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Psychological Predictors of Students' Behavior in Internet Under Information Uncertainty

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Abstract: This article is devoted to the study of psychological predictors of students' informational behavior and their peculiarities of over-coming stressful situations. The article reveals the relevance of studying this problem, the degree of study of the topic of informational behavior in various scientific fields. The necessity of studying the motivational basis of informational behavior is substantiated; the analysis of diagnostic approaches to the study of informational behavior is given. The article presents the author's approach to studying the motivational basis of informational behavior and reveals two groups of informational behavior strategies - normative and risky. The empirical part of the article presents an analysis of the conducted research for the study of psychological predictors of students' informational behavior in the Internet. It was revealed that the normative strategy of informational behavior "Internet as a motivating force" has the largest number of correlations with coping strategies and indicators of resilience. The results obtained can prove the adaptability of students who actively use the socially oriented strategy "Internet as a motivating force" and the level of their resilience.

Keywords: informational behavior, informational behavior motivation, normative strategies, risky strategies, psychological predictors, coping strategies, resilience.

Introduction

The familiarity of a modern person to the informational space changes his attitudes, behavior and life-style. The informational society sets certain guidelines for social relations and contributes to the emergence of human informational behavior. The situation of uncertainty increases the level of stress in the modern world and actualizes the coping behavior of a person in the conditions of internet environment.

In the scientific community, there are discussions about the legitimacy of using the term "informational behavior". However, discussions on this issue in foreign psychology led to the popularization and even wider use of this concept.

Informational behavior is manifested in the ability to navigate the informational space, in the skills of informational technology, in the ability to adequately assess and productively use the information received. The ability to create, distribute and be responsible for the dissemination of new information products also lies within the competence of informational behavior. Although the technical side of informational behavior is significant, this phenomenon cannot be considered one-sided, psychological aspects are important components. The lack of research on this aspect of informational behavior actualizes the need to study and disclose the psychological characteristics of informational behavior and its connection with the peculiarities of using coping strategies in the Internet.

Worldwide network of the Internet is considered today not only as an information infrastructure, but as a new virtual space where the urgent needs of both an individual and large groups can be realized. The openness of the Internet provides great opportunities for a person to realize his needs and motives, and the interactivity of this information tool allows you to "touch" various events in real time.

1. Literature review

Russian researchers are actively studying informational behavior and its various aspects. The informational behavior of readers and their information needs were actively studied in the 60-90s by

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Russian librarians and bibliologists (Yu.A. Schreider, E.S. Bernstein, E.L. Shapiro, T.N. Koltypin). The pedagogical aspect of the informational behavior of specialists was studied by E. Kulakova. The culture of informational behavior of Internet users from a philosophical and cultural approach is considered by Matvienko D. V., the culture of informational behavior as a structural part of informational culture is reflected in the works of Antonov G., Vokhryshev M. G., Gorlov I. I., Degterev A. R., Dulatov A. N., Zinoviev N.B., Zubov Yu.S., Kudrin T. A., Lotman Yu. M., Petrov V. M.

Y. Drescher connects informational behavior to the efforts and actions that a person makes to obtain and master information and create new knowledge (Kulakova, 2000; Matvienko, 2009; Drescher and Atlanova, 2005).

On the Internet, through his informational behavior, a person is revealed, on the one hand, as a consumer, and on the other, as a creator and distributor of information. At the same time, the informational behavior reflects the degree of accessibility and comfort of using information resources (Potekhina and Belyakova, 2001).

The introduction of technical means into the life of a modern person has an impact on the motivational-need-sphere, "new technical means create new needs, as well as change the way existing needs are met. In addition to the main function, technical means are beginning to perform others - to indicate the status of a person, the extent of his acquaintance with technology" (Rasskazova, Emelin and Thostov, 2015).

In connection with the widespread prevalence of information and communication technologies, and in particular the Internet, it becomes urgent to study the features of the informational behavior of active Internet users, the motivational basis of such behavior, predictors of this behavior.

