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SUBJECTIVE WELL-BEING: PREDICTORS AND CONSEQUENCES

What It Means to Be Oneself: The Everyday Ideas of Authenticity among Primary School Children and Adolescents in Russia

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Background. Personal authenticity is a person's ability to be oneself and coherent in both his/her personality and the circumstances of his/her life (time, place, and life-calling). The sense of one's true self plays an essential role in peoples' psychological well-being and life goals. Currently, the theory of authenticity is included in existential psychology, the person-centered approach, and the psychology of the subject, but all of these approaches have some methodological limitations.

Objective. The aim of the current study was to explore the everyday presentations of the true self among the primary school children and adolescents. It was expected that in adolescence, these representations are more differentiated and mature than at an earlier stage of life.

Design. In the exploratory research, 330 respondents took part, including 163 primary school children (74 girls, 87 boys, ages 7 to 11; M = 9.4) and 167 adolescents (78 girls, 89 boys, ages 12 to 17; M = 14.3). A special interview consisting of 11 open and closed-ended questions was developed. The inductive method of content analysis was used.

Results. Differences were found in the frequencies of the categories used by primary school children and adolescents. Older respondents described their true selves in more detail; their evaluations were more positive and often included their social life as an inseparable part of themselves, whereas descriptions by the younger children were more sparse, ambiguous, and individualistic.

Conclusion. The results obtained can help identify the substantial stages of the genesis of the true self. To develop authenticity, these facts should be taken into consideration.

Keywords: authenticity; true self; adolescents; everyday representations; descriptors; content analysis

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Introduction

Authenticity, as the ability to be oneself or to follow one's true self, is defined in our study as the coherence among a person's life experiences (actions, cognitions, and emotions), his/her personality (temperament, values, and beliefs), and the circumstances of his/her life (time, place, and life-calling). The need to be authentic is a constant value in various forms in all cultures and generations. Authenticity lets a person be resilient, emotionally stable, and psychologically healthy; enables friendships; and leads to a meaningful moral life (Brunell et al., 2010; Chessick, 1996; Goldner & Berenshtein-Dagan, 2016; Harter, 2002; Impett, Sorsoli, Schooler, Henson, & Tolman, 2008; Mengers, 2014; Peets & Hodges, 2018; Rivera et al., 2019; Thomaes, Sedikides, van den Bos, Hutteman, & Reijntjes, 2017; Tsang, Hui, & Law, 2019; Yanchenko & Nartova-Bochaver, 2020; Zhang et al., 2019).

The opposite is also true: people who lack in personal authenticity are prone to addictions, depressions, and immoral attitudes toward the world (Anli, 2018; Gino, Kouchaki, & Galinsky, 2015; Vargová, Zibrínová, & Baník, 2019). Hence, people who want to become self-actualized set a goal to develop authenticity. The concept has not been studied comprehensively, and this phenomenon has never been in the mainstream of personality research; it steadily retains a somewhat marginal and complex nature, but remains as a very attractive subject for researchers (Baumeister, 2019; Newman, 2019; Strohminger, Knobe, & Newman, 2017).

Moreover, authenticity is recognized as one of the most problematic, troubling, elusive, and vague concepts of personality psychology (Jones, 2010; Hicks, Schlegel, & Newman, 2019). We can offer some logical explanations for this.

First, the ontological status of authenticity in psychology is not obvious: it is considered a personality trait, a state, or a contextual characteristic (Kernis & Goldman, 2006; Lehman, O'Connor, & Carroll, 2019; Lenton, Slabu, & Sedikides, 2016; Robinson, Lopez, Ramos, & Nartova-Bochaver, 2013; Wood, Linley, Maltby, Baliousis, & Joseph, 2008; Sparby, Edelhäuser, & Weger, 2019).

Second, it can be investigated from both interpersonal and intrapersonal perspectives (Grégoire, Baron, Ménard, & Lachance, 2014).

Third, it is assumed that the content differs depending on the paradigm and culture in which it is studied (Ito & Kodama, 2007; Xia, Lv, & Xu, 2021). Moreover, some researchers are sure that authenticity cannot be identified by scientific concepts at all, because it does not meet the standards of objectivity and verifiability (Strohminger et al., 2017).

Nevertheless, despite this relative ambiguity of understanding, authenticity continues to be the subject of lay theories, folk representations, and everyday reality in the humanities branch of personality psychology and psychotherapy. Our work contributes to this line of research.

Authenticity in different paradigms of personality psychology. Contemporary psychology emphasizes several manifestations of personal authenticity. According to Harter, it involves "owning one's personal experiences, be they thoughts, emotions, needs, wants, preferences, or beliefs, processes captured by the injunction to 'know oneself.'" (Harter, 2002, p. 382). Kernis & Goldman (2006), using the existential paradigm of personality research, suggest that authentic functioning should include four

components: 1) self-understanding; 2) recognizing one's ontological realities objectively; 3) behavioral actions; and 4) certain features of interpersonal relationships. In the humanistic person-centered conception by Rogers (1951), authenticity is the degree to which a person's primary experience, symbolized awareness, and outward behavior and communication correspond to each other (Barrett-Lennard, 1998; Nartova-Bochaver, Reznichenko, & Maltby, 2020; Wood et al., 2008). Authenticity itself is expressed in the ability to live authentically without accepting external influence, and the absence of self-alienation. Sheldon, Ryan, Rawsthorne, & Ilardi (1997) consider authenticity a sign of a person's self-organization (in contrast to cross-role variation as a mark of disorganization); this idea has been being developed nowadays (Ryan & Ryan, 2019).

Most of these definitions, except for the Kernis and Goldman (2006) theory, highlight, in full accordance with the western tradition, the internal consistency of the individual and the inter-correspondence of their desires, opinions, roles, decisions, and behavior. It is noteworthy that Rogers represented a very individualistic position in the personality psychology, and the influence of the surrounding world was clearly interpreted by him as a threat to authenticity (Strohminger et al., 2017; Sedikides, Lenton, Slabu, & Thomaes, 2019).

Since Russia is situated between East and West, it combines features of individualism and collectivism in its culture. Therefore, we expect that the range of everyday ideas about authenticity will include both points of view. People in the eastern collectivistic cultures are eager to establish relationships with people and mutual obligations (Kagitcibasi, 2013). As Xia et al. (2021) noted, people from collectivistic cultures are more likely to accept external influence and integrate it as a part of their sense of self, their true self.

According to Rubinstein's (2012) subject-activity approach, people are inseparable from the world, including the social one. Hence, their experience of authenticity (the true self) might reflect the "correct" quality of relations with the world, like a sense of their relevance in time and space, compliance with life's vocation, and acceptance of fate (Nartova-Bochaver, 2011). Supporters of the holistic eastern understanding of a person as part of the world define authenticity as harmony between oneself and one's life course, including destiny (Leontiev & Shilmanskaya, 2019).

Moreover, manifestations of personal authenticity are even trickier: sometimes actions in accordance with one's own personality are felt and considered authentic, and sometimes they are rather complementary to personality (for example, an introvert considers his/her extroverted actions as authentic ones) (Fleeson & Wilt, 2010). In other words, authenticity can be identified, experienced, and comprehended "from the opposite," in non-typical or unexpected situations.

Summarizing their research on the true self, Strohminger et al. (2017) identified its four features as follows: 1) the true self emphasizes moral features; 2) it is valence-dependent and positive by default; 3) the true self is perspective-independent and does not vary depending on whom the person describes himself/herself to; and 4) it is cross-culturally stable. These features represent the true self as an archetype rather than as a cultural and age-sensitive phenomenon (whereas the rest of research considers authenticity just this way) and, therefore, it can hardly be studied within the framework of evidence-based positivist thinking.

The development of authenticity in children of school ages: first approaches. As our quick introduction showed, the investigation of the true self has a great number of gaps and blanks, so researchers must deal with contradictions and confusions. The genesis of authenticity and the dynamics of its ideas in everyday life is one of the most gaping lacunae. According to Rogers' person-centered approach, as a child, a person lives in harmony, feels authentic in accordance with his/her nature, relying on his/her organismic valuing and being free from outside influences (Rogers, 1951). As a child matures, the balance between trusting him or herself and other people's assessments changes, and he/she loses the belief in his or her own feelings, and starts to trust others. School, the first social institution, restricts the child's freedom by means of rules.

According to Erikson (1963), during the elementary school stage (ages 6–12), children face the choice of industry vs. inferiority. They compare themselves with their classmates, and are either proud of themselves or feel inferior. All these processes contribute to the development of their senses of self and the true self, which increases at the adolescence stage (ages 12–18), when children must resolve the question of identity vs. role confusion.

Adolescents struggle with questions regarding who they are, and what they want to do in their lives. Researchers consider adolescence as the most crucial period for the development of ideas about one's true self (authenticity). Children of this age become especially sensitive to any manifestations of insincerity and learn to distinguish between the true and false self: "Although factors influencing authenticity begin in childhood, not until adolescence are individuals actively interested in, if not concerned about, whether their behavior reflects true-self or false-self behavior" (Harter, 2002, p. 384). Consequently, it's at this life stage that people become aware of their true selves, and make an effort to achieve authenticity (Tsang et al., 2012; Uhlendorff, 2004). Authenticity benefits adolescents: it enhances their sense of well-being, covaries with satisfaction of psychological needs for relatedness and competence, and mediates the relationship between need satisfaction and well-being (Heppner, Kernis, Nezlek, Foster, Lakey, & Goldman, 2008; Thomaes et al., 2017).

One of the first studies of adolescents' authenticity, conducted on the sample of respondents ages 12 to 18, showed that young adolescents felt most authentic only when disclosing single facts of their lives to others (sincerity), whereas older teens recognized and expressed their "true" nature not occasionally, but constantly, regardless of how other people see them. (Ullman, 1987).

At the same time, Harter, Waters, Whitesell, and Kastelic (1997) noted that adolescents manifested different personalities depending upon whether they were interacting with their mother, father, close friends, romantic partners, or peers; this fact represented their multiple selves. Thus, they felt cheerless with family, happy in a group of friends, shy with a partner, open in a group of close friends, hardworking at school, reliable at work, or naughty and less responsible with peers. Some adolescents are not confused or embarrassed when they behave in different ways (Weir & Jose, 2010). That is because one of the critical developmental tasks in adolescence is to create multiple selves, along with the true self (Harter, Bresnick, Bouchey, & Whitesell, 1997). Developing multiple selves does not imply the cultivation of the false self. While having multiple selves is considered a normal developmental process, a false self is alluded to as the result of self-alienation. A false self is "the extent to which one

is acting in ways that do not reflect one's true self as a person or the "real me."" (Harter, Marold, Whitesell, & Cobbs, 1996, p. 360).

Self-alienation has been investigated more vigorously than authenticity, since negative phenomena are usually presented in everyday life more varied and can be understood more deeply (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). So, Harter et al. (1996) identified three parental and peer support variables which predict adolescents' false or true selves, namely: 1) level of support; 2) quality of support (unconditional or conditional); and 3) hope about future support. If adolescents lack these resources, they are more likely to feel self-alienated. A lower rate of self-esteem and a higher level of anxiety also contributed to the risk of false-self behavior and, as a result, the false self (Vargová et al., 2019). Rayce, Holstein, and Kreiner (2009) distinguished alienation of thoughts, actions, or personality in general, and proposed to calculate an index of alienation. O'Donnell, Schwab-Stone, and Ruchkin (2006) emphasized the role of alienation and self-estrangement in maladjustment due to being exposed to community violence.

As for the conditions for achieving authenticity, the main one is Rogers's (1951) concept of unconditional positive regard. The rest of predictors stimulating authenticity are warm relationships with parents (Theran, 2009) and security within the family (Goldner & Berenshtein-Dagan, 2016); emotion management skills (Gross & John, 2003); satisfaction of needs, especially the need for autonomy (Thomaes et al., 2017); true-self behavior with parents and classmates; and knowledge of one's true self (Goldner, & Berenshtein-Dagan, 2016). Some researchers consider the school environment a threat to the authenticity of adolescents whereas homeschooling could protect them (Brown, Higgins, & Paulsen, 2003; Sarajlic, 2019).

In summary, over the course of children's school life, the true self (personal authenticity) turns into a value which can be gained through effort. Although data about the adolescents' sense of true self is lacking, we assumed that these representations are becoming more nuanced and differentiated, compared with primary school children. Adolescents also include the true self protectors, like figures of admired others, in their experience of the true self, along with threats of its violation (like school obligations), and its consequences for later life.

Our research was exploratory. We did not put forward explicit hypotheses because of the data deficit. Instead, we raised several research questions:

1. How do adolescents cognitively understand the meaning of "to be oneself"?
2. What role do other people play in adolescents' feelings of the "true self"?
3. What is more tangible for the true self: self-manifestation or self-alienation?
4. How do they emotionally evaluate themselves and their lives?

Our empirical research was devoted to obtaining answers to these questions.

Method

We followed a bottom-up approach typical for an exploratory assessment (Kovács, 2019; Ullman, 1987) because of the absence of a generally accepted definition of authenticity. To study the descriptors of authenticity in two groups (*i.e.*, primary school children and older adolescents), a special structural interview was developed. Kernis and Goldman (2006) offered four categories: awareness; biased self-esteem; behavior;

and orientation in relationships. Wood et al. (2008) singled out three scales: authentic living, accepting external influence, and self-alienation.

After we analyzed these parameters and discussed the definitions and wordings, we created six iterations. Open questions were developed for five units: 1) authentic living; 2) accepting external influence; 3) self-alienation; 4) authentic behavior; and 5) balance between social and individual. Every subscale included two or three questions; the full interview consisted of 11 questions, five of which were open-ended, five close-ended, and one consisting of two parts, one open and one closed.

Two versions of the interview were prepared, one for primary school children and one for adolescents, both with the same meaning of the questions. A written form of the interview was chosen as a means of minimizing the influence of others, letting the respondents think deeply about themselves, and being more convenient for further analysis. Writing practices are a useful tool for self-reflection (Murray, 2002; Tartakovsky, 2015); in addition, our interview seemed to have a small psychotherapeutic effect.

To process the data, we chose qualitative content analysis, namely, the inductive method that implied finding codes and forming categories from the data without a pre-established theory (Gondim & Bendassolli, 2014; Mayring, 2000). As the codes were extracted from the data (Hsieh & Shannon, 2005; Busygina, 2013), conventional qualitative analysis was most relevant.

Two people coded the data independently to assure the analysis's validity and reliablility (Bengtsson, 2016; Erlingsson & Brysiewicz, 2017; Yardley, 2000). Similar codes were enlarged and spliced (Marks & Yardley, 2004). The categories emerged based on the code tables (White & Marsh, 2006). One independent expert performed the same task as the coder. To eliminate any ambivalence, the coders discussed the results (Yardley, 2000). After that, the coding system was checked, and the final categories were approved by the research group.

The condensation of meaning technique was used to go from lower levels of abstraction to higher ones (Erlingsson & Brysiewicz, 2017; Kvale, 2003). A divided coding system, when several codes were found in one respondent's answer, was chosen (Marks & Yardley, 2004). Therefore, the number of codes in categories of open-ended questions differs from the overall quantity of respondents.

We compared groups for the following parameters: 1) *cognitive appraisal of the true self;* 2) *relationships with others (dichotomy "I vs. others");* 3) *sense of the true self;* and 4) *emotional perception of one's true self and life* (see Appendix). We used the Chi-squared test to evaluate the differences between the categories. The unique categories were excluded from the analysis if they were mentioned by only one group (Chi-squared test for nominal (categorical) data, 2021). We arranged the five answers in one group to form the independent category. The codes that did not align with any category were grouped into the category *Different*.

Participants

330 respondents took part in our research: 163 primary school children (74 girls, 87 boys, and 2 who did not identify their gender; ages 7 to 11; M = 9.4) and 167 adolescents (78 girls and 89 boys; ages 12 to 17; M =14.3).

Procedure

The study was conducted at the Russian-Tatar secondary schools in the multinational large city of Kazan. The so-called front-individual survey was used, taking into account the age characteristics of primary school children and adolescents. We conducted the survey in person, in class. We set the task and time limits at 15-20 minutes; the purpose of the interview was presented as evaluating the children's understandings of themselves and their lives. The children answered using the pencil/paper technique; they did not reveal their names. The content of the interview aroused the students' interest, provoking them to ask questions aimed at understanding their behavior, typical life situations, and share their assumptions and conclusions.

Results

As the age groups were similar in size, we show the initial numbers of categories in the tables. All the adolescents' answers were much more detailed, providing 8,509 words in total, or 51 words for each respondent on average. For primary school children, the data set included 5,402 words, or 33 words for each respondent on average.

Cognitive appraisal of the true self. Eleven categories were singled out in the primary school children group, and 10 in the adolescent one (*Table 1*). The frequencies of categories between groups differed significantly (Chi-squared = 72.47; df = 8; $p < 0.01$). A large number of the primary school children had problems with defining what it meant "to be oneself," so the categories *No answer* and *Different* were most frequently chosen.

Table 1

Cognitive appraisal of the true self

The categories	Primary school children / Adolescents
No answer	35 / 18
Different	34 / 15
Independent behavior	28 / 30
Independent thoughts	3 / 33
Self-identity/Not to create the false self	11 / 49
Feelings and attitude to oneself	10 / 30
To be individual	10 / 3
Solitude	6 / 3
Authenticity as a value	14 / 0
To be a human	5 / 0
Near other people	0 / 11

Note. Italics indicates categories that occurred only in one group (excluded from the Chi-squared test)

Table 2

Relationships with others (Dichotomy "I vs. others")

The categories	Primary school children / Adolescents
1. Do other people help or interfere with understanding oneself?**	
Help / Rather help	71 / 48
Interfere / Rather interfere	23 / 22
Help and interfere	12 / 13
Do not interfere (Indifferent attitude)	15 / 9
No answer	24 / 8
Different	18 / 52
Self-Orientation	0 / 15
2. The commitment to one's own point of view**	
Follow own opinion	93 / 103
Rather follow own opinion	2 / 17
Rather not follow own opinion	3 / 14
Do not follow	23 / 10
Different	14 / 10
No answer	28 / 13
3. Listen to oneself or others**	
Listen to oneself	63 / 83
Listen to oneself or others	12 / 23
Listen to others	27 / 10
Different	27 / 27
No answer	34 / 24
4. Feeling Authentic when alone or with others**	
The same feelings whether alone or with others	61 / 80
Alone	14 / 11
With others	7 / 8
No (without differentiation)	19 / 26
Different	26 / 5
No answer	36 / 22
Ambivalent feelings	0 / 15

*Note. ** Differences are significant at $p < 0.01$*
Italics indicates categories that occurred only in one group (excluded from the Chi-squared test)

Independent behavior turned out to be practically equal in two groups, whereas among adolescents, *Independent thoughts* were broadly represented. Most wanted to save their *Self-identities* and *Not create the false selves*, although primary school children did not identify these categories as the most essential aspects of being themselves. Primary school children denoted *To be individual* and *Solitude* more often than adolescents. *To be with other people* was a category that made its appearance with the adolescents group for the first time. Younger children preferred unique categories, like *Authenticity as a value* and *To be a human* contrary to adolescents' *Near other people.*

Relationships with others (Dichotomy "I vs. others"). When a person tries to be authentic, he or she has to resolve the conflict between two inclinations: the inner vs. outer and him/herself vs. others. Then he/she must find the optimal balance (*Table 2*). Primary school children supposed that other people helped them understand themselves, but adolescents were convinced that others played only a moderate role in helping them discover themselves (Chi-squared = 32.00; df = 5; $p < 0.01$). Only adolescents identified the *Self-orientation* category.

Most respondents in both groups did not change their minds when their opinions differed from the others' views (Chi-squared = 30.73; df = 5; $p < 0.01$). They listened to their own voices more often than other people's (Chi-squared = 15.64; df = 4; $p < 0.01$). Moreover, older respondents were becoming more independent; they trusted themselves more than others.

Most respondents' feelings did not differ depending upon whether they were alone or with other people; however, in adolescents, such answers were much more frequent (Chi-squared = 21.34; df = 5; $p < 0.01$). Adolescents emphasized their ambivalent feelings toward others, while primary school children did not.

The Sense of the true Self: This theme includes two parts, self-manifestation and self-alienation (*Tables 3a* and *3b*). Most respondents from both groups did not know what type of their behavior reflected their true selves and what type of behavior did not. Adolescents emphasized twice as often as primary school children that they always showed their true selves (Chi-squared = 33.81; df = 5; $p < 0.01$). They needed more contact with others and their peers; when being alone, their sense of true self decreased. The category *Being a subject of the action* was identified only in that group. Adolescents identified *Games and other activities* as more inherent to their true selves than the younger group. *Independent choice of activity* and *Listening to one's own voice* is the sources of authenticity which appear at primary school age.

Although most respondents did not understand what actions best reflected their personalities, adolescents had a much broader repertoire of actions and situations that corresponded to their true selves, such as *Personal responsibility, Difficult life situations, Communication, Favorite activity*, and *Quarrels* (Chi-squared =14.75; df = 4; $p < 0.01$).

As for self-alienation (the opposite of being authentic), adolescents, compared with primary school children, seldom felt lost (Chi-squared = 58.10; df = 5; $p < 0.01$). Emotions were one of the key points for defining one's true self. Adolescents, unlike primary school children, felt annoyed or upset when they were aggressive toward others, or were among other people. Whereas school children met their inner selves

and learned to accept their feelings that might be unpleasant or negative, adolescents rather focused on judging themselves. In addition, some primary school children said that school was an unsafe place for their psychological well-being.

Table 3a

The sense of the true self: self-manifestation

The categories	Primary school children / Adolescents
1. Situations when a person feels the True Self**	
No answer	45 / 42
Always	19 / 38
Different	49 / 25
Independent choice of activity	14 / 0
At home	13 / 18
Being alone	12 / 5
Contact with others and their confession	11 / 40
Walking	6 / 0
Lack of anxiety	5 / 0
Listening to one's own voice	5 / 0
Being a subject of the action	0 / 9
Games and different activities	0 / 7
2. Behavior that reflects respondents' personality**	
No answer	70 / 53
Different	69 / 41
Good deeds	14 / 17
Always	8 / 23
At school	5 / 5
Being a subject of the action	0 / 9
At difficult life situations	0 / 8
In communication	0 / 7
Doing the activity that a person likes	0 / 6
In quarrels	0 / 6

*Note. ** Differences are significant at $p < 0.01$*
Italics indicates categories that occurred only in one group (excluded from the Chi-squared test)

Table 3b
The sense of the true self: self-alienation

The categories	Primary school children / Adolescents
3. Situations when a person cannot understand themselves**	
No answer	41 / 25
Do not lose myself	26 / 78
Different	46 / 15
When a person has unpleasant feelings	16 / 0
When vulnerable to others	11 / 30
At school	9 / 3
When being aggressive	6 / 12
Among other people	0 / 7
In the street	6 / 12
In bad situations	5 / 0
4. Means of self-recovery**	
No answer	69 / 59
Different	41 / 33
When a person relaxes	20 / 13
Without awareness	9 / 0
Inner monologue	9 / 7
Among other people	7 / 14
Doing the activity one likes	6 / 6
Being alone	4 / 7
No self-alienation	5 / 34
Games	5 / 0

*Note.** Differences are significant at $p < 0.01$*
Italics indicates categories that occurred only in one group (excluded from the Chi-squared test)

Identifying resources for the recovery of authenticity was a very difficult task for both groups; nevertheless, their answers differed (Chi-squared = 27.22; df = 7; $p < 0.01$). *Relaxation*, *Being among other people,* and *Doing the activity that one likes* were more valued among primary school children; *Games* were identified as a separate category only in this group. For adolescents, the role of other people was ambivalent: they preferred to share the time with others, and chose to stay alone twice more often than the primary school children did. In addition, they often reported the absence of self-alienation.

Emotional perception of one's true self and life. Finally, we contemplated that authenticity might appear when a person becomes immersed in him or herself, which practice helps people meet their true selves (*Table 4*). As expected, this category significantly differentiated primary school children and adolescents; with a high presence of undefined descriptors in both groups, adolescents accepted and liked themselves more than primary school children did (Chi-squared = 9.39; df = 3; $p < 0.05$).

Table 4

Emotional perception of one's true self and life

The categories	Primary school children / Adolescents
1. Emotional appraisal of one's inner world*	
Like	106 / 131
Not very	19 / 7
Do not like	15 / 12
No answer	23 / 17
2. Emotional perception of one's life	
Like	112 / 115
Not very	14 / 19
Do not like	9 / 7
Different	5 / 3
No answer	23 / 23
3. Aspects of life which respondents liked	
Like, because life is good	14 / 0
Relationships with family and friends	9 / 21
Different	19 / 30
Everything	12 / 23

Note. Differences are significant at $p < 0.05$*
Italics indicates categories that occurred only in one group (excluded from the chi-squared test)

Furthermore, most participants were satisfied with their lives, and there were no differences between age groups on this parameter (Chi-squared = 2.02 < 9.49 at df = 4 and $p = 0.05$). Finally, most respondents ignored the question about the most liked aspects of their life (Chi-squared = 0.64 < 7.82 at df = 3 and $p < 0.05$).

Discussion

Our analysis of ideas about the true self has shown that it is not an archetype but a core component of the empirical self, which is sometimes moral, sometimes immoral, manifests itself in typical and special situations, and is able to develop with growing up.

The results we obtained answered all the research questions raised in the introduction. As expected, everyday ideas of the person's sense of the true self are becoming better developed in adolescence compared to primary school age. Four categories identified during the content analysis of respondents' comments (*cognitive appraisal of the true self; relationships with others; the sense of the true self;* and *emotional perception of one's true self and life*) really differentiated respondents from the two age groups; these differences were both quantitative and qualitative. The adolescents' answers were more differentiated and nuanced. Primary school children marked authenticity as a value and a side of their personality, whereas adolescents associated authenticity with separation from others, predominantly adults, and inclusion of significant others in their true selves.

As for identifying the best situations for manifestation of one's true self and the signs of it, older children mentioned being among other people and independent thinking, whereas younger ones brought up solitude and independent behavior only. It may be that the feelings and attitudes toward oneself are becoming more differentiated as people become older, and their cognitive complexity rises (Kelly, 1955). In addition, becoming an authentic personality is closely connected with entering the worlds of others (Rubinstein, 2012).

The analysis of the category *Relationships with others (Dichotomy "I vs. others")* showed that the adolescents observed the changes in their relationships with others: they trusted themselves, integrated various feelings toward others, and tried to find the balance between "I" and "they." All these steps are essential for dividing the inner world from the outer. Adolescents start listening to their own voices more often than other people's. This is in line with Harter's et al. (1998) results, which demonstrated that having one's own voice is a crucial indicator of the true self in adolescence, and is bound to adolescents' independent thinking as a manifestation of their personal authenticity.

As for the category *Sense of the true self*, most respondents in both groups were not aware of which were the situations and behaviors when their true selves appeared. Regarding self-alienation, they demonstrated important differences: whereas primary school children lost a sense of themselves in situations where they were victims (in the school or a street; generally, in "bad" situations), adolescents felt self-alienated when they themselves were agents of aggression Hence, they realized that they could offend others and distanced themselves most when they were vulnerable to others. These facts are easily interpreted, considering that adolescents appreciate social connections much more than primary school children do.

Finally, analysis of the category *emotional perception of one's true self and life* showed that both children and adolescents failed in being able to interpret their feelings; the observer self had not yet been formed. However, they were engaged in their private lives, and generally, most respondents were satisfied with both their true selves and lives. Some difficulties in describing their experience existed because they were still developing cognitively, emotionally, and personally. The fact that most respondents ignored the question about the most liked aspects of their true selves demonstrates a lack of reflection and perspective-taking, which might be overcome at the next stage of development.

Now, we can answer the research questions raised in our study.

1. How do adolescents and primary school children cognitively understand the meaning of "to be oneself"? Younger respondents associate the true self with independent actions, while older ones try to show their real selves to others.
2. What role do other people play in adolescents' feelings of the "true self"? The opposition between the individual self and other people, proclaimed by Rogers, has not been shown: the respondents in both groups listened to their inner voices and built strong and enriching relationships with others.
3. What is more tangible for the true self, self-manifestation or self-alienation? As for the sense of the true self, it is more easily felt and understood in self-manifestation than in self-alienation. We concluded that adolescents and primary school children had never thought about losing their sense of self.
4. How do they emotionally evaluate themselves and their lives? Most respondents appreciated life and themselves, and this positive feeling gives them an opportunity to accept themselves and becoming authentic.

To sum up, the sense of a true self is still far from being mature among both primary school children and adolescents. Their selves are not integrated, but authenticity is discovered in daily representations and experience. Moreover, contrary to Rogers' (1951) belief that people are authentic only at an early age, and that they lose authenticity because others influence them, we have discovered that the sense of authenticity is enhanced by adolescence, and the social world makes a positive contribution to its maturation.

Conclusion

The analysis of the descriptors among primary school children and adolescents allowed us to identify the main tendencies of personal authenticity development during these age periods. First, whereas the primary school children only recognized what it meant to be oneself, adolescents showed they already understood the concept when they chose to hide themselves. Secondly, associations with the true self stimulated by the interview questions were more positive in the older respondents. Finally, whereas in younger children the true self was connected with individualistic tendencies like looking for solitude, and a negative attitude toward the school, adolescents' experiences of both authenticity and self-alienation were tightly bound to the social world, which is an inseparable part of their true selves.

The results obtained can be the basis for further research, perhaps with emerging adults.

Ethics Statement

This research was approved by the Commission for the Ethical Evaluation of Empirical Research Projects of the Department of Psychology of the NRU HSE.

Informed Consent from the Participants' Legal Guardians (if the participants were minors)

Written informed consent to participate in this study and to publish results anonymously was provided by the parents of the minor respondents.

Author Contributions

S. N.-B. developed the theory, supervised the findings, and wrote a draft; R.B. and K.C. developed the method and performed an empirical study; V.Y. developed the theory, performed the computations, wrote a draft, and revised the paper after reviewers' suggestions. All authors discussed the results and contributed to the final manuscript.

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Appendix

Cognitive appraisal of the true self

Primary school children:

"To be oneself is not to be like others."

"Do what you want and spend the time you want."

Adolescents:

"To be who I want to be, despite the opinions of other people."

"It means not to betray your goals, beliefs, and principles, to defend them without imposing them, and to open up to people from the side that you consider necessary."

Relationships with others (Dichotomy "I vs. others")

Primary school children:

"Best friends accept how I am me, and opponents look for my shortcoming."

"I'd rather listen to myself, not others."

Adolescents:

"My friends listen to my whining and all my problems. They accept me for who I am."

"When I am alone, I feel sad, lonely, and when with other people, I feel important."

The Sense of the true self

Self-manifestation

Primary school children:

"When I do something good, kind."

"When other people hear me, understand, do not ignore, do everything for me."

Adolescents:

"I am myself everywhere: with friends, parents, in an unfamiliar society. I am comfortable with showing myself to other people."

"In situations where I am worried or sad. I become like who I am inside myself."

Self-alienation

Primary school children:

"When other people shout at me."

"When I am scared."

Adolescents:

"If I suddenly do something terrible, I will hate myself then."

"I need to think and analyze the whole situation without the influence of anyone and motivate and love myself. But if you go wrong somewhere, you need to fix the situation and move on."

Emotional perception of one's true self and life

Primary school children:

"I like myself."

"I am neutral toward myself."

Adolescents:

"I like my inner world."

"I really like my fantasy; I plunge into a world in which I become happy, without any problems."

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Is Selfie Behavior Related to Psychological Well-being?

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Background. The reasons and consequences of people's activity on social networks have not been sufficiently studied. Most studies have focused on identifying the dangers and risks associated with posting self-portraits on social networks, but it is an open question as to whether such behavior serves to increase people's psychological well-being.

Objective. We asked ourselves what are the main motives for publishing selfies and whether online activity contributes to psychological well-being.

Design. Our study involved 96 respondents from Moscow, mainly psychology students, who provided information about their activity on social networks, and completed questionnaires on their motivation, social support, and psychological well-being.

Results. Three main motives for publishing selfies were identified: 1) to increase self-esteem; 2) maintain social contacts; and 3) preserve and exchange information. The higher the ratio of selfies taken to preserve information, the higher was the user's psychological well-being. We found significant differences between the characteristics of those participants with high and low activity, and larger and smaller numbers of "friends" in social networks. For those with high activity, their sense of psychological well-being was largely determined by interaction with others. For these persons, communication (including with virtual contacts) was the important resource of well-being. The other group was less dependent on others, and for them, psychological well-being was not related to their activity on social networks.

Conclusion. Our results confirm the connection between the personality traits and characteristics of the respondents' network behavior and their psychological well-being. The study showed that the type of correlation constellation differs between groups of respondents depending upon how much or how little they are oriented toward social support.

Keywords:
selfie;
psychological well-being;
self-esteem;
social support;
motivation to success;
motivation to avoid failure

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Introduction

The passion for taking and publishing selfies (photo self-portraits) which has spread in recent years, requires serious sociological, cultural, and, most importantly, psychological research. On November 19, 2013 the Oxford Dictionary officially announced that "selfie" was their Word of the Year and added this term to their dictionary's database. In 2014 Google reported that its Android devices took 93 million selfies per day. The habit of regularly sharing one's photographs on social media is usually associated with the inclusion of modern technologies in a person's daily activities. But with the broad availability of smartphones and similar devices, some young people are addicted to posting selfies, while others post their photos from time to time, and some respondents do not do so at all.

According to lay psychology, there are various (and sometimes contradictory) stereotypes about excessive selfie-taking. It has been associated with self-centeredness, or, vice versa, with the lack of self-confidence; with a desire for self-affirmation; or even with an excess of free time; with adherence to fashion, etc. However, once carefully studied, these assumptions are not always confirmed. Both positive and negative self-esteem can encourage users to engage in online social networking. Y. Wang and colleagues showed that selfie-posting was positively related to Chinese young adult women's self-esteem, with positive feedback mediating this relationship (Wang et al., 2020). A study of adult men between the ages of 18 and 50 demonstrated an association between Instagram use, selfie manipulation, and body dissatisfaction (Modica, 2020). But S. Schebetenko (2019) did not find any correlation between self-esteem and the number of posts and portraits.

So, we are left with a lot of interconnected questions. Here are some of them:

1. Who uploads their photos to social networks more or less regularly?
2. What is the relationship between the characteristics of users and the features of the photos they upload?
3. What are the main motives for publishing self-portraits in on-line media by people with different personal characteristics?
4. Is there any correlation between the information that the user puts into his image and the information that the observer reads?
5. What are the psychological consequences of users' activity on social networks?

Many studies show that respondents' on-line behavior is associated both with their gender and age, as well as with personal characteristics such as, for example, the traits of the "Dark Triad:" narcissism (Boursier, Gioia, & Griffiths, 2020; Kim et al., 2016; Lee & Sung, 2016; Sorokowski et al, 2015); Machiavellianism; and psychopathy (Charoensukmongkol, 2016; Fox & Rooney, 2015). The differences in motivation and in quality and quantity of published selfies between women and men (Stefanone, Lackaff, & Rosen, 2011), as well as between younger and older respondents (Boursier & Manna, 2018; Dhir, 2016), are confirmed in most studies. Social media statistics also indicate that posting their own photos is most common among teens and young people.

Some studies have found more complex multifactorial relationships. For example, for male respondents, significant positive correlations were found between the traits of the "Dark Triad" (narcissism, Machiavellianism, and psychopathy) and the number of photos posted on the web, as well as the frequency of using photo editors to improve their appearance. The data on the role of narcissism in women are less clear (Fox & Rooney, 2015). It has been shown that people whose self-esteem is more based on approval from others are more likely to emphasize their appearance in online interactions by sharing more photos of themselves on Facebook (Stefanone et al., 2011). L. Monacis, M.D. Griffiths, and their colleagues (Monacis et al., 2020) demonstrated the mediating role of selfie behavior in the relationship of narcissism and psychopathy with social media addiction.

Personality traits affect the content of images posted in social media. For example, agreeable and conscientious users display more positive emotions in their profile pictures, while users high in openness prefer more aesthetic photos. Extraverts have a small face ratio, perhaps related to the multiple people present in their pictures, or the fact that they show more of their bodies or environment. Their photos are also strongly associated with not displaying reading glasses. Neuroticism is negatively correlated with colorfulness and display of emotions (Liu et al., 2016).

Women are more likely to publish black and white self-portraits, thus presenting themselves as art objects, and at the same time reducing the visibility of some textural defects of their skin. Men prefer the predominantly natural setting for selfies, while nearly 40% of female photographs are staged (Netusova, 2015).

Information "laid down by the sender" is not always adequately read by the "recipients." This topic, first taken up in the works of A.A. Bodalev, has been developed in publications of recent years. V.L. Korinchuk and M.A. Shchukina showed that, when evaluating photographs which counseling psychologists posted on the portal for psychological services, potential clients and the participating psychologists themselves evaluated the photographs differently on such grounds as "everyday life," "modesty," "ordinary," "realism," "secrecy," and whether the image was perceived as more empathic, professional, or expert (Korinchuk & Shchukina, 2019). Interesting data was also obtained in the study of the relationship between the personal characteristics of Instagram users and assessments of their virtual social status, made by experts unfamiliar with the individuals profiled (Belinskaya & Prilutskaya, 2019). Based on the profiles of respondents with a high level of neuroticism, Machiavellianism, narcissism, and self-monitoring, the experts quite consistently attributed to them a large number and quality of social connections and a high socio-psychological status.

Thus, the image chosen by a user of a social network is associated with her/his personal characteristics. At the same time, there are some data on the influence of the virtual image on human behavior in real life, the so-called Proteus effect (Reinhard et al., 2020; Yee & Bailenson, 2007).

In motivation research, subjects are most often asked to express their agreement/disagreement with a set of statements about the reasons why they take selfies (for example, Sung et al., 2016), or an emphasis is placed on certain features of their behavior, as in the Selfitis Behavior Scale (Balakrishnan & Griffiths, 2018). On the basis of

the theoretical models, the authors proposed questionnaires with a different number of factors (from 2 to 7). Despite the limitations of these techniques due to the culturally specificity of some questions, and the fact that they can elicit socially desirable responses, these studies gave very interesting results.

Research has confirmed that the main reasons that encourage people to take their photos and post them on social networks include the following: the desire to increase their self-esteem; communication; transfer and preservation of information; entertainment (Sung et al., 2016); or seeking self-approval, maintaining a sense of belonging, and preserving one's memories and experiences (Etgar & Amichai-Hamberger, 2017). J. Balakrishnan and M.D. Griffiths (2018) propose a more differentiated approach to this topic by suggesting six factors of selfitis behavior: 1) self-confidence; 2) attention-seeking; 3) mood modification; 4) environmental enhancement; 5) subjective conformity; and 6) social competition.

In part, these motives coincide with traditional photography, and with the presentation and exchange of text information and pictures on social networks (for example, in LiveJournal), blogging, and other types of indirect communication. The main difference lies in the shift of the main focus to the image (figure, and more often to the face) of the author. In this case, the face or body which is "not evaluated," *i.e.*, that has not received a large number of positive ratings (likes), is perceived as socially unsuccessful.

The struggle for likes underlies the creation of both a socially approved image, and its opposite – an image that "violates repressive norms of beauty" (Abeleva, 2014). E. Nguen (2014) showed that young girls and women (18-29 years old) post photos on Instagram mainly to get positive feedback. To achieve this goal, they actively use the various possibilities of lighting, choosing an angle and a scene, and more often experiment with new images. At the same time, girls tend to follow social norms more than boys. Perhaps this is due to the different attitudes of viewers towards female and male photographs: young men feel more freedom to show themselves without the risk of receiving disapproval, because their photos are criticized less often than girls' ones (Burns, 2015). So, their network activity can be in part directed towards obtaining positive feedback to improve self-esteem.

The majority of the factors described are related to the subjective well-being of the person, although models of internal and external sides of the process of achieving well-being are still awaiting development (Perelygina, Rikel, & Dontsov, 2017). Our study does not pretend to solve this complex problem. We just wanted to study the relationship between the characteristics of respondents' self-esteem and motivation (internal factors), and their perception of social support, social network behavior, and ideas about its causes (external factors), with their psychological well-being. So we posed as the main question: do people who are active in social networks and regularly post their selfies there, receive an additional resource for maintaining their self-esteem and psychological well-being from this activity?

The purpose of this preliminary study was to test the selfie motivation questionnaire and to examine the respondents' ideas about the reasons they and their peers post selfies, and identify the differences, if any.

Methods

Participants

The pre-study sample included Russian undergraduate psychology students: N = 50 (36 women, 14 men; M_{age} = 22.17, SD_{age} = 4.22) who volunteered to take part in an off-line discussion about the role of selfies in their lives.

The main study sample was comprised of students (undergraduate and graduate level) from different universities in Moscow: N = 46 (all women; M_{age} = 26.96, SD_{age} = 5.94).

Measures

Selfie motivation was assessed by a selfie motivation questionnaire, which was composed of 15 items in 7-point Likert format scale (1= strongly disagree; 2 = disagree; 3 = somewhat disagree; 4 = neutral; 5 = somewhat agree; 6 = agree; 7 = strongly agree). Items were grouped into three subscales (five items in each subscale): 1) to maintain and increase self-confidence; 2) to maintain social contacts; and 3) to inform and preserve information. Thus, the minimum score on each subscale was 5, the maximum 35 (Nikitina, 2019; Nikitina, 2020).

To understand their *social network behavior,* we asked the participants about their avatars; the number of their on-line friends; time spent in Facebook/Instagram/VKontakte; and the frequency of posting photos (including selfies) and checking their "Likes".

We were interested in the following elements of *self-esteem*: dissatisfaction with one's attractiveness and sociability, and the number of friends, calculated as the difference between ideal and real values of corresponding variables. *Motivation to success and to avoid failure* was studied by the T. Ehlers method.

The SOZU-22 questionnaire was used to assess *Emotional Support, Instrumental Support, Social Integration,* and *Satisfaction by Social Support,* while *Psychological Well-being* and its subscales (*Positive Relations, Autonomy, Management, Personal Growth, Aims in Life, and Self-Approval*) were measured by C. Ryff's questionnaire.

Procedure

The pre-study participants were engaged in oral discussion about the use of social networks, during which they were invited to fill in several forms. They indicated their age, gender, education, number of on-line and off-line friends, rated their own real and ideal attractiveness, and completed the selfie motivation questionnaire. They were also to assess their own agreement, and their assumptions about the agreement of their peers, with 15 statements regarding the reasons for doing selfies.

The respondents in the main study received a larger package of forms to fill out: the selfie motivation questionnaire; a questionnaire about their social media behavior; self-assessment scales of real and ideal attractiveness, sociability, and number of friends; C. Ryff's scale of psychological well-being; the social support questionnaire SOZU-22; and T. Ehlers' questionnaires on motivation for success and avoidance of failures.

Statistical analysis included the Mann-Whitney test for identifying intergroup differences, the Wilcoxon test for comparing the responses of respondents about their own motivations and the motivations of others, and Spearman's correlation analysis. The results were considered significant when $p<0.05$.

Results

During the pre-study, two participants indicated minimum scores for themselves and maximum scores for others concerning selfie motivation, and called the whole phenomenon "stupidity" and "mental illness." These two respondents (both males) had no accounts on social networks; they also had the lowest number of off-line friends (0 and 1) and the greatest discrepancy between real and ideal attractiveness. Their results were excluded from further statistical analysis, but we will discuss them further later on in this paper.

The answers of 48 respondents (36 women, 12 men) confirmed that the main motives of young men and women were to increase self-esteem, maintain social contacts, and preserve and exchange information. The Wilcoxon test confirmed significant differences between the students' ideas about their own and others' reasons for selfie publication (see *Table 1*).

Table 1

Mean values of the Selfie motivation subscales

	Myself	**Others**	**p**
Self Confidence	**20.42**	**26.44**	**0.000**
Social Contacts	**9.94**	**15.34**	**0.000**
Information	21.90	23.92	0.068

Note. Significant differences between the groups are in bold.

The respondents indicated that they post photos mainly for themselves, using social networks as an archive. For example, the item "It's faster than describing in words where, when, and with whom I was" got more agreement from the participants themselves than for the others ($p = 0.000007$). For their peers the students attributed the motivation of attracting the interest of others with the purpose of improving self-confidence. The highest agreement with the statement "If it will be impossible to get likes, then why upload photos!" was attributed to the others ($p = 0.000000004$).

Our participants believed that others are more motivated to post selfies, than they themselves. No significant differences in the responses of men and women, as well as in the answers of the respondents with different levels of network activity, were found. Twenty-five people (22 women, 3 men) gave their consent to the analysis of their real profiles on social networks. Young people less confident of their attractiveness were less likely to use portraits as avatars, and more often used external attributes in portraits ($p < 0.05$).

The next step was to examine whether the use of social media could be a resource for maintaining satisfactory self-esteem and psychological well-being.

First of all, we conducted an analysis of selfie motivation and psychological well-being. Only the idea that the selfie is a tool for storage and exchange of information correlated with well-being (Spearman Rho = 0.361, $p < 0.01$).

Table 2

Mean values of the variables of the 2 groups of respondents

		Group 1 (<200 on-line friends)	**Group 2 (>200 on-line friends)**	**p**
Social networks behavior	Selfies per month	1.00	1.38	0.547
	Views of photo ratings, per month	4.60	27.75	0.003
	Off-line friends	**3.70**	**10.62**	**0.004**
Selfie motivation	To preserve and share information	20.30	24.38	0.007
	To show oneself and attract attention	19.00	21.69	0.286
	To get social support and meet group norms	11.30	13.92	0.284
Self-assessment	Attractiveness Real	69.63	63.31	0.350
	Sociability Real	53.50	64.38	0.078
	Many Friends Real	42.50	54.92	0.043
	Attractiveness Delta	14.00	19.08	0.119
	Sociability Delta	11.38	15.23	0.603
	Many Friends Delta	13.38	21.00	0.568
Social support (SOZU-22)	Emotional Support	35.60	38.77	0.283
	Instrumental Support	15.60	16.62	0.470
	Social Integration	26.60	28.46	0.154
	Satisfaction by Social Support	5.90	5.54	0.821
	Social Support (sum)	80.10	85.08	0.424
Psychological well-being (C.Ryff)	Positive Relations	59.20	64.92	0.021
	Autonomy	56.50	56.67	0.670
	Management	55.70	59.58	0.220
	Personal Growth	61.70	69.42	0.000
	Aims In Life	62.40	72.00	0.000
	Self Approval	53.90	60.08	0.129
	CRyff Summ	**349.40**	**382.67**	**0.012**
Ehler's motivation tests	Motivation to avoid failure	12.67	17.33	0.004
	Motivation for success	17.00	16.78	0.733

Note. Attractiveness, Sociability and Many Friends Delta indicators show the differences between the ideal and real values of the corresponding variables. Significant differences between the groups are in bold.

Then the participants in the main study (N = 46) were divided into two groups according to their activity in social networks and the number of their online "friends:" Group 1 (N1 = 20, mean age = 26.3) had fewer than 200 friends (average = 97.6); Group 2 (N2 = 26, mean age = 28.2) had more than 200 friends (average = 567.9). The group selection cutoff point, 200 friends, was chosen in accordance with Dunbar's limit of a person's stable social contacts (< 150–200 friends). When comparing the two groups' results, we found significant differences (see *Table 2*).

