequency (5-point Likert scales) of application using. Furthermore, the number of Facebook friends and the most frequently used applications were obtained.

To get objective quantitative data of online behaviour, we analysed the Facebook profiles of our participants with respect to the following variables: number of applications, groups, albums, photos, links and “Likes”.

Next, we generated a self-presentation scale out of the following variables: number of albums, photos, “Likes”, applications and application use frequency. The response to the fifth variable was obtained on a 5-point Likert scale. To standardize the response scales we transformed the first four variables also into 5-point Likert response scales. The mean value across the five items represents the general level of self-presentation. Aggregation of related measures improves reliability (Bortz, 2005). The internal consistency of the self-presentation scale is satisfactory, Russian sample $\alpha = .826$, German sample $\alpha = .795$.

In a similar manner we generated the aggregated social interaction scale by taking eight items into account which refer to social interaction: number of groups, links, online-friends, frequency (6-point Likert scales) of writing and commenting status updates, writing and getting online messages and writing in groups. We generated 6-point Likert scales for the variables groups, links and online-friends for the purpose of standardization. Finally, the mean value of the eight items was calculated. The internal consistency of the social interaction scale is good in both samples, Russian sample $\alpha = .926$, German sample $\alpha = .884$.

3. Results

Table 1 shows the descriptive statistics of the personality traits and their reliability in the German and Russian sample. Both personality traits were normally distributed. In both samples, the mean value of open narcissism is higher (e.g., Brailovskaia & Bierhoff, 2012; Rohmann et al., 2012) and the mean value of covert narcissism is lower (e.g., Neumann, 2010; Neumann & Bierhoff, 2004) than in earlier studies.

t-tests for independent samples reveal that open and covert narcissism do not differ significantly between the Russian and German Facebook users (s. Table 1).

The descriptive results of self-presentation are summarized in Table 2. A t-test reveals that there is no significant difference in the self-presentation scale between the German and Russian sample. However, German users indicate significantly more “Likes”. In contrast, Russian members use significantly more applications. The use frequency of applications does not differ significantly between the two samples. In both samples the most used applications are online-games (Russian sample: 52.8%; German sample: 32%).

The social interaction scale and some single interaction variables (e.g., writing in groups) do not differ significantly between the Russian and German users. However, German users join significantly more groups and have significantly more online-friends than Russian users (s. Table 3).

In both samples, open and covert narcissism correlate significantly positively (Russian sample: $r(70) = .616$, $p < .001$; German sample: $r(120) = .664$, $p < .001$).

Also in both samples, narcissism correlates significantly positively with single measures of self-presentation and the aggregated self-presentation scale (s. Table 4).

Furthermore, narcissism correlates significantly positively with single measures of social interaction and the aggregated social interaction scale (s. Table 5).

In both samples, hierarchical multiple regression analyses with narcissism as independent variable and self-presentation scale and social interaction scale, respectively, as dependent variable show significant results.

In the Russian sample, the total model explains 67% of the variance in the aggregated self-presentation scale, $F(4,67) = 33.95$, $p < .001$. Open ($\beta = .577$) and covert ($\beta = .311$) narcissism are significant predictors of self-presentation. Similar results emerge for the aggregated social interaction scale. The total model explains 74.5% of the variance in this variable, $F(4,67) = 48.88$, $p < .001$. Both open ($\beta = .583$) and covert ($\beta = .352$) narcissism turn out to be significant predictors of social interaction.

In the German sample, the total model explains 40.4% of the variance of the self-presentation scale, $F(4,117) = 19.81$, $p < .001$. Once again, open ($\beta = .370$) and covert ($\beta = .314$) narcissism turn out to be significant predictors of self-presentation. The prediction of the social interaction scale is also significant, $F(4,177) = 37.50$, $p < .001$. The total model explains 56.2% of the variance. Both open ($\beta = .467$) and covert ($\beta = .355$) narcissism emerge as significant predictors of social interaction.