The motives of behavior on the Internet, the study of search queries and their use in the system of individualized online marketing are the subject of research of large corporations operating online. So, Google employees proposed a classification of behavioral models of mobile users, which is based on the motivation for going online:

1) "Repetitive Now": use mobile apps to search for current, updated and recurring information to stay in the loop. As a rule, this is viewing the same type of data, but at different dates and periods of time (weather forecast, discounts, and sports results);

2) "Bored Now": the behavior of users who just need to "kill time", something to do, have fun while they are waiting for something. It is characterized by short-term connection to the network and social services using a mobile device;

3) "Urgent Now": this behavior is inherent in users who need access or information, and who are very limited in time. As a rule, they look for information that is sensitive to the time of day, social or space-time context (Melnik, 2012).

In considering the types of informational behavior, researchers are studying coping behavior and resilience as psychological predictors that can help a person maintain psychological well-being and health.

Psychological research concerning motivation and predictors of informational behavior of Internet users is insufficiently represented today. The proposed research is aimed at filling the gap in this kind of research.

Materials and Methods

The study of informational behavior within the framework of psychology began back in the 70s and 80s of the twentieth century: the emphasis in research gradually shifted from the study of communication mediated by computers, to the analysis of the characteristics of user activity on the Internet and the construction of models of Internet behavior.

Diagnostic approaches to this problem have their own characteristic features. The first (and most at the moment) proposed diagnostic methods considered behavior on the Internet in the context of the formation of Internet addiction. So, K. Young, proposing his first version of the Internet Addiction Test (IAT) in 1994 uses the concept of "Internet addiction" to indicate the destructive effect of informational technology on an individual, comparing this addiction to an obsessive state. This technique deliberately does not differentiate between content that leads to obsessive behavior. The test can be used as a rapid diagnostic method to determine the presence / absence of addiction. Further study of Internet addiction and its specifics leads K. Young to the conclusion that Internet addiction can be caused by different reasons and manifest itself in different ways, requiring different types of treatment. The author supplements his IAT methodology (up to 20 questions) by introducing assessments related to the following areas: avoidance of reality, obsession, neglect of duties, anticipation, lack of control, social avoidance.

The diagnostic toolkit, developed in the late 90s of the XX in the early 2000s, focuses on the study of dependent informational behavior, and the presented methods are modifications of the scales of K. Young and S. Chen.

Since the 2000s, the availability of the Internet began to grow, mostly thanks to the revolution in the development of technical means (the emergence of smartphones and the mobile Internet), and the emphasis in the diagnosis of informational behavior is gradually shifting from determining the presence of dependence on the Internet, to the study of online behavior and its influence on the personal characteristics of the user, the model of his informational behavior.

In the proposed study, the emphasis is on the study of models of informational behavior using the author's technique "Strategies of informational behavior" SIP (Abakumova I. V., Romek V. G., Kolenova A. S., Grishina A. V., Zvezdina G. P.). The technique allows determining the severity of a particular strategy of informational behavior, based on the motivational orientation.

Let us consider in more detail the author's approach to the study of informational behavior. In our opinion, it is the motivation of users that is the most important link in behavioral models on the Internet. Understanding motivation as the determination of behavior as a whole, it is necessary to include in the concept of motivation all types of motives - motives, needs, interests, aspirations, goals, drives, attitudes and others (Meshkov, 2015). This understanding of motivation as a complex of factors influencing and determining behavior has led us to single out five models of Internet behavior: entertainment, informational, communicative, productive, and pragmatic. It should be emphasized that within the framework of the author's motivational approach to strategies for Internet behavior, the content consumed itself is not as important as the motive for using this content.

Based on the motives of informational behavior, we divided all the strategies we have identified into normative and risky ones. Normative strategies include Internet for killing time; Internet for information search; Internet to tell others about yourself; Internet for shopping; Internet as a motivating force (examples of others). Risky strategies include Internet as an access to alternative information (oppositional views); Internet for participation in communities (extremism, destructive tendencies); Internet for spying on others in social networks; The Internet for the realization of sexual needs; Internet for expressing ideas (manifestations of nationalism). Each strategy is distinguished by a certain direction of behavior and a complex of different motives of behavior. This study focuses on the normative strategies of informational behavior. Let's describe their features in more detail.