At first glance the results of the respondents of Group 2 seemed to be more positive: they had more friends in real life, considered themselves more sociable, with an average of the same number of photos posted on the network, and they were several times more likely to view their "likes" (the first group had an average of 1 photo per month and 4.6 views, the second 1.38 and 27.75 views, respectively). On the scales of psychological well-being, Group 2 had significantly higher results in Positive relationships with others, Personal Growth, and Aims in Life. However, such a seemingly positive result was darkened by the data from the Ehlers tests; it was in Group 2 that the motivation to avoid failure scored higher ($p < 0.01$), and the motivation for success was somewhat lower. Those with many on-line friends also rated their attractiveness lower, and they had a greater discrepancy between real and ideal indicators. To clarify this situation, correlation analysis was performed separately for each group.

It turned out that in Group 2, almost all the scales of psychological well-being (except for autonomy) were associated with social support ($p < 0.01$), which in turn correlated with the number of friends in real life. Moreover, the more friends, the more social support, and the less pronounced motivation to avoid failure, the higher the indicators of well-being. But there was no effect of the number of on-line or off-line friends on the motivation to avoid failure.

A different correlation structure was observed in the group of people with a more limited number of "friends" in social networks, most of whom were personal acquaintances (Group 1). These respondents did not show as many links between well-being and social support, and the discovered relationship between Satisfaction with Social Support and Personal Growth had a negative sign. At the same time, psychological well-being (Autonomy, Personal growth, and Aims in Life) in this group were associated with the motivation for success. Avoiding failure correlated only with the number of on-line friends (Spearman Rho = 0.754**) and number of off-line friends (Spearman Rho = -0.955**).

Discussion

The first aim of this study was to uncover the motives of Russian respondents for publishing their selfies on social media. To avoid the social desirability effect in the answers, we asked the participants to answer the questions twice – once on behalf of themselves and once on behalf of their peers. Their own motivation was more internal, aimed at preservation of information, as well as maintaining contacts, while they attributed to others the desire to attract attention and follow group norms. The differences we found are consistent with the results of S. Diefenbach and L. Christoforakos (2017), who also showed that people more often attributed to others the motivation for self-presentation through selfies, while judging their own photographs to be more

authentic. Nevertheless, the study participants confirmed the presence of all three groups of motives when posting selfies.

Those two subjects we mentioned earlier who did not admit the meaning of posting selfies by themselves, and believed that others were doing it foolishly, showed a small (1 and 0) number of friends in real life, and high values of dissatisfaction with themselves. Of course, the results of only two respondents are not enough to draw reliable conclusions, but it can be assumed that a complete rejection of online communication is not associated with its replacement with intensive offline interactions, and is not a good option. Some authors associate refusal to post their photos with lacking authenticity (Diefenbach, & Christoforakos, 2017)

The most important finding was that when separating the two groups of respondents on the basis of the level of their network activity, two different systems of connections between their senses of well-being with internal motivation and external support could be observed.

For Group 1, the well-being subscales were associated with the motivation for achieving success and only feeling instrumental support from others. These people rated their external attractiveness significantly higher, but sociability and number of friends lower, than those from Group 2. At the same time, the discrepancies between the real and ideal values of these characteristics were small, which showed the subjects' satisfaction with their real state. At the same time, representatives of this group showed slightly lower indicators of well-being, not only on the scale of positive relationships with others, but also on the scale of Personal Growth and Aims in Life.

These last two scales included several items related to accepting the course of one's life, while critical assessments were considered with a negative sign. In addition, these items can correlate positively with a desire for change and motivation for success.

The overall psychological well-being in Group 2 was higher. These respondents were more involved in their social environment, and they had many friends, but they would have liked to have even more, and to be more sociable. Their perception of social support was also somewhat higher, and it could be the main resource of their sense of wellbeing, as all the subscales of these two methods were closely related. At the same time, we observed a positive relationship between the failure avoidance motivation and feelings of social support, and a negative relationship between this motivation and well-being subscales. Perhaps in an effort to avoid failure, these respondents were getting used to relying on external support from the others. So for these groups, social activity in real life and close contacts in the virtual world may actually become a resource for well-being.

When continuing the study, it will make sense to take into account both the respondents' marital status and their personal characteristics, especially the locus of control.

Conclusion

In this study we found significant differences between the characteristics of women with high and low activity, and large and small number of "friends," on social networks. Those for whom psychological well-being was largely determined by interac-

tion with others often sought to avoid failure, so they included more contacts in their network, and more often looked at the responses to their photos. For these persons, communication (including virtual contacts) was the important resource of well-being. Representatives of the first group were less dependent on others, and assessed their appearance more positively; their motivation was directed to achieving success. For them psychological well-being was not related to their activity in social networks.

Limitations

The first limitation of the study was its limited sample (its size, the absence of men's data, and the fact that most of the sample were psychology students). The data collected were analyzed only quantitatively. We did not have enough measurements aimed at studying such personal characteristics of respondents as their locus of control and consciousness, to attain a deep understanding of the phenomenon.

Ethics Statement

The ethical aspects of the study were discussed and approved at a meeting of the Laboratory of Psychology of Person Development in normal and posttraumatic States, Institute of Psychology, Russian Academy of Sciences (Protocol No. 7, November 2020). All the participants gave informed consent before taking part.

Conflict of Interest

The author declares no conflict of interest.

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The Dynamics of the Interrelationships between Conscious Self-regulation, Psychological Well-being and School-related Subjective Well-being in Adolescents: A Three-year Cross-lagged Panel Study

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Background. Recently, research on psychological well-being and its dynamics and predictors in adolescence, has gained special attention, due to the importance of well-being for mental and physical health, as well as for success in different activities. Self-regulation (SR) is considered a significant resource for maintaining psychological and school-related subjective well-being.

Objective. The purpose of our study was to identify the role of conscious SR in maintaining pupils' satisfaction with school life, and to assess the contribution of conscious SR to the development of psychological well-being in adolescence.

Design. Two three-year longitudinal studies were carried out on samples of young adolescents in Russian schools (N = 148; N = 132; 10–13 years). The studies utilized methods for assessing conscious SR, psychological well-being (PWB), and school-related subjective well-being (SWB), the latter being the cognitive component of life satisfaction.

Results. Our research revealed differences in the dynamics of PWB and SWB levels in adolescents during their transition from primary to basic secondary school. It also identified the specifics of longitudinal relationships between conscious SR, PWB, and SWB in adolescence. We showed that there was a reciprocal relationship between them. However, the most significant cross-longitudinal effects were established between SR and school-related SWB. These effects changed over time: at the beginning, well-being acted as a significant factor of self-regulation, while later self-regulation acted as a significant resource for maintaining adolescent well-being in the subsequent years.

Conclusion. School-related SWB is characterized by the most pronounced trajectory of change, while PWB is characterized by greater stability and insignificant growth. Our three-year longitudinal study demonstrated that the link between self-regulation and well-being is consistently reproduced. Conscious self-regulation is a significant resource for both the psychological and school subjective well-being of adolescents.

Keywords: conscious self-regulation; subjective well-being; psychological well-being; cross-lagged analysis; adolescents.

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Introduction

Research on psychological well-being (PWB) is a significant trend in today's studies of education (Eryilmaz, 2012; Ronen, Hamama, Rosenbaum, & Mishely-Yarlap, 2016; Steinmayr, Wirthwein, Modler, & Barry, 2019). It has been shown that a high level of psychological well-being has a positive effect on academic performance, school engagement, academic self-efficacy, and social adaptation, in addition to reducing the level of academic stress (Antaramian, 2017; Suldo, Gormley, Dupaul, & Anderson-Butcher., 2014; Thomaes, Sedikides, van den Bos, Hutteman, & Reijntjes, 2017). Longitudinal studies of PWB-related factors are of particular importance (Converse, Beverage, Vaghef, & Moore, 2018; Steinmayr, Heyder, Naumburg, Michels, & Wirthwein, 2018; Yang, Tian, Huebner, & Zhu, 2019).

However, predictors of PWB itself have been studied to a lesser extent. There is ample evidence that conscious self-regulation of achieving educational goals is a significant factor in both academic success and PWB (Gestsdottir & Lerner, 2008; Fomina, Burmistrova-Savenkova, & Morosanova, 2020; Singh, & Sharma, 2018). The purpose of this article is to uncover the dynamics of conscious self-regulation as a significant resource for schoolchildren's well-being.

Psychological Well-being and Subjective well-being

In modern research, the well-being of schoolchildren is assessed by means of various measures. The most theoretically and empirically substantiated are the constructs of psychological well-being and subjective well-being. These are interrelated but somewhat different indicators of positive human functioning (Ryan & Deci, 2001). SWB includes a cognitive component, which is reflected as a self-assessment of overall satisfaction with one's life, and an affective component, which is measured as a balance between positive and negative emotions (Diener, 1999). The cognitive component is considered as the most stable component in the SWB structure and is analyzed more often.

It's worth emphasizing that SWB is usually considered in connection with certain specific areas of life. Thus, it seemed relevant for us to focus on the study of school-related subjective well-being, which is characterized by students' satisfaction with their success at school, their relationships with teachers and peers, the school climate, etc. (*e.g.,* Tian, Tian, & Huebner, 2016; Steinmayr et al., 2018; Yang et al., 2019).

On the other hand, psychological well-being (PWB) is based on a person's holistic experience, such as feelings of happiness, and satisfaction with oneself and one's life in the broader context of relations between oneself and the world (Huppert, 2009; Ryff, 1989; Waterman, 1993, etc.). PWB is a multidimensional phenomenon. Its elements are: 1) self-acceptance; 2) positive relations with others; 3) autonomy; 4) environmental mastery; 5) purpose in life, and, finally, 6) personal growth. These six constructs define PWB both theoretically and operationally, and they specify what promotes emotional and physical health (Ryff & Singer 1998).

Although there have been recent attempts to discover a common factor determining SWB and PWB (Garcia, Sagone, De Caroli, & Al Nima, 2017; Heintzelman, 2018), the most promising results have been obtained by differentiating between them (Ryan and Deci, 2001). Indeed, as a rule, factor analysis confirms a close but

still different status of SWB and PWB (Compton, Smith, Cornish, & Qualls, 1996; Keyes, Shmotkin, & Ryff, 2002).

The current scientific consensus on the relationship between PWB and SWB research can be described as follows: "PWB and SWB are strongly related at the general construct level, but their individual components are distinct once their overlap with the general construct of well-being is partially led out." (Chen, Jing, Hayes, & Lee, 2013). We adhered to this position in this study. Our main concern was to compare the specific relationships of conscious self-regulation with both PWB and the cognitive component of SWB in adolescents during their transition from primary to basic secondary school.

Self-regulation (SR), as considered in different contexts by empirical studies, is associated with both PWB and SWB. (*e.g*, Elliot, Thrash, & Murayama, 2011; Fomina et al., 2020; Hofer, Busch, & Kartner, 2011; Wrosch, Scheier, Miller, Schulz, & Carver, 2003; Tavakolizadeh, 2012). It has been shown that the higher a person's SR, the higher their sense of well-being, and the more effective their coping strategies (Boekaerts & Corno, 2005; Hofer et al., 2011; Saha, Huebner, Hills, Malone, & Valois, 2014). A study by Saha and colleagues (2014) demonstrated that SR explains a significant percentage of the variance across all six PWB measures, with the greatest positive associations found between SR and life goals. It's worth noting that all these data were obtained on samples of university students or adults. There are very few similar studies on the relationships of SR with PWB and SWB conducted on the samples of adolescents (Steinmayr et al., 2019). Longitudinal studies can make a significant contribution to uncovering the relationships between conscious SR, PWB, and SWB, since there are data on different trajectories of PWB and SWB in adolescents (Archakova, Veraksa, Zotova, & Perelygina, 2017).

In our approach, the conscious self-regulation of learning activity is understood as a cognitive-personal construct, including cognitive processes (planning goals, modeling significant conditions for goals achievement, programming actions, and evaluating results) and regulatory-intrapersonal properties (flexibility, independence, reliability, and responsibility), which serve as tools for initiating and maintaining activity aimed at consciously setting educational goals and managing their achievement (Morosanova, 2004-2020). Conscious SR is the controlling mechanism for mobilizing all other types of individual resources (cognitive, motivational, and intrapersonal) to achieve a result (Morosanova, 2014). Success, reliability, productivity, and the final result of actions to achieve the goal depend on the level of development of operational-regulatory processes and regulatory-personal features.

Adolescence has traditionally been associated with the risk of behavioral problems and psychological distress. In this connection we considered it extremely important to study the contribution of SR to PWB and SWB, particularly in early adolescence, when children's sense of well-being is of maximum importance; it gradually decreases later toward high school. Empirical studies show that the period between ages 10 and 12 years is a turning point in the development of individual trajectories of PWB and SWB (Orben, Lucas, Fuhrmann, & Kievit, 2020; Willroth, Atherton, & Robins, 2020). At the same time, according to a number of researchers, personal changes during adolescence create unique opportunities for positive trajectories of

development (Lerner et al., 2018). Herewith, SR serves as one of the essential mechanisms contributing to positive youth development (Gestsdottir et al., 2017).

The reflexivity that takes shape during this period probably facilitates the ability of adolescents to develop such subjective qualities as independence, responsibility, and initiative, which make their significant contributions to adolescent well-being. We assumed that conscious self-regulation, being the control level of regulation of educational goals achievement, would determine the level and dynamics of PWB and SWB during this period.

Our research was aimed to answer the following questions:

1. What are the dynamics and specificity of the relationship between conscious self-regulation, psychological well-being, and school-related subjective well-being of adolescents during their transition from primary to basic secondary school?
2. Can conscious SR be considered a long-term predictor of PWB and SWB in adolescents during this transition period?

For research purposes, we conducted two studies. The data obtained and results of the analysis are presented and discussed below.

Methods

Participants and Procedure

Two separate longitudinal studies were conducted on samples of teenagers (grades 4–6) in Russian state schools which implement the basic education program. The 4th grade in Russia is the last year of primary school. Then children go to the basic secondary school. The design of the studies differed in the instruments for assessing the schoolchildren's well-being: in the first study, the methodology for assessing psychological well-being (PWB) was used; in the second, we used the scale for assessing the school-related subjective well-being (SWB).

The data were collected in three waves. In Study 1 the sample at T1, T2, and T3 consisted of 148 students. The sample was evenly distributed by sex (50% boys). At T1, the mean age of the participants was 10.2 years (SD = 0.50; range = 10–11 years). Seven months later, at T2 children were on average 10.9 years old (SD = 0.28; range = 10–12 years). One year later, at T3 children were on average 11.9 years (SD = 0.50; range = 12–13 years). In Study 2 the sample at T1, T2, and T3 consisted of 132 pupils (47% boys). At T1, the mean age of the participants was 10.3 years (SD = 0.48; range = 10–11 years). Seven month later, at T2 children were on average 10.8 years old (SD = 0.42; range = 10–12 years). One year later, at T3 children were on average 11.9 years old (SD = 0.32; range = 12–13 years).

Parental and school consent was obtained for all participants. Analyses were carried out on depersonalized data. The study procedure was approved by the relevant institutional review board. Ethical agreement and consent for access to the schools were provided by the Ethics Committee of the Psychological Institute of the Russian Academy of Education (approval number 2017/1-128).

Measures

Psychological Well-Being was accessed using the slightly modified Russian adaptation of the 25-item Well-Being Manifestation Measure Scale developed by Masse (Masse, Poulin, Dassa, Lambert, Bélair, & Battaglini, 1998). The questionnaire was previously validated on a sample of 4th-grade pupils in Russian secondary schools (Morosanova, Bondarenko & Fomina, 2018). The participants were asked to evaluate to what extent they experienced the described states over the past month on a 5-point Likert scale ranging from 1 (never) to 5 (almost always).

This questionnaire contained the following subscales: 1) Control of Self and Events (*e.g.*, "I was able to face difficult situations in a positive way"); 2) Happiness (*e.g.*, "I found life exciting and I wanted to enjoy every moment of it"); 3) Social Involvement (*e.g.,* "I felt like having fun, doing sports and participating in all my favorite activities and pass-times"); 4) Self-Esteem (*e.g.*, "I had self-confidence"); 5) Mental Balance (*e.g.*, "My life was well-balanced between my family, personal and school activities"); 6) Sociability (*e.g.*, "I got along well with everyone around me"); and the cumulative scale 7) Psychological Well-Being, which summed up the scores on all the scales. The internal reliability coefficients were 0.72–0.78.

School-related Subjective Well-Being was measured by means of the Multidimensional Students Life Satisfaction Scale (MSLSS) (Huebner, 2001, in a Russian adaptation by Sychev, Gordeeva, Lunkina, Osin, & Sidneva, 2018). Its 30 items allow for evaluating schoolchildren's satisfaction in important life domains, including family, school, self, friends, and teachers, on a 5-point Likert scale ranging from 1 (never) to 5 (always). Higher scores indicate higher levels of life satisfaction throughout the scale. All the scales had high reliability ($0.82 < \alpha < 0.89$).

Self-Regulation was measured by means of Morosanova's Self-Regulation Profile Questionnaire – Junior (Morosanova & Bondarenko, 2015). It consists of seven self-assessment scales: Planning of goals (*e.g.*, "I know what grades I want to get at the end of the year"); Modeling of significant conditions (*e.g.,* "Prior to start solving the task, I always carefully examine its introductory conditions"); Programming of Activity (*e.g.*, "I have no difficulty in drawing up a plan of presentation"); Results Evaluation (*e.g.,* "I rarely notice my mistakes"); Flexibility (*e.g.,* "I'm back to studies quickly after the holidays"); Independence (*e.g.*, "I usually do my homework by myself"); and Responsibility (*e.g.,* "I seek to perform additional tasks").

Each item was scored on a 6-point scale with responses ranging from 1 ("not at all like me") to 6 ("very much like me"). The pupils were to choose to what extent the described behavior was characteristic of them. The general SR level was estimated by adding up the scores on the seven scales. The incentive material was presented in forms accessible for primary school age, such as descriptions of typical situations associated with organization of learning activities and pupils' behavior relative to their training. The coefficients of internal consistency of the items for each scale ranged from 0.62 to 0.79, indicating an overall reasonable homogeneity of the items on each scale.

Statistical Analysis

SPSS 26.0 (SPSS Inc.) was used to obtain descriptive statistics for the study variables and bivariate associations. Longitudinal confirmatory factor analyses and bidirectional cross-lagged panel analyses were conducted in AMOS 23. Two separate cross-lagged panel models were assessed, one between SR and PWB and the other between SR and school SWB. The models' fits were evaluated using several fit indices: a Root Mean Square Error of Approximation (RMSEA); a comparative Fit Index (CFI); and the Tucker–Lewis index (TLI).

Results

Study 1. Dynamics of the relationship between psychological well-being and conscious self-regulation in adolescents: a cross-lagged panel analysis

The first study tested the hypotheses about the specificity of the longitudinal relationship between the conscious self-regulation and psychological well-being of adolescents. *Figure 1* shows the initial hypothesized model of this relationship.

The six PWB variables at each point in time were used as indicators of the latent factor PWB, labeled as PWB_Time1, PWB_Time2, and PWB_Time3. The latent factor SR (labeled as SR_Time1, SR_Time2, and SR_Time3) was represented by seven regulatory indicators.

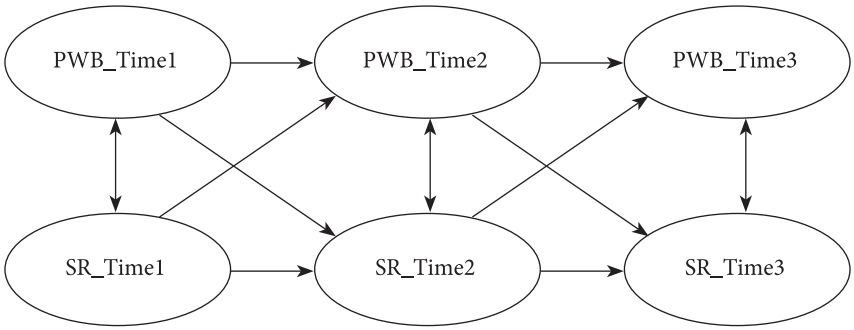

Figure 1. Cross-lagged models
Note. The factor indicators are not shown for brevity

The means, standard deviations, and correlations for Time 1, Time 2, Time 3 PWB, and SR are presented in *Table 1*. Analysis of significant changes in the levels of PWB and SR revealed that the PWB level significantly increased in the adolescents when they moved from the 4th grade (Time 1) to the 5th grade (Time 2), *i.e.*, from primary to basic secondary school. The same thing happened with SR ($p = 0.023$). But during their transition from grade 5 (Time 2) to grade 6 (Time 3), no significant changes in the levels of PWB and SR were recorded. Correlation analysis data indicated the presence of a moderate to strong relationship between the general level of psychological well-being and the general level of conscious self-regulation.

Table 1

Means, Standard Deviations, and Correlations among Variables (N=147)

	Mean	SD	1	2	3	4	5	6
1. PWB Time 1	93.71	15.247	1	.675**	.399**	.512**	.589**	.365**
2. PWB Time 2	95.90	14.125		1	.564**	.384**	.568**	.500**
3. PWB Time 3	96.47	15.126			1	.261**	.378**	.444**
4. SR Time 1	30.71	5.716				1	.595**	.498**
5. SR Time 2	31.29	5.007					1	.566**
6. SR Time 3	30.31	8.262						1

$^{**}p < .01$, $^{*}p < .05$.
Note. PWB = psychological well-being; SR = self-regulation

At the next stage, to reveal the cross-longitudinal effects of PWB and SR, cross-lagged panel analyses were carried out using the method of structural modeling. The full model with all cross-lagged paths, auto-regressive paths, and concurrent covariance demonstrated an acceptable fit to the data (CFI = .983, TLI = .956, RMSEA = .038). The path from PWB at Time 1 to SR at Time 2 was statistically significant. The paths from SR at Time 1 and Time 2 to PWB at Time 2 and Time 3 were all significant.

Next, we looked at the individual cross-longitudinal models. The structural models demonstrated a good level of agreement (see *Table 2*). This allows us to say that there was a significant reciprocal relationship between SR and PWB.

Table 2

Cross-lagged models

Model	χ2	df	CFI	RMSEA	TLI
Cross-lagged (T1_SR→ T2_PWB)	355.190	282	0.951	0.042	0.944
Cross-lagged (T1_PWB→ T2_SR)	338.173	282	0.963	0.037	0.957
Cross-lagged (T2_PWB→ T3_SR)	296.381	268	0.981	0.027	0.976
Cross-lagged (T2_SR→ T3_PWB)	263.898	263	0.999	0.005	0.999

Then we compared the magnitude and significance of the standardized PWB and SR coefficients in the obtained models. Results for the auto- and cross-lagged analyses are presented in *Table 3*.

Table 3

Auto- and cross-lagged standardized path coefficients from the cross-lagged panel analyses

	PWB Time 2	**PWB Time 3**	**SR Time 2**	**SR Time 3**
PWB Time 1	0.70***		0.40***	
PWB Time 2	1	0.60***		***0.12***
SR Time 1	0.20*		0.53***	
SR Time 2		***0.29****	1	0.83***

*Notes. *p < 05.; **p < .01; ***p < .001. Cross-longitudinal coefficients are in bold italics*

The results suggest that standardized coefficient of the self-regulation score is higher in the cross-longitudinal relationship model of SR (Time 2) and PWB (Time 3), while the standardized regression coefficients for PWB (Time 1) are higher in relation to SR (Time 2). These results indicated that PWB served as a firm foundation for the SR development at the stage of adolescent adaptation to secondary school (during the transition from primary school), and that after that, conscious SR (apparently having been formed in the new conditions) acts as a significant resource for maintaining PWB in adolescents in later years.

Study 2. Dynamics of the relationship between school-related subjective well-being and conscious self-regulation in adolescents: a cross-lagged panel analysis

In the second study, we examined the specificity of the relationships between subjective school well-being and conscious self-regulation.

The means, standard deviations (SD), and correlations among the variables included in the analyses are presented in *Table 4*.

Table 4

Means, Standard Deviations, and Correlations among Variables (N= 132)

	Mean	**SD**	**1**	**2**	**3**	**4**	**5**	**6**
1. SWB Time 1	27.45	6.724	1	.561**	.420**	.447**	.223*	.333**
2. SWB Time 2	28.37	5.926		1	.480**	.217*	.424**	.273**
3. SWB Time 3	24.89	5.409			1	.277**	.377**	.392**
4. SR Time 1	29.89	5.770				1	.338**	.458**
5. SR Time 2	30.31	5.355					1	.588**
6. SR Time 3	30.23	5.317						1

***p <.01, *p <.05*
Note. SWB =subjective well-being; SR = self-regulation

In contrast to PWB, we saw a somewhat different picture of the dynamics in relation to the school-related SWB. Younger adolescents, when moving from grade 4 (Time 1) to grade 5 (Time 2), demonstrated a small but significant positive trend ($p = 0.048$), and then a significant drop in their SWB level ($p = 0.000$). The dynamics of self-regulation corresponded to the results of Study 1.

The full model with all the cross-lagged paths, auto-regressive paths, and concurrent covariance also demonstrated an acceptable fit to the data (CFI = .965; TLI = .958; RMSEA = .029). Further, we created separate cross-longitudinal models of the relationship between SR and SWB (*Table 5*).

Table 5

Cross-lagged models

Model	χ2	df	CFI	RMSEA	TLI
Cross-lagged (T1_SR→T2_SWB)	90.420	83	0.984	0.026	0.976
Cross-lagged (T1_SWB→ T2_SR)	106.355	89	0.962	0.039	0.948
Cross-lagged (T2_SWB→ T3_SR)	103.781	92	0.973	0.031	0.965
Cross-lagged (T2_SR→ T3_SWB)	94.256	92	0.995	0.014	0.993

All models turned out to be significant, with their conformity indices demonstrating high levels of significance. To identify the direction of the cross-longitudinal relationships, we compared the significance and magnitude of the standardized regression coefficients in the models (*Table 6*).

Table 6

Auto- and cross-lagged standardized path coefficients from the cross-lagged panel analyses

	SWB Time 2	SWB Time 3	SR Time 2	SR Time 3
SWB Time 1	0.42***		0.21**	
SWB Time 2	1	0.20**		***-0.06***
SR Time 1	***0.28****		0.43***	
SR Time 2		***0.41****	1	0.82**

*Notes. *p < .05; **p < .01; ***p < .001.*
Cross-longitudinal coefficients are in bold italics

Autoregressive coefficients for the SWB indicators were lower than for SR, which testified to a greater variability of the school SWB indicators for adolescents. Evaluation of the cross-longitudinal relationships revealed that when students were moving from grade 4 to grade 5 (Time 1 and Time 2), the relationship between SR and SWB was reciprocal. The cross-longitudinal relationship between SR and SWB during the transition from grade 5 to grade 6 (Time 2 and Time 3) was significant only for SR.

That is, we can say that a higher level of self-regulation development among students in primary school predicted their well-being in the 5th grade, and then in the 6th grade.

Discussion

Comparative analysis of the longitudinal data made it possible to establish that there are certain differences in the dynamics of changes in the PWB and SWB levels of adolescents during their transition from primary to basic school. The School-Related Subjective Well-Being was characterized by the most pronounced trajectory of change. It had an increasing tendency in the 5th grade, and then decreased in the 6th grade. Psychological Well-Being was characterized by greater stability and slight growth during the period of study from grades 4 to 6. The growth of well-being (both subjective and psychological) from grade 4 to 5, in our opinion, took place due to the changes in educational conditions toward actualizing students' positive expectations, expanding their spheres of communication, and encouraging initiative and independence in self-organization of activities. During this period, adolescents could acquire skills of well-being that would help them build positive conditions of school life (Ng et al., 2015).

A number of researchers have stressed that primary school years represent a critical period when the students' experience provides the foundation for their current and later engagement, achievement, and sense of belonging in school (Suldo et al., 2014; Tian et al., 2016). As we did, these researchers noted that puberty is characterized by decreasing SWB, and that adolescents demonstrate a clear drop in the life satisfaction (Shek & Liu, 2014; Steinmayr et al., 2018; Willroth et al., 2020). Furthermore, after the end of puberty, their sense of well-being increases (Salmela-Aro & Tuominen-Soini, 2010).

However, we can identify somewhat different dynamics for PWB and SWB. There was evidence that PWB is indeed more sustainable over the long term (Joshanloo, 2018). It is definitely PWB that determined the level of school-related SWB (the cause-and-effect relationship mainly goes from PWB to SWB, and not vice versa). In this sense, we have confirmed these conclusions.

The trajectory of conscious SR development in both studies was characterized by smooth growth. An increase of the regulatory indicators took place largely due to age characteristics and the social situation for development. In turn, self-regulation became a resource for personal growth in adolescence (Bronson, 2000; Morosanova, Bondarenko, Fomina & Burmistrova-Savenkova, 2018).

The relationships between PWB and SR which we uncovered demonstrated the heterogeneity and heterochrony of these properties' development in adolescents. As a whole, the PWB indicators were steadily increasing, and the indicators of conscious SR, rising in the 5th grade, returned to their previous values in the 6th grade. The results of the analysis revealed that high PWB level in the 4th grade predicted a high SR level in the 5th grade.

These results are consistent with the general conclusions of researchers that PWB affects a wide range of factors in the lives of children and adolescents. A high level of personality and events management, high self-esteem, well-built relationships with

teachers and peers, and mental balance allow 4th-graders to successfully develop their self-regulation. The 5th grade is associated with the transition to new learning conditions. These circumstances challenge the independence of schoolchildren and their ability to regulate their activities.

Cross-longitudinal analysis made it possible to record more significant effects of SR on PWB than of PWB on SR. In other words, the child's PWB level in grade 5 did not significantly affect his/her SR in grade 6. It can be concluded that the PWB level achieved in the 5th grade at the stage of adaptation to new learning conditions served as the foundation for development of conscious SR. Upon completion of the adaptation process, the conscious SR serves as a significant resource for maintaining the adolescents' PWB in the basic secondary school. Thus, during the transition from primary to basic secondary school, PWB can be a significant condition for conscious SR development. In turn, SR acts as a resource for the growth of PWB indicators in the future.

The longitudinal relationship between SR and school-related SWB was characterized by somewhat different features. It should be noted that our study was assessing the cognitive component of school SWB, *i.e.*, life satisfaction. This component is considered more stable, and is most frequently included in studies of youths' perceived quality of life (Suldo et al., 2006). Thus, during the transition from grade 4 to grade 5, the contributions of SR to school-related SWB and *vice versa* are commensurate, *i.e.,* there is a reciprocal relationship between them. When the child moves from grade 5 to grade 6, however, the situation changes dramatically; conscious SR makes a more significant contribution to SWB, while the contribution of SWB to SR is insignificant. This result is especially interesting because life satisfaction decreases during adolescence, which can influence many later life outcomes (Blakemore & Mills, 2014; Orben et al., 2020). Thus, conscious SR acts as a SWB resource throughout the entire schooling period. And its contribution to well-being is especially significant during the transition from 5th to 6th grade.

Accordingly, reliance on internal resources becomes important (Goldbeck, Schmitz, Besier, Herschbach, & Henrich, 2007; Steinmayr et al., 2018). During this period, adolescents demonstrate a decline in academic motivation, which inevitably leads to a decrease in academic performance, which cannot but affect school-related SWB (Martin, & Steinbeck, 2017). The relationship between academic achievement and school-related SWB weakens significantly during adolescence (Yang et al., 2019), while conscious SR still remains a reliable predictor of both academic achievement and SWB in adolescents (Fomina & Morosanova, 2019; Gestsdottir & Lerner, 2008). Thus, conscious self-regulation, being a foundation for success in educational activity, is a necessary resource for maintaining the SWB of adolescents in this difficult age period.

Conclusion

A three-year longitudinal study demonstrated a stable relationship between conscious self-regulation and both psychological and subjective school-related well-being in adolescence.

Cross-longitudinal analysis then made it possible to establish reciprocal relationships between conscious SR and PWB. It has been shown that during the transition from primary to basic secondary school, PWB can act as a significant mechanism for the development of SR. However, in the future, conscious SR can be considered as a significant resource for maintaining adolescents' PWB in subsequent years.

The longitudinal relationships between SR and school-related SWB were characterized by slightly different specificity. The general level of the conscious self-regulation of educational activity in adolescents predicted the level of their subjective well-being to a greater extent, and, in this sense, acted as an effective tool for maintaining well-being in adolescence.

Limitations

The present research did not set the task of studying gender differences in the dynamics of SWB, PWB, and SR, although, according to previous research, it is necessary to take gender specificity into account in this context (Orben et al., 2020). In addition, certain individual characteristics of adolescents can also play a significant role in the dynamics of the studied phenomena. The study of these issues will form the basis for our future research.

Ethics Statement

Parental and school consent was obtained for all participants. Analyses were carried out on the depersonalized data. The study was conducted in accordance with the Helsinki Declaration. Ethical agreement and consent for access to the school were provided by the Ethics Committee of the Psychological Institute of the Russian Academy of Education (approval number 2017/1-128).

Author Contributions

Conceptualization and Supervision were conducted by Varvara Morosanova; Methodology, Validation, Formal Analysis, Writing, Review, and Editing were carried out by Tatiana Fomina and Irina Bondarenko; Investigation, Data Curation, and Project Administration were done by Tatiana Fomina. All the authors have read and endorsed the published version of the manuscript.

Conflict of Interest

The authors declare no conflict of interest.

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Optimistic Attributional Style as a Predictor of Well-Being: Exploring the Mediating Roles of Gratitude and Savoring the Moment

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Background. The construct of attributional style refers to the specific ways people explain events, both positive and negative. An optimistic attributional style (OAS) for negative events has been shown to be reliably associated with low rates of depression (Peterson et al., 1985; Sweeney et al., 1986; Hu et al., 2015). On the contrary, an optimistic attributional style for positive events is a separate phenomenon associated mainly with well-being, but these relationships remain underexplored.

Objective. This study aimed to explore the predictive power of OAS-Positive, its relationships with subjective well-being, and possible personality mediators related to positive functioning. We hypothesized that the abilities to feel grateful and savor positive life events mediate the relationship between optimistic thinking about positive outcomes and subjective well-being.

Design. A cross-sectional design was implemented. The participants were 271 adults from Moscow and Moscow Region (M age = 32.42, SD=12.9).

Results. The results of regression analysis showed that both life satisfaction and subjective happiness depended on gratitude, self-esteem, and dispositional optimism, but only happiness was predicted by savoring the moment. The results of structural equation modeling were consistent with the hypothesis since the structural model revealed that the effects of OAS-Positive on subjective well-being were fully mediated by gratitude and savoring the moment, as well as self-esteem and dispositional optimism. The mediated effects of OAS-Negative through self-esteem and gratitude were inconsistent, and its total indirect effect on subjective well-being was not significant.

Conclusion. This research provides preliminary evidence that optimistic thinking about positive life events promotes subjective well-being through a system of positive psychological traits and attitudes which include gratitude and savoring the moment.

Keywords: Optimistic attributional style (OAS); subjective well-being (SWB); savoring the moment; gratitude; life satisfaction; happiness; dispositional optimism

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Introduction

Optimistic Attributional Style for Negative and Positive Events

The notion of attributional (or explanatory) style is a key concept of reformulated learned helplessness theory (Abramson, Seligman, & Teasdale, 1978) and its later version, the theory of hopelessness (Abramson, Metalsky, & Alloy, 1989). Attributional style is a cognitive personality variable that reflects the specific way people explain the causes of positive or negative events in their lives. It was originally conceptualized as having three dimensions: stability, globality, and internality (locus) (Peterson et al., 1982). It was assumed that people with an optimistic attributional style would tend to explain positive events with causes which are stable in time (*i.e.*, will always exist), global (*i.e.,* affecting all parts of their life — professional and private), and internal (due to them). On the contrary, optimists explain negative events with unstable (*i.e.*, this cause will never arise again), local (affecting just one specific part of their lives), and external causes (not due to them).

Conversely, the theory posited that people with a pessimistic attributional style would tend to explain negative events using stable, global, and internal causes, and positive events using unstable, local, and external causes. However, the locus dimension has been shown to demonstrate low reliability (Cutrona, Russell, & Jones, 1984; Smith, Caputi, & Crittenden, 2013), as well as questionable construct validity (Travers, Creed, & Morrissey, 2015). Consequently, as recommended by Abramson, Metalsky, and Alloy (1989), and Seligman (2002), many researchers have abandoned the locus dimension (*e.g.,* Houston, 1994).

Initially, most attributional style (AS) research was focused on the relationship between a pessimistic AS for negative events, and depression and ill-being. This approach was based on the Peterson's idea that an AS for bad events is more informative than an AS for good events, because people's reactions to negative uncontrollable life events conform to the learned helplessness theory and the theory of hopelessness (Peterson, 1991). Also, the early works of Seligman, Abramson, Semmel, and Baeyer (1979) showed that the association of a pessimistic AS for positive events with depression was weaker than the association of a pessimistic AS for negative events. The stronger association of a pessimistic AS for negative events than for positive events was also confirmed by a meta-analysis by Sweeney, Anderson, and Bailey (1986). Following these findings, many authors excluded positive situations from AS questionnaires (EASQ; Peterson & Villanova, 1988; Dykema, Bergbower, Doctora, & Peterson, 1996).

Studies by Peterson and several meta-analyses (Peterson, Villanova, & Raps, 1985; Sweeney et al., 1986; Hu, Zhang, & Yang, 2015) confirmed that a pessimistic attributional style for negative life outcomes is a reliable predictor of depression. Other studies revealed that a pessimistic attributional style for negative events is associated with anxiety (Lynd-Stevenson & Rigano, 1996; Ralph & Mineka, 1998), hostility (Boman, Smith, & Curtis, 2003), and neuroticism (Cheng & Furnham, 2001), as well as health issues (Peterson & Seligman, 1987; Yuan & Wang, 2016), and health complaints (Reilley, Geers, Lindsay, Deronde, & Dember, 2005). Studies of OAS-Positive have long been neglected, and Peterson would later conclude that this neglect of positive events was a regrettable mistake (Peterson & Park, 2007).

Factor analytic studies have proven the independence of positive and negative attributional style factors (Peterson, 1991; Xenikou et al., 1997), thus confirming the inefficiency of calculating the total score for attributional style and the importance of an OAS-Positive. Therefore, the recent trend of research in this area has switched from studies of OAS-Negative to analysis of the role of positive events attributions in people's sense of well-being.

Studies of OAS-Positive have shown its positive relationship with subjective well-being (SWB), including happiness (Cheng & Furnham, 2001, 2003; Gordeeva & Osin, 2011) and life satisfaction (Rigby & Huebner, 2005), as well as extraversion and emotional stability (Rigby & Huebner, 2005), negative associations with depression (Gordeeva & Osin, 2011), and successful academic performance (Gordeeva et al., 2020). As for its relationship with various personality traits, Cheng and Furnham (2001) have shown that an OAS-positive correlated positively with extraversion, and was unrelated to neuroticism and psychoticism. In a non-clinical sample of adolescents, an optimistic attributional style for positive events moderated the relationship between negative life events and follow-up depressive symptoms (Vines & Nixon, 2009). However, to the best of our knowledge, all the studies that explored the relationship between an OAS-Positive and subjective well-being have been based on samples of adolescents and university students. Given the variation of attributions by age (Blanchard-Fields & Beatty, 2005), it is important to address a wider age range in future research.

Thus, an optimistic attributional style for positive events and an optimistic attributional style for negative events are two separate constructs, each of which has its own consequences. This study was dedicated to an OAS-Positive and its relationships with subjective well-being, since the mechanisms and potential mediators of attributions of positive events influencing people's well-being and positive functioning remain underexplored. In particular, this study aimed to investigate a cognitive mediation model, in which selected personality traits that characterize positive personality functioning were expected to mediate the relationship between optimistic attributions and SWB.

Looking for Personality Mediators of OAS-Positive and SWB

Our study focused on two well-known candidates for personality mediators — dispositional optimism and self-esteem — and two relatively new positive personality variables — gratitude and savoring — all of which imply noticing and valuing positive events. We hypothesized that these four variables may serve as mediators between an optimistic attributional style and well-being. All four variables have well-established relationships with well-being; however, gratitude and savoring, unlike dispositional optimism and self-esteem, have not been studied in relation to optimistic attributional style. Below we consider each personality variable and its relationships with positive functioning.

Gratitude. Theoretically, gratitude can be seen as an emotion, "an emotional response to a gift" (Emmons, 2005, p. 239), or as a personality trait which is "part of a wider life orientation towards noticing and appreciating the positive in the world"

(Wood, Froh, & Geraghty, 2010, p. 891). In our study, we follow Wood's "life orientation" concept of gratitude. A large number of empirical studies have confirmed associations between gratitude and well-being: grateful people tend to be happier (Watkins, Van Gelder, & Frias, 2009; Wood et al., 2010), and have both a higher level of life satisfaction and a higher level of positive emotions over negative ones (Emmons & McCullough, 2003; Peterson, Ruch, Beerman, Park, & Seligman, 2007). Studies by Wood, Joseph, and Maltby (2008, 2009) have shown that gratitude was a reliable predictor of psychological well-being. The first study with a Russian-speaking sample confirmed the positive role of gratitude in well-being, a positive association between gratitude, self-esteem, and resilience, and a negative association between gratitude, depression, and interpersonal problems (Nartova-Bochaver & Kislitsa, 2017). Recent meta-analytic research suggests that gratitude interventions designed to increase appreciation of positive qualities, situations, and people in one's life may improve psychological well-being, decreasing symptoms of depression and anxiety (Cregg & Cheavens, 2020).

The relationship between attributions for positive events and gratitude has many grounds, since optimistic thinking can facilitate a grateful disposition toward other people, which in turn will increase subjective well-being. In line with this idea, McCullough, Emmons, and Tsang (2002) argue that "attributions are central to gratitude, and attributional style may be central to the disposition toward gratitude" (p. 113). Indeed, gratitude was found to be a significant predictor of reduced depressive attributions (Ali & Rizwan, 2018). We suggest that dispositional gratitude could be based on the tendency of grateful people to attribute the reasons for success to the stable and reliable help of others.

Savoring. Although a much less studied topic, savoring has been found to play an important role in human well-being. The concept of savoring was introduced by Bryant and Veroff, who defined it as people's "capacities to attend to, appreciate, and enhance the positive experiences in their lives" (Bryant & Veroff, 2007, p. 2). Savoring is not a process of experiencing a positive emotion; it is a cognitive process of directing attention to amplify and prolong positive emotions. In other words, savoring is a cognitive ability to stop and "smell the roses." Bryant (2003) identifies three aspects of savoring: anticipating; savoring the moment; and reminiscing about past positive emotions or situations. These three kinds of savoring beliefs involve different temporal orientations to positive experience: perceived savoring capacity may stem from beliefs about one's ability to derive pleasure in the present by savoring the moment, and intensifying or prolonging their positive feelings through specific thoughts and behaviors, but also by anticipating future positive events or by reminiscing about past positive events.

Bryant has shown that savoring beliefs were positively correlated with well-being, affect intensity, life satisfaction, and the intensity and frequency of happiness, as well as with aspects of positive functioning, like optimism, self-esteem, extraversion, internal locus of control, self-control, and reported self-control behaviors. They were negatively correlated with guilt, physical and social anhedonia, hopelessness, depression, neuroticism, and the frequency of unhappy and neutral affect, and uncorrelated with socially desirable responses (Bryant, 2003). Other studies have confirmed that

savoring is associated with a wide range of variables reflecting positive functioning, such as optimism, internal locus of control, and self-control, as well as life satisfaction (Bryant, Smart, & King, 2005; Quoidbach, Berry, Hansenne, & Mikolajcza, 2010). Watson (2019) suggested that the inability to savor the pleasure of the obtained object could boost hedonic adaptation (Lyubomirsky, 2011), which leads to the aspiration to possess more and more. Research by Watson (2019) showed that savoring the moment was negatively associated with materialism, which in turn was related to lower levels of subjective well-being (Dittmar, Bond, Hurst, & Kasser, 2014). In a daily diary study which used experience sampling methodology, the multilevel modelling analyses confirmed that savoring is an important mechanism through which people derive happiness from positive events. In particular, momentary savoring both mediated and moderated the impact of daily positive events on a momentary happy mood (Jose, Lim, & Bryant, 2012). In our study we drew on these results and also on the Bryant and Veroff (2007)'s idea that savoring can serve as a mediator in the relationship between positive life-outcome and happiness.

Self-esteem. Self-esteem is an individual's subjective evaluation of their own worth. High self-esteem has a strong relationship to well-being. According to Diener's review (2009), positive association between self-esteem and well-being was confirmed in 11 studies. Later it was found that self-esteem was the most powerful predictor of happiness (Furnham & Cheng, 2000; Baumeister, Campbell, Krueger, & Vohs, 2003; Gordeeva & Osin, 2011). As to relationships between optimistic AS and self-esteem, it was shown that both types of optimistic attributional style — OAS-Positive and OAS-Negative — positively correlated with high self-esteem (Gordeeva & Osin, 2011).

Dispositional optimism. Dispositional optimism refers to generalized expectations regarding future outcomes: optimistic people believe that good things, rather than bad things, will happen (Carver & Scheier, 2014). According to Carver and Scheier, dispositional optimism relates to motivation: optimists exert effort, whereas pessimists disengage from effort. The relationship between dispositional optimism and well-being has been confirmed in a wide range of studies: optimists compared to pessimists are happier, and their level of satisfaction with life is higher (*e.g.*, Carver, Scheier, & Segerstrom, 2010; Mens, Scheier, & Carver, 2016). Optimists also show lower levels of anxiety and depression; have better health; use active coping strategies more often; and report better relationships with others (Carver et al., 2010).

On the other hand, dispositional optimism and optimistic attributional style demonstrate a low to moderate correlation (Reilley et al., 2005; Gordeeva, Sychev, Osin, & Titova Grandchamp, 2019). The similarities and specificities of the two types of optimism, as they are often called (Compton & Hoffman, 2019), were analyzed by Gordeeva, Sychev, and Osin (2017). It was shown that while these concepts are related, they differ in their mechanisms of interaction with well-being and academic performance.

Our study aimed to examine the relationship between OAS-positive and OAS-negative and subjective well-being, taking into account the role of gratitude, savoring, self-esteem, and dispositional optimism as possible mediators in these relationships. We hypothesized that an optimistic attributional style for positive events would be a significant predictor of life satisfaction and subjective happiness, and

that this association is mediated by positive personality traits reflecting positive functioning.

In our study we used two well-established types of well-being variables — subjective happiness and satisfaction with life. According to Diener, subjective well-being is the scientific term for happiness and life satisfaction (2021). Lyubomirsky (2007) has described happiness as the "experience of joy, contentment, or positive well-being, combined with a sense that one's life is good, meaningful, and worthwhile" (p. 32). Life satisfaction involves a favorable attitude towards one's life rather than an assessment of current feelings; it is a measure of well-being assessed in terms of satisfaction with relationships, achieved goals, and self-perceived ability to cope with one's daily life (Diener, 2021). An individual's levels of subjective well-being are influenced by both internal and external factors; this study concentrated on the former and explored the importance of cognitive variables in the processes that underlie SWB.

Methods

Participants

The participants were 271 adults from Moscow and the Moscow Region, of whom 41% were university students and 59% were employees working in the public and private sectors. The sample comprised 238 (88%) women and 33 (12%) men; M age = 32.42, SD = 12.9, age range 18–78 years.