4. Discussion

In the present study, we investigated the relationship between overt and covert narcissism on the one hand and indicators of Facebook use on the other hand. To our knowledge, this is the first cross-cultural study, which was performed with Russian Facebook users which are compared to German Facebook users.

In general, the results in both cultures turn out to be similar. In both samples, there is a positive relation between open and covert narcissism. This positive correlation was also found in other studies (e.g., Brailovskaia & Bierhoff, 2012; Rohmann et al., 2012). The common core of narcissism could explain this positive association. In general, high narcissistic people presumably have an increased belief of their own uniqueness and peculiarity and a high demand of admiration by others. It depends on the form of the narcissism whether this attitude toward life is presented openly or if it rather influences the behaviour of the person covertly.

Table 1
Means, standard deviations, minima, maxima, reliabilities, mean comparisons and effect sizes of the scales of open and covert narcissism (Russian and German sample).

	Russia					Germany					t	df	p	g
	M	SD	Min	Max	α	M	SD	Min	Max	α				
NPI	20.63	10.28	1	38	.931	19.64	10.06	1	39	.932	.654	192	n.s.	–
NI-R	2.08	1.17	.19	3.78	.987	2.30	.90	.28	4.00	.973	−1.363	121	n.s.	–

Notes. Russian sample: $N = 72$, German sample: $N = 122$; M = mean; SD = standard deviation; Min = minimum; Max = maximum; NPI = Narcissistic Personality Inventory; NI-R = Narcissistic Inventory-Revised; α = Cronbach's alpha; t = t-test, df = degrees of freedom; p = significance; g = Hedge's g (effect size).

Table 2
Means, standard deviations, minima, maxima, mean comparisons and effect sizes of online self-presentation (Russian and German sample).

	Russia				Germany				t	df	p	g
	M	SD	Min	Max	M	SD	Min	Max				
Albums	6.57	5.18	1	28	6.88	6.50	1	46	−.342	192	n.s.	–
Photos	161.90	327.54	1	2345	113.55	197.92	0	1154	1.136	102	n.s.	–
“Likes”	43.18	38.94	2	153	66.05	46.30	2	202	−3.519	192	.001	.52
Applications	5.46	3.35	0	15	3.80	2.71	0	12	3.561	125	.001	.56
Applications use	2.14	1.08	1	5	2.25	1.28	1	5	−.671	169	n.s.	–
Self-presentation scale	2.67	.84	1.00	4.60	2.63	.84	1.00	4.40	.307	192	n.s.	–

Notes. Russian sample: $N = 72$, German sample: $N = 122$; M = mean; SD = standard deviation; Min = minimum; Max = maximum; t = t-test, df = degrees of freedom; p = significance; g = Hedge's g (effect size).

Table 3
Means, standard deviations, minima, maxima, mean comparisons and effect sizes of online social interaction (Russian and German sample).

	Russia				Germany				t	df	p	g
	M	SD	Min	Max	M	SD	Min	Max				
Groups	24.36	2.99	0	12	5.94	3.08	0	14	−3.488	192	.001	.52
Links	38.39	76.73	0	359	37.98	55.65	0	292	.043	192	n.s.	–
Online-friends	206.74	171.69	9	1007	285.93	172.84	25	1072	−3.091	192	.002	.46
Status updates												
write	12.65	1.19	1	6	2.72	1.61	1	6	−.339	182	n.s.	–
comment	13.50	1.44	1	6	3.75	1.43	1	6	−1.153	192	n.s.	–
Messages												
write	13.68	1.51	1	6	4.05	1.42	1	6	−1.707	192	n.s.	–
get	13.78	1.53	1	6	4.11	1.36	1	6	−1.552	192	n.s.	–
Groups write	112.65	1.21	1	5	2.63	1.42	1	6	.113	168	n.s.	–
Social interaction scale	3.05	1.12	1.00	5.50	3.36	1.03	1.38	5.75	−1.933	192	n.s.	–

Notes. Russian sample: $N = 72$, German sample: $N = 122$; M = mean; SD = standard deviation; Min = minimum; Max = maximum; t = t-test, df = degrees of freedom; p = significance; g = Hedge's g (effect size).