Behavior within the entertainment strategy (Internet for killing time) is aimed at the process of activity and at oneself, that is, the user himself receives knowledge, emotions, and impressions in the process of consuming entertainment content. This strategy includes motives associated with using information to maintain or change their emotional state, as well as in order to simply pass the time and be distracted.

Within the framework of the information strategy (Internet for information search), the user's behavior is directed towards the result of the activity and towards himself. This strategy is a classic consumption of information from the Internet to solve their educational, professional and even everyday tasks. In this case, the emphasis is on the search result, and not on its process, as in an entertainment strategy.

The communicative strategy of Internet behavior (Internet to tell others about yourself) includes all forms of behavior that involve interaction with other users (both active and passive). In this case, the activity is directed at oneself and at others, and the process of communication is more important than its result.

A productive strategy (Internet as a motivating force) presupposes the creation of new content, a product of one's own creativity, which is important to share with others, i.e. in this case, the activity is aimed at results for others.

Within the framework of the pragmatic strategy of Internet behavior (Internet for shopping), 2 types of behavior can be distinguished: 1) users who sell something and thus earn; 2) users who buy something, thereby satisfying their needs.

On the basis of the presented theoretical model, the author's methodology "Strategies of informational behavior" (SIP) was developed by Abakumova I. V., Romek V. G., Kolenova A. S., Grishina A. V., Zvezdina G.P. The technique has passed peer review and is being tested (Abakumova, Zvezdina and Grishina, 2022).

In order to study coping strategies and resilience, the following techniques were used: "Indicator of coping strategies" by Amirkhan, 1990 (adaptation by N. A. Sirota and V. M. Yaltonsky) and personal questionnaire "SACS" L. Hobfall, methodology "Test of vitality" by S. Maddy, in adaptation of Leontiev and Rasskazova, 2006.

Results

As part of the study of informational behavior, an empirical study was carried out in order to identify the features of informational behavior of students with different motivational orientations, to identify the psychological predictors of it and to study their peculiarities of overcoming stressful situations. Psychology students in the number of 240 people aged 18 to 25, were the respondents of the study. Boys and girls who study at daytime and evening education took part, of which girls made up more than 80% of the respondents.

The diagnostic results were processed using the methods of mathematical statistics, in order to study correlations, the Spearman coefficient was used.

According to the results obtained according to the "Strategies of informational behavior" (SIP) methodology, this sample of subjects demonstrated the informational behavior strategies presented on Figure 1.

Analysis of the severity of informational behavior strategies in the sample of students showed that the priority strategy most often used by students while using the Internet is "the Internet for information search". The use of the Internet as the main source of information indicates that students have, first of all, educational (business) motivation. The modern Internet space has a large information resource capable of satisfying various needs.

The second most popular strategy is the "Internet as a motivating force". This strategy performs, in a sense, the function of socialization of a person and is aimed, first of all, at the assimilation of patterns of behavior and examples of the way of life of the reference and authoritative groups on the network, which are significant for Internet users.

The strategy "Internet for killing time" ranks third in the hierarchy of motivational strategies. Orientation of student youth to meet hedonistic needs and constant presence in the Internet space creates in them the illusion of being busy and immersed in business.

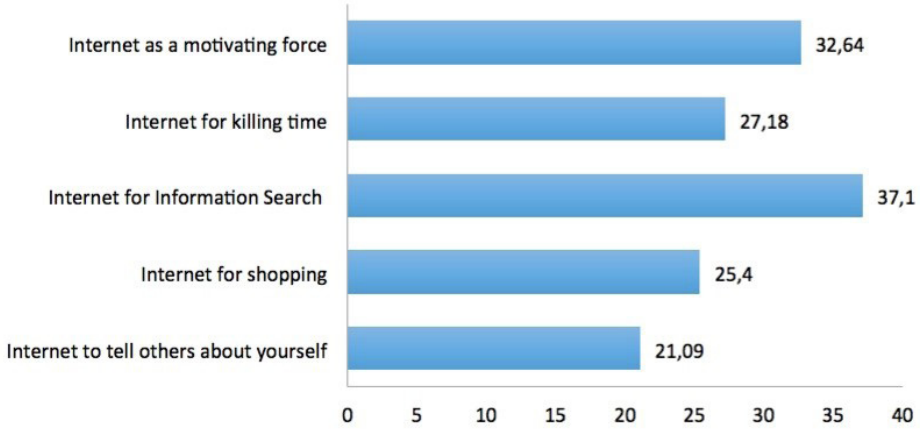

Figure 1. Representation of informational behavior strategies in the student sample

The pragmatic motivation "Internet for shopping" is expressed within the average values, students resort to it when necessary. The lowest indicators were scored by the strategy "Internet to tell others about yourself".