Measures

To measure *optimistic attributional style* as a stable trait and a possible predictor of subjective well-being, we used a modified version of the Attributional Style Questionnaire (Peterson et al., 1982), which featured 10 achievement situations (five positive and five negative) (Gordeeva et al., 2019). A sample negative scenario was: "You have received negative feedback from a respected colleague." Participants were instructed to imagine that each situation had actually happened to them, to write down its most likely cause, and then rate this cause using a 6-point Likert-type scale on two main dimensions of attributional style: stability (this cause will never happen again or will always be present) and globality (this cause influences just this particular situation or influences all situations in my life). An optimistic attributional style for explaining positive events (OAS-Positive) score was computed by summing the stability and globality ratings for positive situations, and an optimistic AS for negative events (OAS-Negative) score was computed by first reversing the ratings of the negative situations, and then summing them. The reliability coefficients of all the scales used in this study are presented in *Table 1*.

Savoring was measured by the Russian version of the Savoring Beliefs Inventory (SBI) (Bryant, 2003), which was developed specifically for this study; direct and back translation of the questionnaire was implemented by two bilingual experts. The questionnaire consisted of 24 items that constituted three scales: 1) savoring the moment; 2) anticipating; and 3) reminiscing. Each scale consisted of eight items, half of which were worded positively (*e.g.,* "I know how to make the most of a good time") and the other half were worded negatively (*e.g.,* "When it comes to enjoying myself, I'm

my own 'worst enemy'"). Respondents rated their agreement with each item using a 7-point Likert scale. The total scale reliability measured by Cronbach's α was 0.91, and the reliability of the subscales varied from 0.82 to 0.85, which was considered satisfactory.

To assess *gratitude,* we used the Russian version of GQ-6 (McCullough et al., 2002), which was developed for this study. Direct and back translation of the questionnaire was implemented by two bilingual experts. The original version consisted of six items, with four positively worded statements (*e.g.,* "I have so much in life to be thankful for") and two negatively worded statements (*e.g.,* "When I look at the world, I don't see much to be grateful for") to be rated on a 7-point Likert scale. In the Russian version of the questionnaire, the reverse items showed weak consistency with the positively worded ones (which is quite a common phenomenon, see Suarez-Alvarez et al., 2018). To improve scale reliability, it was decided to exclude the two reverse items and use four-item version which demonstrated satisfactory reliability (Cronbach's α = .73).

Dispositional optimism was assessed by the Russian version of the Life Orientation Test (Scheier, Carver, & Bridges, 1994; Gordeeva, Sychev, & Osin, 2010). This instrument included four positively worded items, four negatively worded items, and four filler items rated on 4-point Likert scale (Cronbach's α = .89).

Self-Esteem was assessed using the Russian version of the Rosenberg Self-Esteem Scale (Rosenberg, 1965; Bodalev & Stolin, 1987). The scale consisted of 10 items, five positively and five negatively worded, to be rated on a 4-point Likert scale (Cronbach's α = .83).

Subjective well-being. Life satisfaction and happiness were measured with Russian versions (Osin & Leontiev, 2020) of the Satisfaction with Life Scale (SWLS) (Diener, Emmons, Larsen, & Griffin, 1985) and the Subjective Happiness Scale (SHS) (Lyubomirsky & Lepper, 1999). The SWLS consisted of five items which were to be rated on a 5-point Likert scale, and the SHS consisted of four items to be rated on a 7-point Likert scale (Cronbach's α for both scales in this study was .81).

Procedure

This research was introduced as a study conducted by Psychology Department of Lomonosov Moscow State University entitled "Study of the sources of happiness and psychological well-being." We asked participants to help science by completing a battery of tests. As a reward we offered individual feedback on their personality "happiness profile." Confidentiality was stressed. Most participants (N = 171) completed the online version of the survey.

Since this group was dominated by young respondents (average age M = 28.37, SD = 9.12), to increase the representativeness of the sample, a paper survey was conducted among more mature and elderly people (M = 39.36, SD = 15.29), represented mainly by teachers and other staff at two Moscow schools. The effects of which survey type was used were analyzed. The revealed effects were quite weak and did not affect the main assumed predictors (OAS) and dependent variables (well-being indicators). Thus, we concluded that the joint analysis of the "online" and "paper" groups did not compromise the validity of the research findings.

Data Analysis

The structural equation modeling was undertaken in Mplus 8, using a robust maximum likelihood estimation (Muthen & Muthen, 2015). A full-information maximum likelihood method (Enders & Bandalos, 2001) was used to analyze missing data (10 cases, 3.7% of the sample). To assess the significance of mediated effects in the structural model, a bootstrap analysis with 5000 samples was carried out in Mplus (Wang & Wang, 2019). Other analyses, including descriptive statistics, correlations, regression analysis, and t-tests were carried out using SPSS.

Results

The correlations among the study variables presented in *Table 1* showed that subjective happiness was related to all other measures, including both indicators of OAS, and all indicators of savoring, dispositional optimism, self-esteem, and gratitude. Life satisfaction was correlated with all measured variables with the exception of OAS-Negative. An OAS-Positive also demonstrated significant correlations with all other variables, however, it was not associated with an OAS-Negative, while the latter showed significant correlations with only three variables: self-esteem, dispositional optimism, and savoring the moment. All scales of savoring, dispositional optimism, and self-esteem were moderately or strongly interrelated (*see Table 1*).

Age showed moderate correlations with an OAS-Negative ($r = .36$; $p \leq .001$), self-esteem ($r = .25$; $p \leq .001$), gratitude ($r = .17$; $p \leq .01$), subjective happiness ($r = .13$; $p \leq .05$), and savoring the moment ($r = .13$; $p \leq .05$). These results indicated that age covariates with many study variables, including indicators of an OAS and well-being, so measures should be taken in further analyses to control its effects. Analysis of sex differences using the Student's t-test revealed that the women had lower mean scores of an OAS-Positive ($M(\text{women}) = 4.34$, $M(\text{men}) = 4.71$; $t(265) = 2.10$; $p \leq .05$) and higher mean scores of SBI-Future ($M(\text{women}) = 5.36$, $M(\text{men}) = 4.98$; $t(264) = 1.97$; $p \leq .05$).

We then applied regression analysis to estimate the relationships between indicators of well-being and the set of its potential predictors which included dispositional optimism, self-esteem, gratitude, and savoring, controlling for age. The results of this analysis (*Table 2*) revealed that life satisfaction was positively related to an OAS-Positive, dispositional optimism, self-esteem, and gratitude. Savoring the future showed a relatively small negative effect on life satisfaction. Happiness was positively associated with dispositional optimism, self-esteem, gratitude, and savoring the moment. These results confirmed the positive effect of an OAS-Positive on subjective well-being, but this effect may be direct or mediated by some other variables.

To test our hypothesis about mediated relations between an OAS and well-being, we applied structural equation modelling. Life satisfaction and subjective happiness were included in the model as dependent variables, along with an OAS-Positive, an OAS-Negative, and four potential mediators of the effect of OAS on well-being (all of them were allowed to correlate). The only savoring scale included in the model was the savoring-the-moment scale because of its highly significant positive effect on happiness in the regression analysis results. Given the results presented above, the participants' age was added as a covariate of OAS-Negative and predictor of self-

Table 1

Descriptive statistics and correlations between optimistic attributional style, subjective well-being and personality variables

	α	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. Satisfaction with life	.81	4.74	1.06	—									
2. Subjective happiness	.81	4.91	1.23	.66***	—								
3. OAS-Positive	.80	4.38	.95	.35***	.35***	—							
4. OAS-Negative	.85	4.21	1.01	.02	.14**	.01	—						
5. Dispositional optimism	.89	2.99	.79	.45***	.65***	.32***	.15**	—					
6. Self-esteem	.83	3.13	.50	.43***	.61***	.35***	.30***	.59***	—				
7. Gratitude	.73	5.78	.91	.43***	.47***	.29***	–.01	.40***	.32***	—			
8. Savoring, anticipating	.85	5.31	1.03	.13*	.26***	.18**	.01	.37***	.25***	.27***	—		
9. Savoring the moment	.82	4.96	1.11	.40***	.64***	.24***	.16*	.59***	.52***	.43***	.45***	—	
10. Savoring, reminiscing	.84	5.45	1.01	.28***	.35***	.15*	.07	.47***	.30***	.35***	.56***	.59***	—
11. Savoring, Total	.91	5.24	.87	.33***	.51***	.23***	.09	.57***	.44***	.42***	.80***	.83***	.86***

*Note. Pairwise deletion of missing data (N is from 261 to 268), * = p ≤ .05; ** = p ≤ .01; *** = p ≤ .001; α = Cronbach's α.*

Table 2

Linear regression models for Life satisfaction and Subjective happiness (N=261)

Predictors	Dependent variables			
	Life satisfaction		Subjective happiness	
	β	t(251)	β	t(251)
OAS-Positive	0.13*	2.29	0.07	1.48
OAS-Negative	–0.05	–0.82	–0.01	–0.33
Dispositional optimism	0.17*	2.38	0.29***	5.08
Self-esteem	0.22**	3.25	0.24***	4.42
Gratitude	0.25***	4.25	0.17***	3.50
Savoring, anticipating	–0.16*	–2.52	–0.06	–1.30
Savoring the moment	0.13	1.71	0.35***	5.96
Savoring, reminiscing	0.04	0.56	–0.09	–1.67
Age	–0.11	–1.92	–0.03	–0.64
R^2	0.37		0.59	
F(9,251)	16.53		42.03	
p-level	≤ 0.001		≤ 0.001	

*Note. β — standardized regression coefficients, * = p≤.05; ** = p≤.01; *** = p≤.001.*

esteem, gratitude, savoring the moment, and subjective happiness. After removing all non-significant paths from this model, we obtained satisfactory fit: $\chi^2 = 27.10$; df = 13; p = 0.012; CFI = 0.980; TLI = 0.949; SRMR = 0.056; RMSEA = 0.063 (90% CI = [0.029, 0.097]); PCLOSE = 0.230; N = 271.

Then we investigated modification indices and added a path from age to life satisfaction in the model. The final model presented in the figure below showed good fit: $\chi^2 = 19.75$; df = 12; p = 0.072; CFI = 0.989; TLI = 0.969; SRMR = 0.055; RMSEA = 0.049 (90% CI = [0.000, 0.086]); PCLOSE = 0.474; N = 271.

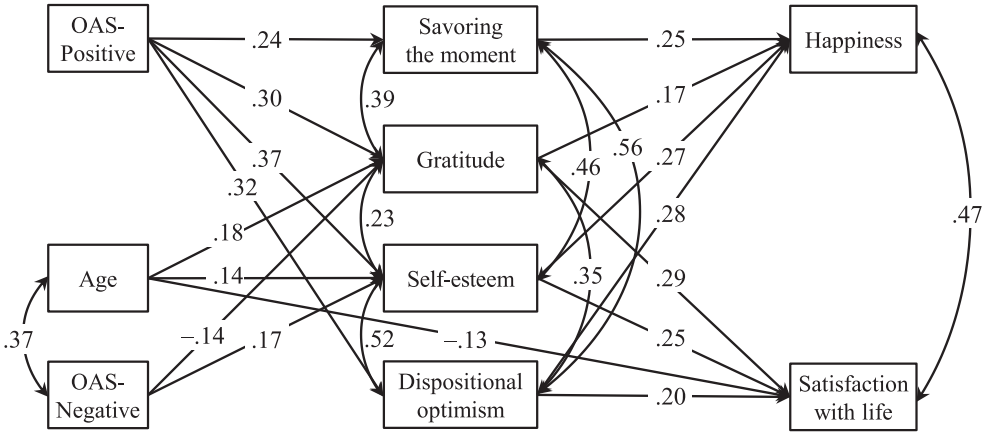

Figure 1. The structural model of relations between the two types of optimistic attributional style (OAS), two indicators of subjective well-being, and four mediators

Note. All coefficients are standardized and significant at p ≤ .01; N = 271.

Table 3

Indirect effects of optimistic attributional style (OAS) for positive and negative events on life satisfaction and subjective happiness.

Dependent variable	Predictors	Mediators	Standardized indirect effect	*p-level*
Satisfaction with life	OAS-Positive	All (Self-esteem, dispositional optimism, gratitude)	.24	≤ *.001*
Satisfaction with life	OAS-Positive	Self-esteem	.09	≤ *.01*
Satisfaction with life	OAS-Positive	Dispositional optimism	.06	≤ *.05*
Satisfaction with life	OAS-Positive	Gratitude	.09	≤ *.001*
Satisfaction with life	OAS-Negative	All (Self-esteem and gratitude)	.01	*n. s.*
Satisfaction with life	OAS-Negative	Self-esteem	.05	≤ *.05*
Satisfaction with life	OAS-Negative	Gratitude	–.04	≤ *.05*
Subjective happiness	OAS-Positive	All (Self-esteem, dispositional optimism, gratitude and savoring the moment)	.30	≤ *.001*
Subjective happiness	OAS-Positive	Self-esteem	.10	≤ *.001*
Subjective happiness	OAS-Positive	Dispositional optimism	.09	≤ *.001*
Subjective happiness	OAS-Positive	Gratitude	.05	≤ *.01*
Subjective happiness	OAS-Positive	Savoring the moment	.06	≤ *.01*
Subjective happiness	OAS-Negative	All (Self-esteem and gratitude)	.02	*n. s.*
Subjective happiness	OAS-Negative	Self-esteem	.05	≤ *.05*
Subjective happiness	OAS-Negative	Gratitude	–.02	≤ *.05*

The results of analyzing the indirect effects of an OAS and age on the subjective well-being indicators in the presented structural model revealed that all the effects mediated by individual mediators were statistically significant (*see Table 3*).

Thus, the structural model revealed that the effects of an OAS-Positive on subjective well-being were fully mediated by gratitude, savoring the moment, self-esteem, and dispositional optimism. Both life satisfaction and subjective happiness depended on gratitude, self-esteem, and dispositional optimism, but only happiness hinged on savoring the moment. The mediated effects of an OAS-Negative through self-esteem and gratitude were inconsistent, so its total indirect effect on subjective well-being was not significant.

Discussion

DeNeve and Cooper (1998) hypothesized that "perhaps what is most critical to subjective well-being is not simply the tendency to experience positive or negative emotion, but the tendency to make either positive or negative attributions" (p. 219). From this standpoint, our study sought to investigate a cognitive mediation model, in which selected positive personality traits were expected to mediate the relationship between optimistic attributions and SWB. We have found that the optimistic attributional style for positive life events uniquely predicted subjective well-being, including happiness and life satisfaction, through positive personality traits such as gratitude, savoring the moment, dispositional optimism, and self-esteem. In contrast, an OAS for negative events did not predict either life satisfaction, or subjective happiness. Also, our results showed once again that the ability to explain the causes of positive events optimistically, *i.e.*, see them as global and stable, was unrelated to the ability to explain the causes of negative events as local and temporary; these are two different types of optimistic thinking.

Thus, this study confirmed previous results on the relationships between the trait of savoring and well-being (Bryant, 2003) and went further to establish the role of savoring the moment as a mediator between optimistic thinking about positive life outcomes and happiness. Moreover, the results of our study suggest that there are some differences in the predictive power of the scales. Savoring the moment was significantly more important for well-being, and especially subjective happiness, than savoring of past events and savoring possible future positive events. This may be due to the different mechanisms of savoring implied in these orientations, which thus need to be studied. For example, savoring the moment is rather close to mindfulness (Kiken, Lundberg, & Fredrickson, 2017; Watson, 2019), which is the ability to have a clear focus upon what is happening in the present moment, and involves intention, attention, and attitude.

The mediational role of gratitude and savoring the moment deserves further attention due to their joint, but also complimentary nature, since the former reflects a more eudaimonic perspective (Wood et al., 2010), while the latter reflects a more hedonic one (Diener, Lucas, Oishi, Hall, & Donnellan, 2018). Gratitude is closer to eudaimonic strategy of life, which is defined as the presence of personal and social skills and abilities that contribute to optimal psychosocial functioning (Ryff, 2018).

With respect to the dispositional optimism and self-esteem findings, our results confirmed the hypothesis and previous results in this field.

The sex differences found in the study, and the finding that women had a lower mean rate of an OAS-Positive, were small and did not correspond to our previous results (Gordeeva et al., 2019), which showed no sex differences on this variable. This means that this part of the research should be replicated with a bigger sample of men. It was also found that women showed a higher level of anticipatory savoring than men, which can be explained by the reality that women often have hopes for a more favorable future associated with family life, and corresponds to the higher dispositional optimism which has been previously found in Russian women (Gordeeva, Sychev, & Osin, 2021).

The strength of this study was its nonstudent sample, which included adults of different ranges of age and professions. The positive relationship of age with an OAS-Negative, gratitude, savoring the moment, and self-esteem, and the negative one with life satisfaction, probably reflected the conflicting trends inherent in aging.

Conclusion

Our results point to the conclusion that the ability to explain good events optimistically is unrelated to the ability to optimistically explain bad events, and that it's the former that's essential for individuals' positive functioning and well-being. The cultivation of optimistic thinking promotes gratitude, a strategy that essentially involves appreciative positive attention, and savoring the moment, as well as feelings of self-worth and positive expectations about the future.

Limitations

This study had some limitations, the most significant of which was associated with its cross-sectional nature. Despite the path model we presented, we are aware that the study's cross-sectional design did not allow us to assess causality.

It is also important to note the limitation due to the sample not being balanced by sex, since the vast majority of participants were female (88%). This characteristic can constrain generalizability of the study's findings. Given the sex differences in OAS, dispositional optimism, and savoring, it is important to confirm these findings using a sample more balanced by sex. At the same time it is important to note that the sex differences may be culture specific: for example, sex differences on savoring the present moment subscale (which showed to be the main predictor of happiness) were the smallest (Bryant, 2003) and in our sample were not significant.

Yet another limitation was the possible validity issues of the Russian version of GQ-6 scale, since it included only four items and did not include the two reverse items. At the same time since other researchers faced the same problems with these items (see Chen, Chen, Kee, & Tsai, 2009; Langer, Ulloa, Aguilar-Parra, Araya-Veliz, & Brito, 2016), the four items Russian gratitude measure was considered to be satisfactory enough for research purposes (Cronbach's $\alpha = .73$).

Finally, taking into account the role of culture in the relationship between gratitude and well-being (Peterson et al., 2007), further research on other cultural samples will be of interest.

Ethics Statement

All study participants gave an informed consent to participate in this study and were informed about its purpose. The participants were volunteers and did not receive any material rewards for their participation.

Author Contributions

V.A.T.G. and T.O.G. conceived of the idea. V.A.T.G. performed the data collection. T.O.G. developed the theory. O.A.S. and V.A.T.G. performed the computations. O.A.S. verified the analytical methods. Draft preparation was done by V.A.T.G. All authors participated in writing, discussed the results, and contributed to the final manuscript.

Conflict of Interest

The authors declare no conflict of interest.

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Well-being and Coping with Stress Among Russian Adolescents in Different Educational Environments

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Background. The school environment influences a child's well-being in different ways, not only by education but also by forming social roles, habits, and stress responses. It provides the sources of stress as well as the sources of resilience.

Objective. This study examines the variety of coping strategies of adolescents attending different educational institutions and the different trajectories in the adaptation process in different educational environments.

Design. This paper examined the coping strategies, optimism, and subjective well-being of students in different educational environments. Three schools were represented, and 646 adolescents between 12–17 years old participated in the study. The measures included the Ways of Coping Checklist, The Life Orientation Test, and The Warwick-Edinburgh Mental Well-Being Scale.

Results. Coping strategies used by students attending different schools significantly differ in their intensiveness of use and age distribution. However, optimism and subjective well-being are higher among older adolescents and do not depend on the educational environment.

Conclusion. The differences in the coping strategies preferred by the adolescents in different types of schools reflect their adaptation to the different environmental demands, which is confirmed by the same level of subjective well-being and optimism in different environments. However, their repertoires of coping strategies are not analogous: the students in high-rated schools use more various and more constructive coping strategies than students in low-rated schools. We may assume that their resilience and ability to cope with stress outside of school may also differ, which, in turn, can influence their further life trajectories and ability to cope with difficulties in life, perpetuating existing social inequality. Early and middle adolescents in all types of schools show a lower level of well-being and optimism than older students, which may indicate their higher psychological vulnerability and need for adult attention and support compared to older adolescents.

***Keywords*:** Adolescence; coping strategies; educational environment; school; well-being

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Introduction

The increase in depression among youth around the world (WHO, 2019), combined with high rates of bullying and cyberbullying in Russian schools (OECD, 2019), along with an increase in cases of school shootings[1], raise questions about Russian school students' well-being and resilience towards stress. Schools have strong differences in their educational achievements, school climate, reputation, and history in Russia despite the reforms of 2012, whereby particular schools integrated into large "educational complexes" to create uniform educational conditions, including up to 20 buildings. This study aims to compare different educational environments from the perspectives of the preferred coping strategies and well-being of students attending these institutions and to discuss the adaptations implemented by these adolescents.

The school environment may influence a child in different ways, not only by education directly but also by forming social roles, habits, behavioral, and communication norms (Crosnoe, 2011). The school environment influences psychological well-being (Tian, Zhao, & Huebner, 2015), health (Symonds, Dietrich, Chow, & Salmela-Aro, 2016), and social adaptation (Wolke & Lereya, 2015) in students. Secure school connectedness, positive teacher influences, supportive peers, and opportunities for academic and other success appear to relate positively to adolescent resilience (Olsson, Bond, Burns, Vella-Brodrick, & Sawyer, 2003) and work as a protective factor mitigating against risks (Oldfield, Stevenson, Ortiz, & Haley, 2018). A higher level of school engagement is related to a higher level of well-being among school students (Tian et al., 2015; Cadime et al., 2016).

At the same time, schools provide a wide range of different stress situations, from the routine difficult communicative challenges to the hard exams. For example, the *Stress in America* survey by the American Psychological Association (2014) suggested an unhealthy level of stress among adolescents, who reported that school (83%), and gaining entry into university or deciding what to do after secondary school (69%), were the two most common sources of stress at this age. Being bullied at school leads to a decrease in somatic and emotional well-being (Hellfeldt, Gill, & Johansson, 2016) and harms performance (Oliveira, de Menezes, Irffi, & Oliveira, 2018; Stavrinides, Georgiou, Nikiforou, & Kiteri, 2011).

Therefore, school is one of the heavyweight environments where stress has a place and where students form, pilot, and master their coping strategies through their social adaptation. Surprisingly, there is little known about the role of the school in developing coping strategies among students. Coping behaviour is an adaptive process that includes "cognitive and behavioral efforts to master, tolerate, or reduce external and internal demands and conflicts" (Folkman & Lazarus, 1980, p. 223) by utilizing personal and social resources to solve the stressful problem or manage the individual's negative emotional reactions (Folkman & Lazarus, 1985; Compas, Jaser, Dunbar, Watson, Bettis, Gruhn, & Willians, 2014; Losoya, Eisenberg, & Fabes, 1998).

There are several views on the role of coping in the overall resilience and well-being of a person. We use an approach, according to which, coping as a fundamen-

[1] *e.g.* Russia school shooting: Children and teacher killed in Kazan https://www.bbc.com/news/world-europe-57069589

tal adaptive process integrates the development of stress reactivity with the emotional, motivational, behavioral, and other forms of regulation that are mobilized by stressful events. Resilience may be viewed as a dynamic adaptation process to a risk setting that involves interaction between a range of risk and protective factors, from the individual to the social (Olsson et al., 2003). It results from the interaction between a child's stress reaction and the environmental response to this reaction (Zimmer-Gembeck & Skinner, 2016). We suppose that in different environments, different coping strategies may be supported and termed as socially acceptable behaviour.

Although there is no universal consensus regarding the classification of coping strategies, most studies are consistent in the associations between types of coping and social adaptation. Problem solving, planning, positive reappraisal, emotional expression, support and information seeking, and problem-focused support are predominantly associated with a lower level of internalizing problems, externalizing behaviour problems, and better social competence. Coping strategies like avoidance, self-blame, venting, and rumination are generally associated with more internalizing and externalizing symptoms, and poorer adjustment and social competence (Losoya et al., 1998; Horwitz, Hill, & King, 2011; Rafnsson, Johnson, & Windle, 2006; Li, DiGiuseppe, & Froh, 2006; Zimmer-Gembeck & Skinner, 2016; Lengua & Stormshak, 2000; Fields, & Prinz, 1997; Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001; Clarke, 2006; Krattenmacher et al., 2013).

Although many studies focus on school-related stress and coping (*e.g.*, Yuan, Zhang & Fu, 2017; Warren, 2000; Paul, Smith & Blumberg, 2012; Harper et al., 2012; Ganim, Frydenberg, 2006), they predominantly focus on coping with an event or phenomenon including exams, bullying, cyberbullying, and switching to remote learning. There is clearly insufficient data on how school characteristics themselves relate to coping strategies preferred by students.

This study aims to explore how the characteristics of the school environment, summarized in the unified city school ranking, are related to both the coping strategies used by students and their psychological well-being. We used the psychological well-being scale to measure the level of subjective well-being as a direct indicator and optimism as an indirect indicator of well-being, reflecting confidence towards the world and the predominance of positive expectations (*e.g.*, Scheier, Carver, & Bridges, 2001). Our hypotheses are as follows:

1) different preferred coping strategies are typical for students in different educational environments;
2) in different educational environments, the level of well-being of students differs.

Methods

Participants

The a-priori power analysis showed that if we set medium effect size ($\eta 2 = 0.0625$), $\alpha = 0.05$, power = 0.95, for our design, the sufficient sample size is equal to 235 or more participants. The sample consisted of 646 adolescents, aged 12–17 years, mean

age — 15.28 years old. We divided the sample into three age groups (12–13 years, 108 participants, 55 males, 53 — females; 14–15 years, 269 participants, 131 males, 138 females; 16–17 years, 269 participants, 137 males, 132 females) (see *Table 1*).

Table 1

Number of students in age and school groups

Age (years)	1st group	2nd group	3rd group
12–13	11	50	47
14–15	57	60	152
16–17	154	51	64
Totals ($N = 646$)	222	161	263

Procedure

To compare the students' characteristics in different educational environments, we organized a sample in a special way[2]. When choosing schools for research, we relied on the Moscow Department of Education ranking position. This ranking is based on a range of criteria that include the results of the unified state exam and state final attestation of students, success in subject and cross-curriculum tests, participation in academic competitions, and the event of non-performance offenses. We were interested in schools from the top 25% of the ranking, from the bottom 25%, and schools that occupy the middle 20%. Despite the Department of Education's attempts to reduce educational inequality and make all schools uniform, each school usually has its own unique history and reputation. They differ in the level of selectivity, socioeconomic characteristics of school students' families, the qualifications of teachers, and the strategies of intra-school psychological services.

The three basic strategies of school psychological services function may be described as follows: 1) "Disaster recovery": psychological rescue actions usually follow incidents such as fights, substance use, and crimes, in collaboration with the police, medical personnel, the commission for juvenile affairs and protection of their rights. This is commonly associated with the schools from the bottom 25%; 2) "Caring for the future": different prevention programs are conducted and demanded from external specialists, but the current psychological problems are not always addressed. This strategy is used in schools that occupy the middle 20%; and 3) "System approach": multidirectional psychological work includes training, counselling, prevention programs, and education and support for the teachers and the parents. It is implemented by the schools from the top 25% of the ranking.

These indicators are mostly directly or implicitly reflected in the school's ranking. Children who study in schools with different ratings are in distinctly different social conditions, with different norms and requirements.

[2] This article is also devoted to the results obtained from the same sample: Khlomov, K.D., Bochaver, A.A., Korneev A.A. (2020). Coping Strategies of Adolescents and Educational Environment. *Social psychology and society, 11*(2), 180–199. https://doi.org/10.17759/sps.2020110211

Nine educational institutions were chosen as platforms for the research, and they were combined into three groups of three institutions.

1st group. A school with a low ranking and two institutions of secondary special education (colleges), characterized by low educational achievement and unsafe behaviour among the students ($N = 222$ students).

2nd group. Three schools with an average ranking ($N = 161$ students).

3rd group. Three schools with a high ranking ($N = 263$ students).

Questionnaires

The participants completed three questionnaires in the Russian adaptation:

(1) Ways of Coping Checklist by Folkman and Lazarus which includes scales of Confrontation (Chronbach's $\alpha = 0.51$, McDonald's $\omega = 0.51$ in our sample), Distancing ($\alpha = 0.52$, $\omega = 0.54$), Self-Control ($\alpha = 0.45$, $\omega = 0.46$), Social Support Seeking ($\alpha = 0.59$, $\omega = 0.61$), Accepting Responsibility ($\alpha = 0.51$, $\omega = 0.53$), Escape-Avoidance ($\alpha = 0.56$, $\omega = 0.56$), Planning of Problem Solving ($\alpha = 0.69$, $\omega = 0.70$), and Positive Reappraisal ($\alpha = 0.62$, $\omega = 0.64$) (Kryukova & Kuftyak, 2007). The responses to items were presented on a Likert scale from 0 to 3;

(2) The Life Orientation Test by Carver & Scheier (Gordeeva, Sychev, & Osin, 2010). We use the scale of optimism in our study (Chronbach's $\alpha = 0.78$, McDonald's $\omega = 0.79$ in our sample). The responses to items were presented on a Likert scale from 0 to 4;

(3) The Warwick-Edinburgh Mental Well-Being Scale (Tennant et al., 2007, Chronbach's $\alpha = 0.88$, McDonald's $\omega = 0.88$ in our sample). The responses to items were presented on a Likert scale from 1 to 5.

For the analysis of coping strategies, a two-way MANOVA analysis was conducted (we used age group and school group as factors, and all scales of the Ways of Coping Checklist as outcomes). To analyze the separated effects of age and school groups on various scales, a series of ANOVA's were used.

Results

In *Table 2*, the general results of the MANOVA are presented. There is only one significant effect of school groups. The coping strategies, in general, are more pronounced in the 3rd group.

Table 2

MANOVA results

Factor	Df	F	η^2	P
	General			
Age	16, 1262	1.382	0.016	0.142
Type of school	16, 1262	2.122	0.026	0.006
Age X Type of school	32, 2532	1.186	0.015	0.219

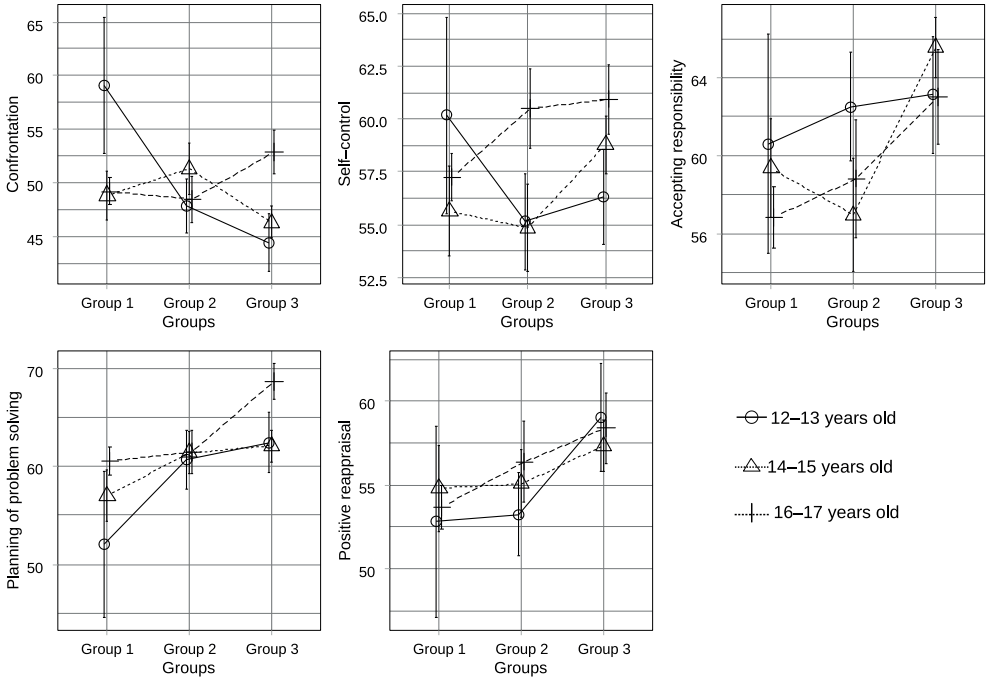

Figure 1. Coping strategies of the students in the three groups of institutions (only significant results are presented).

Besides this general effect, more interesting and meaningful are the effects of age and school groups on separate coping strategies. Table 3 presents significant differences in adolescents' coping strategies with stress situations from different educational environments (see also *Figure 1*). As we conducted a series of ANOVA's, we included raw p-value and adjusted p-values (we used the FDR method, Benjamini, Hochberg, 1995) in the table. Below we discuss unadjusted p-values since we want to estimate general tendencies that can be investigated in detail in further studies.

In the institutions of the 3rd group, the strategies of Planning of Problem Solving, Positive Reappraisal, Taking Responsibility, and Self-Control (sub significantly) have a stronger representation compared to the other groups. These strategies are very important for both coping functions: stress situation transformation and emotional regulation.

In the institutions of the 1st group, Confrontation (among younger teenagers) has a higher representation.

The 2nd group shows a medium level of coping strategies.

There are no differences between groups on the scales of Distancing, Escape-Avoidance, and Social Support Seeking strategies. Escape-Avoidance coping is predominantly discussed as disengagement coping and typically related to the higher number of internalizing problems (Compas et al., 2001). Distancing and Social Support Seeking is usually classified as emotional-focused coping, which is aimed at emotional expression and doesn't change the problem situation. However, social support may have different forms and functions (Compas et al., 2001).

Table 3

ANOVA results for coping strategies scales with significant effect

Factor	Df	F	η^2	P	P adjusted
		Confrontation			
Age	2, 637	1.198	0.002	0.302	0.605
Type of school	2, 637	0.557	0.002	0.573	0.573
Age X Type of school	**4, 637**	**2.923**	**0.018**	**0.021**	*0.164*
		Self-Control			
Age	2, 637	1.302	0.007	0.273	0.605
Type of school	2, 637	2.41	0.008	0.091	*0.181*
Age X Type of school	4, 637	0.852	0.005	0.493	0.875
		Accepting Responsibility			
Age	2, 637	2.745	0.002	0.065	*0.520*
Type of school	**2, 637**	**5.6937**	**0.019**	**0.003**	**0.014**
Age X Type of school	4, 637	0.69563	0.004	0.595	0.875
		Planning of Problem Solving			
Age	2, 637	0.795	0.009	0.452	0.723
Type of school	**2, 637**	**5.804**	**0.018**	**0.003**	**0.014**
Age X Type of school	4, 637	0.322	0.002	0.863	0.881
		Positive Reappraisal			
Age	2, 637	0.208	<0.001	0.812	0.812
Type of school	**2, 637**	**3.129**	**0.010**	**0.044**	0.118
Age X Type of school	4, 637	0.713	0.004	0.583	0.875

Table 4

ANOVA results for optimism and well-being

Factor	Df	F	η^2	P
		Optimism		
Age	**2, 637**	**4.36**	**0.017**	**0.013**
Type of school	2, 637	1.25	0.003	0.286
Age X Type of school	4, 637	1.78	0.011	0.131
		Mental Well-Being		
Age	**2, 637**	**4.04**	**0.013**	**0.018**
Type of school	2, 637	0.44	0.001	0.708
Age X Type of school	4, 637	1.15	0.007	0.333

The results of the ANOVA for scales of Optimism and Well-being are presented in *Table 4*. Results, depicted in *Figure 2* and *Figure 3*, demonstrate a significant increase in optimism (see *Figure 2)* and mental well-being (see *Figure 3*) among respondents over time, with no difference between school types.

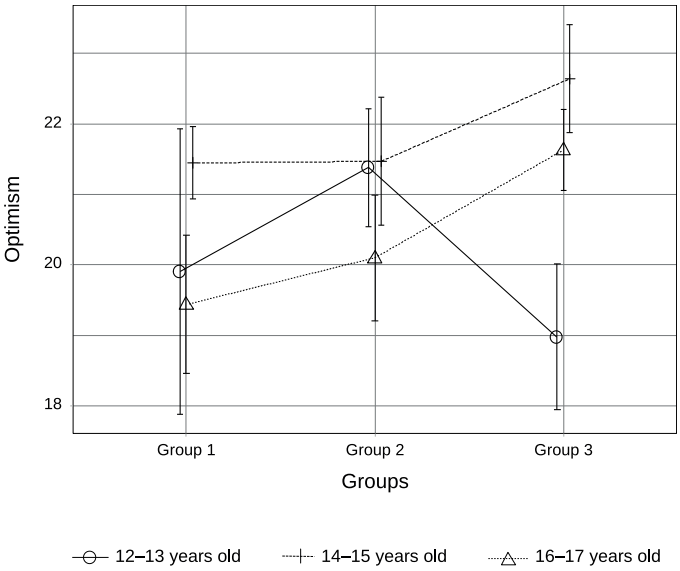

Figure 2. Level of optimism of the students in three groups of institutions.

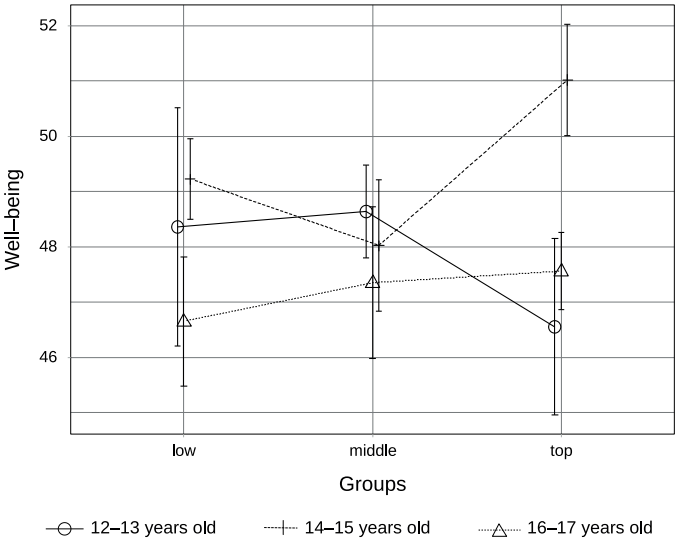

Figure 3. Level of mental well-being of the students in three groups of institutions.

Discussion

The data show several important results. Our first hypothesis is confirmed: there are significantly different coping strategies preferred by students in different types of schools and, contribute to their well-being as optimal for the environmental demands. In the 1st group, Confrontational behaviour is higher among the younger and lower among the older adolescents; such coping strategies as Problem Solving,

Positive Reappraisal, Self-Control, and Accessing Responsibility are significantly more frequently presented in the 3rd group. These differences confirm that students' adaptation to different environments is diverging. In the 3rd group, the coping strategy repertoire is broader, indicating that these students are more competent in problem-solving (which is steadily associated with lower externalizing and internalizing problems) (Compas et al., 2001), self-regulation (Self-Control scale), rethinking their experiences (Positive Reappraisal scale), and responsible perception of the situation (Accepting Responsibility scale), than in the institutions of the 1st and 2nd groups. Confrontation coping is more widely used by younger adolescents in the institutions of the 1st group, but the older students of the 3rd group use it more intensively than in the 1st group. The schools of the 2nd group occupy the middle position between the 1st and 3rd groups.

Since coping behaviour is sensitive to environmental responses, we can assume that different behavioral patterns are supported in schools of different groups through observational social learning, adult encouragement, and norms of socially acceptable behaviour realized in the school. Seemingly, in the 1st group, the predominantly obedient, manageable behaviour with the external locus of control among the students is supported. Partly, it may be related to the characteristics of the students contingent (children with low academic achievement and motivation, and externalizing behaviour problems may provoke stricter responses by the teachers). Still, it is remarkable that neither aggression nor awareness are supported. The behavioural repertoire increases slightly, but students' manageability and controllability seem to develop and get support.

In the 3rd group, we can assume the positive environmental response towards variable behaviour, particularly with a high level of self-control and problem-solving planning. Environmental tolerance to adolescents' confrontational behaviour (the Confrontation scores is higher in older students), in combination with the support of responsibility, the ability to plan their actions and predict the consequences, along with self-control, may promote personal autonomy development.

The schools of the 2nd group have a position between the 1st and 3rd groups; in figures 1, 2, and 3, their profile looks closer to the profile of the 1st group, but there is no statistical confirmation now, and this similarity requires further studies.

These results partly correspond with the previous studies of coping within the school environment. For example, academic stress-coping strategies may be predicted by students' thinking styles (Yuan, Zhang & Fu, 2017). These may be developed differently in different environments; positive attitudes to school are predicted by a low level of school-related stress, a high level of well-being, and different constellations of the coping strategies for males and females (Ganim, Frydenberg, 2006). Harper et al. (2012) showed that coping effectiveness suppresses the effects of peer victimization on perceived school safety. However, there is a lack of research on the coping behaviour of schoolchildren in the context of different educational environments. This explains the novelty of this work, but at the same time, it makes the work less complete and requires further research.

Surprisingly, the second hypothesis isn't confirmed. There are no significant differences in well-being and optimism in educational environments. However, there are differences associated with age: between the ages of 12–15 years old, the adoles-

cents demonstrate a significantly lower level of well-being than older students, which means that this age group is especially vulnerable to the different stressors. An increase of the mental well-being and optimism from younger to older adolescence is shown in other studies (*e.g.,* Salmela-Aro & Tuominen-Soini, 2010; Sanders et al., 2015), and this tendency may reflect maturation processes and an increase of adjustment to the present conditions and successful coping with stress that manifests, for instance, in improving well-being.

The findings show the splitting of the educational strategies and results. In the educational environments where the lower educational level is dominant, and harder psychological problems are noticed (the 1st group), obedience and manageability among students are fostered. In environments with higher academic achievements and attention paid to the psychological problems (the 3rd group), more complex and versatile behaviour is supported.

Conclusion

Our results show that adolescents adapt to their environment over time and build up their resilience in various conditions. Early and middle adolescence seems to be the period of higher vulnerability among adolescents and requires the most attention and support provided by the social environment.

Despite a key feature of adolescence being a growing autonomy, our findings show that, in only certain schools, personal autonomy was encouraged and fostered. Alternatively, in other schools, obedience, but not personal autonomy, is encouraged. These differences in schools indirectly support the different patterns of adaptation towards complicated social conditions. They foster and increase social inequality and a split in the prospective personal maturity in students graduating from the different school groups.

According to the demands-resource model, the environment provides resources and simultaneously imposes demands on students, including effort and usually have physical and psychological costs. The resources can help to diminish the stress induced by this effort and aid the individuals in fulfilling their personal needs and boost their positive adjustment. A mismatch between the students' developmental needs and the school environment can provoke different psychological and mental health problems (Symonds et al., 2016; Cadime et al., 2016). Our study shows some directions in the differences in the efforts made by students to cope with stress, but many questions require further research. In particular, in the future, it is important to make a deeper assessment of the school climate, norms and values within each organization, as well as to study the coping strategies used by students in a long-term study.

Limitations

In this study, there is an uncontrollable factor of individual differences between age groups. The formal rating criterion chosen for the sample formation does not give a complete picture of the features of the educational environment. Future research should include a longitudinal study to avoid these limitations and pay more attention to the students' individual differences and school environment assessment.

Ethics Statement

The study was previously discussed and approved by the Ethics Committee of the Institute of Social Sciences of the RANEPA. Written informed consent to participate in this study was provided by the participants' parents and legal guardians.

Author Contributions

Kirill Khlomov and Alexandra Bochaver conceived of the idea. Alexey Korneev developed the theory and performed the computations. All authors discussed the results and contributed to the final manuscript.

Conflict of Interest

The authors declare no conflict of interest.

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Do Authentic People Care about the Environment? A View from Two Paradigms

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Background. Personal authenticity, the ability to be true to oneself, is traditionally studied from the perspective of its protective role for the individual and is only beginning to be studied in relation to the surrounding world. In this study, we suggest that authentic people may be more aware and concerned about their environment then less authentic people. The theoretical foundations for our work were: the person-centered approach; subject psychology; and modern research on pro-environmental behavior.

Objective. We presented our understanding of personal authenticity within Russian subject psychology, developed the standardized instruments necessary for carrying out our main aim, and explored the links between authenticity and pro-environmental behavior in both person-centered and subject psychology.

Design. Four hundred thirty (430) Russian students (M_{age} = 19.19; SD_{age} = 1.22; 79.5% women) participated in the study. Authenticity was measured both by the revised Russian version of the *Authenticity Scale*, and a new tool, the *Moscow Authenticity Scale*, which was developed on the basis of subject psychology. To measure pro-environmental behavior, we created a new instrument called the *Ecological Lifestyle Scale*, which included *Social Activities* and *Ecological Self-restraint* subscales.

Results. Using the two new scales, the *Moscow Authenticity Scale* and the *Ecological Lifestyle Scale*, along with a modification of the *Authenticity Scale*, we found that authenticity, considered within the framework of subject psychology, provided a more nuanced picture of the relationship between personal authenticity and pro-environmental behavior than the person-centered model did. Women were more likely to exercise pro-environmental behavior than men; however, the connections between personal authenticity and pro-environmental behavior were stronger in the male group.

Conclusion. Authenticity is associated with pro-environmental behavior but does not predict it accurately enough. Future research on moderating or mediating variables is suggested.

***Keywords*:** authenticity; pro-environmental behavior; person-centered psychology; subjective psychology; gender; Moscow Authenticity Scale; Ecological Lifestyle Scale

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Introduction

The famous Greek maxim "know thyself," which represents the human aspiration for harmony and wisdom in the world through self-knowledge, has been known for dozens of centuries, and, to this day, remains one of the most demanded (and demanding) endeavors. In circumstances of high uncertainty, environmental pressure, information overload, and a fast-paced life, the natural need for knowing and being yourself draws significant attention. A human's personal and social identity changes throughout their life with increasing pace, promoting a need for a stable, phenomenological "anchoring point" that ensures the integrity of one's self, despite intense individual and environmental changes; this anchor is represented by authenticity.

Authenticity, originating from the Greek word *αυθεντικός* (meaning true, genuine), is a personality trait that facilitates being true to oneself. It includes one's personality, one's own path or calling, and the circumstances of one's life, including space, time, and environment (Nartova-Bochaver, 2011; Nartova-Bochaver, Irkhin, & Reznichenko, 2020).

Psychologists distinguish authenticity from both intrapersonal and interpersonal perspectives (Grégoire, Baron, Ménard, & Lachance, 2014). From an intrapersonal perspective, authenticity is viewed as congruence between one's experience and values, in relation to one's "true" self (Strohminger, Knobe, & Newman, 2017). While it does not imply judgment, due to its subjectivity, authenticity has been found remarkably important in terms of personal well-being (Chen & Murphy, 2019); stable self-esteem (Grijak, 2017); self-compassion (Yanchenko & Nartova-Bochaver, 2020); acquiring meaning in one's life and work (King & Hicks, 2021); and overall mental health (Hallam, Olsson, Bowes, & Toumbourou, 2006; Nartova-Bochaver, 2011; Nartova-Bochaver, Irkhin, & Reznichenko, 2020) The above-mentioned studies represent significant research on the positive role of authenticity on the self-self axis, fortifying its role as a sturdy pillar of self-development.

Interpersonal authenticity is often studied as a beneficial quality of various social interactions, such as work relationships (Reis, Braga, & Trullen, 2017), leadership (Sidani & Rowe, 2018), emotional display and response (Zloteanu & Krumhuber, 2021), and personal relationships (Josephs et al., 2019). From that perspective, being authentic means respecting social norms and being responsible for one's decisions, virtues, and moral principles, and their effects on others. At the same time, research on the self-world axis remains scarce, and the social psychology of authenticity is still in its infancy (Ryan & Ryan, 2019). In our view, discovering the effects of personal authenticity in relation to the environment is gaining increased interest, which could provide useful insights for the ongoing discussion of human-nature relations.