Table 4
Correlations between narcissism and online self-presentation (Russian and German sample).

	Russia		Germany	
	NPI	NI-R	NPI	NI-R
Albums	.354**	.369**	.308**	.270**
Photos	.267*	.279*	.419**	.388**
“Likes”	.525**	.563**	.458**	.502**
Applications	.677**	.630**	.414**	.358**
Applications use	.751**	.592**	.469**	.417**
Self-presentation scale	.777**	.668**	.558**	.546**

Notes. Russian sample: $N = 72$, German sample: $N = 122$; NPI = Narcissistic Personality Inventory; NI-R = Narcissistic Inventory-Revised; $^{*}p < .05$, $^{**}p < .01$.

Table 5
Correlations between narcissism and online social interaction (Russian and German sample).

	Russia		Germany	
	NPI	NI-R	NPI	NI-R
Groups	.691**	.640**	.312**	.318**
Links	.347**	.366**	.345**	.358**
Online-friends	.558**	.457**	.538**	.463**
Status updates				
write	.732**	.714**	.601**	.561**
comment	.702**	.661**	.536**	.527**
Messages				
write	.661**	.620**	.596**	.575**
get	.690**	.608**	.607**	.506**
Groups write	.641**	.536**	.538**	.517**
Social interaction scale	.810**	.717**	.558**	.546**

Notes. Russian sample: $N = 72$, German sample: $N = 122$; NPI = Narcissistic Personality Inventory; NI-R = Narcissistic Inventory-Revised; $^{**}p < .01$.

Recent studies showed a positive relation between other personality traits (e.g., extraversion) and the amount of online interaction and self-presentation (e.g., Kuo & Tang, 2014). In the current study, open and covert narcissism turns out to be positively related to self-presentation both in German and Russian Facebook users. High narcissists include, for example, more albums with private photos on their Facebook pages and use more applications on the platform, especially online games, than low narcissists.

Furthermore, high narcissistic people set more “Likes” on “fan pages” than other Facebook users. In addition, they regularly get updates from the pages they liked. As a consequence, they are well-informed about different topics and presumably demonstrate their knowledge in online and offline conversations. This could increase their popularity.

Furthermore, narcissistic participants show a high level of online interaction. They use the chance to set many superficial relationships in a very short time. As a consequence, they get a lot of attention from a large audience, and they do not need to deepen these relationships or invest much in them. Many online-friends are rarely contacted and met beyond the online world. Therefore, the selfishness, low agreeableness and narcissistic tendencies to manipulate other people might go unrecognised by online interaction partners over a long period of time (Okdie, Guadagno, Bernieri, Geers, & Mclarney-Vesotski, 2011). Narcissists may convince online interaction partners with their controlled and planned self-presentation who, as a consequence, might admire them and pay them a lot of attention. This feedback is likely to increase their self-esteem (Paulhus, 2001).

Overall, narcissistic users cross-culturally take advantage of Facebook's functions and possibilities to fulfil their wish for attention and admiration in front of an audience, which theoretically persists of more than one billion people. On SNSs, they get the unique possibility to control and influence the way other users perceive them. They create an image of their own person in accordance with the impression they want to create for their interaction partners (Buffardi & Campbell, 2008). The attention of other members is likely to increase the self-esteem of narcissistic users, satisfies their need for popularity and reinforces the manner of their self-presentation (DeWall, Buffardi, Bonser, & Campbell, 2011; Twenge & Campbell, 2009; Twenge et al., 2008).