Thus, the analysis performed allows concluding that the repertoire of motivational strategies used by students is quite diverse and flexible.

At the next stage of the empirical study, psychological predictors were identified that are associated with strategies of informational behavior. The indicators of resilience and coping strategies were used as predictors. The study of Spearman's correlations between informational behavior strategies and coping strategies showed the presence of both direct and feedback relationships, presented in Table 1.

Table 1

Results of correlation analysis between motivational strategies of informational behavior and strategies of coping behavior

Variables	Quantity of persons	Correlation coefficient (Rs)	Significance (p-value)
Internet to tell others about yourself & Internet as a motivating force	240	0, 502	0.01
Internet as a motivating force & Internet for spying on others on social networks	240	0.452	0.01
Internet to tell others about yourself & seeking social support	240	- 0, 249	0.01
Internet to tell others about yourself & problem solving scale	240	- 0.247	0.01
Seeking social support& Internet for spying on others on social networks	240	- 0.376	0.01
Internet for Information Search & Problem Avoidance Scale	240	0.227	0.03

The informational strategy "Internet for information search" (0.227) has a direct relationship with the passive strategy of "avoiding problems", and the strategy "Internet for killing time" (-0.227) has a feedback.

The results obtained may indicate that students, using the Internet as a source of information, avoid solving the problems that they face, or in this way avoid solving the problems they face.

And according to the results obtained, the more often students use the Internet to "kill" time, the less often they resort to avoidance strategies.

The analysis for the presence of a connection and tightness of connection between strategies of informational behavior and coping strategies showed that in the group of strategies for informational behavior the greatest number of correlations was found between the strategy "Internet as a motivating force" and different coping strategies.

Direct moderate and weakly expressed relationships were established using the Spearman coefficient between:

-strategy "Internet as a motivating force" and adaptive strategies for coping behavior as "assertive actions" (0.206), "entering into social contact" (0.41);

- the strategy "Internet as a motivating force" and non-adaptive strategies of coping behavior, such as "manipulative actions" (0.27), "impulsive actions" (0.22) and "asocial actions" (0.22);

- the strategy "Internet as a motivating force" and indicators of resilience: "engagement"(0,29), "risk taking"(0,20), "general level of resilience"(0,25).

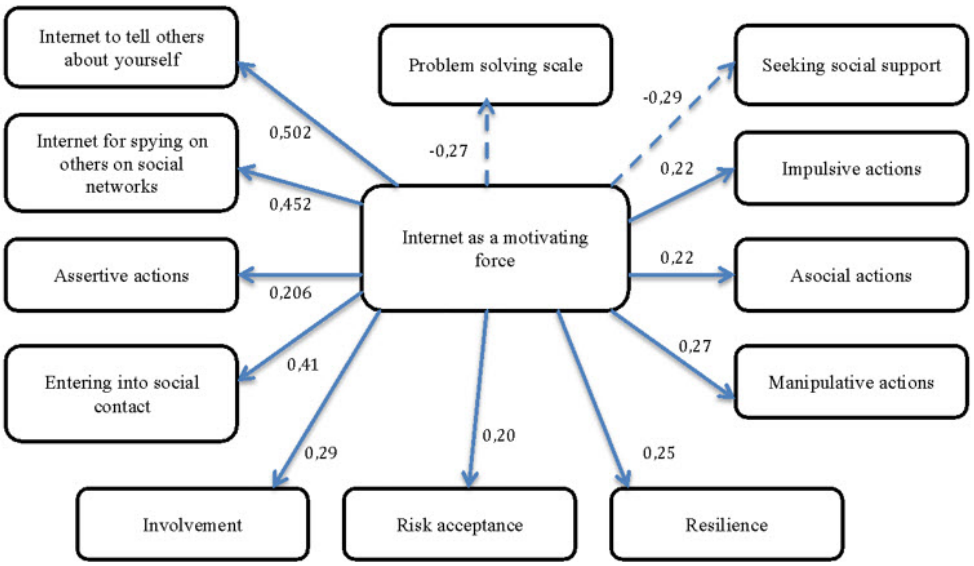

Figure 2. Correlation links with the strategy "Internet as a motivating force"