Is it intrinsic for people to care for and protect nature? While the overwhelming number of reports on ecological issues forecasts an unprecedented man-made planetary crisis (Das & Horton, 2018; Watts et al., 2019; Zeppetello et al., 2020), psychological research on pro-environmental behavior is gaining the utmost importance. Multiple studies on ecological trends propose that the resolution of the oncoming challenges requires a significant change of current attitudes (Pooley & O'Connor, 2000), values (Karp, 1996), or even the whole paradigm of views regarding nature

(Dietz, Stern, & Guagnano, 1998; Dunlap, 1980). These proposed changes are often viewed as an educational objective in schools and universities (Zsóka, Szerényi, Széchy, & Kocsis, 2013), based on evidence that younger people are more adaptable in their attitudes (Liefländer & Bogner, 2014) and are more focused on and motivated toward building a constructive relationship with nature.

One idea of an ecologically-minded person is represented in Carl Rogers' vision of future human moral values. In Rogers' view, human beings have an intrinsic potential to care for nature and be close to it (Rogers, 1995). Since his work, environmental psychology has found several nature-related phenomena that confirm his ideas of a deep link between humans and the natural world (Clayton, 2003; Mayer & Frantz, 2004). However, this link seems to be weakened by the overwhelming stress and monotony of modern life, and a lack of time spent in natural surroundings, which increases the risk of developing psychological disorders like the nature deficit disorder (Kuo, 2013). Connection to nature also appears to be gender-related. Women have consistently shown higher relatedness to nature (Lawton, Brymer, Clough, & Denovan, 2017; Irkhin, 2020) and more participation in pro-ecological activities than men (Richardson, Cormack, McRobert, & Underhill, 2016; Dietz et al., 1998; Kennedy & Kmec, 2018).

Person-oriented scholars, following Rogers, saw the appropriate human response to the planetary crisis in personal development, congruence, and authenticity facilitation (*e.g.,* Barrett-Lennard, 2013; Cornelius-White, 2006; Joseph, 2016; Neville, 2013). In person-centered psychology, a morally mature person seeks harmony, not only inside, but also around their self. When they consider nature a part of themselves, people become more concerned about the environment (Clayton, Irkhin, & Nartova-Bochaver, 2019; Clayton & Kilinç, 2013; Vorkinn & Riese, 2001), and are prone to display pro-environmental behavior (Lee & Lim, 2020; Tam & Chan, 2018).

Taking into account the rather unique Russian culture and mentality, often placed somewhere in between collectivism and individualism (Mamontov, Kozhevnikova, & Radyukova, 2014), in Russia a new model of authenticity called subject psychology was developed by the famous Soviet psychologist Sergei Rubinstein (1889-1960). Rubinstein was one of the "pillars" of Soviet psychology. He was educated in Germany and demonstrated an unusual breadth of interests and dialectical thinking. According to his theory (Rubinstein, 2012), which was influenced by the works of Franz Brentano, personality always exists in the context of the environment, circumstances, and the world as a whole. We cannot extract an individual from this context; thus, the true self necessarily includes the presence of the social and natural circumstances of their life.

In contrast to Rogers' person-centered approach, which considers social influences as a source of violation of the individual's authenticity, the subject approach sees the true self involving mutually productive interactions of the individual with other people, culture, and nature (Znakov, 1998; Znakov, & Sverchkova, 2003). These ideas were taken into account when we developed the *Moscow Authenticity Scale*, presented below.

Authenticity, defined as the ability to be oneself or to follow one's true self, is considered in our study as the coherence of a person's life experiences (actions, cogni-

tions, and emotions), on the one hand, and his/her personality (temperament, values, beliefs) and the circumstances of his/her life (time, place, and life-calling), on the other (Nartova-Bochaver, Reznichenko, & Maltby, 2021). In contrast to the person-centered model of authenticity, which has been criticized as an individualistic one (Strohminger et al., 2017), authenticity in subject psychology acts as an integral characteristic of a person, represented by both a subjective attitude toward the self and the world around them (Slobodchikov & Isaev, 1995). Thus, authenticity appears as a holistic phenomenon, implying the inseparability of the person from the world, and their interdependence. In the prism of subject psychology, the acquisition of one's true self is carried out through ethical attitudes and placing oneself in the context of social relations (Rubinstein, 2012). Therefore, involvement in social relationships and the establishment of honest, harmonious relationships with others, are inseparable from authentic living and self-realization.

Ottiger and Joseph (2020) revealed a significant positive connection between authenticity and ethically minded consumer behavior, providing the first empirical support for Rogers' idea of an ecological mindset. However, when taking into account that the person-centered conceptualization of authenticity does not work very well in Russia (Nartova-Bochaver et al., 2021), it is necessary to consider an alternative understanding of authenticity, namely, one developed within the framework of Russian subject psychology.

In the current research, we examined the link between authenticity (understood from the two points of view) and pro-environmental behavior. We considered pro-environmental behavior as those actions that increase environmental benefits or reduce environmental harm (Steg & Vlek, 2009).

To investigate the possible link between personal authenticity and pro-environmental behavior, we hypothesized that:

1) Personal authenticity would positively correlate with pro-environmental behavior; and
2) This connection would be moderated by conceptualization (in the framework of subject psychology, it would be stronger than with the person-centered approach).

First, we present the preliminary psychometric work which was required to perform our main study.

Methods

Participants

The students took this survey as part of their homework, via the online service 1ka.si. A total of 430 people, in the age range of 17–26 years old ($M_{age} = 19.19$; $Me_{age} = 19.0$; $SD_{age} = 1.22$; 79.5% women) participated. All participants were bachelor or master's program students from Moscow universities. Participation was voluntary; all participants gave their informed consent to anonymously publishing their data. Along with the main questionnaires, respondents provided demographic information (age, sex, ethnicity, and religion).

Measurement Instruments

Authenticity Scale. The modified *Authenticity Scale* measures an individual's self-reported authenticity trait. Based on the person-centered approach, authenticity is conceptualized as a tripartite construct comprising *Authentic Living*, not *Accepting External Influence*, and a lack of *Self-Alienation* (Wood et al., 2008) (Appendix 1). It has 11 items, with a seven-point Likert scale, ranging from 1 (does not describe me at all) to 7 (describes me very well).

Moscow Authenticity Scale (MAS). The MAS is a new one-factor tool developed within the framework of subject psychology. It consists of five items (Appendix 2), with a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Ecological Lifestyle Scale (ELS). The ELS is a new tool developed to measure pro-environmental behavior as a person's stable behavioral pattern, reflecting their eco-centric worldview. The ELS includes two subscales: *Social Activities* (three items), which describes the person's purposeful social activities aimed at protecting nature, and *Ecological Self-Restraint* (four items), which describes routine pro-ecological actions aimed at an environmentally-friendly lifestyle. A five-point Likert scale, ranging from 1 (never) to 5 (very often), was used (Appendix 3).

Analytical Strategy

First of all, item pools were developed for two new questionnaires, the *Moscow Authenticity Scale* and the *Ecological Lifestyle Scale*. The items were developed based on both deductive (literature review and assessment of existing scales) and inductive (exploratory research methodologies, including focus group discussions and interviews) methods. Seven experts in personality psychology and environmental psychology participated in formulating the questionnaire items.

After the experts' deliberation, item reduction, dimensionality testing, and verification of psychometric properties (model quality and reliability) of the new questionnaires were carried out. Decisions on the reduction of items and the choice of the optimal factorial structure of the questionnaires were based on the results of Horn's parallel analysis (both principal axis analysis and principal components), exploratory factor analyses (EFA), and confirmatory factor analyses (CFA). Both EFA and CFA were performed using the robust ML (MLR) rescaling-based estimator, due to its ability to handle ordinal variables. To assess the model fit of each of the developed questionnaires, we examined both absolute and incremental fit indices, including the Root Mean Square Error of Approximation (RMSEA) and its 90% confidence interval, as well as the p-value of Close Fit (PCLOSE), the Comparative Fit Index (CFI), the Tucker Lewis Index (TLI), and the Standardized Root Mean Square Residual (SRMR).

The internal reliability of all developed scales was estimated with both Cronbach's Alpha and McDonald's Omega.

Finally, the relationships between authenticity (the independent variable) and pro-environmental behavior (the dependent variable) in male/female groups were examined via ANOVA, the Pearson correlation, and multiple regression analysis. To address the imbalanced classification problem (20.5% male), we used weighted sampling while processing regression analyses (weights of 3.5 for the minority class) and

also used bootstrap, based on 1000 samples, to check the significance level of predictors in the regression model.

Statistical analysis was performed using R Software and Programming, environment 4.0.2 (R Core Team., 2020), SPSS v. 23, and MS Excel 2016 software.

Results

Modification of the Authenticity Scale

A recent study (Nartova-Bochaver et al., 2021) had presented a Russian version of the *Authenticity Scale* (Wood et al., 2008). Although it was a working instrument, we decided to modify it, because the authors reported a bias towards lower scores, a potential ceiling effect, and the cognitive complexity of one item. Moreover, the subscale measuring *Authentic Living* in this version, turned out to be inverted relative to the original, and we hoped that by selecting more accurate wordings, we would be able to make it direct; unfortunately, this was not possible.

In the current study, we developed additional ("spare") versions for five items; the resulting scale included 16 items. All previous studies devoted to the analysis of the factor structure of the *Authenticity Scale* (Wood et al., 2008; Nartova-Bochaver et al., 2021; Di Fabio, 2014), indicated that the hierarchical model (three uncorrelated first-order factors and a higher-order A*uthenticity* factor) describes empirical data better than a first-order correlated model or a bifactor one. Taking into account the high-level reproducibility of the results and reliability of the hierarchical model of the *Authenticity Scale*, and also small substantive changes in the current version of the scale, we focused on the analysis of the hierarchical model and did not compare its fit indices with other alternative models.

Table 1

Comparison of the fit statistics and reliability between Authenticity Scale versions

	Primary validation (Nartova-Bochaver et al., 2021)	**Current validation**
Fit statistics		
χ^2/(df)	2.98	1.64
CFI	0.961	0.985
TLI	0.949	0.980
RMSEA [95% CI]	0.050 [0.040–0.060]	0.039 [0.023–0.053]
PCLOSE	0.347	0.893
SRMR	0.037	0.033
Reliability ω (α)		
Authentic Living	0.78 (0.64)	0.76 (0.71)
Accepting External Influence	0.79 (0.71)	0.81 (0.80)
Self-Alienation	0.84 (0.80)	0.91 (0.89)
Authenticity total	0.89 (0.84)	0.92 (0.89)

Note. ω = *McDonald's Omega,* α = *Cronbach's Alpha*

Based on the CFA modification indices, factor loadings, and data on item distributions, we chose the optimal three-factor model, which consists of 11 items (Appendix 1). As expected, the fit indices and internal reliability of the modified version of the model were better than in the model created during primary validation (Hu & Bentler, 1999) (*Table 1*). All items were normally distributed (ranging from –1 to 1); the factor loadings of the current model were also higher than the loadings obtained in the primary validated model: 0.57–0.91 vs. 0.53–0.79 on the first-order factors, and 0.71–0.92 vs. 0.72 to 0.89 on the second-order authenticity factor. The modified model explained 68.9% of the variance, while the primary validated model explained only 56.7%. As in the original version, the current one includes three subscales, such as *Authentic Living*, *not Accepting External Influence*, and a lack of *Self-Alienation*.

Development of the Moscow Authenticity Scale (MAS)

Item pool development

We aimed to design the *MAS* as a time-effective express tool which should measure personal authenticity as a holistic phenomenon in line with subject psychology. When formulating the *MAS* items, we emphasized such features of an authentic person as the acceptance of when, in the stream of time, a person has been "thrown-in" to life, the coherence of one's personality, and one's general life course, in accordance with our definition of authenticity. Thus, the *MAS* items reflected a synergistic, holistic model of a person-in-the-world. In contrast with the items of the *Authenticity Scale*, interaction with the social world was interpreted in terms of environmental pressure, and most wordings described manifestations of self-alienation, rather than authenticity itself.

Seven experts worked together to develop and refine the items and consulted other scholars. The pool included 12 items; then, we set a limit of 5–7 items as the target number of statements.

Factor analysis and reliability testing

A principal component exploratory factor analysis, with varimax rotation and extraction based on eigenvalues greater than 1, was conducted, from which a two-factor solution (accounting for 58.25% of the variance) converged in four iterations. Five items, with loadings lower than 0.50 and/or cross-correlations above 0.30, were dropped and an additional iteration was conducted, which resulted in a one-factor structure (explained variance = 55.30%), with loadings for the remaining items higher than 0.50. The results of Horn's parallel analysis showed that a one-factor solution was optimal.

Further, the resulting one-factor model, with the remaining seven items, was tested using CFA. The scaled fit indices ($\chi^2(14) = 63.773$; $p < 0.001$; CFI = 0.945; TLI = 0.917; RMSEA = 0.090 (95% CI [0.069; 0.114]); and SRMR = 0.410) were unacceptable (Hu & Bentler, 1999). To make an additional improvement of the model, we checked the modification indices (MI) with values higher than 10. The MIs suggested that the model could be improved by drawing error covariances between the items *"I live in accordance with my beliefs"* and *"Although I'm wrong, I'm living my own life"*)

(MI = 23.06), and the item "*I know for a fact that I am not living my life in vain,*" along with three other items (MI = 11.15–15.67).

Since there was no strong theoretical rationale to add the error covariances between the items, we decided to remove the two items with the lowest factor loadings ("*I live in accordance with my beliefs*" (0.50) and "*I know for a fact that I am not living my life in vain*" (0.51). These changes improved the model: all fit indices showed a perfect fit of the model ($\chi^2(5) = 3.767$; $p < 0.583$; CF = 1.000; TLI = 1.000; RMSEA = 0.000 (95% CI [0.000; 0.051]); PCLOSE = 0.946; and SRMR = 0.017) (Hu & Bentler, 1999). The range of the factor loadings of the five items included in the model was 0.51–0.78; the amount of variance explained by the model was 51.8%.

Internal consistency measured with McDonald's Omega and Cronbach's Alpha was satisfactory: 0.767 and 0.757 respectively (Hair, Black, Babin, & Anderson, 2010) (Appendix 2).

Development of the Ecological Lifestyle Scale (ELS)

Item pool development

To accomplish the main aim of the study, we needed a new instrument that would measure a person's pro-environmental behavior and ecocentric belief system, since most of the existing tools were developed in WEIRD (Western, educated, industrialized, rich, and democratic) cultures, which differ from the lifestyle of Russians.

During the development of the item pool, some statements were borrowed from works by Markle (2013) and Clayton et al. (2021) and subsequently modified (questions were reformulated into statements according to forward and back-translation guidelines ("Process of translation and adaptation of instruments," n.d.). As a result, the initial pool included 12 items, reflecting both environmental routine actions (*e.g.*, water and power conservation, sorting of waste, reduced car use, refusal of meat products, etc.) and civic actions (*e.g.,* prosocial behavior; volunteering for nature protection activities, and donating to environmental charities).

Factor analysis and reliability testing

According to Kaiser's eigenvalue > 1 criterion, the number of factors to be retained was three (eigenvalues of 4.36, 1.47, 1.11), which accounted in total for 57.74% of the variance, but examination of the scree plot suggested only two factors. Based on Horn's parallel analysis, a two-factor solution was optimal. During EFA, one item ("*If possible, I avoid consuming animal-based food [meat products]*") was excluded due to its low factor loading (> 0.3).

When conducting CFA, we built a hierarchical model with two uncorrelated first-order factors and a higher-order factor — *Total Ecological Lifestyle*. Our choice of the higher-order model, rather than the correlated factors model, is explained by the fact that a person's pro-environmental behavior is considered as an integral construct consisting of several subordinate "traits" (Markle, 2013; Clayton et al., 2021). Accordingly, the structural model should assume the possibility of calculating scores on both the subscales and the overall score, unlike the correlated factors model, which can't incorporate any general factor. When investigating a new tool, Brown (2015)

suggests using the higher-order structure rather than the bifactor model to explore theoretical understandings of the relationship between a series of subscales which are distinct from one another but united by a common factor.

The model fit values were not satisfactory; however, the two latent factors loaded highly (< 0.6) on a higher-order factor, suggesting that a hierarchical structure was appropriate to explain the relationships between the latent variables. To improve the quality of the model, four items with factor loadings below 0.50 and/or high error covariances between the items were removed (Appendix 3). The resulting hierarchical model, with two latent factors, showed satisfactory scaled fit indices: ($\chi^2(12) = 11.013$; $p < 0.528$; CFI = 1.000; TLI = 1.000; RMSEA = 0.000 (95% CI [0.000; 0.044]); PCLOSE = 0.977; and SRMR = 0.024) (Hu & Bentler, 1999). The first factor, labeled *Social Activities,* contained three items (participation in voting, rallies, and house meetings). This subscale had satisfactory reliability values: ω = 0.828 and α = 0.812 (Hair et al., 2010). The second factor, named *Ecological Self-Restraint,* included four items regarding actions aimed at consumption reduction and a nature-friendly lifestyle. The reliability of this scale was acceptable (ω = 0.675; α = 0.643) for a research instrument with few items (Taber, 2017).

The *Total Ecological Lifestyle* factor explained 0.807 of the variance at the first-order factor level (hierarchical Omega); Cronbach's Alpha was also satisfactory (α = 0.746). The factor loadings on the first-order factors were reasonable (between 0.43 and 0.86). Taken together, *Social Activities* and *Ecological Self-Restraint* explained 59.7% of the variance and loaded highly on a higher-order *Total Ecological Lifestyle* factor (0.63 and 0.79 respectively).

Main Study: the Connection between Personal Authenticity and Pro-environmental Lifestyle

First of all, we were interested in whether there were any gender differences between the means of the investigated variables. Since the assumptions of normal univariate distribution (the values for asymmetry and kurtosis were between –1 and +1) and the equality of variances (Levene Statistic > 0.05) were met, an ANOVA was carried out, which demonstrated that men and women significantly differed in the mean values of *Accepting External Influence* (F(1; 429) = 7.36; p = 0.007); *Social Activities* (F(1; 429) = 10.66; p = 0.001); *Ecological Self-Restraint* (F(1; 429) = 7.15; p = 0.008); and *Total Ecological Lifestyle* (F(1; 429) = 12.61; p = 0.000) (*Table 2*).

Next, we analyzed the correlations between authenticity and ecological lifestyle variables (*Table 3*). Weak, but significant correlations were found between the *Moscow Authenticity Scale* (r = 0.166; p = 0.000), *Authentic Living* (r = 0.100, p = 0.005), and *Self-Alienation* (r = –0.121; p = 0.001 respectively), on the one hand, and the *Social Activities* subscale on the other. *Ecological Self-Restraint* had no interrelations with the authenticity variables. Total scores on the *Ecological Lifestyle Scale* positively correlated with the *Moscow Authenticity Scale* (r = 0.136, p = 0.001) and *Authentic Living* scores (r = 0.083; p = 0.022) and had a negative relationship with the *Self-Alienation* subscale (r = –0.094; p = 0.009). The correlations between ecological lifestyle *(ELS)* variables and the person-centered tool of measuring authenticity *(MAS)* were

stronger than the correlations obtained between ecological lifestyle *(ELS)* and the person-centered framework of Authenticity consideration (the *Authenticity Scale*), confirming Hypotheses 1 and 2.

Table 2

Mean values and Standard Deviations of the Authenticity Scale, the Moscow Authenticity Scale, and the Ecological Lifestyle Scale in male & female groups, and the entire sample

	N (%)	Age	AL	AEI	SA	MAS	SoAct	Sf-R	ELS
Male	88 (20.5)	19.30 (1.73)	13.49 (4.44)	**12.85 (6.86)**	12.15 (5.21)	18.56 (3.96)	**5.59 (2.84)**	**11.21 (4.27)**	**16.80 (5.96)**
Female	342 (79.5)	19.17 (1.05)	12.76 (4.27)	**15.11 (6.99)**	12.55 (5.24)	18.26 (3.56)	**6.82 (3.21)**	**12.44 (3.74)**	**19.25 (5.74)**
Entire sample	430 (100)	19.19 (1.22)	12.91 (4.31)	14.65 (7.02)	12.47 (5.23)	18.32 (3.64)	6.57 (3.17)	12.18 (3.88)	18.75 (5.86)

Note. Significant differences in mean values on subscales for men and women are in ***bold*** *($p < 0.05$). AL = Authentic Living; AEI = Accepting External Influence; SA = Self-Alienation; MAS = the Moscow Authenticity Scale; SoAct = Social Activities; Sf-R = Ecological Self-Restraint; ELS = total scores on Ecological Lifestyle Scale*

Table 3

Correlations between MAS, Authenticity Scale, and ELS

	MAS	AL	AEI	SA	SoAct	Sf-R	ELS
MAS		0.491**	–0.670**	–0.449**	0.166**	–	0.136**
AL	0.491**		–0.593**	–0.576**	0.100**	–	0.083*
AEI	–0.670**	–0.593**		0.474**	–	–	–
SA	–0.449**	–0.576**	0.474**		–0.121**	–	–0.094**
SoAct	0.166**	0.100**	–	–0.121**		0.370**	0.792**
Sf–R	–	–	–	–	0.370**		0.860**
ELS	0.126**	0.083*	–	–0.094**	0.792**	0.860**	

*Note. MAS = the Moscow Authenticity Scale; AL = Authentic Living; AEI = Accepting External Influence; SA = Self-Alienation; SoAct = Social Activities; Sf-R = Ecological Self-Restraint; ELS = total scores on Ecological Lifestyle Scale. * = $p < 0.05$, ** = $p < 0.01$, – = statistically insignificant correlations*

Multiple regression analysis was carried out, using the enter method, in order to determine whether authenticity could predict pro-environmental behavior. Three subscales of the *Authenticity Scale*, and the scores on the *Moscow Authenticity Scale,* as well as gender (dummy-coded: 1 = male, 2 = female), were taken as independent variables, and the *Social Activities* and *Ecological Self-Restraint* subdomains of ecological lifestyle were taken as the dependent variables.

The regression model for *Social Activities* and *Ecological Self-Restraint* included two significant predictors: scores on the *Moscow Authenticity Scale* and gender (*Table 4*). Although technically both models were significant, confirming connections be-

tween the investigated variables, the determination coefficients of both models were low ($R^2 = 0.073$ and 0.027). The scores on the *Moscow Authenticity Scale* and gender explained the variability level of ecological lifestyle subscales poorly, amounting to less than 8%. Thus, we cannot state that authenticity significantly contributed to an ecological lifestyle.

Table 4

Prediction model for ecological lifestyle in the entire sample ($N_{weighted} = 650$)

	Independent Variables	**β**	**b**	**SE b**	**t**	**p (p_{bt})**
Model 1: prediction for *Social Activities* $F(3; 647) = 26.482$, $p < 0.001$, $R^2 = 0.073$	Constant term		1.384	0.699	1.980	0.05 (0.06)
	Sex	0.205	1.271	0.234	5.426	< 0.001 (0.001)
	MAS	0.191	0.158	0.031	5.059	< 0.001 (0.002)
Model 2: prediction for *Ecological Self-Restraint* $F(2; 647) = 9.001$, $p < 0.001$, $R^2 = 0.027$	Constant term		10.349	0.794	8.468	< 0.001 (< 0.001)
	Sex	0.156	0.182	0.048	4.045	< 0.001 (0.002)
	MAS	0.139	–0.141	0.041	2.649	0.008 (0.01)

Note. MAS = the Moscow Authenticity Scale; β = standardized beta coefficient, b = unstandardized coefficient beta; SE = standard error; p_{bt} = bootstrapped significance level

At the next stage, we analyzed the links between the authenticity variables and ecological lifestyle subscales in the female and male groups separately. According to the results of the regression analysis, only the *MAS* scores made a positive and significant contribution ($\beta = 0.163$; $p = 0.002$) to *Social Activities* in the female group. *Ecological Self-Restraint* was not associated significantly with any of the authenticity variables (*Table 5*). The significant predictor of *Social Activities* in the male group were

Table 5

Prediction model for ecological lifestyle in the female group (n = 342)

	Independent Variables	**β**	**b**	**SE b**	**t**	**p (p_{bt})**
Model 1: prediction for *Social Activities* $F(2; 340) = 9.314$, $p = 0.002$, $R^2 = 0.027$	Constant term		4.124	0.899	4.590	<0.001 (<0.001)
	MAS	0.163	0.147	0.048	3.052	0.002 (0.007)
Model 2: prediction for *Ecological Self-Restraint*	No variables were entered into the equation					

Note. MAS = the Moscow Authenticity Scale; β = Standardized beta coefficient, b = unstandardized coefficient beta; SE = standard error; p_{bt} = bootstrapped significance level

MAS scores (β = 0.234; p = 0.001), and the predictors of *Ecological Self-Restraint* were *MAS* and *Authentic Living* scores simultaneously (*Table 6*). Interestingly, the *MAS* scores contributed positively to *Ecological Self-Restraint* in the male group (β = 0.321, p = 0.001), while *Authentic Living* contributed negatively (β = -0.343, p = 0.001), although these predictors were positively correlated with each other (r = 0.491, p < 0.001). These results partially confirmed Hypothesis 2.

Table 6

Prediction model for ecological lifestyle in the male group ($n_{weighed}$ = 308)

	Independent Variables	**β**	**b**	**SE b**	**t**	**p (p_{bt})**
Model 1: prediction for *Social Activities* F(2; 306) = 17.707, p < 0.001, R^2 = 0.052	Constant term		3.268	0.757	1.732	0.001 (0.007)
	MAS	0.234	4.208	0.040	2.231	< 0.001 (0.002)
Model 2: prediction for *Ecological Self-Restraint* F(3; 305) = 20.352, p < 0.001, R^2 = 0.121	Constant term		9.275	1.125	8.246	< 0.001 (< 0.001)
	MAS	0.321	0.342	0.065	5.243	< 0.001 (0.004)
	AL	–0.343	–0.328	0.058	–5.634	< 0.001 (0.002)

Note. MAS = the Moscow Authenticity Scale; AL = Authentic Living; β = Standardized beta coefficient; b = unstandardized coefficient beta; SE = standard error

Discussion

Before we could prove the main hypotheses of the study, we had to develop or modify our techniques: the renewed versions of the *Authenticity Scale* (Wood et al., 2008), the *MAS,* and the *ELS*.

The Russian version of the *Authenticity Scale* (Nartova-Bochaver et al., 2021) went through a set of adjustments. Several items were reformulated for better clarity, and five additional versions of the translation were needed to replace the previous ones, which led to better internal reliability and fit indices. Unfortunately, we were not able to keep the *Authentic Living* subscale not inverted as in the original scale.

We also developed a new short tool for assessing an authentic personality, named the *Moscow Authenticity Scale* (MAS), in light of the fact that subject psychology developed as a scientific school mainly in Moscow. The content of the subscale items reflected the main idea of subject psychology, which studies not the person and the world but the person-in-the-world. This also corresponds to the collectivistic side of Russian culture. The *Moscow Authenticity Scale* consisted of five items and one factor; the scale showed acceptable internal consistency and a perfect fit to the empirical data.

We also created the *Ecological Lifestyle Scale* (ELS), which measured pro-environmental behavior in the context of an impact-oriented approach. This scale was developed with regard to the pro-environmental opportunities, culture, and lifestyle

of Russians. It consisted of seven items and had two factors, labeled *Social Activities* and *Ecological Self-Restraint*. The scale showed good psychometric qualities: fit scores and internal consistency. The *Ecological Self-Restraint* subscale's reliability was slightly below the accepted range, but was still acceptable for an instrument with few items, and created purely for research (nonclinical) purposes (Taber, 2016).

Our main goal was to study the relationship between personal authenticity, understood in terms of the two research paradigms, and pro-environmental behavior.

We found a weak but significant correlation between both measures of authenticity and one of the two subscales (*Social Activities*) of the *ELS*. The *MAS* scores showed a strong positive correlation with *Social Activities*, whereas the corresponding subscale *Authentic Living* of Wood's *Authenticity Scale*, did not form any connections at all. This demonstrated that an authentic lifestyle in the framework of person-centered psychology is absolutely orthogonal to the ecological lifestyle. In other words, among authentically living people, there could be both pro-ecological and anti-ecological ones. However, reverted subscales of the *Authenticity Scale, Accepting External Influence,* and *Self-Alienation*, formed clear negative connections with *Social Activities*: people who experience environmental pressure and those who are alienated from themselves, are not inclined to support an environment that is not friendly to them.

Interestingly, *Ecological Self-Restraint* did not correlate with any measures of authenticity; the question arises: why is this so?

In our opinion, the items of the *Social Activities* subscale clearly reflect the interdependence of a person with other people (s/he encourages other people to be active) and with nature (this activity is aimed at protecting the environment), which fully corresponds to understanding personal authenticity within the framework of subject psychology. By contrast, the items on the *Ecological Self-Restraint* subscale are not so unambiguous and allow, along with environmental motivation, pragmatism (for example, saving money for paying for electricity), which may not relate to the "true self" in any way.

In addition, the items of the first subscale are obviously formulated in the "promotion" modality, whereas the items of the second one are formulated in the "prevention" modality. An authentic person, in accordance with the classical understanding, is creative and capable of productive activity. It can be assumed that, if pro-ecological items were formulated as motivational (for example, to clean one's yard, plant a tree), then connections would be obtained. At the moment, this is speculation, but it can serve as a starting point for further research.

Based on these results, we partially confirmed our Hypotheses 1 and 2, with some qualifications: higher authenticity was connected with social activity but was not connected with conservation behavior. The results partially overlap with those obtained by Ottiger and Joseph (2020).

In the main study, we also witnessed ambiguous results based on gender. First of all, *Accepting External Influences*, and the totals of the *Ecological Lifestyle, Social Activities*, and *Ecological Self-Restraint* scores were lower in the male group. This means, in line with previous results (Irkhin, 2020; Lawton, Brymer, Clough, & Denovan, 2017), that the men were less closely connected with the outer world, compared with women. In other words, men seemed to be more individualistic (Borkenau, McCrae & Terracciano, 2013).

The next step of analyses we performed was the development of a multi-regression model. The only predictors of *Social Activities* (a subscale of the *ELS*) were gender and authenticity (*MAS*); *Ecological Self-Restraint* was predicted only by gender. Although the pro-ecological variables' level was lower in males, men's authenticity showed more connections with pro-ecological variables than women's did. Two regression models of authenticity measures, aimed at predicting pro-ecological behavior, were built separately for the two gender groups, showing mixed results. In women, *Social Activities* were predicted by authenticity, measured by the *MAS*, while there were no predictors for *Ecological Self-Restraint*. In men, *MAS* positively predicted *Social Activities* and *Ecological Self-Restraint* (both *ELS* subscales), while *Authentic Living* (a subscale of Wood's model) predicted *Ecological Self-Restraint* negatively. Thus, these outcomes also confirmed Hypothesis 2.

These results reflect an essential difference between the two models of authenticity. According to Rogers' person-centered model, authenticity, even in the case of a morally mature person, cultivates independence from the outer world, including connections with nature and the environment. So, authenticity might contrapose self-transcendence, a value that is consistently associated with environmentalism (Lee, 2018). Indeed, if one's motivation is to unite with nature, one is required to let go of one's uniqueness and thus, in certain sense, one's authenticity. So, when pro-environmental action requires a sacrifice of personal resources, an individualistic person encounters a contradiction between their own needs and the needs of a sustainable society. Resolving this contradiction egoistically (valuing their own needs over the needs of others) would be authentic for an individualistic person.

On the other hand, the subject psychology approach, promoted in the *MAS*, implies congruence between a person and society, therefore presuming that the values of a sustainable lifestyle are a part of one's true self in the form of one's larger purpose in life. This ideally allows one to avoid the contradiction between personal needs and the needs of a sustainable society, which, in our case, means that ecological behavior is not experienced as a sacrifice, but a means to fulfill a greater ecological goal.

Overall, the *MAS* showed higher correlations with an ecological lifestyle and was better at predicting pro-ecological behavior than the subscales of the *Authenticity Scale* of Wood et al. (2008). But in general, all the regression models had low coefficients of determination, which means that both authenticity measures were unable to accurately explain the variability of pro-ecological behavior.

Limitations and Future Research

The current study was conducted with Moscow university students; our sample was also gender-biased (79.5% women), which further limits our ability to extrapolate the results to a larger population. Apart from extending the age range of the sample, it would be interesting to obtain data from people living in small towns and rural areas in order to examine the results with people with a more diversified experience of nature. Moreover, as our results are not easily interpreted, it would be worthwhile to consider other variables, and to build more complicated models, including moderating and mediating effects. We should also investigate the correlations between specific items in the *ELS*, to see which particular pro-environmental activities would

correlate with authenticity. Another challenge that we set ourselves is to conduct and describe a more complete validation study of the *MAS* and *ELS*, including cross-validation and measurement invariance across age and gender. Finally, we can use (or develop) more instruments to measure environmentally friendly attitudes and behaviors.

Conclusion

The results of the current study provide some insight into the growing research on personal authenticity and its benefits in relation to the environment. While other research has suggested a connection between authenticity and pro-environmental values (Ottiger & Joseph, 2020), the current research brought mixed results. Generally, authenticity is associated with pro-ecological behavior. However, it does not accurately predict it, which motivates us for future study of the connection, in search of possible mediators.

In comparison to Wood's *Authenticity Scale* (2008), the *MAS* showed stronger correlations with an ecological lifestyle, especially with the *Social Activities* score, and therefore is proposed as a more accurate instrument in light of the specific Russian mentality and cultural nuances.

Results of the current study indicate that women are more likely to exercise pro-ecological behavior than men (while showing no significant difference in authenticity between genders), but the connections between authenticity and pro-ecological style were more nuanced in males.

As a side but very significant outcome, the current paper introduced three freshly developed scales necessary to conduct the main study: the revised Russian version of Wood's (2008) *Authenticity Scale;* the *Moscow Authenticity Scale;* and the *Ecological Lifestyle Scale.* These scales show good psychometric properties and are valid for measuring authenticity and pro-environmental behavior in a Russian youth sample and can be recommended for use in various areas of non-clinical research and practice.

Ethics Statement

This research was approved by the Commission for the Ethical Evaluation of Empirical Research Projects of the Department of Psychology of the NRU HSE.

Author Contributions

S. N.-B. developed the theory, supervised the findings & data collection, and wrote a draft; S.R. and B.I. developed the method, performed an empirical study and data analysis; S.R. performed computations and wrote a draft. B.I. wrote a draft, edited the manuscript, and revised the paper after reviewers' suggestions. All authors discussed the results and contributed to the final manuscript.

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Appendix 1

Шкала аутентичности
The Authenticity Scale

Instruction

In Russian:
Пожалуйста, прочтите список приведенных утверждений и оцените их с точки зрения того, насколько они характеризуют Ваши привычки и поведение. Поставьте галочку в ячейке под тем ответом, который подходит Вам.

In English:
Please read the list of statements provided and rate them in terms of how they characterize your habits and behavior. Please check the answer that best describes you.

Russian wording	English wording
1. Обычно я делаю то, что говорят мне другие люди* (*ПВВ*)	I usually do what other people tell me to do* (*AEI*)
2. Я не знаю, что я чувствую на самом деле (*СО*)	I don't know how I really feel inside (*SA*)
3. Мои поступки и взгляды меняются в зависимости от мнения других (*ПВВ*)	I am strongly influenced by the opinions of others (*AEI*)
4. Я считаю, что должен(а) делать то, чего от меня ждут другие (*ПВВ*)	I always feel I need to do what others expect me to do (*AEI*)
5. Окружающие очень сильно влияют на меня (*ПВВ*)	Other people influence me greatly (*AEI*)
6. Мне кажется, что я не знаю себя достаточно хорошо (*СО*)	I feel as if I don't know myself very well (*SA*)
7. Мне не всегда удается отстоять то, во что я верю (*АЖ*)	**I do not always succeed in upholding what I believe in (*AL*)**
8. Не могу сказать, что я всегда бываю верен себе (АЖ)	**I can't say that I am true to myself in most situations (AL)**
9. Мне трудно разобраться в себе* (СО)	I find it hard to understand myself* (SA)
10. Бывает, что мне нелегко соответствовать своим ценностям и убеждениям* (АЖ)	**Sometimes I find it difficult to live up to my values and beliefs* (AL)**
11. Мне бывает сложно понять, кто же я такой* (СО)	It can be difficult for me to understand who I am* (SA)

*Note. Reverted items are in bold. * = new items added instead of items included in the primary validated model (Nartova-Bochaver et al., 2021); Which scale the item belongs to is indicated in the brackets: AL = Authentic Living (АЖ = Аутентичная жизнь); AEI = Accepting External Influence (ПВВ = Принятие внешнего влияния); SA = Self-Alienation (СО = Самоотчуждение).*

Responses were recorded on a seven-point scale, which ranged from 1 (does not describe me at all; не относится ко мне вообще) to 7 (describes me very well; полностью относится ко мне).

Appendix 2

Московская шкала аутентичности

The Moscow Authenticity Scale

Instruction

In Russian:

Пожалуйста, оцените приведенные ниже утверждения с точки зрения того, насколько Вы согласны с ними. Оцените каждое утверждение на шкале от 1 (совершенно не согласен) до 5 (совершенно согласен)

In English:

Please rate the statements below in terms of how much you agree with them. Rate each statement on a scale from 1 (strongly disagree) to 5 (strongly agree).

Russian wording	English wording
1. Меня устраивает место и время, в которое мне довелось жить	1. I am satisfied with the place and time in which I happen to live
2. Я принимаю себя таким(ой), какой(ая) я есть от природы	2. I accept myself as I am by nature
3. Я знаю свое предназначение и следую ему	3. I know my calling and I follow it
4. Пусть я ошибаюсь, я проживаю свою собственную жизнь	4. Although I'm wrong, I'm living my own life
5. Я себя знаю и хорошо понимаю	5. I know and understand myself well

Appendix 3

Экологический стиль жизни

The Ecological Lifestyle Scale

Instruction

In Russian:

Оцените, насколько часто Вы совершаете действия, описанные ниже. Оцените каждое утверждение на шкале от 1 (никогда) до 5 (очень часто).

In English:

Please rate your activities described below by rating each statement on a scale of 1 (never) to 5 (very often).

Russian wording	English wording
1. Я стараюсь собирать мусор раздельно *(ПС)*	1. I try to separate my garbage *(ESR)*
2. Я стараюсь не использовать пластиковые пакеты, совершая покупки *(ПС)*	2. I try not to use plastic bags when shopping *(ESR)*
3. Я экономлю воду и/или электричество в моём доме *(ПС)*	3. I conserve water or energy in my home *(ESR)*
4. Я голосую за проекты, связанные с местной экосистемой *(СЭ)*	4. I voted to support a policy or regulation that affects the local environment *(SA)*
5. Я подписываю петиции, касающиеся экологических проблем *(СЭ)*	5. I signed a petition about an environmental issue *(SA)*
6. Я жертвую деньги благотворительным организациям, защищающим животных и растения *(СЭ)*	6. I contributed money to an environmental, conservation or wildlife protection group *(SA)*
7. По возможности я избегаю пользоваться автомобилем, предпочитая добираться пешком, на велосипеде или общественным транспортом *(ПС)*	7. If possible, I try to walk, cycle, or take public transport instead of driving *(ESR)*

Note. SA = Social Activities (СЭ= Социальный экоактивизм); ESR= Ecological Self-Restraint (ПС = Проэкологическое самоограничение).

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Does Culture Mediate the Effect of Promotion/Prevention Regulatory Focus on Subjective Well-Being? Evidence from an Armenian Sample

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Background: Many studies have proven that promotion focus corresponds to the logic of individualistic culture, while prevention focus is characteristic of collectivistic culture. Armenia, as a post-Soviet country, has not been included in cross-cultural studies, since it is not viewed as a typically collectivistic or individualistic society.

Objective: To investigate how promotion and prevention regulatory foci can predict subjective well-being, as conditioned by individualistic–collectivistic cultural orientations within Armenian society, and to reveal the links between regulatory focus and subjective well-being within Armenian culture, considering the effect of personality–culture fit.

Design: We carried out two studies. In Study 1, regression analysis was conducted to reveal how promotion and prevention foci predicted different aspects of subjective well-being. In Study 2, mediation analysis was conducted to reveal how vertical and horizontal collectivism and individualism mediate the linkage between a promotion or prevention focus, and different aspects of subjective well-being.

Results: Regression analysis replicated the findings of other studies, showing that promotion focus has a great predictive role in subjective well-being, while prevention focus neither predicts or obviates different aspects of subjective well-being. Mediation analysis indicated that vertical collectivism had a partially mediating effect on the linkage between promotion and cognitive, emotional, and psychological aspects of subjective well-being. Vertical individualism had a mediating effect on the linkage between prevention and social well-being.

Conclusion: Vertical collectivism is a consistent pattern in people experiencing subjective well-being when they behave in a promotion-based way in different settings in the Armenian cultural context.

Keywords:
Subjective well-being; promotion and prevention regulatory focus; horizontal/vertical individualism; horizontal/vertical collectivism; mediation

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Introduction

Many studies have examined the impact of cultural values on personality and psychological outcomes, such as positive functioning or subjective well-being. These studies usually examined different cultural dimensions as distinct value orientations and revealed differences between countries and/or cultural groups on the individual or societal level. For example, various studies in cross-cultural psychology have found that subjective well-being is culturally conditioned (Diener, Oishi, & Lucas, 2003; Tov, 2018). Other studies have confirmed that various psychological factors determining subjective well-being — such as self-assessment (Diener & Diener, 1995), beliefs and values (Tov & Nai, 2018), and motivation (Csikszentmihalyi & Asakawa, 2016), as well as goal-setting (Oishi & Diener, 2009), and achievement-related behavior (Kurman, Liem, Ivancovsky, Morio, & Lee, 2015) — have different content depending on the culture.

But this dimensional approach does not fully take into account the dynamic nature of the relationship between individuals and their socio-cultural environment. Many researchers have elaborated a multilevel approach for studying the impact of culture on psychological outcomes, particularly on well-being (Fulmer et al., 2019). Oyzerman (2017) suggests that in modern heterogeneous societies, the research methodology of cultural differences between and within cultures should be reviewed, since culture can be operationalized in different ways. Culture can be thought of as the particular practices of a group, as a core theme (such as individualism, collectivism, or honor), and as a situated cognition (Oyzerman, 2017; Oyzerman & Lee, 2008). Oyzerman proposed that studies on individualism vs. collectivism should expand beyond generalizations about Eastern and Western countries, and that results based on specific differences in each culture and subculture could bring new ways of operationalizing "what is culture and how culture matters" (Oyzerman, 2017, p.17).

Subjective Well-Being, Promotion/Prevention Regulatory Focus, and Cultural Context

Diener (2006) conceptualized subjective well-being (SWB) as the emotional and cognitive evaluations — both positive and negative — that people make about their lives. He defined three elements which measure SWB: an abundance of positive emotions; a lack of negative emotions; and cognitive evaluation of life satisfaction. The *OECD Guidelines on Measuring Subjective Well-Being* (OECD, 2013) recommend including not only overall life satisfaction, but also people's evaluations of different domains of their lives, as well as the "meaningfulness" or "eudaimonic" aspect of well-being. Based on these main approaches, three aspects of subjective well-being can be distinguished: cognitive, hedonic, and eudaimonic.

Many studies have shown the impact of various personal factors on subjective well-being. For example, according to the theory of self-determination, the satisfaction of his basic needs (such as autonomy, competence, and attachment) contributes to the individual's sense of well-being in hedonic and eudaimonic ways (Martela & Sheldon, 2019; Ryan & Deci, 2000). The significance of the satisfaction of basic needs

for the individual's sense of well-being is also supported in cross-cultural studies (Linch, 2004). Some studies relating to an individual's ambitions, goals, and achievements also found that these contribute to the growth of the sense of subjective well-being (Emmons, 2003; Kaftan & Freund, 2018). Among personality factors, regulatory focus as a general motivational orientation also has an impact on subjective well-being. Many studies have shown that regulatory focus determines subjective well-being in different settings (Koopmann, Lanaj, Bono, & Campana, 2016; Ouyang, Zhu, Fan, Tan, & Zhong, 2015).

Regulatory focus theory has had a significant role in studies related to the individual's motivation and behavior. This theory, based on the hedonistic approach of behavioral understanding — *i.e.*, approaching pleasure and avoiding pain — expands the explanatory models of behavioral regulation to include social factors (Higgins, 1997). Higgins (1998) singles out promotion focus and prevention focus as distinct patterns of behavioral regulation. The first is aimed at achievements, accomplishments, desired outcomes, and end-states, while the second aims at avoiding certain outcomes, losses, and end-states of the past.

Referring to the theory of self-discrepancy, Higgins (1998) affirms that promotion and prevention are two different ways of regulating pleasure and pain. In the case of an "ideal self-guide," the individual has ideas about his/her aims, aspirations, desires, and these are presented as maximal goals; self-congruence is ensured by a positive result, and self-incongruence by the absence of a positive result. In the case of an "ought self-guide," the individual has ideas about his/her duties, obligations, and responsibilities, which are presented as minimal goals. Here, self-congruence is ensured by the absence of a negative result, and self-incongruence by the presence of one. Other studies also indicate that the promotion or prevention regulatory focus contributes to certain emotions, such as eagerness for promotion focus and vigilance for prevention focus (Higgins et al., 2001), as well as cognitive processes, such as information-processing perception (Hamamura, Meijer, Heine, Kamaya, & Hori, 2009), and making choices and decisions (Zhang & Mittal, 2007).

Regulatory focus also has cross-cultural variability. Cross-cultural studies show that a promotion focus corresponds to the logic of individualistic culture, and a prevention focus to the logic of collectivistic culture (for a review, see Lee & Semin, 2009). In addition, regulatory focus can be a good predictor of cross-cultural differences in achievement-related behavior (Kurman et al., 2015). Some studies identify differences of promotion vs. prevention focus within a culture. Regarding promotion/prevention regulatory focus, Kurman and Hui (2011) show that the division is not absolute, and that these can both be manifested within the same culture, although the authors say that further research is needed in this direction.

Current Research

The main purpose of this study was to reveal the links between regulatory focus and subjective well-being within Armenian culture, considering the effect of personality–culture fit. Armenia, as a post-Soviet republic with a profound ethnic heritage, has not been included in cross-cultural studies, since it is not viewed as a typically collec-

tivistic or individualistic society. There is a widespread opinion that Armenian society is close to the West in its aims and aspirations, but close to the East in its lifestyle.

Previous findings, though few in number, have shown that Armenian society can be generally characterized as collectivistic. According to the World Values Survey (waves 1997, 2011) (Inglehart et al., 2014) and European Values Study (wave 2008) data analysis, security values are predominant, as opposed to self-expression values. According to the Schwartz Value Survey, the embeddedness value is expressed by Armenians more than the autonomy value on the cultural level. Among the basic 10 value orientations, conformity, benevolence, and security had high ratings on the individual level (Khachatryan, Manusyan, Serobyan, Grigoryan, & Hakobjanyan, 2014). In the same study, the differences between groups and genders showed that for youth and women, the achievement value orientation was salient.