In many respects our results are similar for open and covert narcissism. But open narcissists might have an advantage in the offline world, because they are able to gain the attention of their social environment. They are extraverted, charming and humorous and have many acquaintances (Miller & Campbell, 2008). If these acquaintances are not deepening, they may be long-lasting as long as the interaction partners do not perceive their low agreeableness.

Even though offline covert narcissists rarely are able to gain the interest of other people because of their shyness and social anxiety (Neumann, 2010), online they act more like open narcissists and are able to gain considerable attention. The lack of face-to-face interaction on Facebook is likely to increase their self-confidence. Besides, on Facebook covert narcissists have more time to plan and control the way they present themselves in the mostly asynchronous interactions. This low time pressure could decrease their social anxiety.

To sum it up, our results confirm the hypotheses. In Germany and Russia, there is a positive association between open and covert narcissism. Both narcissism forms are also positively related to online self-presentation and social interaction (hypotheses 1, 2).

The general level of open and covert narcissism was similar in Russia and Germany and higher than in earlier research in the USA (e.g., Twenge et al., 2008) and in Germany (e.g., Brailovskaia & Bierhoff, 2012; Neumann & Bierhoff, 2004). One reason might be a general trend toward higher narcissism, which was demonstrated by Twenge et al. (2008). Note that for Russian participants, despite of an elaborate search in relevant databases (e.g., Psyndex, PsycINFO), no indications of the general level of narcissism values were available.

The level of self-presentation was also similar in our two samples. However, on Russian Facebook pages we found more applications than on German pages. The use frequency of these applications does not differ. German users seem to choose fewer applications, which they use frequently, whereas Russian users often try different applications without to commit themselves to one of them.

Furthermore, German users set more “Likes” on “fan pages” than Russian users. An explanation for this result could be that Russian users prefer Russian “fan pages” which are rare on Facebook in comparison to German or US “fan pages”.

Finally, the general level of social interaction does not differ between the two samples. But there are differences in some single measures of Facebook interaction. German users have more online-friends and they are members in more Facebook groups than Russian users. One reason for these differences might be the following: Facebook is the most popular and most used social platform in Germany. German SNSs, e.g., StudiVZ, did not achieve such a popularity in Germany. After the triumphal march of Facebook, in Germany they lost many members (Szugat, Gewehr, & Lochmann, 2010). However, probably, most Russian Facebook members use also several Russian SNSs (e.g., VK). As a consequence, they might have less time to visit Facebook. If many of their friends also use the Russian platforms, some interaction takes place on these sites. To test this assumption, the behaviour of Russian users on Russian platforms should be analysed in further studies.

In conclusion, the comparison of Russian and German Facebook users reveals cross-cultural similarities in narcissism and the activity level on Facebook (hypothesis 3). Cross-culturally, narcissistic persons show more online self-presentation and online social interaction on Facebook. In contrast, the amount of “Likes” on “fan pages” and the use of interaction patterns seem to deviate between the Russian and German sample. We assume that these differences could be caused by the use of Russian SNSs, in addition to Facebook, in the Russian population. However, this assumption should be investigated systematically in future studies.

4.1. Limitations

To measure the values of narcissism and some Facebook activities we used self-report questionnaires. This is the most common way to measure these variables. However, this method is also prone to social desirability. Despite of our instruction to answer the questions as spontaneously and honestly as possible, it could be that especially narcissistic participants tried to present themselves positively. So the answers themselves could be a kind of self-presentation, or impression-management (Mummendey, 2006). The tendency of social desirability can be measuring by the BIDR (Balanced Inventory of Desirable Responding; Musch, Brockhaus, & Bröder, 2002; Paulhus, 1998; Paulhus, Bruce, & Trapnell, 1995).

Furthermore, it should be considered that the size of our Russian sample ($N = 72$) is quite small. Therefore, caution is required with respect to generalization of results. They represent the first step of a research endeavour, which focuses on cross-cultural comparisons in narcissism and online behaviour on Facebook in Germany and Russia.