The presence of a connection between assertive actions and the motivating power of the Internet demonstrates that the positive experience of other people, their achievements and success contribute to constructive overcoming of life's difficulties, increase confidence in oneself and one's capabilities. It can be assumed that this strategy of informational behavior teaches a person constructive behavior, based on the demonstrated images of success.

The results obtained may indicate that when using adaptive strategies, Internet users turn to internal resources and rely on themselves, or resort to external social resources, such as entering into social contact.

When using non-adaptive coping strategies, Internet users try to cope with stressful situations through manipulative actions aimed at achieving the desired result through indirect actions and covertly using others to their advantage. Also, the list of non-adaptive coping strategies includes "impulsive actions". Coping actions with such a strategy lose their purposefulness and become mainly the result of the release of emotional stress. Asocial actions are also present in the arsenal of coping behavior of Internet users and are manifested rather in violation of generally accepted norms and rules, in violation of boundaries.

Also, negative inverse links were revealed between the strategy of informational behavior "Internet as a motivating force" and the coping strategy "Seeking for social support". The results obtained may indicate that due to the frequency of using the Internet as a social reference point and an example to follow, there is a decrease in the need to turn to others for help in stressful and difficult life situations. It is possible that active interaction with others on social media devalues real social support. Observing the lives of others, a sense of belonging and presence, perhaps becomes a resource for overcoming stressful situations.

The informational strategy "Internet as a motivating force" also has feedback with problemsolving coping. Active inclusion in the public space, using the possibilities of the Internet to satisfy one's needs for belonging to a group, to others, takes a person away from solving problems, creates illusions of well-being in him. The "problem solving" strategy requires a rational approach to problem solving, the ability to critically analyze the situation and choose the most adequate solutions. However, students-Internet users, focused on self-presentation of them in the Internet space, constantly wait for an emotional response from others and less often resort to an active problem-solving strategy that requires a person to be able to transform and overcome himself.

Thus, students actively resorting to the informational strategy "Internet as a motivating force" have in their arsenal different strategies and techniques of coping behavior, both adaptive active and maladaptive strategies, both direct connections and inverse ones. The results obtained may indicate that, depending on the life situation, users flexibly and dynamically use one or another strategy that helps to minimize stress and increase a sense of well-being.

The study of correlations between strategies of informational behavior revealed moderate positive links between the informational strategy "Internet as a motivating force" and other socially oriented strategies - "Internet to tell others about yourself" (0.502) and "Internet for spying on others on social networks" (0.452). Students actively use the Internet as a platform for their self-presentation, and as a resource for obtaining information about others, the peculiarities of their lives, successes and failures. The possibility of making social comparisons on the Internet may help in the formation of one's own identity.

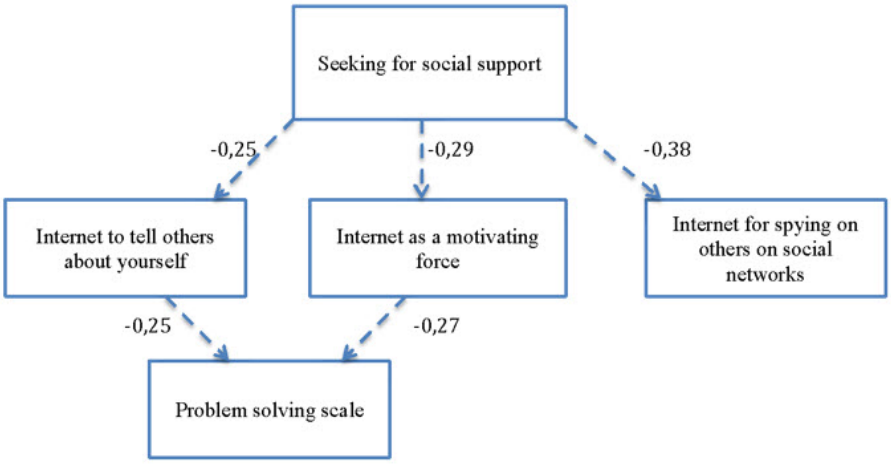

Figure 3. Correlation matrix of relationships between motivational strategies of informational behavior and strategies of coping behavior