These results showed that, based on value orientations, Armenia can be characterized as having a collectivistic culture, but with a tendency towards individualistic values. In a recent cross-cultural study that compared the individual-level and sample-level predictive utility of a measurement of the cultural patterns of dignity, honor, and face, Armenia was categorized as having an honor culture (Smith et al., 2020). In honor cultures, the acquisition and maintenance of authority for oneself and for one's group is primary, and this is particularly characteristic of Mediterranean, Latin American, and South Asian cultures (Smith et al., 2017). Honor culture has a different logic than individualistic and collectivistic ones, in which dignity and face cultural logics are more relevant.

The purpose of our study was to investigate how promotion/prevention regulatory focus can predict subjective well-being conditioned by individualistic–collectivistic cultural orientations within Armenian society. We examined the associations between regulatory focus and different aspects of subjective well-being: the cognitive aspect as satisfaction with different life domains, as well as the hedonic and eudaimonic aspects. Two studies were conducted to this end.

Study 1

The first study was based on the following logic. Promotion is a predictor factor for subjective well-being, and this relation is common for individualistic cultures, while prevention is a more relevant motivational pattern in collectivistic cultures. The question for our study was whether promotion will still predict subjective well-being in Armenian culture, which has features of collectivistic culture and culture of honor. Thus, the hypothesis for Study 1 was the following: *Both promotion and prevention regulatory foci can be predictive factors for subjective well-being*.

Methods

Participants

Study 1 used a sample of 223 participants, of whom 107 (48%) were women, with an average age of 19 ($SD = 1.1702$; range 16–22). The participants were students in different disciplines from different universities in Yerevan, Armenia.

Questionnaires

Regulatory Focus Scale (RFS)

An 11-item questionnaire was used to measure the dispositional focus on promotion and prevention (Higgins et al., 2001). Six questions quantify promotion, and five questions quantify prevention. Participants were asked to respond to items on a 5-point Likert-type scale based on the frequency of the specific events in their lives (1–never or seldom; 5–very often). The Armenian version was adapted through the common procedure: translation, back-translation, and comparing with original version. The internal consistency for the promotion subscale was 0.573; for prevention it was 0.678.

Personal Well-Being Index (PWI)

This instrument was used to measure the level of satisfaction across eight aspects of personal life — standard of living, health, achievements in life, personal relationships, safety, community connectedness, future security, spirituality/religion, and satisfaction with one's whole life (International Wellbeing Group, 2013). We measured the cognitive aspect of subjective well-being. The instrument consists of nine items; participants were asked to rate their satisfaction on a Likert scale (from 0 to 10). The Armenian version was adapted through the common procedure: translation, back-translation, and comparing with original version. The internal consistency of the instrument was satisfactory (Cronbach's $\alpha = 0.889$).

The Short Form of the Mental Health Continuum (MHC-SF)

The MHC-SF is a 14-item self-rating assessment tool that combines the three components of well-being: emotional, social, and psychological (Keyes, 2009). In the MHC-SF, emotional well-being is represented by three items (happy, interested in life, satisfied); psychological well-being (Ryff, 1989) by six items (self-acceptance, environmental mastery, positive relations with others, personal growth, purpose in life, autonomy); and social well-being by five items (social growth, social coherence, social integration, social contribution, social acceptance). According to Keyes's model, psychological and social well-being are related to the eudaimonic aspect of well-being (Robitschek & Keyes, 2009).

The Armenian version was adapted through the common procedure: translation, back-translation, items comparison with original version. Participants were asked to respond to the items on a 6-point Likert-type scale based on the experiences they had had over the last month (never, once, or twice, about once a week, 2 or 3 times a week, almost every day, or every day). The internal consistency for emotional well-being was 0.750, for social well-being 0.600, for psychological well-being 0.801.

Statistical analyses were performed using IBM SPSS Statistics for Windows, Version 23.0.

Results and Discussion

Descriptive statistics of the main variables are presented in *Table 1*. The skewness and kurtosis for all variables were acceptable (between ±2.0; Tabachnick and Fidell, 2013).

Table 1

Means and SDs for all the variables in the study

Variable	M	SD	SK	KU
Personal well–being	7.51	1.552	–.97	1.49
Emotional well–being	4.43	.944	–.81	.29
Social well–being	3.13	.985	.19	–.41
Psychological well–being	4.47	.913	–.87	.56
Promotion	3.61	.599	–.47	.36
Prevention	3.57	.785	–.19	–.65

Regression Analysis

A stepwise linear regression analysis was performed using personal well-being as the outcome, and promotion and prevention as the predictors. This allowed the examination of whether prevention and promotion predicted personal well-being. A significant regression was found ($F(1, 218) = 39.861$; $p < 0.0001$), with an R^2_{adjusted} of 0.166. Both significantly predicted personal well-being: $B_{\text{promotion}} = 0.929$, $t(218) = 5.593$, $p < 0.0001$, $B_{\text{prevention}} = 0.285$, $t(218) = 2.247$, $p = 0.026$.

Three stepwise linear regressions were calculated to predict different aspects of well-being based on promotion and prevention. A significant regression was found for the relationship between promotion and emotional well-being ($F(1, 218) = 26.342$, $p < 0.0001$; $B = 0.523$, $p < 0.0001$), with an R^2_{adjusted} of 0.104. Also, significant regression equations were found for the relationships between promotion and social well-being ($F(1, 218) = 11.410$, $p = 0.001$; $B = 0.368$, $p = 0.001$), with an R^2_{adjusted} of 0.045, and between promotion and psychological well-being ($F(1, 218) = 63.837$, $p < 0.0001$; $B = 0.729$, $p < 0.0001$) with an R^2_{adjusted} of 0.223.

The regression analysis indicates that promotion regulatory focus contributes to subjective well-being. Moreover, these results are consistent across all aspects of subjective well-being: cognitive, emotional, and eudaimonic. Prevention focus is a predictor only for cognitive evaluation of life satisfaction in different life domains, but with little contribution.

The results of Study 1 replicate those of many other recent studies that show the predictive role of promotion focus in subjective well-being (Koopmann et al., 2016; Ouyang et al., 2015). This means that promotion regulatory focus, such as eagerness to gain rewards and positive outcomes, is consistent in the Armenian cultural context with features of collectivism and honor.

Study 2

The second study focused on the Armenian cultural context. For capturing this and following the logic of Study 1, we included self-reported cultural orientations — the vertical/horizontal aspect of collectivism and individualism — as mediators between promotion/prevention and different aspects of subjective well-being. Following Triandis's (1996) definition of cultural syndromes and the interpretation of vertical and

horizontal dimensions of individualism (VI, HI) and collectivism (VC, HC) by Singelis, Triandis, Bhawuk, and Gelfand (1995), we assumed that the cultural patterns of VC-VI-HC-HI can best define the social belief system and value orientations within heterogeneous societies such as Armenia. Thus, the hypothesis for Study 2 was the following: *Vertical collectivism and individualism will mediate the association between promotion/prevention regulatory foci and subjective well-being.*

Method

Participants

Study 2 was based upon a sample of 237 participants, of whom 181 (76.1%) were women, with an average age of 22.77 ($SD = 6.034$; range 17–57).

Questionnaires

General Regulatory Focus Measure (GRFM)

This instrument was used to measure people's promotion and prevention goals; it comprises a total of 18 items (9 promotion and 9 prevention items) to be answered on a 9-point scale ranging from "not at all true of me" to "very true of me" (Lockwood, Jordan, & Kunda, 2002). In contrast to the items in the RFQ, the items in this questionnaire relate to current attitudes, actions, and habits (e.g., "In general, I am focused on preventing negative events in my life," or "I typically focus on the success I hope to achieve in the future"). The Armenian version was adapted through the common procedure: translation, back-translation, items comparison with original version. The internal consistencies for both subscales were satisfactory (Cronbach's $\alpha_{\text{promotion}} = 0.829$; Cronbach's $\alpha_{\text{prevention}} = 0.718$). We used this instrument because the internal consistency for promotion/prevention is satisfactory for comparison with the RFS used in Study 1.

The Personal Well-Being Index (PWI) and the short form of the Mental Health Continuum (MHC-SF) were the same as in Study 1.

Individualism and Collectivism Scale

The 16-item instrument was used to measure four dimensions of individualism and collectivism (four items for each dimension) (Triandis & Gelfland, 1998):

- Vertical Collectivism (VC) — seeing the self as part of a collective and being willing to accept hierarchy and inequality within that collective;
- Horizontal Collectivism (HC) — seeing the self as part of a collective, but perceiving all the members of that collective as equal;
- Vertical Individualism (VI) — seeing the self as fully autonomous, but recognizing that inequality will exist among individuals and accepting this inequality;
- Horizontal Individualism (HI) — seeing the self as fully autonomous and believing that equality between individuals is the ideal.

All items were answered on a 9-point scale, ranging from 1 = never or definitely no and 9 = always or definitely yes. The Armenian version was adapted through the common procedure: translation, back-translation, items comparison with original version. The internal consistencies for each subscale were: $\alpha_{VColl} = 0.669$; $\alpha_{HColl} = 0.713$; $\alpha_{VInd} = 0.711$; $\alpha_{Hind} = 0.740$.

Results and Discussion

The mediation analyses were performed using IBM SPSS Statistics for Windows, Version 23.0, in combination with the PROCESS version 3.5 macro by Andrew F. Hayes (Hayes, 2017).The contribution for each mediator was tested in a parallel format and the mediating effect only went via paths a_i and b_i through the corresponding mediators. This made it possible to compare the effects of each mediator in the model. The significance of indirect effect was tested by bootstrapping procedures.

The first parallel mediation analysis was performed to assess the mediating role of the four cultural dimensions in the linkages between promotion/prevention and personal well-being (PW).

For the mediation model of promotion to personal well-being, two out of the four mediators were found to significantly contribute to their relationship. The indirect effect (IE) of promotion on personal well-being through vertical collectivism was found to be significant (IE = 0.0698, 95% CI [0.0128, 0.1537]), meaning that the effect of promotion on personal well-being was partially mediated by vertical collectivism. The significant indirect effect of vertical individualism had the opposite sign to that of the total effect (IE = –0.1131, 95% CI [–0.2226, –0.0202]), meaning that vertical individualism was a suppressor (MacKinnon, Krull, & Lockwood, 2000). The relationship between promotion and personal well-being was strengthened by including vertical individualism.

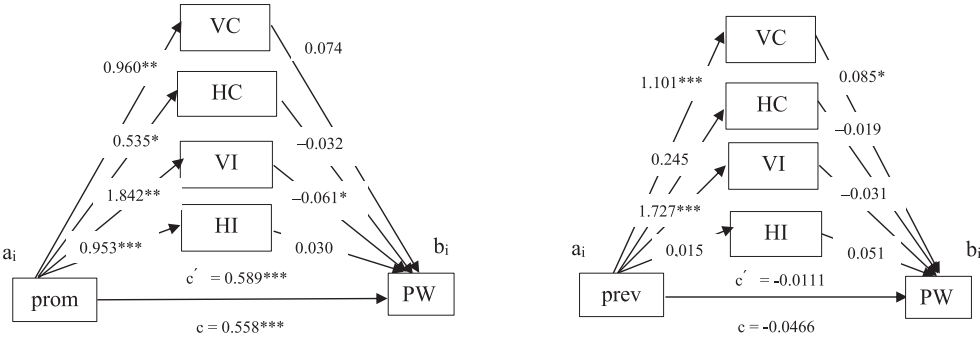

Figure 1. The mediating effect of four cultural dimensions in the relationships between promotion/prevention and personal well-being.

Note. VC = vertical collectivism; HC = horizontal collectivism; VI = vertical individualism; HI = horizontal individualism; prom = promotion; prev = prevention; PW = personal well-being.
All effects presented are unstandardized; ai is the effect of promotion/prevention on cultural dimensions; bi is the effect of cultural dimensions on personal well-being; c′ is the direct effect of promotion/prevention on personal well-being; c is the total effect of promotion/prevention on personal well-being.
**p < .05; **p < .01; ***p < .001.*

The mediation analysis indicates that promotion regulatory focus with association to vertical collectivism predicts the cognitive aspect of subjective well-being. We can assume from these results that promotion focus as an achievement-related motivational orientation in the Armenian context can have different manifestations in social behavior. Such differences can be observed in the agency–communion model of narcissism, about which, according to Gebauer and Sedikides (2018), narcissistic, self-empowerment behavior may be manifested in collectivistic cultures; however, the causes of such behavior are connected to the satisfaction not of "self"-motives, but "we"-motives. Following this logic, we can assume that promotion, as motivation to reach goals and have achievements, has in-group direction and is in accordance with the expectations and opinions of referent people with high status. This kind of hierarchical attachment in relations provides safety, self-enhancement, and maintenance of self-esteem, which have an impact on life satisfaction.

There is no mediation for the model of prevention to personal well-being because the total effect (TE = –0.0111, $p = 0.9294$) and the indirect effect (IE = –0.0466, $p = 0.7246$) were not significant.

The second parallel mediation analysis was performed to assess the mediating role of four cultural dimensions on the linkages between promotion/prevention and emotional well-being (EW).

For the mediation model of promotion to emotional well-being, two out of the four mediators were found to significantly contribute to their relationship. The indirect effect of promotion on emotional well-being through vertical collectivism was found to be significant (IE = 0.0305, 95% CI [0.0007, 0.0774]), meaning that the effect of promotion on emotional well-being was partially mediated by vertical collectivism. The significant indirect effect of vertical individualism had the opposite sign to that of the total effect (IE = –0.0966, 95% CI [–1.1661, –0.0360]), meaning that

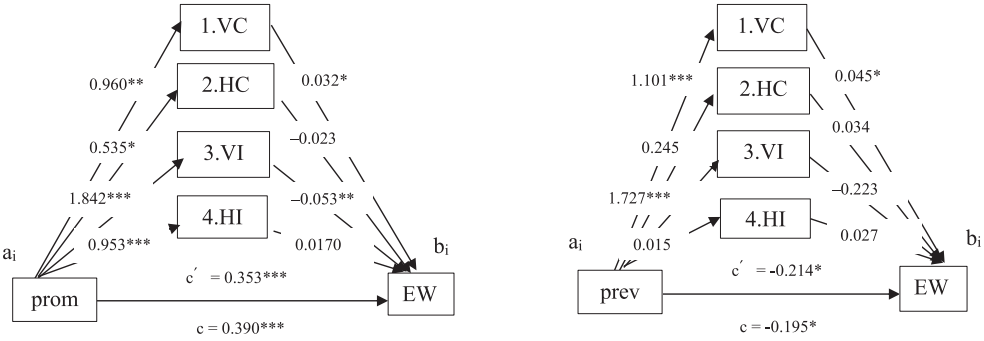

Figure 2. The mediating effect of four cultural dimensions in relationships between promotion/prevention and emotional well-being.

Note. VC = vertical collectivism; HC = horizontal collectivism; VI = vertical individualism; HI = horizontal individualism; prom = promotion; prev = prevention; EW = emotional well-being.

All effects presented are unstandardized; ai is the effect of promotion/prevention on cultural dimensions; bi is the effect of cultural dimensions on emotional well-being; c′ is the direct effect of promotion/prevention on emotional well-being; c is the total effect of promotion/prevention on emotional well-being.

**p < .05; **p < .01; ***p < .001.*

vertical individualism was a suppressor. The relationship between promotion and emotional well-being was strengthened by including vertical individualism.

The mediation analysis indicates that promotion regulatory focus with an association to vertical collectivism predicts the emotional/hedonic aspect of subjective well-being. These results replicate the previous one, and we can state again that achievements and gaining positive results can raise the sense of subjective well-being when achievements are approved by the referent groups, by members who have high status, thus satisfying the latter's expectations. This may give a sense of safety, as well as the experience of positive emotions.

For the mediation model of prevention to emotional well-being, one out of the four mediators was found to significantly contribute to their relationship. The significant indirect effect of vertical collectivism had the opposite sign to that of the total effect (IE = 0.0494, 95% CI [0.0113, 0.1003]), meaning that vertical collectivism was a suppressor. The relationship between prevention and emotional well-being was strengthened by including vertical collectivism.

The third parallel mediation analysis was performed to assess the mediating role of four cultural dimensions on the linkages between promotion/prevention and social well-being (SW).

For the mediation model of promotion to social well-being, one out of the four mediators was found to significantly contribute to their relationship. The significant indirect effect of vertical individualism had the opposite sign to that of the total effect (IE = –0.0899, 95% CI [–1.570, –0.0367]), meaning that vertical individualism was a suppressor. The relationship between prevention and social well-being was strengthened by including vertical individualism.

For the mediation model of prevention to social well-being, the indirect effect of vertical individualism was found to be significant (IE = –0.0542, 95% CI [–0.1181, –0.0029), meaning that the effect of prevention on social well-being was completely

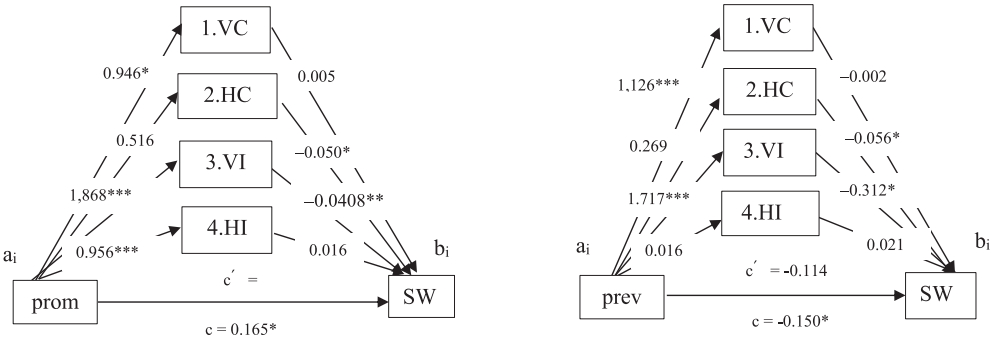

Figure 3. The mediating effect of four cultural dimensions in the relationships between promotion/prevention and social well-being.

Note. VC = vertical collectivism; HC = horizontal collectivism; VI = vertical individualism; HI = horizontal individualism; prom = promotion; prev = prevention; SW = social well-being.

All effects presented are unstandardized; ai is the effect of promotion/prevention on cultural dimensions; bi is the effect of cultural dimensions on social well-being; c' is the direct effect of promotion/prevention on social well-being; c is the total effect of promotion/prevention on social well-being.

**p < .05; **p < .01; ***p < .001.*

mediated by vertical individualism. This mediation means that prevention negatively predicts social well-being when the autonomous self is postulated as different from others with the inequality notion. As social well-being is the extent to which people are thriving in their social lives in local and broader communities (Keyes, 1998), the results can make sense, because social aspects of well-being describe satisfaction with one's prosocial behavior, which is related to the meaningfulness of life.

The fourth parallel mediation analysis was performed to assess the mediating role of al four cultural dimensions on the linkages between promotion/prevention and psychological well-being (PsyW).

For the mediation model of promotion to psychological well-being, three mediators were found to significantly contribute to their relationship. The indirect effects of promotion on psychological well-being through vertical collectivism (IE = 0.0324, 95% CI [0.0007, 0.0789]) and horizontal individualism (IE = 0.0575, 95% CI [0.0175, 0.1138]) were found to be significant, meaning that the effects of promotion on psychological well-being were partially mediated by vertical collectivism and horizontal individualism. The significant indirect effect of vertical individualism had the opposite sign to that of the total effect (IE = -0.636, 95% CI [-0.1295, -0.0085]), meaning that vertical individualism was a suppressor. The relationship between promotion and psychological well-being was weakened by including vertical individualism.

The mediation analysis indicates that promotion regulatory focus with an association to vertical collectivism and horizontal individualism predicts psychological well-being. Psychological well-being is the extent to which people are thriving in their personal lives, for example, in personal growth, self-acceptance, and a sense of purpose in life (Ryff, 1989). Horizontal individualism is a cultural pattern in which an autonomous self is postulated, but individuals perceive themselves and others as equal in status. If horizontal individualism can be a relevant factor for psychological well-being, vertical collectivism is a non-typical cultural pattern in this. Meanwhile,

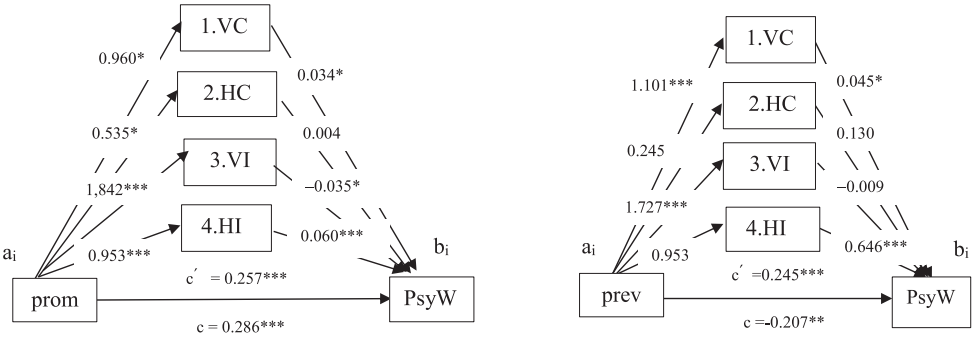

Figure 4. The mediating effect of four cultural dimensions in the relationships between promotion/prevention and psychological well-being.

Note. VC = vertical collectivism; HC = horizontal collectivism; VI = vertical individualism; HI = horizontal individualism; prom = promotion; prev = prevention; PsyW = psychological well-being.
All effects presented are unstandardized; ai is the effect of promotion/prevention on cultural dimensions; bi is the effect of cultural dimensions on psychological well-being; c′ is the direct effect of promotion/prevention on psychological well-being; c is the total effect of promotion/prevention on psychological well-being.
**p < .05; **p < .01; ***p < .001.*

comparing the mediation effects of previous models, we have a replication of the significance of vertical collectivism as a predictive factor for subjective well-being. According to these results, we can assume that different aspects of psychological well-being, such as personal growth, self-acceptance, personal goals, positive relations with others, purpose in life, and mastery can be realized in the context of competitiveness with members of the in-group. As vertical collectivism and horizontal individualism have opposite features as cultural patterns in the sense of an independent vs. interdependent self, as well as equality vs. inequality in social relations, we can assume, based on the interpretation of culture as situated cognition, that there can be a shift from one to another depending on situational cues (Oyzerman & Lee, 2008).

For the mediation model of prevention to psychological well-being, the significant indirect effect of vertical collectivism had the opposite sign to that of the total effect (IE = 0.0496, 95% CI [0.0101, 0.1013]), meaning that vertical collectivism was a suppressor. The relationship between prevention and psychological well-being was strengthened by including vertical collectivism.

General Discussion and Conclusion

The results from the Armenian sample replicate the findings of other studies, particularly that promotion focus has a great predictive role in subjective well-being, while prevention focus does not predict (Study 1) or predicts negatively (Study 2) the different aspect of subjective well-being. However, when we capture cultural orientations and their impact on the predictive role of promotion/prevention regulatory focus in subjective well-being, the specific effects are revealed. Vertical collectivism has a partial mediating effect on the linkage between promotion and the cognitive aspects of subjective well-being, such as satisfaction with different life domains, as well as the emotional aspect and psychological well-being. Based on our findings, we can assume that vertical collectivism is a consistent pattern in experiencing subjective well-being when people behave in a promotion-based way in various settings.

This finding is not consistent with cross-cultural studies showing that a promotion regulatory focus corresponds with individualism, but we can assume that our findings prove the effect of personality–culture fit. As we saw from previous findings, embeddedness as a cultural value is more descriptive than autonomy for Armenian society, and honor is a salient cultural value as well (Smith et al., 2020). Conformity, benevolence, and security are also high among Armenian value orientations (Khachatryan et al., 2014). Putting together our previous and present findings, we can conclude that promotion in the Armenian cultural context can have different manifestations than those in an individualistic cultural context. Thus, promotion-based behavior raises satisfaction with life, positive emotions, and meaningfulness through personal, not social, growth even in collectivistic, unequal, and competitive forms of social interactions.

Our study also illustrated that vertical individualism had a mediating effect on the linkage between prevention and social well-being. Vertical individualism, as an independent sense of self with inequality in relations, fully mediated the negative impact of prevention-based behavior on social well-being. Thus, prevention-based be-

havior decreased the sense of subjective well-being and the meaningfulness of social growth and proactive behavior in individualistic, competitive, and unequal forms of social interactions.

The results show that in Armenian society, we can speak about both universal and cultural patterns of understanding in the sense of subjective well-being, a finding which can be useful for the study of other societies as well. On the other hand, the results also showed that subjective well-being is a multidimensional phenomenon and can have various manifestations, depending on between-culture and within-culture differences.

Limitations and Future Studies

One limitation of this research is that demographic factors which could reveal differences within Armenian society, such as gender, age, education, material well-being, and urban vs. rural, were not taken into account. Future studies will be aimed at capturing the moderating effect of such demographic factors, which may show subcultural differences of the predictive role of regulatory focus on different aspects of subjective well-being.

Since there is a lack of cross-cultural studies testing the effects of regulatory focus on personality–culture fit, the other limitation of the study is that the evidence that vertical collectivism is a consistent pattern in mediating subjective well-being when people behave in a promotion-based way, might not be very convincing. To test and replicate this finding, cross-cultural studies need to be done to examine the linkage between regulatory focus and different aspects of subjective well-being in countries both similar and unsimilar to the Armenian cultural context. Future efforts will be aimed at working in collaboration with representatives from different countries on this task.

Based on our results, the other direction for future study could be the study of social-cognitive factors that could determine the negative impact of prevention-based behavior on social well-being in individualistic, competitive, and unequal forms of social interaction. We believe that future findings will be applicable for developing culturally sensitive social policies, facilitating different types of prosocial behavior in Armenian society.

Ethics Statement

The study did not obtain ethics approval as there is no ethics committees for research in social science and/or humanities in Armenia, nor is there an institutional review board at YSU.

Participants gave the informed consent before taking part in the survey.

Author Contributions

N. Khachatryan conceived of the idea, developed the theory, and supervised the findings. A. Grigoryan performed the computations and verified the analytical methods. The authors discussed the results, and both contributed to the final manuscript.

Conflict of Interest

The authors declare no conflict of interest.

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Subjective Well-being during the Pandemic: A Pilot Study in the Cuban Population

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Background. The study of aspects related to positive mental health and well-being in the general population with a gender approach is a necessity in the current context imposed by COVID-19.

Objective. To explore gender as a predictor of subjective well-being during COVID-19 in a sample of the Cuban population.

Design. A cross-sectional web-based survey design was adopted. The sample consisted of 129 Cuban participants. The Subjective Well-being-Reduced Scale (SW-RS) was used to explore subjective well-being in the sample. Descriptive statistics were used to explore the participants' characteristics. A multinomial logistic regression analysis was conducted to identify variables independently associated with the participants' subjective well-being.

Results. The gender of participants significantly predicted subjective well-being levels. The probability of males having middle or high levels of subjective well-being, rather than low levels, was 4.16 times greater than in females. The probability of males having a high self-image instead of a low one was 4.35 times greater than in females. According to the *self-satisfaction* dimension, the odds of males having high rather than low self-satisfaction were five times more than in females. In this sample, gender did not predict whether participants had middle or high levels of the hedonic dimension.

Keywords: Subjective well-being; gender; COVID-19; psychological impact; Cuban population

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Conclusion. Our results corroborated international studies that have indicated the coincidence of lower well-being and greater psychosocial risk in women during the COVID-19 pandemic. The results also indicated the need to dig deeper into the experiences of subjective well-being from a gender perspective, and to strengthen the sufficiency and effectiveness of the actions and guidance that are offered to the population from psychological care services, the media, and public policies.

Introduction

In recent decades, there has been a change in the field of mental health from being focused on pathologies, discomfort, and finding ways to provide interventions aimed at improvement, to focusing on the absence of disorders and the promotion of well-being (Martínez, 2021). Thus, well-being studies currently occupy a large part of the work done in the field of psychology. There are several perspectives related to the study of well-being (Vielma & Alonso, 2010); despite this, there is general agreement that well-being is a multivariate construct of a stable nature in mobile equilibrium (Zotova & Karapetyan, 2018).

The dominant perspectives on the study of well-being are the hedonistic tradition, which focuses on happiness, the presence of positive affect, and the absence of negative affect (Deci & Ryan, 2008), and the eudaimonic tradition, which focuses on living life to its fullest and realizing one's human potential (Diener, 1984). Both perspectives consider happiness and well-being as indicators of the degree to which a person is psychologically fulfilled; however, each perspective has foundations that reflect very subtle differences in their points of view. The hedonic perspective of well-being varies from a relatively limited focus on bodily pleasures to a broad focus on personal interests. This model focuses mainly on the results of happiness or pleasure, and stresses the perspective that well-being consists of subjective happiness, which includes as primary components satisfaction with life, the presence of a positive mood, and the absence of negative mood (Ryan & Deci, 2001).

From the eudaimonic perspective, Diener's model of subjective well-being is the one most supported by the scientific community and is shared by the authors of this article. Diener highlights the role that cognitive and affective evaluations play in a person's life. These evaluations include emotional reactions to events and judgments about satisfaction and achievement. This concept includes the experience of pleasant emotions, a low level of negative emotions, and a high level of satisfaction with life (Diener, 2000).

Scientific interest in the role that subjective well-being plays in an individual's development has led to numerous follow-on research projects. These studies include ones that have shown the effect of positive or negative events on the individual's subjective well-being . The meta-analysis carried out by Koydemir et al. (2020), with non-clinical adult populations, showed that positive psychological interventions increase subjective well-being. Other research has emphasized the relationship between various sociodemographic variables and subjective well-being. For example, it has been found that there are changes in subjective well-being as age advances, with

a progressive decrease from early to late adolescence, and then again from 60 years of age on (Casas et al., 2012; Wunder et al., 2013).

Studies on the gender variable and subjective well-being have not been totally conclusive. The European Union's publication *Quality of Life: Facts and Views* (2015) stated that women reported greater satisfaction with life than men; however, they also showed a greater tendency for depressive symptoms. Senik (2015) affirmed a gender gap that varies throughout life, while Valls-Llobet (2009) asserted that gender is the foundation for determining the individual's state of health or disease. For these authors, gender differences were associated with differences in the prevalence of certain disorders, in the response to treatment alternatives, and in the attitude taken towards care. On the other hand, Hyde (2005) maintained that the similarities between genders and subjective well-being were greater than the differences.

In Cuba, gender inequalities are much lower than those of other Third World countries in the region. However, studies have revealed the presence of gender inequities, especially in everyday life, which could mark differences in the well-being of men and women. In recent decades, some studies have shown differences between men and women in terms of sexual and reproductive health, rest time, the perception of diseases or symptoms, and the search for medical attention (Castañeda Abascal et al., 2010). Researchers have warned of inequity gaps in the distribution of caregiving tasks, with a disproportionate burden and costs to the health of females (Romero, 2019). Different studies have also placed women within the groups most likely to suffer different forms of violence and the burden of tasks within the family, which affects their physical and emotional health (Ferrer Lozano et al. 2020), while Fleitas (2013) has shown the close relationship between gender, poverty, and health, and identified women as the most affected group.

Effects of the Pandemic on Well-being

There is considerable consensus when it comes to the role that life events play as determinants of well-being. Negative and stressful events have been associated with the presence of a negative subjective state of well-being (Argyle, 2001). As the pandemic has worsened on a global scale, and forced self-care, confinement at home, and changes in lifestyle, studies have pointed to a greater incidence of emotional disorders such as depression, stress, apathy, irritability, insomnia, post-traumatic stress disorder, anger, and emotional exhaustion (Broche-Pérez, Fernández-Castillo, & Reyes, 2020), evidencing the negative impact that the pandemic has had on the well-being of the population (Boukhris et al., 2020). For example, in a study conducted in Australia, it was found that there was a decrease in the population's subjective well-being due to the social and workplace difficulties that resulted from the pandemic (Dawel et al., 2020). In particular, the researchers reported a significant increase in depressive and anxious symptoms among Australians.

In Germany, Zacher and Rudolph (2020) conducted a study on well-being in the general population. The results indicated that, during the months between December 2019 and March 2020, the pandemic did not significantly affect the well-being of people in Germany. However, between the months of March and May of 2020, the psychological well-being of Germans was significantly affected. O'Connor et al.

(2020) reported an increase in suicidal ideation in the general population during the first wave of the pandemic in the UK, especially among young adults.

In this sense, it is important to understand how some variables modulate the impact of the current pandemic on the subjective well-being of the population. One of these variables is gender, and thus the link between gender and well-being has been studied by several authors during the current epidemiological situation.

During the current pandemic, there have been differences reported between the levels of happiness of men and women (Gausman & Langer, 2020; Yildirim et al., 2020). In general, women have reported a lower level of psychological well-being, related to the biological, psychological, and environmental factors that typically affect them. For example, in a longitudinal study conducted in Spain to explore gender-related differences in the psychological impact of COVID-19 lockdowns, clear differences were found between the well-being of women and men, with women showing significantly lower levels of well-being (Ausín et al., 2021). Also, in a study that looked at the mental health and psychological well-being of the UK adult population during the first six weeks of the COVID-19 pandemic, men reported significantly higher levels of psychological well-being than women (O'Connor et al., 2020).

In Cuba, studies on the impact of COVID-19 on the mental health of the population have shown that women presented with higher levels of fear (Broche-Pérez et al., 2021). These findings showed that fear of COVID-19 was more severe in female participants than male ones, and that gender was a predictor of the level of fear of COVID-19 (Broche-Pérez et al., 2020).

However, there are still a limited number of studies in our context that explore aspects related to positive mental health in the general population, and that delve into the impact of COVID-19, with a focus on gender. Distinguishing gender when it comes to well-being could guide future preventative actions, helping to make them more effective. The objective of our study was to explore gender as a predictor of psychological well-being during the COVID-19 pandemic in a sample of the Cuban population.

Methods

A cross-sectional web-based survey design was adopted.

Participants

Participants completed a survey via Google Forms®, between April 14 and August, 2020. All Cuban citizens over the age of 18 were eligible to participate in the study. Nonprobability samples were used. Snowball sampling was conducted to recruit participants. The survey was disseminated through WhatsApp groups, Facebook, email lists, and the website of the Well-being Center of the Universidad Central "Marta Abreu" de Las Villas.

A total of 129 people participated in the study (72.1% females and 27.9% males); the mean age was 36.4 years old (SD 12.3). Online consent was obtained from the participants.

Procedure

All subjects were asked to fill out the Subjective Well-being-Reduced Scale (SW-RS) questionnaire: We used the scale adapted by Torres-Acuña (2003). Its abbreviated version was validated for the Cuban population and showed acceptable psychometric properties (α = .70). The results of the exploratory factor analysis performed on the scale showed a structure of four factors with acceptable reliability indices.

Factor 1 (F1) was associated with the hedonic aspects of well-being, such as leisure time, fun, and socialization (*i.e.,* "I like to have fun"). The second factor (F2) explored the dimension of satisfaction with life (*i.e.,* "I think that I have achieved what I wanted as a person"). The third factor (F3) explored satisfaction with daily activities, sense of purpose, and the eudaimonic dimension of well-being (*i.e,* "I face my tasks with a good mood"). The fourth factor (F4) grouped items on which the individual reports a self-image of being healthy, through a positive perception of their mood (*i.e.,* "I think I have good health"). Each item was answered using a Likert scale as follows: 1 = Never or almost never; 2 = Sometimes; 3 = Very often; 4 = Almost always; and 5 = Always. (Rodríguez-Martín et al., 2012).

In the present study, the scale showed acceptable reliability indices both in general (α = .878) as well as for each of its four dimensions (F1 α = .745; F2 α = .758; F3 α = .796; F4 α = .512).

Data Analysis

The study was approved by the ethics committee of the Department of Psychology of the Universidad Central "Marta Abreu" de Las Villas. Informed consent to be included in the study was obtained from all participants. Participation was voluntary, and the anonymity of the participants was guaranteed.

The data was processed using SPSS v21.0. Descriptive statistics were used to explore the participants' characteristics. Logistic regression (LR) was the best statistical choice for processing the data, as it took two main criteria into account: 1) the type of sample and the non-parametric design of the data analysis, and 2) the practical value of the results obtained through LR in the current epidemiological situation. Scores on the well-being scale were grouped by levels (high, medium, and low); the results allowed for the detection of people who might be at-risk, taking the predictor variables as a reference.

LR allows the test of models which can predict categorical outcomes with two or more categories. The independent variables can be either categorical or continuous, or a mix of both (Field, 2009, 2012; Pallant, 2005). A model of the main effects for multinomial logistic regression was constructed to identify variables independently associated with well-being. The three subjective wellness levels were established according to the method established by Rodríguez-Martín, Molerio, Castillo, and Pedraza (2012). These authors describe three levels for each factor as well as for the global variable. The threshold of statistical significance used in this study was $p < 0.05$.

Results

Respondent Characteristics

The characteristics of the respondents are shown in T*able 1*. The larger proportion of respondents were women (72.1%). The mean age was 36.47 years (SD ± 13.01), and most participants were in the 29-41 age group (34.31%). Boundaries of age groups were established according to sample percentiles. Age was measured in all three categories, to put in the middle the values of SD, minimum and maximum only respond to spatial location.

Table 1

Demographic characteristic of the sample

		fr(%)	M(SD)	Min.	Max.
Gender	Male	36(27.9)			
	Female	93(72.1)			
Age groups	Until 28	34(26.4)			
	29–41	59(45.7)	36.4(12.3)	18	76
	More than 42	36(27.9)			

Note. M = Mean. SD = Standard Deviation. fr = Frequency.

Results from the SW-RS are shown in *Table 2*. Global well-being scores registered a mean of 37.75 (SD ± 7.30). The middle level of well-being showed the highest frequencies for F4 (M = 7.44, SD ± 1.77, 55.0%) and F1 (M = 10.82, SD ± 2.02, 48.1%), as well as for the global score (49.6%). The highest level of subjective well-being occurred in the "Self-satisfaction" dimension, with a score of 32.6% (M = 10.87, SD ± 2.73).

Table 2

Results from SW-RS score and levels in the sample

					Levels *fr*(%)		
	Median	SD	Min.	Max.	Low	Middle	High
Well-being	37.75	7.30	10	50	36(27.9)	64(49.6)	29(22.5)
F1 Hedonics	10.82	2.02	4	15	54(41.9)	62(48.1)	13(10.1)
F2 Self-satisfaction	10.87	2.73	3	15	34(26.4)	53(41.1)	42(32.6)
F3 Activities performed	6.89	1.37	3	10	87(67.4)	41(31.8)	1(.8)
F4 Healthy self-image	7.44	1.77	3	10	43(33.3)	71(55.0)	15(11.6)

Note. SD = Standard Deviation. fr = Frequency.

Association between Gender of Participants and Subjective Well-being

Gender was investigated using Multinomial logistic regression (LR). Demographic was explored as a demographic factor independently associated with levels of subjec-

Table 3

Demographic and social factors independently associated with well-being during COVID-19 pandemic

	Global Well-being				Healthy Self-image				Self-satisfaction				Hedonic			
		95% CI				95% CI				95% CI				95% CI		
	B(SE)	Inf.	OR	Sup.	B(SE)	Inf.	OR	Sup.	B(SE)	Inf.	OR	Sup.	B(SE)	Inf.	OR	Sup.
Middle vs. Low Well-being[a]																
Intercept	1.71(.54)				.75(.41)				1.32(.56)				.25(.36)			
Female	−1.43(.59)*	.08	.24	.76	−.32(.46)	.29	.72	1.79	−1.09(.61)	.10	.34	1.12	−.16(.42)	.38	.86	1.94
High vs. Low Well-being[a]																
Intercept	.92(.59)				−.12(.49)				1.45(.56)				−1.25(.57)			
Female	−1.44(.66)*	.07	.24	.86	−1.46(.64)*	.07	.23	.81	−1.63(.62)**	.06	.20	.66	−.24(.68)	.21	.79	2.97

*Note. CI = Confidence Intervals. [a] = Reference Category. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.*

tive well-being. The factor *Activities performed* was not included in the LR because of the existence of empty cells in the expected frequency. There were two cells (33.3%) with frequencies lower than 5, so, according to the standard set by Pallant (2005), that factor was not included in the LR. Preliminary analyses were performed to ensure no violation of the assumptions of linearity, independence of errors, and multicollinearity (Field, 2012). *Table 3* shows final analysis was conducted on a total of 129 valid cases.

Gender predicted both whether participants had middle or low global well-being during the Coronavirus pandemic [b = –1.43, Wald X2(1) = 5.86, $p < 0.05$], and whether they had high or low levels of well-being [b = –1.44, Wald X2(1) = 4.76, *$p < 0.05$]. In both cases, comparing the effect on females with that on males, the odds ratio indicated that as the variable changed, the change in the odds of having middle or high levels of well-being instead of low levels were .24. The odds that males had middle or high levels of well-being rather than low levels was 1/.24, or 4.16 times greater than for females.

Gender also significantly predicted whether people had a high or low healthy self-image [b = –1.46, Wald X2(1) = 5.24, $p < 0.05$] and self-satisfaction [b = –1.63, Wald X2(1) = 6.95, $p < 0.01$]. The odds of males having a high self-image instead of a low one were 1/.23, or 4.35 times greater than in females. According to the self-satisfaction dimension, the odds that males had high rather than low levels of self-satisfaction were 1/.20, or 5 times more than females.

In the sample, gender did not significantly predict whether participants had middle or high levels in the hedonic dimension.

Discussion

The objective of this study was to explore gender as a predictor of subjective well-being during COVID-19 in a sample of the Cuban population. Our results showed that the gender of participants did significantly predict the level of subjective well-being in a sample of this population.

Being male was a predictor of medium to high levels of subjective well-being during COVID-19. Gender also significantly predicted whether people had a high or low healthy self-image and self-satisfaction. Furthermore, gender did not significantly predict whether participants had medium or high levels on the hedonic dimension. These results confirmed the findings of previous studies. For example, in a study conducted by Yildirim et al. (2020) on 4,536 Turkish adults, the authors examined the effects of vulnerability, perceived risk, and fear on COVID-19 preventive behaviors. The authors reported that women were more vulnerable than men to experiencing fear.

On the other hand, Burdett et al. (2020) reported that the decline of women's mental health in the UK was twice that reported by men. In Germany, a greater decline in the psychological well-being of women than of men due to COVID-19 has been reported. The growth of the negative impact of the pandemic on women's psychological well-being corresponded to the progression of the disease in that country (Mutz, 2020).

In a qualitative study carried out in Argentina, women showed greater intensity in their reactions to fear and anguish. Women also showed a greater level of responsibility in self-care, and were more self-reflective about the consequences of the pandemic (Johnson et al., 2020).

Similar results were found by Hill et al. (2016) in the different dimensions they studied; their results showed that gender had a strong effect on self-image. A meta-analysis by Gentile et al. (2009) found that men scored significantly higher than women on self-satisfaction ($d = 0.33$). This meta-analysis examined gender differences in 10 specific domains of self-esteem across 115 studies, including 428 effect sizes and 32,486 individuals.

In general, women tend to experience more negative affect, and their subjective well-being deteriorates more than men's. However, women also show more adaptive ways of coping with stress and tend to manage their emotions better. This is a tentative explanation as to why in the present study gender did not predict medium and high levels of the hedonic dimension of subjective well-being. In this regard, LeFebvre & Huta (2021) only found a significant difference in the motivation for hedonic pleasure between men and women in subjects 20 to 29 years old (sample: 701 women and 623 men, ages 18-87). LeFebvre and Huta (2021) did not find differences in the motivation for hedonic comfort.

The COVID-19 crisis has strengthened the differences between men and women in terms of mental health and well-being, although this had already been happening. Pre-pandemic studies found that men are less likely to suffer from common mental health disorders than women (Shepherd, 2016). Xu and Wang (2021) found that older women have more abundant and meaningful activities of daily living and receive more emotional support than men, and that these differences are related to their gender roles.

To understand the results found in this study of subjective well-being from a gender perspective, it is important to understand that it is a socially constructed category, and take into account its strong cultural variation among different countries (Álvarez, 2014). During socialization, emotional expression and caretaker roles are encouraged in women, while men are often told that they should be "strong" and should not show their emotions (Álvarez, 2015).

On the other hand, there are studies that suggest that the differences in subjective well-being between women and men are due to the intensity of their emotions, not the frequency with which these emotions are experienced. Reviews of gender differences in subjective well-being consistently agree that women tend to experience higher levels of unpleasant affect than men, but that these differences are limited to internalizing moods. Women report more frequent and intense internalized moods, such as sadness, fear, nervousness, shame, and guilt. In general, women tend to report more intense and frequent negative, unpleasant, and internalized emotions than men (Lucas & Gohm, 2000).

In summary, to explain the variability reported during the pandemic in the mental health indicators of both genders, multiple factors must be considered. Some factors predate the pandemic (such as the social construction of gender), and other factors are specific to this period of time (such as the burden of the caregiver role

and remote work). These results must be taken into account when designing actions aimed at enhancing the subjective well-being of Cuban women.

Conclusion

In conclusion, our findings showed that the gender of participants significantly predicted the level of subjective well-being in a sample of the Cuban population. The results corroborated research carried out in other contexts where it was suggested that women have lower levels of well-being, which could in turn be associated with greater psychosocial risk during the current COVID-19 pandemic.

The results emphasized the importance of considering gender differences when designing interventions aimed at improving subjective well-being. In addition, our study offers initial results that could be useful in the design of actions aimed at promoting health.

Limitations

This research is not without limitations. First, the sample for this preliminary study is small. In future studies, the sample size should be increased to obtain more generalizable results. Furthermore, it is a cross-sectional study, so it is difficult to capture the causal relationships between gender and subjective well-being. It is important to develop longitudinal studies that explore the relationship between both of these variables and other variables that could be mediating this relationship at different times during the pandemic.

Ethics Statement

The data was approved by the ethics committee of the Department of Psychology of the Universidad Central "Marta Abreu" de Las Villas (2020.03.23).

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Author Contributions

EFC and DRG conceived of the idea. EFC, DRG, ZFF, and IMOR developed the theory and performed the computations. YBP and AEVE verified the analytical methods. DMFL encouraged RMG and LMR to analyze Cuban gender-related research results and supervised the findings of this work. EEPB and YBP participated in the editing and proofreading of the article. All authors discussed the results and contributed to the final manuscript.

Conflict of Interest

The authors declare no conflict of interest.

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Psychological Well-Being and Intra-personal Conflicts in Adolescence

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Background. Adolescence is a period characterized as transitional and as such, it is full of complications and conflicts. Research of Intra-Personal Conflicts in connection with Psycho-Emotional Well-being (PEW) comprising three kinds of indicators: personality, cognitive-evaluative and emotional represents new scientific approach. This approach provides the opportunity to define the role of PEW in Intra-Personal Conflicts: Motivation Value Conflict (MVC) and Self-Estimate Conflict (SEC).

Objective. Our aim was to study the severity of MVC and SEC, the interrelationship of these types of conflicts, and their connection with various PEW components.

Design. 237 high school students (ages 15–18; 99 boys, 138 girls) were surveyed. Tests of MVC, the Self-Estimate Scale (SE), and the Level of Aspiration Scale (LA) were applied to measure the conflicts. The Scale of Psychological Well-Being, the Scale of Life Satisfaction, and the Dominant Emotional States Test were employed to measure PEW.

Results. The study revealed a high prevalence of Intra-Personal Conflicts in the sample. The adolescents all had high levels of Intra-Personal Conflicts; changes were found in all three blocks of PEW. In the group with a high level of MVC, the levels of Environmental Mastery and Self-Acceptance were significantly lower. Having high level of SEC went along with decreases in most indicators of the personal and cognitive-evaluative components of PEW: decreasing of Cheerfulness, Active Attitude to Life Situation and Life Satisfaction; there were changes in emotional blockage, including decreases in Stability and Emotional Tone, and increases in Despondency, Tension, and Anxiety.