For our analyses, it was necessary to match the Facebook pages of our participants with their questionnaires. We did this with the help of participant-codes. But this way, no complete anonymity of the participants was ensured. All participants signed the permission for this method. In order to allow certain anonymity, no qualitative analyses (e.g., the content of the messages) were made. We analysed objective quantitative data.

In addition, we did not ask our participants how often they reject friendship-invitations and delete comments and links of them on photos of other users. This is also a kind of self-presentation and probably takes place when the contents do not fit the image the participants want to create of the own person.

To measure open and covert narcissism in the Russian sample, we translated the German standardised questionnaires. One option would be to adapt the questionnaires, which were developed in English and German and are mainly used in German and US studies, closer to the Russian culture. However, this would make a cross-cultural comparison more difficult because an adaptation of the questionnaires to the Russian culture would inevitably lead to

changes of semantic content. For the translation of the questionnaires from German to Russian we used the customary translation-backtranslation-modification procedure (Berry, 1989).

This procedure ensures that the semantic content in the original language is not changed. However, the translated Russian questionnaires have to be validated in further studies more thoroughly.

In the Russian sample, we have not asked our participants about their use of Russian SNSs. It can be that some participants, who rarely use Facebook, spend a lot of time on Russian platforms, presenting themselves and caring their online relationships. So we could rate their self-presentation and social interaction misleadingly as low.

4.2. Future directions

Our results reveal that in both Germany and Russia a positive relation between narcissism on the one hand and self-presentation and social interaction on Facebook on the other hand emerges.

It would be worthwhile in future research to replicate these findings with larger German and Russian samples. In addition, the inclusion of further cross-cultural samples from other countries would be very instructive.

Present research also might be linked to other areas of research (e.g., neuropsychological science). Narcissism could have some neuronal correlates, similar to extraversion (Eysenck, 1973) and sensation seeking (Zuckerman, 1984). Magnetic resonance imaging can be used to examine if there are differences in people with high and low values of narcissism while using Facebook.

Furthermore, the motives for Facebook use should be investigated explicitly (e.g., the wish to belong or for popularity; Winter et al., 2014). For example, some users could show high self-presentation because of peer pressure. When they observe the online behaviour of their online-friends they are likely to reason that they also have to show high online activity to become popular. Their friends may reason the same. So the online activity increases in general (Ong et al., 2011; Tong, Van Der Heide, Langwell, & Walther, 2008).

The culture we live in influences our perception and understanding of us, our environment and other persons. Earlier research showed that some emotions can only be understood out of the cultural context (Thomas & Kammhuber, 2006). Therefore, the question arises whether Facebook users from different cultures are able to recognise narcissistic features of their interaction partners through their online self-presentation.

We assume that people in a collectivistic culture use stricter criteria to identify narcissistic self-presentation and interaction as people grown up in an individualistic culture. This might also influence their individual behaviour. These considerations could be profitably examined in future research.

To put our results in perspective it is important to mention that we analysed only the online behaviour on the social platform Facebook. Even though this platform has over one billion users in different countries, it is just one application among others in the World Wide Web. Therefore, it is not possible to generalize the present results to the whole online world. Further studies might examine whether the differences and similarities we found between the two countries on Facebook generalize to other applications, which are offered in the online world. For example, a recent study of the Internet encyclopedia Wikipedia showed that authorship of Wikipedia is associated with different personality traits and individual differences in motivation to contribute to the encyclopedia (Jadin, Gnambs, & Batinic, 2013). Furthermore, it would be interesting to investigate the online behaviour of users of the Amazon store or the professional orientated social platform Xing. These online applications clearly differ from Facebook in design and content. However, it would be interesting to study whether personality traits of users (like their narcissism) exert an influence on their method of approach on different applications and whether the results that we found with respect to social interaction on Facebook might be replicated in the context of other Internet environments.

Acknowledgement

The authors would like to thank Holger Schillack for proof reading the article.

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