Also, correlations were revealed between the strategy of informational behavior "the Internet as a motivating force" and indicators of resilience, such as "involvement" (0.29), " risk acceptance "(0.20), and a general level of resilience(0.25).

The results obtained may indicate that the socially oriented behavior strategy of student users of the Internet resource - "Internet as a motivating force" is positively related to involvement, which is characterized by the respondents' enthusiasm, the presence of internal motivation for what they are doing, life satisfaction. The relationship of this strategy with the scale of "risk acceptance" shows that students in whom this strategy is dominant are characterized by dispositional optimism, tolerance to uncertainty and optimistic attribution of failures.

The results obtained show that students who actively use the informational strategy "Internet as a motivating force" have demonstrated a sufficient level of resilience, allowing a person to overcome anxiety in situations of increased uncertainty and be independent of situational emotional reactions.

Discussions

Research on the problem of informational behavior reflects different aspects of this psychological category. The problem of coping styles in connection to digital consumption became of serious importance in the period of COVID-19 pandemic and social isolation, when social media and Internet recourses has become the only source of communication with relatives, colleges and friends.

Our studies in that period showed that increased informational consumption can be considered as a coping strategy of overcoming the pandemic social isolation for respondents with low hardiness and tolerance to ambiguity: searching different types of information (in particular the latest news about the COVID-19 pandemic) helps such people to overcome the ambiguity of the situation, makes their life more understandable and predictable, thereby giving confidence in the future and making today's interesting. Stable informational consumption indicates that these respondents are stable and confident in their interests, in their need for the information necessary to feel safe. Decreased informational consumption shows that for feeling calm and enjoy the opportunity to spend time on social isolation, these respondents do not need outside information (Grishina and Abakumova, 2020).

Zhao N. and Zhou G. (2021) studied the risk of addictive social media use (SMU) in COVID-19 pandemic. The results showed that COVID-19 stress was positively associated with tendencies toward addictive SMU. Path analyses revealed that this relationship was significantly serially mediated by active use and social media flow, with SMU time being controlled. Authors' findings suggest that individuals who experience more COVID-19 stress are at increased risk of addictive SMU that may be fostered by active use and flow experience (Zhao, N. and Zhou, G., 2021).

Wolfers L. N., Festl R., & Utz S. found within-person correlations between nomophobia ("no-mobile-phone phobia") and stress at one time-point, but not over time. For the younger age group (18-39 years), more passive Facebook use than usual was associated with more stress than usual six months later, and more stress than usual was followed by less passive Facebook use six month later (Wolfers, Festl and Utz, 2020).

Nimrod G. explored older people's use of the Internet for coping with stress posed by the COVID-19 pandemic and found significant positive associations between stress and increase in Internet use for interpersonal communication and online errands. Linear regression analysis revealed a significant negative association between stress and subjective wellbeing, but it was only increased Internet use for leisure that associated significantly with enhanced wellbeing (Nimrod G., 2020).

This result can be supplemented by the conclusions made in the work of Gioia, F., Rega, V., & Boursier, V., showed that among adolescents it is the problematic use of the Internet that can act as a coping strategy to compensate for deficits in emotional regulation. The lack of social support and good relations between adolescents and parents negatively affects the ability to emotional self-regulation, which, in turn, further increases the risk of developing problematic Internet use (Gioia, Rega and Boursier, 2021).