Conclusion. The study found the prevalence of Intra-Personal Conflicts in the adolescents. We showed that the personality and cognitive-evaluative components of PEW played the role of conflict moderators, while the emotional components were manifested as intra-personal conflict.

Keywords:
Psycho-Emotional Well-Being (PEW);
Intra-Personal Conflicts (IPC);
Motivation-Value Conflict (MVC);
Self-Esteem Conflict (SEC)

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Introduction

Over the last decade, the problem of Psychological Well-Being (PEW) has attracted more and more attention, not only from psychologists, sociologists, and educators, but also from politicians, economists, governmental authorities, and the whole international community. The interdisciplinary nature of this problem has been indicated by D.A. Leontiev (2020). It should be noted that psychology does not have a generally accepted scientific concept of "Psychological Well-Being"; moreover, some approaches to its formulation and structural determination are subject to debate.

Two approaches can be considered the most traditional: the hedonistic and the eudaimonic. N. Bradburn and E. Diener are the founders of the hedonistic approach to research on subjective Well-Being (Diener, Oishi, & Tay, 2018). The proponents of this approach consider the experience of Happiness, Life Satisfaction, Positive Thinking, and Social Behavior to be the most common indicators of Well-Being (Diener et al., 2018; Shamionov, 2004). In the eudaimonic approach, Psychological Well-Being is defined as a basic subjective construct that reflects the individual's perception and assessment that they are functioning at their highest potential, and are seeking Self-Actualization. This construct includes Autonomy, Environmental Mastery, Focus on Personal Growth, Positive Relationships, Life Goals, and Self-Acceptance (Ryff & Singer, 2008). Modern psychologists tend to merge both approaches and view them as aspects of an overall picture of Well-Being (Henderson & Knight, 2012). The term Psycho-Emotional Well-Being is also used, which usually means resistance to stress, and lack of Depressiveness or excessive Anxiety (Podolskiy, Karabanova, Iodobaeva, & Heymans, 2011; Reeve, 2014).

We based our study on the concept of Psycho-Emotional Well-Being (PEW), which combines these approaches, using such notions as personality (Psychological Well-Being,) (Ryff et al., 2008), cognitive-evaluative state (Life Satisfaction), and emotional-affective condition (sustainable emotional states) (Troshikhina & Manukyan, 2017). This approach provides the most complete definition of individual inner Well-Being. From this standpoint, researchers study the influence of such factors as age, gender, self-control, family crises, social support, contact with nature, etc. on Psychological Well-Being (Ronen, Hamama, Rosenbaum, & Misheli-Yarlap, 2016; Golovey (Ed.), 2020).

The relationship between Psychological Well-Being and Intra-Personal Conflicts and their role in personality development is also subject to debate. Some scientists (Vygotsky, 1983; Bozhovich, 1968; Asmolov, 1990) consider conflicts as a factor which stimulates Personality Development, while others stress their ambiguous, and often negative, impact on the individual's emotional state and development (Borozdina & Zaluchenova, 1993; Vasilyuk, 1984; Fantalova, 2001, 2015).

Intra-Personal Conflict is viewed as a clash of opposing trends, interests, ideas, and aspirations within an individual. Researchers pay the most attention to Motivation-Value (MVC) and Self-Estimate conflicts (SEC). Motivation-Value Conflicts (MVC) are operationalized through the study of the ratio of values an individual considers vital and their availability (Fantalova, 2001, 2015). Much research has been devoted to the structure of values, and their hierarchy. Researchers have uncovered

features of gender value conflicts, their relationship with Mature Inner World, Creativity, Protective Inactivity, and Difficulty in Life Agenda Implementation (Zhuravlev & Drobysheva, 2010; Vartanova, 2014; Fedotova, 2017; Golovey & Gruzdeia, 2017). Relationships between an individual's Value Orientation, Subjective Well-Being, and Emotional Orientation have also been highlighted (Shamionov, 2004).

Self-Estimate Conflict (SEC) is identified as a conflict between an adolescent's level of Self-Esteem (SE) and Level of Aspiration (LA). Self-Esteem as a person's general evaluation of his or her value is expressed as either positive or negative Self-Orientation. Scientists point to the special role of Self-Esteem in adolescence, and its connection with Academic Performance and Mental Health (Leavitt, Covarrubias, Perez, & Fryberg, 2015; Tagai, 2017; Minev et al., 2018). It has been shown that inadequate Self-Esteem can act as a predictor of Aggressiveness, Anxiety, Frustration, and decreased Life Satisfaction. (Diener, E. & Diener, M., 1995; Paradise & Michael, 2005; Kuzmina, E. & Kuzmina, Z., 2018; Vodyakha, S. & Vodyakha, Y., 2019).

However, there is far less information on the links between MVC, Personality Development, and Well-Being. Moreover, there are indications of these conflicts' negative impact on adolescents' Socialization and Adaptation. (Prikhozhan & Tolstikh, 2016). Some studies suggest that a discrepancy between levels of Self-Esteem and Level of Aspiration in early adolescence can lead to an increase in Anxiety and result in Somatic disorder. (Borozdina & Zaluchenova, 1993; Sidorov, 2007; Pukinska, 2008).

As our analysis showed, the relationship of MVC and SEC with Psychological Well-Being indicators (personality, cognitive-evaluative, and emotional) still remains understudied.

Methods

Measurements

The following tests were administered: the Intra-Personal Conflicts study (AVR-Availability Value Ratio) (Fantalova, 2001); the Dembo-Rubinstein Self-Assessment and Level of Aspiration Scale (modified by Prikhozhan, 1988); and the Psychological Well-Being Scale by C. Ryff (adapted by Zhukovskaya & Troshikhina, 2011). The instrument consists of six scales: Autonomy; Environmental Mastery; Personal Growth; Positive Relations with Others; Purpose in Life; and Self-Acceptance. We also used E. Diener's Life Satisfaction Scale (adapted by Osin & Leontiev, 2008), and the Testing Dominant Emotion States (by Kulikov, 1998), which consists of the following scales: Active vs. Passive Attitude toward one's Life Situation; Cheerfulness vs. Despondency; Emotional Tone (high or low); Relaxation vs. Tension; Tranquility vs. Anxiety; Stability vs. Instability of Emotional Tone; and Satisfaction vs. Dissatisfaction with Life. All the methods used in the study were adapted and tested on adolescent samples and had normalized scores.

Participants

The study sample was comprised of 237 high school and gymnasium students, ages 15 to 18 (99 boys, 138 girls). The study was conducted in regular class sessions in

2018. The parents were given an explanation of the purpose of the study, and informed consent was obtained from them.

Procedure

Study Objectives: To reveal the severity of MVC and SEC as varieties of Intra-Personal Conflicts in adolescence and find out the relationship of these conflict types with each other and various PEW substructures.

Hypotheses. We proceeded from the following assumptions: 1) Various types of Intra-Personal Conflicts, in particular MVC and SEC, can be interrelated; 2) Pronounced Intra-Personal Conflicts may have two-way relationships with some levels of PEW; and 3) Different substructures of PEW can be interconnected with Intrapersonal Conflicts in different ways. We assumed that personal and cognitive-evaluative substructures can act as predictors of conflicts, either weakening or strengthening them. The emotional substructures of PEW act as consequences of conflicts.

Results

The data analysis showed that the sample's general level of Psychological Well-Being ($M = 188.83$; $\sigma = 20.01$) and Life Satisfaction ($M = 23.46$; $\sigma = 6.66$) corresponded to mean values, and in the given sample, reflected a generally favorable picture of Maturation. However, there was a high variability of indicators where the mean values did not reflect its individual characteristics.

The comparative analysis of the frequency of conflict manifestations revealed that both types of conflict were prevalent, with high levels of SEC accounting for the greater number of respondents (52%), and that of MVC for 19.3%.

The mean value of the total MVC index in the sample was 34.9 points, $\sigma = 15.24$, which indicated an insignificant degree of Dissociation and a gap between the Values and their Availability. Draw your attention to the wide variability of the MVC index (value scores ranged from — 5 to 69), which significantly exceeded the standard values obtained by the author of the method (Fantalova, 2015). All its indicators were expressed in the structure of MVC (*Table 1*).

Table 1

Indicators of value imbalance (score in points), n 237

Indicators of concordance in value	M	σ	Skewness	Std.Error	Kurtosis	Std.Error	Cronbach's alpha
Inner Conflict (IC)	12.63	8.69	.342	.158	-.584	.315	.645
Internal Vacuum (IV)	10.67	9.05	.407	.158	-1.041	.315	.738
Neutral Zone (NZ)	11.80	4.39	.125	.158	.358	.315	.632

Note. M = Mean; σ = Standard Deviation.

The sample mean data indicated that Neutral Zones (65.5%) were expressed in the Internal Conflict framework; these zones are characterized by Values Coincidence and their Availability for Satisfaction. Internal Vacuums which means Redun-

dancy of Availability in the Absence of its value prevailed in 15.19% of respondents. More than 19% percent (19.3%) of respondents had a pronounced Internal Conflict due to the Unavailability of Desired Values. Valid differences in Value/Availability ratio were revealed in 8 out of 12 life spheres (with significance level p ranging from .004 to .000).

The most significant discrepancies between Values and their Availability were identified by such indices as Happy Family Life, Love, and Financially Secure Life, whereas a decrease in incentive motivation was noted in Beauty of Nature and Art, Active life, Creativity, and Cognition, which are characteristic of Internal Vacuum. The values of Health, Friends, Freedom, Challenging Work, and Self-Confidence were confined to the Neutral Zone.

Given the high variability of the indicators, a further analysis was carried out on groups with different levels of MVC severity. The group division was based on a Conflict Integral indicator, which is the sum of differences between a Value and its Availability in various spheres of life. An index equal to or exceeding 50 points meant the unavailability of significant values and indicated an individual's Motivation Disintegration, Deep Dissatisfaction, and Blockage of Basic Necessities. The two groups we distinguished were: Group 1, which consisted of adolescents with a low MVC level (144 respondents), and Group 2, which had medium or high MVC levels (94 respondents). Girls outnumbered boys in Group 2 (p = .005). These groups differed in their total MVC indices (p = .000) and in conflict structure (*Table 2*).

Table 2

Differences in a conflict structure and indicators of psycho-emotional Well-Being in groups with different levels of MVC

Conflict indicators and PEW Valid	**Group 1**		**Group 2**		**Mann-Whitney U-test**	**(p) Significance**
	M	**σ**	**M**	**σ**		
SEC, Confidence	27.55	23.03	33.14	22.9	5668.5	.04
Total Index MVC	24.5	7.08	50.7	8.3	33.00	.000
Inner Conflicts, %	10.52	8.15	27.41	8.76	969.00	.000
Internal Vacuums, %	6.80	7.0	27.9	8.4	503.00	.000
Neutral Zones, %	82.69	12.6	44.6	12.1	195.50	.000
Environmental Mastery	29.2	4.5	27.4	5.06	5482.50	.016
Personal Growth	33.2	5.0	34.4	4.2	5650.50	.038
Self-Acceptance	31.4	6.2	28.7	6.9	5266.50	.005

Note. M = Mean. σ = Standard Deviation.

As you see in the table, the MVC for the adolescents in Group 1 was distinguished by 2.7 times fewer Internal Conflicts (p = .000), more Neutral Zones (p = .000), and fewer Internal Vacuums (p = .000), while in Group 2, the percentage of Internal Conflicts (p = .000) and Internal Vacuums (p = .000) was significantly higher, with fewer Neutral Zones (p = .000). These indicators suggest the Disintegration of Motivation,

as a high level of conflict zones coexisted with poorly represented zones with Value-Availability concordance. There were more zones with a Low Level of Values and High Availability of them. This suggests that these adolescents have what they do not need and miss what is really meaningful to them.

A comparison of the Values/Availability ratio in different spheres of life revealed a lower level of divergence of values Active Life ($p = .000$), Cognition ($p = .000$), Beauty of Nature and Art ($p = .000$), and Creativity ($p = .000$) and their availability in Group 2, along with reduced motivation (Mann-Whitney U-test). At the same time, Friends ($p = .000$), and Family ($p = .000$) were the most conflicted spheres. Thus, in the adolescents with pronounced MVC, there was a change in conflict structure and range of represented life spheres. It is also noteworthy that they had SEC in the area of Self-Confidence.

The analysis of differences in PEW indicators between the groups revealed differences in personality indicators: in Group 2, the Level of Environmental Mastery ($p = .016$) and Self-Acceptance ($p = .005$) was lower, while the Level of Personal Growth pursuit was higher. The differences in parameters of dominant emotional states were negligible.

The analysis of Self-Esteem and Level of Aspiration levels revealed that the sample fit within a framework of the average statistical norm (Self-Esteem, $M = 61.8$; Level of Aspiration, $M = 85.05$), with high individual variability (from 0 to 100), and lower values among girls. Partial indicators of Self-Esteem fluctuated from 59.6 points to 72.6 points on different scales and indicated its mean level. The adolescents rated Intelligence and Character the highest and gave lower scores to their Peers' Authority, Self-Esteem, and Manual Skills. Scores on the Level of Aspiration demonstrated high values (from 75 to 89 points on all scales), which reflected the optimism of both the boys and girls about their capabilities. Like for Self-Esteem, the results showed very large individual variation (min — 15 points, max — 100 points). The highest Level of Aspiration was in Intelligence and Appearance; all other areas were evenly distributed.

Under our methodology, an Indicator of Conflict was considered to be a discrepancy between the adolescent's Level of Aspiration (LA) and Self-Esteem (SE) (less than 8 points or more than 22 points) (Prikhozhan, 1988). On this basis the sample was subdivided into three groups: the first was made up of respondents with no SEC expressed (113 respondents). The second group consisted of respondents with a pronounced SEC (the difference between AL and SE is more than 22 points — 114 respondents). These two groups were balanced by gender. The third group consisted of young men only, whose SEC indicator was less than 8 points (10 respondents). The representatives of the third group demonstrated a rare conflict between decreased Level of Aspiration and increased Self-Esteem, which reflects a state of Protective Inactivity. To identify differences between the groups, we applied a one-way analysis of variance. In further analysis, the results of the third group were not analyzed due to its small size and gender homogeneity. The differences between groups 1 and 2 in SE and AL and all scales of the methodology ($p = .000$) are presented in *Table 3*.

Table 3

Differences in indicators of psycho-emotional Well-Being between groups with different levels of SEC (results of one-way analysis of variance)

SEC and PEW Indices	Group I (n-113)		Group II (n-114)		Mean M, (i–j)	(p) Significance
	M	σ	M	σ		
SEC (Total Index)	15.40	3.7	33.5	9.9	18.1	.000
Life Satisfaction	23.9	6.6	21.2	6.5	–2.68	.008
Autonomy	32.4	5.6	29.8	5.7	–2.56	.003
Environmental Mastery	29.8	4.7	27.1	4.6	–2.64	.000
Positive Relations with Others	33.1	5.9	30.3	5.6	–2.77	.002
Self-Acceptance	31.9	6.1	28.8	6.3	–3.03	.002
PEW (total Index)	194.2	20.08	179.2	19.2	–15.06	.000
Activeness-Passiveness	47.2	10.9	44.4	10.2	3.49	.004
Cheerfulness-Despondency	50.5	9.2	44.9	9.2	5.55	.000
Relaxedness - Tension	50.5	10.8	45.9	10.2	–4.63	.005
Satisfaction– Dissatisfaction	53.1	9.9	49.2	11.2	–3.94	.002

Note. M = Mean; σ = Standard Deviation.

The analysis of the differences in PEW indices between the groups showed that they differed in Life Satisfaction (p = .008), Autonomy and Environmental Mastery (p = .000), and Positive Attitudes and Self-Acceptance (p = .002), as well as in the Total Indicator of Psychological Well-Being (p = .000). All these indicators were significantly lower in adolescents with a high SEC level. Some differences were found in dominant emotional states. Group 2 adolescents showed lower Activity (p = .004), lower Cheerfulness (p = .000), decreased Life Satisfaction (p = .005), and increased Tension (p = .002). Thus, the conflict of Self-Esteem affected all three constituents of PEW: personality, cognitive-evaluative, and emotional.

In order to confirm the results obtained in the analysis of differences, we undertook correlation and regression analyses. Correlation analysis was carried out on the groups with a high level of conflict. Among MVC indicators, the Level of Conflict in Freedom was found to be the most interconnected with negative links of PEW indices with Life Satisfaction, Positive Relationships, Self-Acceptance, Total Level of Well-Being, Emotional Stability, and Satisfaction as a sustainable state (six connections at p .001 – .005). The Conflict in Creativity had four negative connections: Environmental Mastery, Self-Acceptance, Total Well-Being, and Tranquility (p = .001). Dissatisfaction with Family was directly related to Environmental Mastery and Total Level of Psychological Well-Being (p = .005). The total indicator of Internal Conflict formed two negative connections, one with Autonomy and one with positive Self-Image. The high value of the parameter Neutral Zones was directly related to positive Self-Image (p = .001); the parameter Internal Vacuums was interconnected with passive Life Attitude (p = .005). Therefore, various PEW indices were found to be interrelated with manifestations of MVC. Conflicts in Freedom and Creativity tended to be most integrated into the PEW framework.

The analysis of SEC relationships revealed 21 negative connections with all PEW indices. Various indicators of SEC tended to be linked with Life Satisfaction, Self-Acceptance (eight connections at p .017 – .001), Environmental Mastery, Autonomy, Total Level of Psychological Well-Being (nine connections at p .022 – .000), and Life Goals (one connection) (p = .002). Relationships with Emotional states (three connections at p .028 – .000) indicated that an increase in SEC was accompanied by a decrease in Vigor, Emotional Stability, and Self-Acceptance. Indicators of Total SEC Index and Self-Confidence Conflict were most involved in the structure of connections with PEW.

Regression analysis was also carried out in the group with a high level of conflicts. It is significant that in the group with SEC, in addition to the size of the discrepancy between the Level of Aspiration and Self-Esteem, indicators of MVC were found to be dependent variables, and in the group with high indicators of MVC, SEC variables were found.

Table 4

The impact of PEW on Conflicts indicators

Dependent Variable	R Square	Predictors	β	p
		Model 1		
SEC	.319	Total Level of Psychological Well-Being	–.317	.025
		Environmental Mastery	–.281	.045
		Model 2		
SEC	.139	Life Satisfaction	–.296	.001
		Autonomy	–.317	.025
		Model 3		
Neutral Zones	.190	Self-Acceptance	.217	.027
		Environmental Mastery	.293	.005
		Positive Relations with Others	–.234	.011
		Model 4		
MVC (Total Index)	.160	Self-Acceptance	–.191	.05
		Positive Relations with Others	.250	.008
		Environmental Mastery	–.261	.013

We created four models that reflected the relationship of PEW with various types of conflicts: two models showed the relationship of PEW with SEC, and two models, the relationship of MVC with PEW (*Table 4*). SEC was described by the model as accounting for 31.9% of the variance. Total Level of Psychological Well-Being (β = –.317; p = .025) and Environmental Mastery (β = –.281; p = .045) were the predictors in this model. The Total SEC indicator was included as a dependent variable in the second model (with variance 13.9%), with the independent variables being Life Satisfaction (β = –.296; p = .001) and Autonomy (β = –.317; p = .025). In the third model, Self-Acceptance (β = .217; p = .027), Environmental Mastery (β = .293;

p = .005), and Positive Relations with Others (β = –.234; p = .011) predicted 19% of the variance on Neutral Zones. The independent variables of Self-Acceptance (β = –.191; p = .05), Positive Relations with Others (β = .250; p = .008), and Environmental Mastery (β = –.261; p = .013) predicted 16% of the variance for the Total Value Conflict index in the fourth model.

At the next stage of the regression analysis, the dominant emotional states were included as dependent variables, while the indicators of Conflicts were the independent factors. Four models were obtained (*Table 5*). In the first model (variance 37%) Internal Conflicts of Family Values (β = –.342; p = .005), Cognition (β = –.328; p = .000), Freedom (β = –.253; p = .005), Total MVC index (β = –.172; p = .048) and SEC in Skills (β = .224; p = .000) predicted the dependent variable Cheerfulness vs. Despondency. In the second model, the dependent variable Relaxation vs. Tension (variance 23.6%) was predicted by Internal Conflicts in Health (β = –.342; p = .054), Freedom (β = –.384; p = .021), and Family (β = –.441; p = .012). In the third model, the dependent variable Tranquility vs. Anxiety (variance 21.1%) was predicted by Internal Conflict in Beauty of Nature and Art (β = .343; p = .000), Creativity (β = .195; p = .05), and SEC in Self-Confidence (β = –.235; p = .018). In the fourth model, the dependent variable Satisfaction vs. Dissatisfaction with Life (variance 10.3%) was predicted by the levels of Internal Conflicts in Freedom (β = .292; p = .002), and Family (β = –.216; p = .021).

Table 5

The impact of Conflicts indicators on Dominant Emotional States

Dependent Variable	R Square	Predictors	β	p
		Model 1		
Cheerfulness-Despondency	.370	Internal Conflict of Family Values	–.342	.000
		Internal Conflict of Cognition Values	–.382	.000
		Internal Conflict of Freedom Values	–.253	.005
		MVC (Total index)	–.172	.048
		SEC in Skills	.224	.005
		Model 2		
Relaxedness-Tension	.236	Internal Conflict in Health Values	–.342	.054
		Internal Conflict in Freedom Values	–.384	.021
		Internal Conflict in Family Values	–.441	.012
		Model 3		
Tranquility-Anxiety	.211	Internal Conflict in Beauty of Nature and Art Values	.343	.000
		Internal Conflict in Creativity Values	.195	.050
		SEC in Self-Confidence	–.235	.018
		Model 4		
Satisfaction-Dissatisfaction with Life	.103	Internal Conflicts in Freedom Values	–.292	.002
		Internal Conflict in Family Values	–.216	.021

The results of regression analysis showed that SEC and MVC were a part of all models mentioned above. Correlation analysis revealed 13 connections between these conflicts. The conflicts most related to total SEC in Financial Satisfaction were SEC in Intelligence, Authority, Confidence, Appearance, and Character indices (six connections, $p = .001$); SEC in Intelligence and Skills had four negative connections with MVC through such indices as Friends, Family, Love, and Health ($p = .005$; .001).

Discussion

The results of our PEW analysis revealed an overall positive picture of the respondents' maturation over high individual variability, which was consistent with the data obtained from other samples (Pavlova & Benkova, 2016; Golovey & Danilova, 2019). Our study of the most common conflicts in adolescence revealed a widespread prevalence of MVC and SEC. The variability of the MVC data, which significantly exceeded the results of a 2001 normative sample (Fantalova, 2001), might indicate an increase in Financial Family Stratification, which was reflected in an increase in MVC, which indicates the initial stages of Value Disintegration. The importance of Financial Satisfaction was also confirmed by the presence of a large number of correlations between this indicator and manifestations of both Total MVC level and SEC level.

The respondents with high levels of MVC were characterized by a change in MVC structure. In the framework of conflict, an increase in conflict zones was combined with a decrease in Neutral Zones and an increase in internal vacuum zones. This indicated Unavailability of significant values, an increase in Value /Availability concordance, and a decrease in a number of zones of Motivation Level of Development such as Creativity, Beauty of Nature and Art, Cognition, and Active Life. The respondents with a high level of SEC showed a decrease in the Total and in all indicators of this conflict.

The analysis of differences in PEW indicators revealed that in the groups with a high level of MVC, Environmental Mastery and Self-Acceptance were significantly lower, but Desire for Personal Growth was higher, which may indicate a motivating role of MVC and is consistent with the results (Golovey & Gruzdeva, 2020) for adolescents. The group with a high level of SEC was characterized by a decrease in all indicators of Personality and Cognitive-Evaluative PEW indices, coupled with a decrease in Vigor, Activity, Life Satisfaction, and an increase in Tension, *i.e.,* all MVC indices are involved in a SEC conflict.

Correlation analysis confirmed that an increase in the severity of Internal Conflicts was correlated with an increase in the indicators of Personality and Cognitive-Evaluative PEW indices, and was also accompanied by the changes in the emotional part of PEW. These changes in the emotional component were manifested by a decrease in Emotional Stability, Activity, and an increase in Depression, Tension, and Anxiety, which correlates with the "Anxiety Triad" described in SEC (Borozdina & Zaluchenova, 1993; Sidorov, 2007; Pukinska, 2008). In our study, similar changes were observed in both conflicts.

We used two strategies to conduct the regression analysis, In the first strategy, the Personality indicators and Cognitive-Evaluative components of PEW were taken as independent variables, whereas indicators of conflicts were taken as dependent vari-

ables. The results of this strategy application showed that MVC and SEC predictors were low indicators of Life Satisfaction, Autonomy, Environmental Mastery, and a decrease in Overall Assessment of Psychological Well-Being. In MVC conflict, Self-Acceptance, Environmental Mastery, Positive Attitudes were the factors that contributed to an increase in a number of Neutral Zones, thus reducing Conflict Tensions. In the second strategy, the independent variables were indicators of Conflicts, while the dependent ones were dominant Emotional States. It can be seen from the regression models that Family Dissatisfaction, Cognition, Beauty of Nature and Art, Freedom, and Health in MVC and SEC were linked to an increase in Confidence, while a decrease in Motivation worked as a predictor of Despondency, Tension, Anxiety, and Dissatisfaction.

Therefore, the results showed the role of different PEW indices in the Intra-Personal Conflicts of adolescence. Personality and cognitive-evaluative components played the part of predictors and possible moderators of conflicts. This view is consistent with the understanding of PEW personality parameters as sustainable personality traits which reflect its psychological maturity as a result of ontogenesis, and act as moderators in difficult life situations (Zhuravlev & Sergienko (Eds.), 2007; Golovey (Ed.), 2014; Manukyan & Troshikhina, 2016; Golovey et al., 2019). Cognitive-evaluative indicators, especially Life Satisfaction, are considered as a sustainable property with a high contribution of the genetic factor (Diener et al., 2018). Emotional components, reflecting everyday dominant emotional states, are manifestations of the effects of intra-personal crises and conflicts. Earlier, such results were obtained in a study of SEC, which revealed the "Risk Triad," that is, the Discrepancy between high levels of SE and LA, Increased Anxiety, and Somatic Diseases (Sidorov, 2007; Pukinska, 2008).

From our study we concluded that negative changes affected not only Anxiety, but also other emotional states; they were observed in both SEC and MVC. The internal relationship between the two above-mentioned Intra-Personal Conflicts was most clearly manifested in the connection between the severity of SEC in Intelligence, Authority, Confidence, Appearance, and the Total SEC index with MVC in Financial Well-Being, Friends, Family, and Love, which indicates the most significant modern adolescence values. The interrelationship of conflicts suggested that there were common predictors of Intra-Personal Conflicts, possibly accounting for personality and cognitive-evaluative PEW indices.

Conclusion

This study highlighted the prevalence of Intra-Personal Conflicts in an adolescent sample. The respondents with high levels of intra-personal conflicts showed changes in all PEW indicators: personality, emotional, and cognitive-evaluative. Decreasing of personal indicators of PEW such as Environmental Mastery and Self-Acceptance is in correspondence with high level of MVC. A high level of SEC is characterized by decreasing of the most of PEW indicators: personal — decreasing of Cheerfulness and Active Attitude to Life Situation; cognitive-evaluative — decreasing of Life Satisfaction; emotional - decreasing of Stability, Emotional Tone, increasing of Despondency, Tension, Anxiety. The study showed that personality and cognitive-evaluative

components of PEW played the part of conflict moderators, while emotional ones were manifested as effects of Intra-Personal Conflicts. A decline in Environmental Mastery and Self-Acceptance was accompanied by a high level of MVC. A high level of SEC was characterized by a decrease in the majority of PEW indicators. Adolescents with MVC were motivated by a desire for Personal Growth, whereas those manifesting SEC showed an absence of conflicts in Family, Friends, Freedom, Creativity, and Self-Confidence, which created the basis for the reliance on these spheres of life.

Limitations

The study's major limitation was the imbalance of the sample by gender with a predominance of girls and by having groups with a high level of Intra-Personal Conflicts. This can be partly explained by the literature on the greater severity of conflicts in adolescent girls (Fantalova, 2015; Golovey & Gruzdeva, 2017; Golovey at al., 2020). However, further gender-sensitive research is required.

Ethics Statement

The design of the study did not require the approval of the Ethics Committee. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

Author Contributions

Golovey and Gruzdeva conceived of the idea and developed a theory. Danilova performed the computations. Rykman performed visualization. All authors discussed the results and contributed to the final manuscript.

Conflict of Interest

The authors declare no conflict of interest.

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The Phenomenon of Loneliness in Old Age

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Background. The issue of solitude is fragmentary in gerontological investigations, and is generally interpreted as loneliness: a negative experience of lack of relationships with other people.

Ageing people have many variants of loneliness, often connected with their own prejudices or satisfaction with their social contacts.

In loneliness, opportunities and rights to the sovereignty of one's life space can be preserved.

Objective. To study loneliness as a fact of life, a multi-dimensional phenomenon, including the feeling of loneliness itself, lack of communication, and ability to be alone. We suppose that senior adults with different levels of psychological well-being are specific in this acceptance of loneliness and ability to find resources in this situation.

Design. The participants comprised 129 residents of Kamchatka Region aged 60–82. In the first stage, using C. Ryff's "Psychological Well-Being Scale" with mid-values cluster analysis, the respondents were divided into groups with different levels of psychological well-being.

In the second stage, the data of the "Differential Questionnaire on Experiencing Loneliness" and "Subjective Perception of One's Own Life" questionnaire were used for correlation analysis of interrelations between psychological well-being and the "positive loneliness" subscale, revealing the participants' ability to find resources in loneliness.

Results. The research shows that experiencing loneliness in the gerontological cohort is non-homogeneous; it is interconnected with personal attitudes towards positive loneliness, with psychological well-being. It changes the activities of the elderly and the extent of experiencing loneliness.

Conclusion. There is cultural mitigation of loneliness in gerontological cohorts and also in their shift from a negative mindset towards an existential one.

Keywords: General loneliness; positive loneliness; solitude; gerontological cohort; loneliness as a resource for self-cognition and self-development

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Introduction

Rapid growth of the proportion of the world's ageing population is becoming more and more obvious, which is why the first decades of the 21st century have been a time of increasing research interest in problems of ageing and senior adulthood. The previously dominant bio-determining model of old age as an illness and involution are now giving place to an adaptive-compensative model, considering old age to be a stage in human evolution and underlining that the elderly have a wide range of potential resource mechanisms for compensation for negative consequences of ageing and for continuing development of the person. Works by R.J. Havighurst (1961) and later by J.W. Rowe & R.L. Kahn (1987) were very important for the creation of this model; they demonstrated that deteriorating health cannot predict a decline in the ageing person's subjective state. The authors reject the idea that old age is a period of illnesses and deterioration, and oppose to this the concept that old age opens perspectives for new activities. The ageing person is responsible for their own state: the more his physical and social activity, the better is his health and emotional state. The authors also propose a new understanding of age-related changes through the challenges theory, which supposes that risks of the appearance of different illnesses don't depend only on age. The works by J.W. Rowe & R.L. Kahn created a new gerontology, looking for personal resources and potentials in the elderly.

A study by P. Baltes & M. Baltes (1990) proposed the model known as Selection — Optimization — Compensation (SOC) — three mechanisms of adaptation for the elderly. Selection means concentration on the most important tasks; optimization looks for the best ways to achieve these tasks; and compensation means replacement of what is not possible by alternative means. A combination of these mechanisms provides preservation of activity, adaptation to changes, and slows destructive and degenerative processes. The model accentuates the plasticity of the human mind during gerontogenesis and the preservation of potentials for reconstructing internal and external resources for efficient functioning.

A typical feature of the period of gerontogenesis is restriction of social networks (death of peers, professional limitation, selectivity in relationships), which makes it even more important for the ageing person to form new strategies for relationships, based on qualitative analysis of the situation — the socio-emotional theory of selectivity by L. Carstensen & D. Isaakovitz (1999). According to this theory, psychological and emotional comfort becomes the leading motivation for communication in late ontogenesis, resulting in adaptation of one's own communications so as to minimize negative emotional experiences and to increase positive ones. The theory also looks at the person's social networks: how to select a communicator, to optimize the time of communication, and compensative emotional preferences of communities.

Russian studies belonging to the adaptive-compensatory paradigm are represented in the adaptive-regulatory theory of V. Frolkis (1970, 1988) and by the scientific theory of gerontogenesis (Alexandrova, 1974; Ananyev, 1977, 2010; Davydovsky, 1967; Krasnova, 2011, and others).

V.V. Frolkis (1988) proved that ageing has internal contradictions: functional disturbances are accompanied by mobilization of important adaptive mechanisms, favoring stabilization of vitality, increasing activity and life expectancy.

The scientific theory of gerontogenesis underlines the social determination of ageing: the character, dynamics, and speed of age-related modifications are "realized in definite social-cultural conditions" (Krasnova, 2011, p. 116). A synthesis of self-determination and external determination is a means to influence the ageing process (Davydovsky, 1967). This is confirmed by B.G. Ananyev's description of "the extraordinary phenomenon of ageing slowness due to social determination of human organic development in his individual life" (Ananyev, 2010, p. 137). The author pays attention to the increasing individualization of ontogenic evolution in the elderly and to "the contrast of individual types of general vital tonus and intelligence" (Ananyev, 2010, p. 229). Ananyev distinguishes two opposite orientations of ageing: convergent (destructive — causing stagnation of mental functions) and divergent (minimal loss and acquisition of new skills). This acquisition is a resource for mental intactness, for new strategies of behavior in continuation of life.

Many studies of gerontogenesis show that old age has a wide range of potential resource mechanisms for the continuing development of the person (Baltes & Baltes, 1998; Glozman & Naumova, 2014, 2018; Havighurst, 1961; Naumova, 2014; Rowe & Kahn, 1997, 2015; Settersten & Godlewski, 2016). The modern representation of the elderly includes adaptive-compensative mechanisms, together with realization of the dividends of long life expectancy as potentials and/or resources for positive ageing (Melehin, 2015; Strizhetskaya, 2016, 2018; Tornstam, 2011).

This evidence is supported by numerous variants of highly productive and successful ageing or active interaction of senior adults with the surrounding world, which can be based on positive aspects of their functioning (Kudrina, 2015; Sergiyenko & Kharlamova, 2018; Stryzhetskaya, 2016, 2018; Zavialova & Soldatova, 2019).

However, the majority of Russians still maintain that "old age has no advantages over other ages" and its image is more often stereotypically associated with inevitable losses, such that "a place of honor" and the status of being a person of great practical significance are replaced by the problem of "senior loneliness", or such losses are viewed as an inevitable consequence of ageing, or as a widespread and unavoidable attribute of old age (Krasnova, 2005). We can probably explain this by social and economic instability in Russia and the stigmatization of the elderly as helpless, dependent, and rigid, which interferes with their social integration (Reznichenko, 2017); their financial problems, anxiety about their health, lack of institutional care and environmental adjustment for older people's needs, decreasing their motility (Elutina &Trofimova, 2017); and the predominance of occidental-type nuclear self-sufficient families, consisting of young parents and children (Ibragimova, 2007).

These contradictions underlie our interest in the study of loneliness in old age.

Our analysis of numerous works confirms that, although the phenomenon of loneliness has been studied for a long time, it remains one of the most important issues in various scientific areas, first and foremost due to a sharp increase in the weakening of social ties and of all types of social mobility (Klinenberg, 2012; Riesman & Glazer, 1961).

In academic psychology, the aspects of loneliness have been developed in the framework of the adult attachment system (Weiss, 1973); the non-correspondence between expected satisfaction to be obtained from personal interactions and the actual level of personal relationships (Peplo & Perlman, 1989; Slobodchikov, 2007);

sociocultural analysis of loneliness (Pokrovskiy & Ivanchenko, 2008); age/gender aspects of the experience of loneliness (Kon, 2008; Lyubyakin & Okonechnikova, 2016); alienation mechanisms and modules of personality autonomy (Leontiev, 2011); and positive aspects of loneliness (Heidegger, 2013; Lyashchenko, 2017; Osin & Leontiev, 2016).

In more general terms, loneliness is viewed as a negative experience of one's own lack of deep relationships with other people. This experience can occur in a community in which one lacks psychological contact (alienation), or as voluntarily accepted solitude necessary for realizing "the experience of impressions and interactions with the world" (Ishanov, Osin, & Kostenko, 2018).

The overwhelming majority of investigations of solitude and loneliness performed in gerontological groups are fragmentary and differ in their contexts: as a predictor of fast ageing (Alexandrova, 2006; Ananyev, 1977, 2010), development of degenerative processes, and mortality (Gerino, Rollè, Sechi, & Brustia, 2017; Wong, Liu, Lin, Huang, Wai, & Lee, 2016); with reference to social conditions or dwelling places (Bydtayeva & Zurayeva, 2017); psychosocial maladaptation (Nikitina & Shakirova, 2016; Reznichenko, 2017); social-emotional selectivity (Carstensen & Isaacowitz, 1999; Melehin , 2015); in theories of social capital (Biggs, Carstensen, & Kogan, 2012; Olshansky, Beard, & Börsch-Supan, 2012); and in suicidal behavior (MacLeod, Musich, Hawkins, Alsgaard, & Wicker, 2016).

Summing up, we infer that solitude in old age is an ambiguous notion, and on the whole it is presented as loneliness: a negative problem. It is also important to note that authors often join the concepts of "social isolation, social disregard for aged people" and "a deliberate choice of solitude in senior adulthood" or "experiencing loneliness in senior adulthood". The fact of the person's separate, independent living in old age does not automatically imply an experience of negative emotions related to loneliness as an experience of non-involvement, a feeling of being unwanted, of indifference or non-acceptance by others, according to which the person's everyday life may be constructed (Krasnova, 2005; Yelyutina & Trofimova, 2017; Yermolayeva, 2002).

A number of researchers have noticed that people who live alone do not necessarily experience loneliness. Solitude may manifest itself with either a stereotypical negative experience or an emotionally positive one; it can become a valuable resource for "internal dialogue", for reflective, productive activity (Ishanov, Osin, & Kostenko, 2018).

Furthermore, solitude may be considered as an important condition for analysis of the "personal vocabulary", the core of which is formed by the person's life experience. The consummation of one's life experience is especially urgent in the period of gerontogenesis, as, in many respects, it determines the behavior, choices, and deeds of an ageing person (Sapogova, 2019).

Thus, many senior adults are able to manage their everyday lives without external assistance and can live on their own for a long time, "maintaining his or her independence to the utmost" (Yelyutina & Trofimova, 2017). Respondents included the following in the advantages of a "solitary life": mobilization of functioning according to the "who-if-not-me" principle; the possibility of temporary isolation in order to

assess their experience "in the context of their own life more broadly than in the 'here and now' under the influence of strong emotions" (Yelyutina & Trofimova, 2017).

Experiencing solitude or loneliness in senior adulthood takes a diversity of forms, and this diversity is often not immediately associated by the ageing people themselves with isolation or alienation, but rather with their own prejudice, (dis)satisfaction, or cognitive evaluation of the content and quality of their social contacts.

On the whole, solitude is characterized by senior adults as a state in which opportunities and rights to the sovereignty of one's life space and realization of one's life ambitions are preserved, in spite of non-acceptance, neglect, alienation, lack of understanding or indifference on the part of others (Yelyutina & Trofimova, 2017).

Thus, longer life expectancy and the phenomena of the modern ageing person bring into focus the problem field of old age support, providing opportunities for well-being in the elderly (Nilsson, Bülow, & Kazemi, 2015; Smith & Hollinger-Smith, 2015). It is also important to note that modern society is beginning to shift the focus of viewing solutions to the problem of the population's ageing towards "cultural adaptation, which includes rethinking the interrelations between material and spiritual consumption that are changing due to longevity" (Biggs & Haapala, 2016).

The survey presented above makes it obvious that solitude in senior adulthood should be investigated not only as a negative problem, but also as a fact of life, reflecting variable attitudes of a person to loneliness and solitude, which can be a positive resource for "the formation of the whole modus of psychological life of an ageing person, his or her development of a new position in life" (Shakhmatov, 2004, p. 273).

The following ideas underlay this investigation:

- In modern society, loneliness is not the prerogative of old age, but it is in the declining years that it becomes critically significant, as at this time it is less possible to conceal one's confusion in social relations (Victor, Scambler, & Bond, 2009).
- A conscious personal choice can be made to accept and productively exploit situations of solitude as a resource for self-cognition, internal connection with other people, nature, and God; preference for openness to change and self-transcendency are characteristic of solitude (Long, Seburn, Averill, & More, 2003).
- In senior adulthood, solitude, as an existential fact in which longevity has advantages, allows the person to "experience the world as a harmony and oneself as a harmony within that harmony" (Yermolayeva, 2002, p. 149), which, in turn, facilitates the person's satisfactory functioning and successful ageing in general.

Based on these approaches, we suggest that late-middle-aged and elderly adults with different levels of psychological well-being (PWB) will display specificity in their attitudes towards acceptance of solitude and capability to find resources in situations of solitude. To measure the level of psychological well-being, we used the approach of C.D. Ryff, considering psychological well-being as the objective possession of the necessary psychological characteristics that facilitate more successful functioning of the subject (Ryff, 1989).

Methodologies and Subjects

The goal of the research presented in the article was to study the solitude of the ageing person as a multi-faceted phenomenon, including analysis of the degree of loneliness and capability to find resources in situations of solitude.

The following psychodiagnostic methods were used:

1. C.D. Ryff's Psychological Well-Being Scale (adapted by Shevelenkova & Fesenko, 2005) includes six basic scales ("positive relations with others", "autonomy", "environmental mastery", "personal growth", "purpose in life", "self-acceptance") and three additional ones ("affect balance", "meaningfulness of life", "the person as an open system"). The technique analyzes the psychological well-being of respondents at a particular stage in life (Borisov, 2019; Glozman & Naumova, 2018). Cronbach's alpha measure of internal consistency = 0.75.

2. The Differential Questionnaire on Experiencing Loneliness (Differentsialnyi oprosnik perezhivaniya odinochestva [DOPO]) (Osin & Leontiev, 2016) makes it possible to investigate individual features of solitude and loneliness and a person's attitude towards them. The authors of the methodology consider that solitude can include not only negative aspects (loneliness), but also needs to be analyzed as an existential factor that allows a person to value and employ solitude as a significant resource for self-actualization. The questionnaire includes eight sub-scales that form three main scales measuring the General Experience of Loneliness (the EL scale) and aspects of the attitude towards it (the DC scale [Dependence on Communication] and the PSscale [Positive Solitude]). Cronbach's alpha measure of internal consistency = 0.81.

3. The "Subjective Perception of One's Own Life" questionnaire (Naumova, 2014) includes questions about variables that are presumed to be relevant to experiencing loneliness (examples: "I find/don't find a common language with my children", "I maintain warm and friendly relationships with people who have been my friends for many years", "I am satisfied with the relationships that have been established in my family"), as well as a number of open questions specifying states and behaviors in situations of solitude (examples: "Is the feeling of loneliness familiar to you? Could you describe it?", "What can you be engaged in when living alone?"). The results were processed with the help of qualitative content analysis.

The group of respondents consisted of 129 residents of Kamchatsky region (88 females and 41 males) aged 60–82 (the average age is 72.3). Participation was voluntary; the investigation was held at the respondents' residences, individually with each respondent.

Research Design

In *the first stage*, using hierarchical cluster analysis of the Ryff Psychological Well-Being sub-scales' standardized scores, the respondents were divided into two groups: the first experimental (EG1) and the second experimental group (EG2).

The socio-demographic characteristics of the participants are presented in *Table 1*, which shows that respondents who provided information about having a family, being employed, and living in urban conditions are predominant in EG1. No considerable differences were found in the clusters according to education and

gender. The average age of participants in the first experimental group is 70.1 years, in the second group 66.4 years.

Table 1

Social-demographic characteristics of clusters

Characteristic	EG1, % (n = 56)	EG2, % (n = 73)	Fisher criterion φ_{emp}
Average age			
60–74	69.6	86.3	2.29**
75–82	30.4	13.7	2.30*
Gender			
Female	64.3	71.3	1.30
Male	35.7	28.7	0.84
Residence			
City	82.1	53.4	3.53**
Village	17.9	46.6	3.52**
Marital status			
Married	48.2	26.0	2.61**
Divorced	33. 9	24.7	1.14
Widow(er)	17.9	49.3	3.83**
Education level			
Incomplete secondary education	3.6	8.2	1. 15
General secondary education	21.4	21.9	0.08
Professional secondary education	39.3	41.1	0.22
Higher education	35.71	28.76	0.84
Social status			
Works at the same place	33.9	30.1	0.46
Works at another organization	28.6	6.9	3.34**
Does not work	37.5	63.0	2.89**

$*p \le 0.05; **p \le 0.01$

Analysis of the data presenting both groups' psychological well-being shows that the values are within the range of mid-values (according to the mean values in the sample as a whole), but comparing the two samples with the help of Student's t-criterion shows their considerable differences (*Table2*). Thus, in EG1, significantly higher values are registered on the PWB scales 2–6 and 8–9, and lower values on scale 7 ("affect balance").

The considerably higher values for "affect balance" ($p \le 0.01$) found in the second experimental group can probably be interpreted as a tendency of respondents to underestimate their abilities to overcome life's difficulties and to compromise in order to keep communications open. This situation is likely to represent selective confidence and insufficient ability to maintain positive relationships with others.

Table 2

Psychological well-being in the sample as a whole and in the cluster groups

Scales		positive relations with others	autonomy	environmental mastery	personal growth	purpose in life	self-acceptance	affect balance	meaningfulness of life	the person as an open system
Values for whole sample[1] (n = 129)	Mid-value	52.76	53.81	53.33	54.12	57.77	53.01	99.68	96.86	62.48
	SD	7.29	7.76	8.60	11.48	12.08	9.14	15.36	16.44	9.78
EG1 (n = 56)	Mid-value	54.19	57.41	58.02	64.5	66.02	59.52	93.27	104.38	67.42
	SD	8.51	8.19	8.74	6.13	8.99	6.50	13.53	13.9	8.75
EG2 (n = 73)	Mid-value	51.68	51.01	49.74	46.16	51.43	48.03	104.60	91.11	58.69
	SD	6.05	6.15	6.54	7.61	10.20	7.63	14.94	15.99	8.83
Student's t-criterion[2]		1.87	4.86**	5.93**	10.8**	8.61**	9.22**	4.51**	5.03*	5.59**

Notes:[1] *standards of mean values in the sample in general;* [2] *values are obtained by comparison of EG1 and EG2. *p ≤ 0.05; **p≤ 0.01*

On the "positive relations with others" sub-scale, no significant differences between the groups were found. The results of some other studies show that maintaining a positive attitude towards others during the stages of gerontogenesis may perform an important resource role for overcoming the difficulties or losses of ageing and maintaining active functioning of the ageing person as a subject of his or her life activity (Glozman & Naumova, 2018; Zavialova & Soldatova, 2019). This allows us to suggest that the possibilities for participants' satisfactory and close relationships with others are preserved.

Summing up the results of the first stage of the research on psychological well-being, we conclude that the EG1 respondents displayed readiness to feel empathy, to establish emotionally strong relationships, and to find compromises, to regulate and control their own behavior, to plan and organize their life space, to find ways of actualizing resources for their own development, to admit and accept their internal heterogeneity. For those in EG2, their psychological well-being can be described as less satisfaction with their life circumstances (in comparison with EG1), including problems with showing warmth to others; dependence on the opinion of those around them; less control over reality, interest in life, intentions, prospects for implementing their life's ambitions; and a need to integrate aspects of their life's experience. The summarized data of this PWB cluster group show a tendency for passivity and a lack of sense of purpose in life.

In *the second stage* of our study, on the specificity of the respondents' experiencing of solitude, we compared the values of the two groups, analyzing the data from the following instruments: the "Differential Questionnaire on Experiencing Loneliness (Differentsialnyi oprosnik perezhivaniya odinochestva [DOPO])" and the "Sub-

jective Perception of One's Own Life" questionnaire. The following research tasks were performed:

- Comparative analysis of the DOPO sub-scale values in the two cluster groups to reveal particular features of their attitude towards loneliness;
- Correlational analysis of interrelations between the PWB components and the data of the DOPO "positive solitude" sub-scale, the anticipated result of which may reveal the group specificity of the participants' ability to find resources in solitude;
- Content analysis of the participants' descriptions of their experience that qualitatively characterize the states and behaviors of respondents in situations of solitude.

Results

Table 3 presents the values of the DOPO scales in the whole sample and in the two cluster groups, and shows that the mid-values of the questionnaire scales in both groups comply with the range of mid-values of the whole sample, yet a statistically relevant difference is observed.

Table 3

DOPO scale values in the sample as a whole and in the two cluster groups

Scales/subscales	Values of whole sample (n = 129)		EG1 (n = 56)		EG2 (n = 73)		
	Mid-value	Deviation ratio	Mid-value	Standard deviation	Mid-value	Standard deviation	Student's t-criterion[1]
General Experience of Loneliness (EL)	34.46	8.66	31.54	9.53	36.71	7.17	1.97*
Isolation	12.37	4.30	11.18	4.69	13.30	3.75	2.77*
Sense of self	10.35	3.58	9.64	3.65	10.98	3.42	2.29*
Alienation	11.63	3.66	10.87	3.92	12.21	3.36	2.05*
Dependence on Communication (DC)	31.13	6.84	26.38	5.03	34.76	5.72	4.03**
Dysphoria of loneliness	9.52	2.63	8.34	2.23	10.44	2.54	5.12**
Loneliness as a problem	10.68	3.38	9.23	3.26	11.79	3.08	4.53**
Need for company	10.79	3.41	8.80	1.43	12.33	3.69	7.46**
Positive Solitude (PS)	22.29	8.78	29.80	6.89	16.53	4.79	6.03**
Joy of solitude	9.94	3.67	12.25	2.93	8.17	3.19	7.52**
Resource of solitude	12.15	6.05	17.37	4.65	8.15	3.36	12.55**

*Note: [1]The values are obtained by comparing EG1 and EG2. *p ≤ 0.05; **p≤ 0.01;*

Comparative analysis of the questionnaire scales' and subscales' values makes it possible to describe the characteristics of the experience of loneliness and the attitude towards loneliness in the cluster groups. Thus, EG1 respondents display *EL* (general

experience of loneliness) values that are lower than the average range of the sample (*Table 3*), and considerably lower *DC* (dependence on communication) values, in the context of *PS* (positive solitude) values that are significantly higher than the average. We may suppose that the members of this experimental group are likely to be tolerant of loneliness and able to accept solitude. The respondents of EG2 display a different pattern: The quite high *EL* values are combined with considerably higher *DC* values and low *PS* values. This fact allows us to characterize the respondents as representing loneliness as suffering and a negative emotional experience, as well as possibly having problems with living in solitude without finding in it resources for their lives.

To reveal possible interrelations between the aspects of positive solitude and psychological well-being, a correlational analysis of PS parameters and PWB components was implemented in the groups (*Table 4*).

Table 4

Correlation of DOPO subscales of positive solitude with PWB components in the cluster groups

	Scales	positive relations with others	autonomy	environmental mastery	personal growth	purpose in life	self-acceptance	affect balance	meaningfulness of life	the person as an open system
EG1	Joy of solitude	0.028	0.177	0.227	–0.094	–0.113	**0.303****	0.158	0.185	**0.264***
	Resource of solitude	0.079	0.161	**0.264***	0.062	–0.121	0.166	0.087	0.126	0.084
EG2	Joy of solitude	–0.151	–0.187	–0.101	0.101	–0.124	–0.188	–0.034	–0.105	–0.109
	Resource of solitude	–0.216	0.161	0.222	–0.061	**0.309****	0.173	–0.226	0.138	0.012

*$p \le 0.05$; **$p \le 0.01$

As is evident from *Table 4*, the correlations are not numerous. Thus, in the first experimental group we can register significant positive interrelations between the values of the "joy of solitude" subscale with the values of the PWB "self-acceptance" ($p \le 0.01$) and "the person as an open system" subscales and between the "resource of solitude" subscale with the values of "environmental mastery ($p \le 0.05$). In EG2, only one significantly positive correlation is observed, between the values of the "resource of solitude" subscale and the "purpose in life" subscale ($p \le 0.01$).

Going forward, for a more comprehensive study of the respondents' attitudes towards positive solitude, we used the questionnaire. On the basis of the respondents' answers, their conditions and behaviors in situations of solitude were grouped into eight categories by using content analysis (*Table 5*).

The frequency analysis of the answers and the content analysis of the descriptions, which focus on the respondents' behavior in a situation of solitude, show the

Table 5

Distribution of categories characterizing conditions and behaviors of respondents in situations of solitude

Categories	EG1		EG2		Fisher criterion φ_{emp}
	Examples[1]	No. (%)	Examples[1]	No. (%)	
Health	"I go in for yoga"; "walk a lot"; "was gathering wild herbs all summer, then I will make decoctions"; "I like to take a steam-bath in the Russian sauna and think about life"; "take care of my body"; "ride a bicycle"; "take aromatic baths and give myself different facials for women's health, it is important in our 'peach'[*mature*] age"; "lie on pins. Did you know there is such an applicator [*Kuznetsov Acupressure Acupuncture Massage Mat*]? And what's more, I do exercises to relieve my backache, using a stick, I have a special one".	50 (91.1)	"I take medicine"; "constantly measure my blood pressure and sometimes blood sugar level"; "try to have more rest and eat healthy food"; "try not to think about bad things and about the future; I don't have much time left…"; "handle my finances in order to pay the bills and get enough money for food and medicines. How else can I preserve my health?"; "keep a diary of my everyday state, write down my blood pressure and what medicines I have taken and at what time I took them. If I have doubts, I write down questions to ask my doctor".	70 (95.8)	1.30
Tranquility	"I like to reflect"; "I like to relax; now I can do it with a clear conscience — I've raised them all [*my children*], hurray!"; "fishing, by all means, … stillness, tranquility, and the full pleasure of enjoying nature and life…";"enjoy reading; I can say that I abandon myself to reading and feel so good"; "well, I feel fine being by myself, I adore such moments".	29 (51.2)	"I sleep a lot"; "cook my favorite dishes … and eat as much as I want and whenever I want"; "well, I do nothing, just rest"; "I am idling my time away"; "hardly anyone is interested in us now, so I just sit and do nothing, that's all, so the days pass"; "I've deserved rest, I worked a lot in my life and worked hard. Now let them take care of me and give me peace and tranquility".	65 (89)	3.91**
Independence	"I don't have to stay in tune with someone else's mood"; "I feel that I am the master of my life": "no conflicts about trifles"; "I am not burdened with care about someone else"; "I can take a break at any time, I don't exclude the possibility of relaxed solitude"; "so as not to be a burden, I rely only on myself"; "financial independence; currently I have enough funds …" "don't need to submit to anyone".	50 (89.3)	"I can be myself, that is' a former me'. I often return to my past; it is my past that was real…"; "solitude is when I don't have to prove the authenticity of my memories about my own life to anybody. Well, indeed, can anyone believe that all that happened to me? As my grandson says: 'Grandma, is it possible to believe in your fancy stuff?' "; "how bad it is to live alone; my wife died and it is not easy to live with the children; they are really different now, and they may be waiting for my death …, I don't want to be the cause of their sinful thoughts".	55 (75.3)	1.9*

Acknowledgement	"I want to be in tune with the times…, therefore I surf a lot on the Internet, get very much that is new and useful from it"; "accept my age with curiosity, try to listen to my body, thoughts, wishes …, this is a new and very interesting experience for me (for now, at least)"; "play computer games".	35 (62.5)	"I look through my old albums again and again"; "I still do the home canning myself, my granddaughter praises me for it"; "I go down the stairs on my own from the fourth floor and do the shopping all myself"; "I am still in good condition to drive my car … my grandson, of course, laughs at me, but I hope, it is not malicious laughter"; "this is the cost of missed opportunities".	22 (30.1)	2.44**
Creativity	"Now I have enough time at last, so I am making a creative revision of my many years of notes about travelling by sea. I went to sea for almost 35 years"; "I play the guitar"; "I am concerned with making a genealogical tree; I want to leave the heritage for my grandchildren"; "I bake fish pies; my friends say my pie is a masterpiece…"	48 (85.7)	"I watch TV serials", "sometimes I sing for myself"; "repair warm socks for my husband; our grandchildren don't wear such socks anymore …, and I can save some money from my pension"; "we listen to music".	47 (64.3)	2.47**
Relations with the family	"I think that it is very important in our age; moreover, it is important for the whole family that my old man and I should be in good shape"; "prepare presents for everyone; now I am indeed not so lively as before"; "learn poems by heart; but now I am becoming forgetful, so I mustn't do it; I don't want to frighten my homefolks"; "I pray for the health of my relatives and close friends"; "I am always thinking about my loved ones, how they are, all my darlings. I am eager to help them while I can, and then — at least not to disturb them".	39 (69.6)	"I do a good many of our household routines; my home-folks work a lot"; "I think a lot and worry about my children and grandchildren …, what if I fall ill and cannot move? They will have a lot of trouble with me "; "often communicate with my children via Skype; they have moved far away from me, so I always keep listening, not to miss a call".	69 (94.5)	3.4**
Education	"I attend the Third Age Institute"; "master computer graphics, gradually"; "study Chinese"; "I have been dreaming about a journey to Laos for a long time. I am planning the route by myself, so I am studying the history and geography of the country"; "I want to give myself a present for my 70th birthday–to jump with a parachute, so I am studying the material gradually".	41 (73.4)	"I read sometimes"; "try to do crosswords, but get bored soon"; "study new recipes"; "not so long ago I learned how to make butter".	20 (27.4)	3.27**

Terminality of life	"I recall my friends and relatives who are gone. Sometimes I think over how it can happen to me"; "I think over how to write my will correctly; I don't want to offend anyone, and besides, I want to be remembered well"; "I often think about the final days of my life. Try to keep myself in good shape"; "A year ago my friend died. Her children quarreled over her inheritance. Nobody even wants to give money for the tombstone. I often think about how awful it is, get nervous, cry, but do it so that my children shouldn't see it".	40 (71.2)	"What joy can be found in solitude? At our age being alone is terrible and dangerous; the end of life is coming soon"; "I live alone. Sometimes it happens that nobody has been wondering how I am for several days. I think sometimes that I could die and nobody would care"; "when I was strong and earned a lot, everybody needed me. And now that I am on the edge of life, they are probably waiting for my demise".	56 (75.3)	0.22

Note: [1] *These examples of respondents' answers are presented in the authors' wording.* $*p \le 0.05$; $**p \le 0.01$

group specificity. Thus, in the first experimental group, the respondents describe in a differentiated way their experience as a readiness to find in solitude a resource for self-cognition and self-development. Being alone, the respondents of the first group display their negative feelings no more rarely than the respondents of the second group, but positive feelings are considerably more frequent. This suggests that, in general, they do not typically evaluate solitude in a negative way. Besides, uniting the few correlations of *PS* with the results of content analysis of the descriptions of solitude, we can detect the ability of the participants to use the situation of solitude as an opportunity "to be, not to seem" real and true, to experience positive emotions and accept oneself as one is.

In the second experimental group, however, the content-related analysis of the results can be interpreted as an expression of the deficiency (scarcity) of this group's contacts with others, a critical shortage of emotionally close, intimate, and constructive relations. Their low estimation of the purposes of their own life, dependence on others, and orientation to the other people's opinions, difficulties with fulfilling their life's ambitions, unwillingness/inability to integrate their life experience may facilitate or even stimulate the boredom, yearning, and sadness, and, in general, actualize bitterly painful ideas about their own lonely feebleness and uselessness. The significantly positive correlation between "resource of solitude" and "purpose in life" also presents some difficulties for theoretical understanding. To provide explanations, we find it relevant to use the results of certain investigations, the analysis of which sheds light on the voluntary choice of "negative retirement solitude" (Dickens, Richards, Greaves, & Campbell, 2011; Kudrina, 2015; Miklyaeva, 2018).

We have shown that at the stages of gerontogenesis, the scarcity and indefiniteness of goals and plans, a decline in the feeling of purposefulness, a negative and non-differentiated expectation of the future are, as a rule, associated with an inescapable and unfavorable health prognosis, which may block life prospects and activate the mechanism of personality stagnation. Reality, as it has developed, makes ageing persons feel lonely even if they live with their family, are employed, whether or not they have financial difficulties, and whether they are in good or bad health. So, EG2

respondents represent themselves as lonely, describe their state either as "escape from the everyday world to memories", or as taking umbrage at the "injustice of life", or as a "forfeit for failures in the implementation of biographical projects and one's own underperformance" (Yelyutina & Trofimova, 2017, p. 44). On the whole, the respondents display the experience of loneliness combined with self-restrictions and uncertainty, an inability or unwillingness to find in solitude a resource, a productive way of fulfilling one's own opportunities and life ambitions.

Discussion

In the existential tradition, loneliness is considered the most important challenge, which can be addressed by acceptance of solitude as a fact of life and adaptation to it, or by experiencing distress and regression of the personality. In the modern world, everyone faces quite frequent chances to experience loneliness, and loneliness is now not just a prerogative of the elderly (Klinenberg, 2012).

At the same time, the current scientific discussion of gerontogenesis reveals the emergence of positions concerning old age that express a new world-view, where the issues of loneliness remain pressing (Biggs & Haapala, 2016; Hagan, Manktelow, Taylor, & Mallet, 2014).

Thus, in the context of the more liberal occidental attitude to ageing, the rejection of stereotypes concerning the widespread and inescapable character of loneliness in old age and the necessity of overcoming it is accentuated (Blanchard & Anthony, 2013). Guaranteed social support for spatial and psychological conditions of self-realization of the ageing person can be an alternative to direct social relationships in the public space. Then the elderly may find themselves needed by "living in a community", and through meaningful solitude as a justified distancing that creates a context for communication and social interaction. In Russian reality, an elderly person's negative solitary life is often demonstrated along with the traditional preference for living in families, of intergenerational communication and protecting the social-cultural traditions of different generations.

In the context of ageing as "the triumph of active and productive old age", solitude is also admitted as a withdrawal from social involvement and use of the creative benefit of inactivity for calm reasoning and critical analysis. Active ageing does not exclude "positive solitude" (Tornstam, 2011). Solitude and the possibility of meditation are essential elements for reaching a critical distance. Productive critical inactivity may provide a symbolic space for investigating semantic structures of ageing and, at the same time, a condition of critical reflection on the existential advantages of longevity (Biggs & Haapala, 2016).

Summing up this brief review, we take the liberty to reason about cultural mitigation of loneliness in gerontological cohorts and the shift from a dominant negative, psycho-social mindset towards an existential one, interpreted as a resource for an ageing person's self-realization.

This work is an attempt at considering the ageing person's solitudes a multidimensional phenomenon, including analysis of the ability to find resources in situations of solitude, as well as the person's attitudes to positive solitude as an existential fact.

Conclusions

The investigation shows that experiencing solitude in the gerontological cohort is non-homogeneous, displays group specificity, and that the interconnection of personality attitudes to positive solitude with psychological well-being can lead to changes in the person's activity and the extent of their experience of loneliness.

Regardless of their level of psychological well-being, the respondents displayed a trend towards accepting solitude, from the standpoint of actualizing its positive resources as an existential fact. At the same time, non-reflexive understanding of inactivity in old age from the standpoint of positive solitude, not supported by the "existential advantages of longevity", may lead a person to a senseless position of ordinary existence or stereotypical copying of someone else's life.

Limitations and Prospects

Analyzing the results of this work critically, we find it interesting to consider them in the context of research limitations.

First, it is rather difficult to motivate an ageing person for voluntary "study of his/her life journey", since many of them do not admit the uniqueness of that life journey and/or have strong doubts that their experiences are significant and valuable for society. By using only volunteers as subjects, with their degree of activity and motivation preserved, there is a risk of distortion of the research focus, as data concerning a less active gerontological group are lost.

Second, the open questions are not free of limitations such as inaccuracy and social desirability. This prevents us from getting a sufficiently comprehensive overview of the senior adults' loneliness (solitude) in their everyday lives.

Third, there is a lack of methods adapted for old age. We consider this as a prospect for future research.

In conclusion, it should be noted that the research presented here has theoretical foundations and may provide an urgent field for further study of the positive aspects of solitude in old age, as a resource for resolution of existential and spiritual problems of this cohort.

Ethics Statement

The ethical aspects of the study were discussed and approved at the meeting of the Department of Theoretical and Applied Psychology of Vitus Bering Kamchatka State University on June 22, 2021, Protocol No. 6. Written informed consent was obtained from all subjects involved in the study.

Author Contributions

V. Naumova and J. Glozman conceived of the idea. V. Naumova developed the theory and performed the computations. V. Naumova verified the analytical methods. Janna Glozman supervised the findings of this work. The two authors discussed the results and contributed to the final manuscript.

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Measuring TechnoWellness and Its Relationship to Subjective Well-Being: the Mediating Role of Optimism

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Background. The relationship between technology use and subjective well-being is controversial, with recent research suggesting both positive and negative links. Thus, it is important to determine whether using technology actually leads to flourishing and well-being. To do so, the construct of TechnoWellness, which includes both adaptive and maladaptive modes of using technology, could be particularly useful. Moreover, the mechanisms that account for these relationships have been insufficiently explored.

Objective: With this study, we had two objectives. First, we aimed to test the relationships between TechnoWellness and the three components of subjective well-being (positive affect, negative affect, and satisfaction with life). Secondly, we aimed to investigate whether optimism mediates those relationships.

Design: A total of 366 participants (122 men and 244 women, mean age = 22.34 years old) took part in this study. In this cross-sectional investigation, we measured TechnoWellness, optimism, positive and negative affect, satisfaction with life, and some demographic variables, using an online form. To verify our aims we used structural equation modeling (SEM) with mediation.

Results: Among the positive factors of TechnoWellness, only using technology for physical activity was directly associated with satisfaction with life. Among the negative factors, the stress caused by technology use was directly associated with negative affect. Optimism mediated the relationships between these two factors (using technology for physical activity and stress caused by technology use) and all the components of subjective well-being.

Conclusion: Using technology to foster wellness is related to actual subjective well-being. However, the purpose, frequency, and type of its use are important elements to be considered when studying its effects.

Keywords: Technology; positive psychology; satisfaction with life; positive affect; negative affect

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Introduction

Is technology use related to subjective well-being? A growing body of research, having its roots in the frameworks of positive psychology and positive technology, indicates an affirmative answer to this question. Using technology can lead to improving various levels of human functioning, such as fostering positive emotions, happiness, strength, resilience, and stronger interpersonal relationships (Botella et al., 2012). However, to fully comprehend this relationship, one must find the different mechanisms that can affect it. Moreover, not all forms of technology are useful and beneficial to individuals. The development of technology has also led to the advent of new issues that can negatively impact one's level of well-being (Neverkovich et al., 2018; Tarafdar, Cooper, & Stich, 2017).

With this study, we had two aims. First, we set out to test the relationships between TechnoWellness, "a mode of interacting with technology that maximizes its potential to enhance health and well-being" (Kennedy, 2014, p. 114) and subjective well-being. Second, we sought to investigate whether optimism mediates the relationship.

Technology use is a broad term that can include every kind of interaction between humans and machines. Thus, it can refer to the use of mechanical tools in factory settings as well as the use of the latest information and communication technologies (ICTs). No matter what the setting, the proponents of the positive technology framework consider that technology can "improve the quality of the personal experience, which in turn serves to promote wellness and generate resources and strengths in individuals" (Botella et al., 2012, p. 78). This same framework led to the proposal of a new construct, that of TechnoWellness (Kennedy, 2014; Kennedy & Baker, 2016). Rooted in the Indivisible Self Model of Wellness (IS-Wel; Myers & Sweeney, 2005), this construct can offer insight into how some domains of technology use affect subjective well-being.

The need to measure TechnoWellness led to the development of the TechnoWellness Inventory (TWI; Kennedy & Baker, 2016). An exploratory factor analysis revealed a five-factor structure, with three factors representing adaptive ways to use technology (for leisure, physical activity, or vocational purposes), and two factors representing maladaptive effects of technology use (stress and excessive use). Some important advantages that TechnoWellness has over other constructs were derived from the framework of positive technology. These include incorporating more facets of the person's character (it includes questions related to the social self, creativity, coping, spirituality, and physical health), while also taking into account the negative outcomes of technology use (Kitson, Prpa, & Riecke, 2018).

However, this construct has some limitations, given that it has only been empirically tested in a few studies. To our knowledge, TechnoWellness has been the subject of only two studies, where it presented significant associations with holistic wellness and happiness (Kennedy & Baker, 2016; Shawaqfeh & Almahaireh, 2019). Nonetheless, the concept of TechnoWellness shares major similarities to the more general idea of technology use for positive outcomes (Kitson et al., 2018). Moreover, the relationship between different forms of technology use and subjective well-being has been more thoroughly studied.

Subjective well-being (SWB) represents "a person's cognitive and affective evaluations of his or her life" (Diener, Lucas, & Oishi, 2002, p. 63). It has three main components: positive affect, negative affect, and satisfaction with life (Andrews & Withey, 1976). Thus, for individuals to consider that they have high levels of SWB, they must show high levels of positive affect and satisfaction with life, and low levels of negative affect.

Previous studies have shown that, when used in moderation, digital technologies can lead to higher levels of mental well-being for adolescents (Przybylski & Weinstein, 2017). Moreover, Facebook use and the number of Facebook friends have been associated with psychological well-being for those between 18 and 34 years old (Chan, 2018). Although there is a persistent concern about the maladaptive effects of some technology use, recent research suggests that the negative effects are small or inconsistent (Orben & Przybylski, 2019a; Orben & Przybylski, 2019b). Also, for older individuals, technology use and positive attitudes towards technology are related to higher levels of well-being (Sims, Reed, & Carr, 2017; Zambianchi & Carelli, 2018).

In the work domain, the use of technology has been associated with higher well-being through enhanced work/life balance, greater autonomy, and more effective communication (ter Hoeven & van Zoonen, 2015). Finally, various positive psychology interventions targeting subjective well-being have been implemented through the use of positive technologies (Botella, Baños, & Guillen, 2017; Diefenbach, 2018).

However, one should also take into account the negative impact of technology use on subjective well-being. Problematic use of smartphones was found to be related to lower global SWB and higher negative emotions (Chan, 2018; Hornwood & Anglim, 2019). A meta-analysis of 28 studies also showed that problematic internet use is negatively related to SWB (Çikrıkci, 2016). Also, social media addiction negatively impacted life satisfaction in a sample of students (Hawi & Samaha, 2016). Finally, techno-stress ("stress that individuals experience due to their use of Information Systems," Tarafdar et al., 2017, p. 7) negatively impacts well-being in a variety of domains (Dragano & Lunau, 2020; Nimrod, 2018).

Thus, the way technology influences subjective well-being becomes highly dependent on the frequency of use, on the way the people use it, and on what type of technology they use (Cotten, 2018). Using a concept such as TechnoWellness, which incorporates both the positive and the negative aspects of technology use, allows us to test this complex relationship between technology and SWB. More precisely, we decided to explore how the use of technology to maximize wellness and well-being is actually related to well-being. We set forth the following hypothesis:

H1: TechnoWellness is associated with subjective well-being:

H1a: Using technology for leisure, physical activity, and vocational purposes is positively associated with positive affect and satisfaction with life, and negatively associated with negative affect.

H1b: Excessive use of technology and stress are negatively associated with positive affect and satisfaction with life, and positively associated with negative affect.

Previous empirical studies found that personality factors are the most important predictors of SWB (Daukantait & Zukauskiene, 2012). Some of them impact

one's perspective on current or future events, thus affecting life satisfaction and its sustainability (Duy & Yildiz, 2019). One stable personality trait that greatly contributes to an individual's perception of future events is optimism, which is defined as a generalized tendency to expect positive outcomes in life (Scheier & Carver, 1985). Because optimists believe that their actions can lead to various positive outcomes, they use elevated problem-focused coping and better planning, and display a higher general expectation that they will reach their goals (Bailey, Eng, Frisch, & Snyder, 2007).

There is a high level of consensus regarding the link between optimism and the components of SWB, with the majority of studies showing a significant and positive relationship. Previous research showed that optimism is related to global SWB in various cultures (Duy & Yildiz, 2019; Satici, 2019; Utsey, Hook, Fisher, & Belvet, 2008; Yu & Luo, 2018), as well as to its components, such as life satisfaction (Bailey et al., 2007; Daukantait & Zukauskiene, 2012; Razaei & Khosroshahi, 2018) or positive and negative affect (Esteve et al., 2018; Hajek & Koning, 2019).

The use of technology has brought humanity unprecedented levels of progress. Thus, people maintain an implicit association between technology and success that leads to higher levels of optimism in the fields where technology is used (Clark, Robert, & Hampton, 2016). Although this "technology effect" can have its maladaptive outcomes (such as biased decision-making, as pointed out by Clark et al., 2016), we consider that it can also lead to positive outcomes. Past studies have shown that Techno-Wellness is positively related to optimism (Shawaqfeh & Almahaireh, 2019), and that some interventions delivered through positive technology can lead to an improvement in future expectations (Enrique, Breton-Lopez, Molinari, Banos, & Botella, 2018). On the contrary, maladaptive use of ICTs was related to lower optimism (Guo, You, Gu, Wu, & Xu, 2020). Thus, there is evidence that technology use is related to optimism, and that optimism is related to SWB. Based on this, we proposed our second major hypothesis:

H2. Optimism may mediate the relationship between TechnoWellness and subjective well-being.

Methods

Participants

Three hundred sixty-six participants (122 men and 244 women) took part in this study. The mean age in our sample was 22.34 years old (SD = 3.36, Min. = 18 years old, Max. = 29 years old). Three hundred forty-nine participants reported they were heterosexual, four participants reported they were homosexual, and 13 participants reported they were bisexual. Among the participants, 283 had finished high school at the time of the study, 64 had a bachelor's degree, and 19 had a master's degree.

Procedure

This study was approved by the University's ethics board. The participants were recruited from students enrolled in various bachelor's degree programs. Participation was voluntary and was rewarded with course credit. All the data was gathered using

an online form containing the questionnaires for TechnoWellness, optimism, subjective well-being, and demographic information.

Measures

TechnoWellness. TechnoWellness was measured using the TechnoWellness Inventory (Kennedy & Baker, 2016). Its items describe specific interactions with technology that could have a significant impact on a person's wellness in either positive or negative ways. The scale consists of 76 items rated on a scale from 1 (strongly disagree) to 4 (strongly agree). Some items are reverse coded.

The instrument measures five factors of TechnoWellness: 1) leisure (39 items, *e.g.,* "I use technology to connect with new friends I have met in person"; Cronbach's alpha = .83); 2) stress (18 items, *e.g.,* "I worry about my ability to use new technologies"; Cronbach's alpha = .88); 3) vocational use (7 items, *e.g.*, "Using computers and other technology helps me to feel more in control of my work"; Cronbach's alpha = .67); 4) physical activity use (7 items, *e.g.*, "I go online to find information about healthy nutrition"; Cronbach's alpha = .85); and 5) excessive use (4 items, *e.g.*, "I sometimes do not get enough sleep because of the time I spend online"; Cronbach's alpha = .76).

Optimism. Optimism was measured with the Life Orientation Test-Revised (LOT-R; Scheier, Carver, & Bridges, 1994). The scale contains 10 items (three for optimism, three for pessimism, and four that are not computed in the final score), measured on a scale from 1 (total disagreement) to 7 (total agreement). The authors recommended the inclusion of the four filler items to disguise the purpose of the questionnaire. The items for pessimism are reverse coded. For this study, the scale reported a good internal consistency (Cronbach's alpha = .80).

Emotional Response. To measure the positive and negative emotional components of subjective well-being, we utilized the 10 item short-form of the Positive and Negative Affectivity Scale developed and validated by Thompson (2007). Participants rated five adjectives for positive affect (Active, Determined, Attentive, Inspired, and Alert) and five for negative affect (Upset, Hostile, Ashamed, Nervous, and Afraid), when asked how they felt recently, using a scale from 1 (never) to 5 (always). For the Positive Affect factor, Cronbach's alpha was .69. For the Negative Affect factor, Cronbach's alpha was .66.

Satisfaction with Life. Satisfaction with life was measured with the Satisfaction with Life Scale (SWLS, Diener, Emmons, Larsen, & Griffin, 1985). This is a 5-item scale designed to measure global cognitive judgments of one's subjective well-being. The participants indicated how much they agreed or disagreed with each of the 5 items, using a 7-point scale that ranged from 1 (strongly disagree) to 7 (strongly agree). Higher scores indicated higher satisfaction with life. The Cronbach's alpha for this study was .82.

Additional questions dealt with the participants' demographic characteristics (age, sex, sexual orientation, and level of studies) and their use of technology (how comfortable they are with the use of technology and how much they use it). The latter was measured on a two item scale, from 1 (not that much) to 5 (a lot).

Results

First, we aimed to assess the level of technology use in our sample. We found that the mean response to the item "How much do you use technology in your life" was 4.65 (SD = .58), indicating high usage. Also, the participants seemed to be comfortable with using technology, with a mean score of 4.56 (SD = .67).

Table 1

Means, standard deviations, and correlations among the study's variables

	M	SD	1	2	3	4	5	6	7	8
1. Leisure use	2.56	.35	1							
2. Vocational use	3.04	.54	.36**	1						
3. Physical activity use	2.18	.77	.46***	.13*	1					
4. Stress	1.98	.57	.32***	–.09	.27***	1				
5. Excess use	2.23	.64	.26***	.04	.10	.24***	1			
6. Optimism	2.40	.80	–.04	–.02	.04	–.19***	–.07	1		
7. Positive affect	3.46	.68	.07	.08	.05	–.03	–.06	.36***	1	
8. Negative affect	2.62	.82	.12*	–.09	.08	.36***	.03	–.37***	–.07	1
9. Satisfaction with life	4.75	1.15	.10	.07	.16**	–.05	.07	.51***	.29***	–.28***

*Note: *** p < .001, **p < .01, * p < .05*

Second, we computed the descriptive analyses and Pearson product-moment correlation between the study's variables. The results of these analyses can be seen in *Table 1*. We found that, among the dimensions of TechnoWellness, only the stress derived from technology use correlated significantly and negatively with optimism. In regard to the associations with SWB, using technology for leisure activities correlated significantly and positively with negative affect. The stress derived from technology use correlated significantly and positively with negative affect. Finally, the use of technology for physical activity correlated significantly and positively with satisfaction with life. The level of optimism correlated significantly with all three dimensions of SWB, being positively associated with positive affect and satisfaction with life, and negatively associated with negative affect.

Although we did not find significant correlations among all the proposed predictors, the mediator, and all the proposed outcomes, we still proceeded to test the proposed mediation model. The analyses were in line with recent guidelines that support this approach (Rucker, Preacher, Tormala, & Petty, 2011). We used structural equation modeling (SEM) and created a model where the dimensions of TechnoWellness were introduced as predictors, the dimensions of SWB as outcomes, and optimism as a mediator. One of the main advantages of this kind of analysis is that it allows the use of multiple predictors, multiple outcomes, and the simultaneous investigation of the relations between them. In this model, we additionally controlled for age, sex, and comfort with the use of technology, and we allowed the control variables to correlate with the predictors.

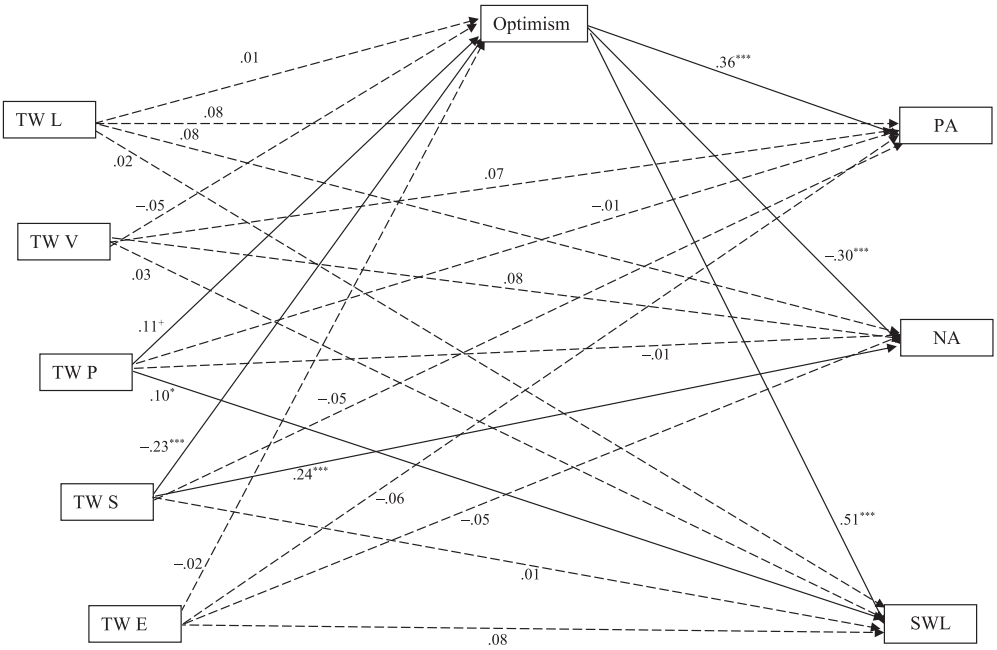

Figure 1. Standardized direct effect from TechnoWellness to SWB and optimism and from optimism to SWB

*Note. Significant paths are indicated with continuous lines. TW L = TechnoWellness leisure use; TW V = TechnoWellness vocational use; TW P = TechnoWellness physical activity use; TW S = TechnoWellness stress; TW E = TechnoWellness excessive use; PA = Positive Affect; NA = Negative Affect; SWL = Satisfaction with life; p = .06; * p < .05; *** p < .001.*

This model presented good fit indices ($\chi 2 = 20.82$, df. = 8, p = .008, CFI = .98, GFI = .99, RMSEA = .06, SRMR = .03). By analyzing the relationships among the variables (see *Figure 1*), we found that using technology for physical activity has a significant direct effect on satisfaction with life. Also, the stress caused by the use of technology had a significant positive effect on negative affect. Moreover, higher use of technology for physical activity was related, although just barely, to higher levels of optimism, and the stress caused by the use of technology was significantly and negatively related to optimism. Optimism was significantly related to all the components of SWB.

Analyzing the indirect effects (*Table 2*) provided us with further significant relationships. First, using technology for physical activity was, through optimism, indirectly associated with all the components of SWB (positive affect: β = .04, 95% CI [.007; .08]; negative affect: β = –.03, 95% CI [–.07; –.006]; satisfaction with life: β = .05, 95% CI [.008; .11]). Second, the stress caused by the use of technology was, through optimism, indirectly associated with the components of SWB (positive affect: β = –.08, 95% CI [–.13; –.05]; negative affect: β = .07, 95% CI [.04; .010]; satisfaction with life: β = –.11, 95% CI [–.17; .07]).

Table 2

Standardized indirect effects from TechnoWellnes to SWB through optimism

	Beta	**S.E.**	**p**	**95% CI**
Leisure use → Optimism → Positive Affect	.01	.02	.91	[–.03; .04]
Leisure use → Optimism → Negative Affect	–.01	.02	.91	[–.03; .03]
Leisure use → Optimism → Satisfaction with life	.01	.03	.92	[–.05; .06]
Vocational use → Optimism → Positive Affect	–.02	.02	.24	[–.05; .01]
Vocational use → Optimism → Negative Affect	.01	.01	.28	[–.01; .04]
Vocational use → Optimism → Satisfaction with life	–.03	.02	.27	[–.07; .01]
Physical activity use → Optimism → Positive Affect	.04	.02	.04	[.01; 08]
Physical activity use → Optimism → Negative Affect	–.03	.01	.04	[–.06; –.01]
Physical activity use → Optimism → Satisfaction with life	.05	.03	.05	[.01; .11]
Stress → Optimism → Positive Affect	–.08	.02	.001	[–.12; –.05]
Stress → Optimism → Negative Affect	.07	.01	.001	[.04; .10]
Stress → Optimism → Satisfaction with life	–.11	.03	.001	[–.17; –.07]
Excess use → Optimism → Positive Affect	–.01	.02	.67	[–.04; 02]
Excess use → Optimism → Negative Affect	.01	.01	.67	[–.02.03]
Excess use → Optimism → Satisfaction with life	–.01	.03	.68	[–.06; .03]

Discussion

Subjective well-being is related to various factors, such as personality, social relationships, or contextual and environmental agents (Kobylińska, Zajenkowski, Lewczuk, Jankowski, & Marchlewska, 2020; Nartova-Bochaver, Mukhortova, & Irkhin, 2020; Siedlecki, Salthouse, Oishi, & Jeswani, 2014; Zotova & Karapetyan, 2018). In recent years, the changes specific to modern life have brought into discussion a new potential pathway to human flourishing and well-being. The theoretical frameworks of positive psychology and positive technology speak about the advantages of using technology to improve quality of life and well-being (Botella et al., 2012).

However, the use of technology can also lead to maladaptive outcomes (Çikrıkci, 2016; Neverkovich et al., 2018; Tarafdar et al., 2017). Moreover, even in the case of positive relationships between technology use and well-being, their mechanisms have been insufficiently explored. With this study, we aimed to account for these limitations by testing the links between TechnoWellness, or the use of technology to maximize wellness and well-being, and actual subjective well-being, and by proposing a potential mediator of the relationship in the form of optimism.

First, we found that among the positive factors of TechnoWellness, only using technology for physical activity had a direct link with one facet of SWB, namely satisfaction with life. Specifically, people who used technology for physical activity more often (by using different mobile applications to track their activity, their calorie intake, or by searching for the best possible fitness exercises on the Internet) also reported

higher levels of satisfaction with life. In terms of indirect effects, the same factor of TechnoWellness had positive associations with positive affect and satisfaction with life, and negative association with negative affect. The people who used technology to augment their physical training reported higher SWB scores, their level of optimism mediating this relationship. These results confirmed previous findings which reported that regular physical activity and exercise enhance subjective well-being (Jeoung, 2020; Kim, Kubzansky, Soo, & Boehm, 2017; Lawton, Brymer, Clough, & Denovan, 2017; Mandolesi et al., 2018; Maugeri et al., 2020).

Moreover, with our study, we suggest that technology plays an important part in this relationship. Technology offers new opportunities for maintaining a healthy lifestyle through regular exercise and more opportunities for control (Milani & Franklin, 2017) and thus it relates positively to more satisfaction with life. Also, using technology for physical activity was associated with higher levels of optimism. By taking into account the "technology effect" (Clark et al., 2016), people might consider that technology improves their chances of success in keeping a healthy lifestyle, which affects their tendency to expect positive outcomes in the future. Furthermore, our study confirmed the previous findings that optimism was associated with SWB (Duy & Yildiz, 2019; Satici, 2019; Utsey et al., 2008; Yu & Luo, 2018). Optimists are more confident in their abilities, perseverant in their efforts, and consistent in their interests, characteristics that are important for flourishing and subjective well-being (Datu, McInerney, Żemojtel-Piotrowska, Hitokoto, & Datu, 2020; Oriol, Miranda, Bazan, & Benavente, 2020). Hence, it can be stated that this result is consistent with that of previous studies, which suggested that optimism may play a role in the relationship between using technology for physical activity and SWB.

Second, we found the opposite relationship between the stress caused by the use of technology and SWB. Stress seemed to affect the components of SWB by reducing optimism. Our findings support the results of studies suggesting that stress in general, including techno-stress, gravely impacts SWB (Choi & Lim, 2016; He, Turnbull, Kirshbaum, Phillips, & Klainin-Yobas, 2018; Nimrod, 2017; Smith & Yang, 2017). Using technology can lead to overload, uncertainty, insecurity, and feelings of invasion, and it entails a constant need to adapt to new developments and discoveries (Nimrod, 2017; Tarafdar et al., 2017). According to our study, all these negative responses to technology use are associated with lower levels of optimism (people might stop expecting positive outcomes because they feel overwhelmed by technology) and, through it, with lower satisfaction with life, lower positive affect, and higher negative affect.

The other two positive factors of TechnoWellness – using technology for leisure and vocational purposes – did not present significant associations with SWB. On the one hand, this shows that it is important to take into account the purpose for using technology when discussing its positive or negative relationships with SWB. On the other hand, using technology for leisure and vocational purposes might still have an indirect association with SWB. For this reason, future studies need to take into account other potential mediators, such as self-efficacy and social support or authenticity, factors that have previously been connected to flourishing and well-being (Liu et al., 2018; Reinecke & Trepte, 2014; Rivera et al., 2018; Siedlecki et al., 2014).

We also found no relationship between excessive technology use and SWB, a result which contradicts previous studies (Chan, 208; Çikrıkci, 2016). However, it is important to take into account that in this study, we were only measuring the perceived use of technology, not the actual use of it. Previous studies showed only weak correlations between these two measures, suggesting that they may widely differ (Sewall, Bear, Merranko, & Rosen, 2020). This difference might represent a potential limitation of the TechnoWellness model and should be further studied.

Conclusion

This study had multiple strengths. Firstly, from a theoretical standpoint, it showed that the construct of TechnoWellness (Kennedy, 2014; Kennedy & Baker, 2016) was related to subjective well-being. Although we did not find significant relationships among all of its components and SWB, our results strongly suggested that using technology to enhance health and well-being is actually related to higher levels of well-being. Thus, our study adhered to the framework of positive technology by showing that using technology by itself can help the development of wellness.

Also, TechnoWellness takes into account the potentially damaging effects of technology use. This study found a significant and negative relationship between stress caused by technology use and SWB. Taken together, these results offer support for the idea that the purpose, frequency, and type of technology use are important elements to be considered when studying its effects. Moreover, we proposed a mechanism to explain these relationships. We found that the associations between TechnoWellness and SWB were mediated by optimism. Thus, our results support the inclusion of other potential mediators in future research.

Limitations

This study was not without its limitations. First, the paper used cross-sectional data in the analyses. Thus, the results are more associative than inferential. Future longitudinal or experimental studies are needed to draw more exact conclusions regarding the predictive power of TechnoWellness on subjective well-being.

Second, we used a convenience sample composed of university students. While the youth population is most closely associated with technology use, it would be important to explore the same variables in an older sample. Additionally, nowadays people over 40 years old are using technology more than they did a few years back, but some effects of technology use might be unique among their age group (such as techno-stress).

Third, we used only self-report scales. We already mentioned that perceived technology use might be different from actual technology use, so future studies should take into account the use of more objective measures.

Finally, a study by Sewall and colleagues (2020) suggested that the respondents' well-being was associated with the degree of inaccuracy in their estimated digital technology use. This finding shows that a bi-directional relationship between technology use and SWB should be taken into account. Future studies could be interested

in testing whether different levels of well-being also impact the way people report technology use, especially in the case of perceived use.

Ethics Statement

The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the Institutional Ethics Committee of University Alexandru Ioan Cuza of Iasi, Romania.

Author Contributions

Conceptualization, methodology, formal analysis, and writing were done by O.S.C.

Conflict of Interest

The author declares no conflict of interest.

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Subjective Appraisal and Orientations in Difficult Life Situations as Predictors of Coping Strategies

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Background. Many studies have shown that problem-focused coping and a positive reappraisal of one's situation are the most conducive to achieving life goals and psychological well-being, whereas avoidance coping and self-blame have a negative impact on well-being. But there is not enough data on what the predictors of these coping strategies are in the situational context.

Objective. To assess the combined influence of subjective appraisal (uncontrollability, unclearness, negative emotions) and orientations in difficult situations (by drive and rejection) on planful problem solving, positive reappraisal, wishful thinking (fantasizing), and self-blame.

Design. The research has a survey design. The sample consisted of 637 adult participants who analyzed difficult situations in their lives associated with achieving significant life goals of various types (N = 637; 60% female; M_{age} = 24.2; SD = 6.25). Two alternative structural models were assessed, which include subjective appraisals of the situation (uncontrollability, unclearness, intensity of negative emotions), orientations in difficult situations (drive and rejection), and ways of coping (planful problem-solving, positive reappraisal, wishful thinking, and self-blame).

Results. The first model, in which all cognitive appraisals and orientations in difficult situations directly influence coping strategies, has relatively low fit indices. The second model, in which the influence of cognitive appraisal was partially mediated by orientations in difficult situations, has better fit indices. In life situations involving solution of a difficult task, the strongest predictor of problem-focused coping and positive reappraisal is the "drive" orientation of being attracted to difficulties, which mediates the influence of subjective control and emotions on these ways of coping. An orientation away from difficulties, "rejection," mediates the influence of unclearness and negative emotions on fantasizing and self-blame. A low level of subjective control directly affects self-blame and the avoidance of problem-solving. Negative emotions are a weak predictor of self-blame.

Conclusion. Interaction between the subject and the situation involves appraisal of difficulty, which influences orientation in difficult situations. In turn, orientations are predictors of coping strategies. The characteristics of the psychological situation determine coping, which may be oriented toward approach to or avoidance of the goal.

***Keywords*:** Cognitive appraisal; ways of coping; planful problem-solving; positive reappraisal; wishful thinking; self-blame; approach coping; avoidance coping; life situation

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Introduction

The rapidly growing body of data on the psychology of coping indicates that coping strategies are a significant factor of psychological well-being. These studies show that predictors of life satisfaction, happiness, and physical and mental health include planning, proactive coping, positive reappraisal, self-blame, and support of significant others (Bakracheva, 2019; Groth et al., 2019; Panahi, 2016; Park & Adler, 2003; Park et al., 2020). However, the question arises of the determinants of the coping strategies. In this article, we analyze cognitive predictors of coping strategies (namely, perceived situational characteristics) in situations of life goal attainment.

The article is aimed first of all at broadening the research field of perceived components of a situation. Second, it may broaden psychological activity theory (Leontiev, 1975; Sokolova, 2021), by adding empirical data on coping with difficult life situations.

Ways of Coping and Their Cognitive Predictors

According to the transactional theory of stress and coping, coping is understood as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus & Folkman, 1984, p. 141).

Many studies have shown the influence of cognitive appraisal on coping. Cognitive appraisal, following the transactional model of stress and coping, is seen as "the process of categorizing an encounter, and its various facets, with respect to its significance for well-being" of the subject, as a factor of coping dynamics (Lazarus & Folkman, 1984, p. 31). Multiple studies demonstrate the variability of coping, depending on whether stress is perceived as a loss, a threat, or a challenge (Aldwin, 2011; Folkman & Moskowitz, 2004).