The study of Brailovskaia, Schillack and Margraf, has links with our research, as they investigated the reasons for social media use (SMU), as well as their relationships with daily stress, depression and anxiety symptoms, experience of flow during the usage process and tendencies of addictive SMU. Authors suggest the following users' reasons to go online: "Search for Information and Inspiration", "Search for Social Interaction", "Beat of Boredom and Pastimes", "Escape from Negative Emotions", and "Search for Positive Emotions". The empirical study showed that only the category "Escape from Negative Emotions" positively predicted tendencies of addictive SMU (Brailovskaia, Schillack and Margraf, 2020).

A number of other studies analyze personal qualities that determine or influence the informational behavior of a person (Shchebetenko S. A., 2013; Gordeeva A. V., 2016; Khasanova and Kotova, 2017; Rubtsova, Panfilova and Smirnova, 2018; Rubtsova, Panfilova and Smirnova, 2018; Moore and Craciun, 2021; Pogozhina et al., 2020). Studying digital behavior predictors Shchebetenko S. A. investigated the relationship between the personality traits of the Big Five and the behavioral patterns of students in the virtual space. The researcher identified indicators of user activity on the site and studied the relationship with the personality traits of the Big Five. The author found that extraversion, neuroticism, and agreeableness are important independent predictors of many behavioral indicators of activity, including the number of friends, the number of posts on the wall, photos and "likes" under a user photo, etc. The effects of openness to experience were found to be almost entirely mediated by association with extraversion. Conscientiousness effects have their own specifics, manifesting themselves in relation to the features of the "avatars" used by users: as conscientiousness indicators increase, they use substitute avatars less often and more often use their personal portrait photos. In general, user activity increases as extroversion and neuroticism scores increase, and these effects were found to be independent of each other (Shchebetenko S. A., 2013).

The relationship between the self-attitude of a teenager and the variability of his self-presentation in communication mediated by the Internet was studied by A. V. Gordeeva. The author has identified the following patterns:

1. The content of self-presentation of adolescents in the virtual space becomes more heterogeneous and unstable when there is no clear sense of identity. Then teenagers try different behaviors in Internet communication.

2. The variability of a teenager's self-presentation in Internet communication is not determined only by situational external causes, but is associated with the content characteristics of the user's self-attitude (Gordeeva A. V., 2016).

Marengo, D., et al, aimed to identify the relative prevalence of different patterns of social media use, and to evaluate potential between-group differences in the distributions of age, gender, education, and Big Five personality traits. It was found that individuals using at least one social media platform were generally younger, more often female, and more extraverted than non-users. Small differences in Conscientiousness and Neuroticism also emerged across groups reporting different combinations of social media use (Marengo et al., 2020).

Moore, K., & Craciun, G. showed that personality factors explained significant amounts of variance in terms of attitude towards Instagram, number of likes, total number of Instagram posts since account inception, and social media addictive tendencies (Moore and Craciun, 2021).

In this way, the results of russian and foreign studies show that the informational behavior of a person is largely determined by the personal characteristics of the Internet user and, in certain situations, can help the person cope with stress, providing more information about the situation and distracting from actual problems. This coincides with the conclusions we made at different stages of the study.

Conclusions

Based on the conducted empirical research, the following conclusions can be drawn:

- it was revealed that the dominant motives for going online for students are motives of communication, cognitive and entertainment motives;
- it was found that the predominant motivational strategies of informational behavior in the student sample are strategies - "the Internet for information search" and "the Internet as a motivating force";
- it was found that coping strategies and indicators of vitality are psychological predictors of informational behavior;
- the greatest number of correlations between indicators of resilience and strategies of coping behavior was revealed with the motivational strategy of informational behavior "the Internet as a motivating force";
- the motivational strategy "the Internet as a motivating force" has a positive relationship with indicators of resilience - with inclusion and acceptance of risk, which may indicate that such students are able to withstand life failures in a situation of uncertainty;
- the variety and wide repertoire of coping strategies associated with the informational strategy "Internet as a motivating force" allows us to say that students using this strategy demonstrate an adaptive style of behavior and flexibility in coping with stress and life difficulties.

The study made it possible to reveal the features of informational behavior strategies in connection

with the resilience and coping strategies of respondents in using the Internet and outline the prospects for further study of this problem.

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Conflict of interests

The authors declare no conflict of interest.

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