The concept of meaning-making distinguishes between situational and global meaning. Global meaning refers to people's life goals, beliefs, and expectations about the world (Park & Folkman, 1997). A number of studies have been based on the proposition that stress is experienced when the meaning a person attaches to an event is incompatible with that person's global meanings (Geninet & Marchand, 2007; Park & George, 2018).

It should be noted that identification of cognitive predictors of coping is connected with the problem of the differences between some coping methods and cognitive appraisal, a problem which has been a subject of debate since the early 1990s, but has yet to find an unambiguous answer (Schwarzer & Schwarzer, 1996).

We believe the problem can be resolved if the subject's goal is seen as part of the coping process. R. Lazarus, in developing the main principles of his theory, stressed the importance of the very fact that an attempt to cope was made, regardless of whether it was successful (Lazarus, 1991). According to more recent interpretations, coping can be understood as "positive coping," i.e., the creation of resources that contribute to the achievement of complex goals and personal growth (Schwarzer & Knoll, 2003). This approach makes goal achievement an important criterion of successful coping. In our case, this involves the identification of special types of situations that require an effort, if a significant, difficult task is to be accomplished.

Coping Functions in Solving Life Tasks

In the contemporary view, "tasks" are situations that call for activity of the subject, the performance of some actions to solve the task and focus on the future (i.e., not just on the current situation, but also on the solution of future tasks) (Rauthmann & Sherman, 2018). Such situations call for coping as a process that makes it possible "to adapt to these changing opportunities in order to experience well-being" (Cantor & Sanderson, 1999, p. 230). Coping performs two functions in the solution of difficult tasks. First, it provides an *approach* to the goal through planful efforts. Second, in working toward a goal, the person needs to resist distracting influences, because realization of intentions may be complicated by attempts to *avoid* the difficulty (Brandstädter & Rothermund, 2002; Gollwitzer, 1999; Gollwitzer & Sheeran, 2006; Kato, 2012).

The Concept of 'Psychological Situation'

In this study, a situation is defined on the basis of theoretical ideas that differ from existing approaches to coping. In transactional theory, a situation is seen as a stressor, as "situation factors influencing appraisal" (Lazarus & Folkman, 1984, p. 82). Works based on this approach use the concepts of "stressor," or "negative life event," as the context in which an encounter takes place (Schwarzer & Schwarzer, 1996; Skinner, Edge, Altman, & Sherwood, 2003). An alternative view looks at a situation as a psychological phenomenon and focuses on subjective factors: perception and subjective experiencing *[perezhivanie]* of the situation.

According to the theory of psychological space, when people perceive and appraise life situations, they construct their own psychological space (Lewin, 1951). L.S. Vygotsky considered subjective experience to be "a unit for the study of personality and environment" (Vygotsky, 1984, p. 382). The process of experience combines objective circumstances and their perception by the person, which confers on these circumstances the status of a life event (Grishina, 2020).

In transactional theory, the subjective process involves appraisal of the stimulus as stressful (Primary Appraisal) and the subsequent determination of possible actions (Secondary Appraisal). These may be present or future events (Lazarus & Folkman, 1984; Peacock & Wong, 1990). The revised model adds that the appraisal stage may be followed by a stage of divergence between situational meaning and global aims and meanings, causing the experience of stress (Park & George, 2018). However, we believe that divergence between the situational and global meanings does not happen in all difficult life situations. Perhaps it may occur in one type of stressful (difficult) situation. On the whole, this approach assumes that there are some stress-generating characteristics of events which a person appraises in a certain way.

Our research has discovered a fact that cannot be explained by such theoretical notions. When asked to describe the content of an actual difficult life situation, 30% of respondents (n = 813) did not describe *the situation* as comprised of conditions, external circumstances, but as *internal experiences*[1]. Subjective factors play the key role here: self-determination, the search for one's path in life, dilemmas, inner conflicts, lack of self-assurance, lack of will, "emotional dependence," etc. The external

[1] The same proportion (30% of the situations described by respondents) was found in our study where people described their difficult life tasks.

context in this case is not decisive for appraisal and perception of a life difficulty, and a "negative life event" often does not actually take place in the respondent's lifetime. Rather, many of these situations can be categorized as "tasks for meaning" (Leontiev, 1975), "the search for meaning" (Frankl, 1984), experiencing "the impossibility of realizing inner needs" (Vasilyuk, 2005); therefore, we prefer to see "the situation" as a psychological, subjective phenomenon. In accordance with activity theory, interaction with the world and the situation is effected through meaning-making (Leontiev, 1975; Sokolova, 2021). Hence the difficulty of the situation stems from how it is perceived.

In Russian psychology, the concept of a "difficult life situation" is used as an analogue of "negative life event" (Antsyferova, 1994); however, these concepts differ in some important ways. First, the concept of "a difficult life situation" does not carry an initial negative connotation (as distinct from "a negative life event") and makes it possible to describe not only negative stressful experiences, but also the attractiveness of difficulty. Second, the concept of a "difficult life situation" makes it possible to study coping not only when resources are lacking (which leads to stress), but also when they are sufficient or even excessive (Bityutskaya, 2020).

Theoretical Premises of This Study

The concept of "coping predictor" in this study is based on the following theoretical premises:

1. We proceed from the concept of the subjective or psychological situation as the space of the possible (Grishina, 2020; Heckhausen, 2008; Leontiev, 2011; Lewin, 1951). A difficult life situation is created not by the material structure of the situation and not even by its appraisal. A person, based on previous interaction with situations, "builds meanings" (Leontiev, 1975; Sokolova, 2021) and experiences them emotionally as a difficult life situation. The idea of interaction between an individual and a situation implies that the probable becomes real in the process of the subject's activity. Accordingly, a difficult life situation may be explained as the space which simultaneously contains multiple stimuli: ways of fulfilling a task, the possibility of achieving a goal, obstacles, etc. By attaching significance to some stimuli and ignoring others, the person chooses between factors of the environment. Significant elements become the basis for "building an image" of the situation in individual consciousness. We use the concept "image of the world" to explain the mechanisms of this process (Leontiev, 1979). An actual image (including the image of a situation) can be formed when the subject sets into motion a process directed towards external stimuli (Smirnov, 2016). This process presupposes directed cognitive activity. These theoretical concepts formed the basis for creating our model of types of orientation in difficult situations.

2. By *orientation*, we mean the combination of cognitive, emotional, and motivational components conducive to certain coping efforts in a difficult life situation. Each orientation includes the following components: 1) types of stimuli that are considered significant; 2) representations of the world and of oneself upon which the subject relies when dealing with a difficult situation; 3) predictions; 4) emotions; 5) the difficulty of the goal. This concept describes the focus of attention on certain situational stimuli. While means of coping describe the person's efforts, orientation

points to the factors that determine a strategy for achieving (or not achieving) a difficult goal. The orientation model is designed to describe one type of difficult situation: life tasks. We identify *eight orientations:* five orientations characterize the focus of efforts on the approach to difficulties (drive, thoroughness, threat alert, opportunity orientation, obstacle orientation); and three orientations characterize avoidance of difficulties (flight or rejection, inaction, insouciance) (Bityutskaya, 2018). Our study looks at the version of life goal attainment that is accompanied by positive experiences in the coping process. This corresponds to the "drive" orientation, combined with reduced probability of a "rejection" orientation.

On the basis of qualitative research, we have described the orientation of being attracted to difficulties, "drive," in which attaining a difficult goal generates pleasure from overcoming a difficulty, a sense of a rising flow of energy in anticipation of victory. Self-development is an important motive of drive, in which people are willing to exert themselves beyond what is required by the situation (Bityutskaya, 2018). The drive orientation in a difficult situation strongly correlates with proactive, problem-focused coping and positive reappraisal (Bityutskaya & Korneev, 2020a). In an interview, the respondents for whom drive is the preferred orientation said that in this state they have a sharpened sense of "being alive." Analysis of the respondents' subjective reports suggests that life satisfaction is at its highest when the person is aiming to overcome a difficult situation (Bityutskaya, 2018).

The orientation opposite to drive is orientation away from difficulties: "rejection." This avoidance orientation in the face of a difficult task is explained by focusing on the loss of strength and on negative predictions and emotions, the futility of one's efforts. In the absence of purposeful activity aimed at solving the task, the person focuses on attributing blame for the current state of affairs. This perception of the difficulty creates preconditions for avoidance (Bityutskaya, 2018). The indicators on that scale have a positive correlation with the coping strategies of wishful thinking (fantasizing) and self-blame, and a negative correlation with proactive coping, planning, and positive reappraisal (Bityutskaya & Korneev, 2020a).

3. In determining subjective appraisal, we proceed from appraisals in a context of categorization of the situation (Lazarus & Folkman, 1984). From the standpoint of activity theory (Leontiev, 1979), we define subjective appraisal as the process of image formation for a difficult life situation in the individual consciousness. The mechanism of appraisal is described in its relationship with the motive, the personal meaning in the situation, and the goal (Bityutskaya, 2013; Leontiev, 1975). Earlier we conducted a study aimed at revealing the basis upon which people categorize a situation as a difficult life situation. We identified eight criteria: the situation displays general features of a difficult life situation; does not lend itself to control; is unclear; demands a quick and active response; involves difficulty in making a decision; is difficult to predict; generates strong negative emotions; and is a threat to the future (Bityutskaya, 2013).

4. Proceeding from the ideas on appraising the difficulty of a situation and the orientation in the difficult situations model (Bityutskaya, 2013, 2018), we believe that in the process of interaction with the situation, the situation is first categorized and then appraised as being difficult on the basis of various criteria. Some appraisals of difficulty influence orientations whose function is to build up a readiness to use one

way of coping or another. We do not rule out the possibility that appraisals may directly influence the actualization of coping methods.

5. In developing the structural models which were tested in this study, we were mindful of the two functions of coping described above: *approach* to the goal and *avoidance* of the goal. In this study, a negative correlation between approach and avoidance indicates a diminished tendency to avoid when experiencing attraction to the difficulty (and vice versa).

The aim of this study was to develop and test a path model that describes the influence of individual criteria of subjective appraisal and orientations in difficult situations to coping with planful problem solving, positive reappraisal, wishful thinking (fantasizing), and self-blame. In modeling, we took account of both direct and mediated relationships.

We tested the influence of subjective appraisal on difficult situations, and the effect on coping strategies of "drive" and "rejection" orientations in difficult situations. We believe that *subjective appraisal* of the difficulty of a situation (uncontrollability, unclearness, the intensity of negative emotions), as well as *orientations* in a difficult situation (drive or rejection), have an impact on the strength of (are predictors of) such *coping strategies* as planning, positive reappraisal, wishful thinking, and self-blame. Orientation in a difficult situation can play a mediating role between a subjective appraisal and coping strategies. The hypothesis of such connections is based on the model of orientations in difficult situations (Bityutskaya, 2018).

Methods

Participants

The sample consisted of 637 adult respondents aged between 19 and 64 ($M_{age} = 24.2$, $SD = 6.25$) who had given informed consent to take part in the study; 256 were males ($M_{age} = 22.1$; $SD = 4.48$) and 381 females ($M_{age} = 25.6$; $SD = 6.84$). They were students at Moscow universities in different specialties, as well as employees with a higher or secondary specialized education (bank employees, government officials, education and healthcare professionals, business managers) resident in Moscow and the Moscow Region. The sample size is sufficient for the path models presented below, as the ratio of sample to number of free parameters in the models is greater than 10:1, which is enough for obtaining reliable and unbiased estimates (Bentler & Chou, 1987).

Assessment Procedure

In a questionnaire, we asked participants to describe a current life situation that involves solving a difficult task. After writing a description of the situation, participants responded to questions about their appraisals, orientations, and coping.

We received 637 descriptions of difficult situations across various spheres of life: professional and educational difficulties (implementing a major project, job-seeking, a tough exam, writing and defending a graduation paper/dissertation, combining work and study); material problems (buying an apartment, how to increase income); internal personal issues (self-identification, a life-changing choice, a dilemma, etc.); inter-personal relations; health problems.

Measures

Subjective appraisal was measured by the questionnaire "Appraisal Criteria of the Difficulty of a Life Situation" (Bityutskaya, 2013). The questionnaire consists of 34 items by which the respondents assess the situation described on a scale from 0 ("no, totally wrong") to 6 ("yes, absolutely right"). The results make it possible to identify why the respondent considers the situation as a difficult one. The questionnaire operationalizes subjective appraisals of a situation on the following scales, which correspond to criteria of difficulty: 1) *general features* of difficult situations; 2) *uncontrollability* of the situation; 3) *unclearness* (ambiguity) of the situation; 4) the need for a *quick and active response*; 5) *difficulty of making a decision* (dilemma); 6) *difficulty of predicting* the situation; 7) *negative emotions*; 8) *threat for the future*. The factor structure of the questionnaire was tested using confirmatory factor analysis on the material of difficult life situations of different contents (N = 736). The following fit indices were obtained: RMSEA = 0.044; CFI = 0.910; $\chi^2 = 912.899$, df = 378. This study used the results on scales 2, 3, 7.

Orientations in a difficult situation were measured by the situational version of the questionnaire "Types of Orientations in Difficult Situation" (TODS; Bityutskaya & Korneev, 2020b). The questionnaire comprises 65 items which respondents must answer relative to the situation described and assess on a scale from 0 to 3 (0 — "totally wrong," 1 — "somewhat wrong"; 2 — "somewhat right," and 3 — "absolutely right"). The questionnaire is designed to diagnose the perception of a difficult situation in the respondent's life as described by the respondent. TODS differentiates the two poles of the coping dimension "approach–avoidance," by introducing orientations that describe the perception of the situation as a complex of cognitive, emotional, and motivational components (goal level, predicting, emotions, focus of efforts, etc.). The questionnaire makes it possible to diagnose eight orientations: five orientations characterize the subject's efforts to approach difficulties (*drive, thoroughness, threat alert, opportunity orientation, obstacle orientation*); three orientations involve avoiding difficulties (*rejection, inaction, insouciance*). *Drive* describes an attitude that welcomes a difficult situation and is accompanied by a surge of enthusiasm and positive emotions. *Rejection* characterizes the perception of a difficult situation as a waste of time and energy and a source of anxiety. The questionnaire's structural model was evaluated in studying different difficult situations of 687 adults. The model fits well: RMSEA = 0.049, CFI = 0.900, $\chi^2 = 3{,}068.835$, df = 1,171.

Ways of coping were assessed with the Russian version of the "Ways of Coping Checklist" (revised). The WCC consists of 66 items that the study participants evaluate on a 4-point ordinal response scale including 0 ("not used"), 1 ("used somewhat"), 2 ("used quite a bit"), and 3 ("used a great deal"). The questionnaire was adapted for studies of Russian-language samples (N = 727) in order to study coping with a situation that the respondent considers to be difficult and urgent. The questionnaire structure was developed on the basis of material concerning various difficulties, using exploratory and confirmatory factor analysis as well as expert evaluations. We selected nine factors that were used in the original versions of the Checklist (Folkman & Lazarus, 1985; Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986), but were not identical to the original versions in terms of the scales. These factors are as

follows: 1) *planful problem-solving*, deliberate problem-focused efforts to alter the situation, coupled with an analytic approach to solving the problem; 2) *seeking social support*; 3) *positive reappraisal*, efforts to create positive meaning by focusing on personal growth; 4) *confrontive coping*; 5) *self-controlling*; 6) *self-blame*, acknowledging one's own role in the problem with a concomitant theme of reproach and trying to put things right; 7) *wishful thinking (fantasizing)* and hope for a miracle; 8) *distancing*; 9) *escape-avoidance*. The factor model of the Russian-language version of the WCC has the following estimates: RMSEA = 0.047; CFI = 0.89; $\chi^2 = 2{,}634$; df = 1,011 (Bityutskaya, 2014). In this study we used the results of scales 1 (Cronbach's $\alpha = 0.712$ in our sample), 3 ($\alpha = 0.817$), 6 ($\alpha = 0.521$), and 7 ($\alpha = 0.736$).

We employed the following strategies to rule out common method bias (Jordan & Troth, 2019): the participants analyzed a difficult situation that they had actually experienced subjectively, which minimizes retrospective distortions and makes it possible to obtain data on the subjective situation. Some of the scales involve elements with reverse scaling. Finally, we motivated the respondents to give honest answers by promising (and keeping the promise) to give feedback in the form of an individual profile of appraisal and coping with the difficult life situation.

Statistical Analysis

The path models were assessed in an Mplus package, version 8.3. The analysis used the method of maximum likelihood estimation with robust standard errors, calculated by using a sandwich estimator (estimator MLR in Mplus). To assess the distribution of the variables included in the model, a descriptive statistic was calculated and the normality of the distribution was assessed by the Shapiro-Wilk test.

Results

Descriptive Statistics and Correlation Analysis

The descriptive statistics of the scales and results of testing of their normality are presented in *Table 1*.

Table 1

Descriptive statistics of the scales

Descriptive statistics	Uncontrollability	Unclearness	Negative emotions	Drive	Rejection	Problem–solving	Reappraisal	Wishful thinking	Self–blame
Mean	1.983	2.348	3.424	1.757	1.428	1.838	1.824	1.352	1.427
Standard deviation	1.201	1.113	1.316	0.628	0.598	0.587	0.707	0.688	0.672
Skewness	0.600	0.171	–0.124	–0.231	0.191	–0.135	–0.289	0.165	0.107
Std. error skewness	0.097	0.097	0.097	0.097	0.097	0.097	0.097	0.097	0.097
Shapiro-Wilk W	0.966*	0.991*	0.982*	0.987*	0.990*	0.988*	0.976*	0.984*	0.981*

*Note. * p <0.001*

It will be seen from the table that all the variables have a distribution different from the normal, which is due to a pronounced skewness. Because of this, the use of a robust estimates in confirmatory factor analysis is adequate. The Pearson correlations between the variables are presented in *Table 2*.

Table 2

Pearson correlation coefficients between the scales

Scale	Uncontroll-ability	Unclearness	Negative emotions	Drive	Rejection	Problem-solving	Reappraisal	Wishful thinking
Unclearness	0.529***	—						
Negative emotions	0.446***	0.431***	—					
Drive	–0.414***	–0.236***	–0.341***	—				
Rejection	0.464***	0.504***	0.616***	–0.454***	—			
Problem-solving	–0.346***	–0.293***	–0.225***	0.493***	–0.333***	—		
Reappraisal	–0.265***	–0.117**	–0.171***	0.640***	–0.293***	0.573***	—	
Wishful thinking	0.334***	0.302***	0.337***	–0.114**	0.388***	–0.071	0.024	—
Self-blame	0.082*	0.209***	0.333***	–0.031***	0.355***	0.020	0.081*	0.345***

Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$*

Analysis in most cases revealed high correlations between the variables. This indicates that the constructs included in the analysis are interconnected; however, the structure of pair correlations is difficult to describe through simple analysis. We will therefore describe in more detail the path model, based on theoretical suppositions concerning the mechanisms of the impact of subjective appraisal indicators on orientations in difficult situations, which in turn influence the dominance of certain ways of coping.

Path Analysis

The first path model included three indicators of the subjective appraisal scale as independent variables: *uncontrollability, unclearness*, and *negative emotions*, as well as two orientations in difficult situations: *drive* and *rejection*. The dependent variables were ways of coping: *planful problem-solving*, *positive reappraisal*, *wishful thinking*, and *self-blame*.

Planful problem-solving and *positive reappraisal*, according to the model, are impacted by *negative emotions* and *drive*; and *wishful thinking* and *self-blame* by *uncontrollability*, *unclearness*, *negative emotions*, and *rejection*. A correlation is allowed between errors of pairs of dependent variables: *planful problem-solving–positive reappraisal* and *wishful thinking–self-blame*.

The fit indices of the model turned out to be fairly good: $\chi^2(12) = 74.882$, SRMR = 0.061, RMSEA = 0.091 (with 95% confidence interval [0.072; 0.111]), CFI = 0.930, TLI = 0.848. Some estimates, though, turned out to be close to zero. The

standardized coefficients are shown in *Figure 1*; the full table of coefficients with confidence intervals is in Appendix A (*Table A1*).

The results reveal low estimates of the impact of *negative emotions* on *planful problem-solving* and *positive reappraisal*, and of *unclearness* on *wishful thinking* and *self-blame*.

Proceeding from the results obtained, and from a theoretical analysis of the relationship between the variables included in the analysis, an alternative (second) model was built, in which some direct links between independent and dependent variables were replaced or complemented by mediated ones. This applies to links between a subjective appraisal and the "ways of coping" indicators. We assumed that some of these links may be mediated by orientations in difficult situations. That is, a subjective appraisal does not merely affect the prevalence of this or that strategy directly, but also (and in some cases only) the orientation in a difficult situation, which in turn may prompt a particular way of coping.

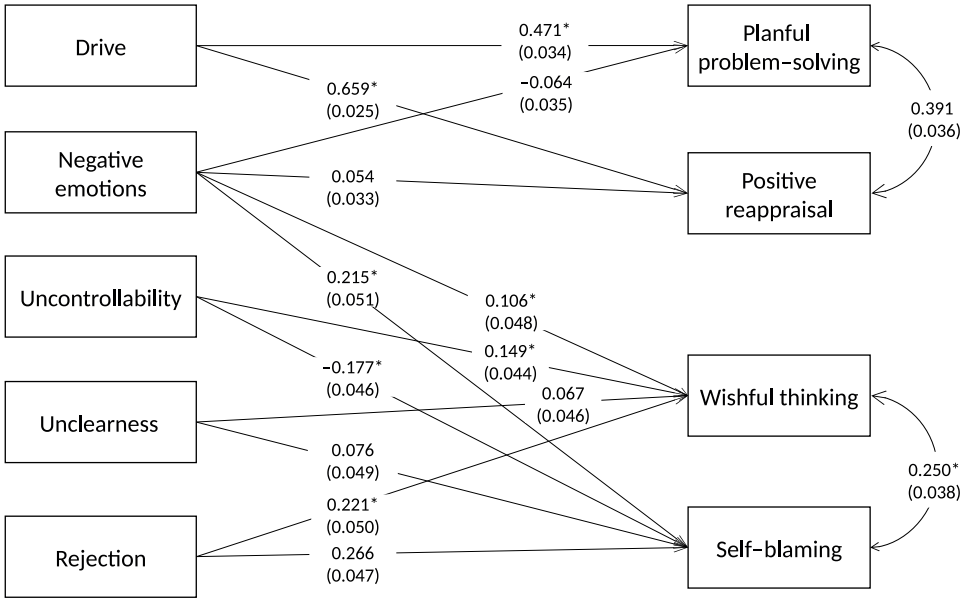

Figure 1. Subjective appraisals and orientations in difficult situations as predictors of coping strategies: direct influence model, Model 1.

The second path model included *uncontrollability, unclearness*, and *negative emotions* as primary independent variables. All these variables, according to the second model, 1) may influence the *rejection* orientation; 2) *uncontrollability* and *negative emotions* influence the *drive* orientation; and 3) *uncontrollability* directly impacts *wishful thinking* and *self-blame*, and *negative emotions* impact *self-blame*.

In turn, two orientations in difficult situations impact ways of coping in the following manner: *drive* has a positive impact on *planful problem-solving* and *positive reappraisal*, and *rejection* has a meaningful positive impact on *planful problem-solving*, *wishful thinking*, and *self-blame*.

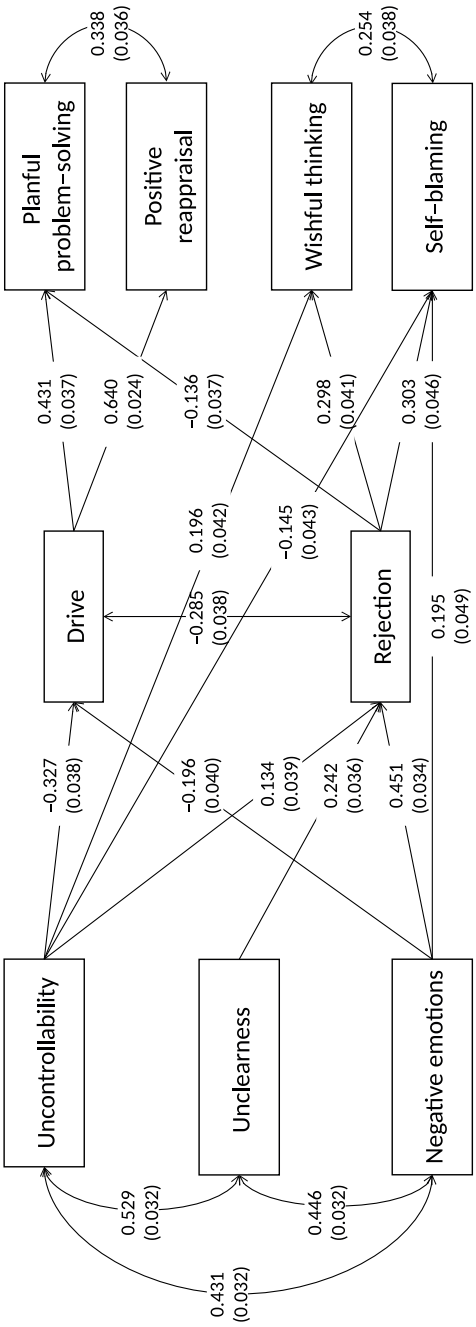

Figure 2. Subjective appraisals and orientations in difficult situations as predictors of coping strategies: mediated influence model, Model 2.

The model also includes correlations among all three subjective appraisal scales, between *drive* and *rejection*, and also between residuals of the two pairs of independent variables: *planful problem-solving–positive reappraisal*, and *wishful thinking–self-blame*.

The fit indices of the second model proved to be better than those of the first: $\chi^2(17) = 79.025$, SRMR = 0.051, RMSEA = 0.076 (with 95% confidence interval [0.059; 0.093]), CFI = 0.956, TLI = 0.915. Because the two models considered above differ in structure and are not nested, a direct comparison is impossible, but the fit indices show that the second model agrees with the data better than the first. The standardized coefficients are shown in *Figure 2*, and the full table of coefficients with confidence intervals is in Appendix 1 (*Table A2*).

The results of analysis show a significant negative influence of *uncontrollability* on *drive* and a positive influence on *rejection*. Similarly, *uncontrollability* has a significant positive influence on *wishful thinking* and *self-blame*. *Unclearness* has a positive influence on *rejection*, and *negative emotions* have a positive influence on *rejection* and a weaker, but still significant negative influence on *drive*. Furthermore, *drive* exerts a positive influence on *planful problem-solving* and *positive reappraisal*, and *rejection* has a significant positive influence on *wishful thinking* and *self-blame*.

Moreover, according to the model, all three subjective appraisal indicators significantly correlate with one another. Likewise, the pairs of coping methods—*planful problem-solving–positive reappraisal*, and *wishful thinking–self-blame*—have significant positive correlations. Finally, a negative correlation has been obtained between the drive and rejection orientations included in the model.

Discussion

Previous studies of coping predictors mainly proceeded from the transactional theory of stress and coping (Lazarus & Folkman, 1984). In contrast, this study uses an approach in which coping predictors are components of the psychological (perceived) situation. We have considered coping as a process that permits one to achieve a difficult life goal. The participant does not only appraise the difficult task, but is a subject who vigorously interacts with the situation through meaning-making (Leontiev, 1975; Sokolova, 2021). We were verifying a hypothesis on the combined influence on coping strategies of appraisals and orientations in difficult situations. We did not check whether the person felt stress in a life situation, but the instruction asked the respondents to describe a real life task that needed to be solved and then to analyze their experiences, emotions, appraisals, and predictions. We reconstructed the perceived (psychological) situation on that basis.

This study affords a description of perceived situation characteristics as predictors of coping strategies. We distinguish between coping strategies themselves and predictors of coping: cognitive appraisals of a situation, orientations as a complex of perceptual characteristics. In this context, the idea that approach–avoidance is cognitive activity is more suitable for us. Orientation in a difficult situation is largely related to the orientation of attention (Roth & Cohen, 1986; Skinner et al., 2003).

An evaluation of the two models has proved that it is possible to describe the range of predictors of coping methods through a simple model containing only

the direct effects of indicators of subjective appraisal and orientations in difficult situations. Some direct effects, however, turned out to be insignificant.

The second model includes not only direct but also mediated links between independent and dependent variables. For instance, subjective appraisal indicators have an impact on orientations in difficult situations, which in turn affect the methods of coping. This model has demonstrated better data fit, showing that the structure of coping strategy predictors can be more complex than the direct influence of subjective appraisals and orientations on one way of coping or another. Thus, for example, in the first model, direct correlations between *negative emotions* and *planful problem-solving* turned out to be insignificant. But according to the second model, *negative emotions* may have a significant (negative) impact on *drive*, which in turn significantly influences *planful problem-solving*. In other words, the less intense are the *negative emotions*, the more manifest is *drive*, which makes *planful problem-solving* more likely. This indicates that direct and mediated influences may differ not only in intensity, but also in the direction (positive or negative) of impact.

Thus, the mediated influence model allows a systematic description of one of the orientations of being attracted to difficulties that make people feel at their most active, focused on attaining the goal and experiencing feelings of pleasure and anticipation of success (drive). This is congruent with the definition of a challenge from the transactional theory of stress and coping (Lazarus & Folkman, 1984). However, there are differences: "drive" is not confined to an evaluation, but is an entire "pattern" which includes a sense that a situation is manageable; positive emotions (interest, curiosity, and inspiration); positive predictions concerning the development of events; and increased complexity of the task. Such people feel bored when confronted with tasks of a low degree of difficulty. This description is similar to the characteristic of intrinsically motivated, or autotelic, activity: "activity rewarding in and of itself…, quite apart from its end product or any extrinsic good that might result from the activity" (Nakamura & Csikszentmihalyi, 2002). It is also possible to compare drive orientation with "oversituational activity," which is characterized by the growth and development of human capabilities (Petrovsky, 2010).

We have demonstrated the important role of subjective control and lowering of negative emotions for experiencing drive. Drive itself is a predictor of the actualization of planful coping and a positive reappraisal of the situation. While the majority of modern approaches see coping strategies as a predictor of psychological well-being, we have described the experience of drive, which implies a sense of the fullness of living not as a result of, but in the process of, coping with a difficult situation. Herein lies the originality of the proposed model.

Proceeding from the idea that goal attainment is connected with resistance to distractive stimuli (Brandstädter & Rothermund, 2002; Gollwitzer & Sheeran, 2006), we have introduced the factor of wishful thinking (or fantasizing), which is connected with self-blame. Our results show that these coping strategies are actualized when a difficult situation is perceived as a waste of time and effort, with an anxious focus on negative predictions of how the situation will develop (rejection). The most powerful predictor of rejection is negative emotions generated by attaining a difficult goal, as well as the less strong but still significant predictors of uncontrollability and unclear-

ness of a situation (the lack of a clear vision or understanding of how to act in order to achieve the desired result).

Our results are comparable to the theoretical conceptions and empirical evidence on perceived control, which influences how well people act and plan, or remain passive and avoidant (Skinner, 1995). Our study of subjective appraisals of life situations corroborates the results of studies of control as power. Power is associated with the clarity of focusing on the goal, and also encourages work on the achievement of goals (Guinote, 2017; Scherer & Moors, 2019).

According to our data, subjective control is not only a predictor of orientations, but also directly influences the actualization of wishful thinking and self-blame. Interestingly, with increasing subjective control, self-blame increases and avoidance decreases.

The connections revealed in our study correspond to the conceptual model of orientations in difficult situations and demonstrates their mediatory role.

Conclusion

The purpose of this study was to develop and test two structural models in which subjective appraisals and orientations in difficult situations were considered as predictors of coping strategies (*planful problem-solving*, *positive reappraisal*, *wishful thinking*, and *self-blame*). The first model assumes a direct influence of coping predictors (subjective appraisals: *uncontrollability*, *unclearness*, *negative emotions*; and orientations: *drive* and *rejection*). In the second model, orientations in difficult situations are constructs mediating the connection between subjective appraisals and coping strategies. Comparison of the two models shows that the more complex second model fits better with the data than the first model.

The proposed models describe two opposite strategies. The first strategy implies the achievement of a difficult goal with positive emotions, a feeling of satisfaction with life in the process of overcoming difficulties (drive). The second is associated with an orientation toward avoiding difficulties, minimizing the waste of effort and resources (rejection).

The results can be interpreted as corroboration of the idea of interaction between the subject and the situation. The process of such interaction involves appraisal of difficulty, which influences orientation in difficult situations. In turn, orientations are predictors of coping strategies. The characteristics of the psychological situation determine coping, which may be oriented either toward approach to or avoidance of the goal.

Limitations

The study has some limitations. First, this is a cross-sectional survey. We plan to further test the identified relationships using an experimental design.

Second, we considered only one type of situation—"tasks"—involving the achievement of a difficult goal, but we were presented with various situations in different spheres of life (material, professional challenges, etc.). Subsequently, it would be interesting to answer the question: Is coping different for different types of situ-

ation (situations)? Or are the connections we have found sufficiently universal that they manifest themselves in situations or "tasks" belonging to different domains of life?

Third, we looked at two aspects of achieving a difficult goal, related to approaching and avoiding. Important aspects have been left out of attention: mechanisms that facilitate the adjustment of goals and the concomitant ability to abandon an ineffective coping strategy (Kato, 2012). We believe that in considering coping as a dynamic process, these are stages of the process of appraisal and coping that could be most effectively studied in research designed to model the process of difficult goal attainment and to combine observation and experiment.

Ethical Statement

All subjects were over 18 years old and gave their informed consent for participation in the study. The study received ethical approval from the Ethical Committee of the Department of General Psychology, Faculty of Psychology, Lomonosov Moscow State University (Moscow, Russia), meeting No. 3, held Oct. 26, 2016.

Author Contributions

Ekaterina Bityutskaya developed the concept of the study, performed the theoretical analysis, and collected the data. Aleksei Korneev performed statistical analysis and computations, and described the results. The two authors discussed the results of the study and prepared the text.

Conflicts of Interest

The authors declare no conflicts of interest.

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Appendix A

Table A1

Standardized path coefficient for Model 1

Terms*	Estimate	Standard error	95% confidence interval
Drive on Planful problem-solving	0.471	0.034	[0.404; 0.538]
Negative emotions on Planful problem-solving	–0.064	0.035	[–0.133; 0.005]
Drive on Positive reappraisal	0.659	0.025	[0.610; 0.708]
Negative emotions on Positive reappraisal	0.054	0.033	[–0.011; 0.119]
Rejection on Self-blame	0.266	0.047	[0.174; 0.358]
Unclearness on Self-blame	–0.177	0.046	[–0.267; –0.087]
Uncontrollability on Self-blame	0.076	0.049	[–0.020; 0.172]
Negative emotions on Self-blame	0.215	0.051	[0.115; 0.315]
Rejection on Wishful thinking	0.221	0.05	[0.123; 0.319]
Unclearness on Wishful thinking	0.149	0.044	[0.063; 0.235]
Uncontrollability on Wishful thinking	0.067	0.046	[–0.023; 0.157]
Negative emotions on Wishful thinking	0.106	0.048	[0.012; 0.200]
Wishful thinking with Self-blame	0.25	0.038	[0.175; 0.325]
Positive reappraisal with Planful problem-solving	0.391	0.036	[0.320; 0.462]

*Note. * "on" – regression; "with" – correlation*

Table A2
Standardized path coefficient for Model 2

Terms*	Estimate	Standard error	95% confidence interval
Drive on Planful problem-solving	0.431	0.037	[0.358; 0.504]
Rejection on Planful problem-solving	–0.136	0.037	[–0.209; –0.063]
Drive on Positive reappraisal	0.64	0.024	[0.593; 0.687]
Rejection on Self-blaming	0.303	0.046	[0.213; 0.393]
Negative emotions on Self-blaming	0.195	0.049	[0.099; 0.291]
Uncontrollability on Self-blaming	–0.145	0.043	[–0.229; –0.061]
Rejection on Wishful thinking	0.298	0.041	[0.218; 0.378]
Uncontrollability on Wishful thinking	0.196	0.042	[0.114; 0.278]
Uncontrollability on Drive	–0.327	0.038	[–0.401; –0.253]
Negative emotions on Drive	–0.196	0.04	[–0.274; –0.118]
Uncontrollability on Rejection	0.134	0.039	[0.058; 0.210]
Unclearness on Rejection	0.242	0.036	[0.171; 0.313]
Negative emotions on Rejection	0.451	0.034	[0.384; 0.518]
Rejection with Drive	–0.285	0.038	[–0.359; –0.211]
Unclearness with Uncontrollability	0.529	0.032	[0.466; 0.592]
Negative emotions with Uncontrollability	0.446	0.032	[0.383; 0.509]
Negative emotions with Unclearness	0.431	0.033	[0.366; 0.496]
Wishful thinking with Self-blaming	0.254	0.038	[0.180; 0.328]
Planful problem-solving with positive reappraisal	0.388	0.036	[0.317; 0.459]

*Note. * "on" – regression; "with" – correlation*

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Review of Contributions to the Russian Child Well-Being Index: Focus on Subjective Well-Being Indicators

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Background. In Russia, there is a demand for evaluation of children's well-being, including subjective well-being, at the national and regional levels. To implement such an evaluation system, it is necessary to develop a Russian Child Well-Being Index (CWBI), which includes indicators of both objective and subjective well-being in several domains. One can rely on various national data sources that can be partially integrated into the CWBI, as well as the application of the UNICEF/Innocenti methodology for children's well-being evaluation and new developments by Russian research teams.

Objective. To analyze the Russian experience in developing approaches to large-scale and multidimensional evaluation of children's well-being (with an emphasis on subjective well-being) and to provide recommendations for development of the national Children's Well-Being Index (CWBI).

Design. Scoping review of the methodology and results of the studies that can inform the Russian task force on CWBI development.

Results. Like most international models of subjective well-being, a Russian CWBI will be based on various aspects of the socio-ecological approach. The structure of domains vary but is generally compatible with the UNICEF/Innocenti model. The tools used by Russian researchers have included standardized psychometric techniques (as an independent tool and as a control of various types of validity); questionnaires specially designed to operationalize certain domains of well-being; and qualitative methods applied to small samples of children, such as focus groups, and creative and play-based methods. Work on the development of the CWBI (including the subjective well-being indicators) has been most actively performed in relation to children in state care; therefore, many of the tools have been designed to address the particular characteristics of this target group.

Conclusion. Recommendations for development of the national Children's Well-Being Index (CWBI) are given, including both the index design and organizational/ethical considerations.

Keywords: Children's subjective well-being; childhood in Russia; national Index of Child Well-Being (CWBI)

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Introduction

One of the most important criteria for a country's social progress is the level of its children's well-being. The first steps toward the purposeful and informed development of the conditions required to increase children's well-being should include reaching a consensus on defining and measuring this construct among the scientific and expert communities, governmental bodies, and wider society. The index should also take into account the views of the children themselves, including children from underrepresented and high-risk groups.

The core aspects of the concept of well-being are multidimensionality (manifestations in various fields of life) and normative character (reliance on the ideas of "good" and "bad") (Sandin, 2013). National and international (UNICEF, OECD) indexes of children's well-being — systems of subjective and objective indicators in several fields of life (domains) — are used to measure children's well-being at the macrolevel.

There is increasing demand for a national CWBI in Russia. The plan for general action in the framework of the "Childhood Decade" national project (2018 to 2027) includes "performing research, including international, to evaluate the level of well-being, including subjective well-being, in children and adolescents." A CWBI which allows the nation "to evaluate quality of children's life in the Russian Federation regions" and "perform comparative analysis of child well-being levels in Russia and the other countries of the UN Convention of the Rights of the Child," is scheduled to be designed by 2024.

The Russian expert community collected data according to several indicators of the UNICEF/Innocenti child well-being index in 2007, but the final index was not calculated for Russia because of lack of data in three domains — "Material well-being", "Education", and "Behaviors and risks". The methodology of the UNICEF child well-being index was also used in preparing the report "Children in adversity: Prevention of ill-being" (Children support foundation …, 2013). Finally, Russia has participated in the OECD's Programme for International Student Assessment (PISA), that has included study of the well-being domain since 2016 (OECD, 2016).

Currently the ministries responsible for child-related issues collect large sets of data on the objective well-being of the whole child population, as well as of the most vulnerable groups (children with disabilities, children in state care, etc.), in various domains such as observance of rights and access to social services, health, education. The part of this information which is relevant for developing the CWBI may thus be relatively easy to obtain through analysis of the data collected for the State Report on the Situation with Children and Families and the children's ombudsman's yearly report. Information on Russian citizens' subjective well-being is collected within the national and departmental sets of data that are not specifically aimed at the child population, but may be analyzed through the lens of children's well-being (*e.g.,* the Federal State Statistics Service (Rosstat) on Sustainable Development Goals).

However, one cannot make comprehensive interpretations and conclusions based solely on those objective indicators. The levels of objective well-being (*e.g.,* material assets and resources available) and subjective well-being (*e.g.*, personal satisfaction with one's situation) may mismatch (see, for example, Heukamp & Arino,

2011). Therefore, a comprehensive well-being index should combine objective and subjective indicators in each domain, capturing both positive and negative aspects in children's lives (Lee, 2014).

Subjective well-being is frequently defined as "the set of perceptions, evaluations and aspirations of people (in this case, children) about their own lives and living conditions" (Campbell, Converse, & Rogers, 1976). Subjective well-being of children is regarded as a construct that differs from subjective well-being of adults in its determinants: children face age-dependent developmental tasks and challenges, and their well-being is based on a balance between current "well-being" and "well-becoming," *i.e.,* factors that ensure well-being in later life (Ben-Arieh, 2006). It is also necessary to consider well-being in typically "childish" areas of life, such as play or learning activities. When discussing well-being in children, it is important to consider two types of indicators: both the outcomes (the level of functioning of individual children) and the contexts (environment, resources, and/or inputs) needed to support that development (Moore & Theokas, 2008).

Asking children for personal opinions and emotional evaluations about their life conditions can produce new and "unexpected" knowledge (Casas, 2011). The so-called "child indicators movement" is closely connected with the "new sociology of childhood" that regards children as competent social actors with subjective opinions and assessments that are no less significant than those of their parents and educators (Ben-Arieh, 2008). Triangulating the data obtained from all three types of stakeholders — the child welfare system (objective indicators), adults, and the children themselves (subjective indicators) — is a good practice in both social research and evaluation of programs and policies. Considering children and youth to be competent actors also requires involving them in the development and approbation of CWBIs, as well as in creating measuring instruments, collecting data, and preparing reports.

An interesting experiment in collaboration with children is represented by the development of some regional subjective well-being indexes, such as the Irish Development of National Set of Child Well-Being Indicators and the Scottish Wellbeing Wheel and Wellbeing Indicators. The Russian professional community has also initiated attempts to involve children in discussing well-being and its evaluation; one example was at the "Together with Children" international conference in 2020 (see Archakova & Garifulina, 2020 for the comprehensive report).

The aim of our work was to analyze the Russian experience in developing approaches to large-scale and multidimensional evaluation of children's well-being (with an emphasis on the measurement of subjective well-being in each domain), and to make recommendations for the development of the national Children's Well-Being Index (CWBI).

Method

This article provides a scoping review (Munn et al., 2018) of publications that were selected by the Russian CWBI task force and seeks to aid the taskforce's work with their methodology and results.

The scoping review included research that: 1) focused on measuring children's well-being in several domains and provided a framework for understanding their structure; 2) used subjective well-being indicators; and 3) was performed on large (regional/Russian-wide) samples (for quantitative research) or referred to the opinions and assessments of the children themselves (for desk studies and focus groups).

We excluded research on children's subjective well-being that measured well-being in only one domain, *e.g.,* dealing with subjective well-being in primary care and the school environment. While such papers provide valuable insights for CWBI development, our review was focused on the structural characteristics of the index.

The review included six papers (see *Table 1* for their characteristics). It provided an analysis of approaches to working definitions of subjective child well-being, the construction of its domains, the measurement instruments, and issues of their validity, as well as the most significant results of their implementation.

Results

Working Definition

The Children's Worlds: The International Survey of Children's Well-Being, Wave 3, 2016–2019 (ISCWeB), which dealt with the Russian child population in the Tyumen region, focused on "children's day-to-day feelings of happiness and sadness; their satisfaction with their life as a whole and different aspects of it; their feelings of safety, being cared for, autonomy, and being listened to; and their hopes and expectations for the future" (Children's Worlds, 2020). It reflected the importance of using plain language, as was also emphasized by Rogozin, Ipatova, & Garifulina (2019), who held focus-groups to discuss well-being and its measurement with adolescents. If plain language is not used, a discussion is rapidly "colonized" with bureaucratic ones, and alienation emerges. Rogozin & Ipatova (2019) also noted that both adolescents and parents are more familiar with defining well-being as the absence of manifestations of adversity than with any positive indicators.

Two large-scale research projects on the well-being of children in state care (children's homes) approached the definition of well-being from different positions. Odinokova, Rusakova, and Usacheva (2018) defined subjective well-being as "the situation when a child is free from any symptoms of mental and somatic disorders; has capacities and skills which make him/her proud; is satisfied with the school environment; relationships with friends and significant adults; has at least one adult (s)he can reach for support; feels safe at the children's home and at school; is satisfied with living conditions in the children's home; and knows his/her rights and participates in decision-making." That approach corresponds to the UNICEF/Innocenti universal three levels (individual, relationships, and context) model of well-being (Lippman, Moore, & Mcintosh, 2011).

Oslon, Semya, Prokopeva, and Kolesnikova (2020) emphasized the importance of elaborating their own working definition of well-being and making it applicable

Table 1

Review sources

	Population	Russian region(s)	Sample size and available characteristics	Settings	Ethical considerations	Primary disciplinary context	Type of publication
Bruk, 2019; Rees, Savahl, Lee, & Casas, 2020	General child population, 10–12 y.o.	Tyumen region	1959 (989 F), 10 y.o. — 953, 12 y.o. — 951, 82% urban, 3,7% living outside family settings	Computer testing	Guidance on key ethical principles formulated for the project; ethical approval from an appropriate authorising body within their country	Multidisciplinary	Research paper (report)
Oslon, Semya, Prokopeva & Kolesnikova, 2020	Children in state care (group homes)	85 regions	498 (248 F), mean age — 15.1 y.o. (SD — 1.34), w/o intellectual disabilities	Computer testing	Helsinki declaration	Psychology	Research paper (peer-reviewed)
Odinokova, Rusakova & Usacheva, 2017	Children in state care (group homes)	St. Petersburg (215 children), Ekatrinburg (124), Bashkortostan republic (178)	517 (46.3% F), 10–17 y.o., mean age — 14 y.o., normal or delayed intellectual development (w/o intellectual disabilities)	Personal interviews, pen and-paper questionnaires	Guidance on key ethical principles formulated for the project, reference to ethical principles of child participation in social projects evaluation	Sociology	Research paper (peer-reviewed)

	Population	Russian region(s)	Sample size and available characteristics	Settings	Ethical considerations	Primary disciplinary context	Type of publication
Oslon, 2019	Children in state care and alumni (group homes)	64 regions	1932 children in care 4–18 y.o. (3 sub-groups: preschoolers, children 7–12 y.o., adolescents 13–18 y.o.)	Computer testing	N/A	Psychology	Research paper (conference report)
Rogozin & Ipatova, 2019	Selected groups of children and birth / foster parents of such children	Voronezh (city); Ulyanovsk region	8 (4 F) children from 2-parent families; 5 (4 F) children with disabilities; 7 (6 F) children in care	Focus-groups	N/A	Sociology	Research paper (report)
Archakova & Garifulina, 2020	Children receiving services from organizations — grantees of Timchenko Foundation	30 regions	Small-scale social projects evaluations (of 15592 children participated in the projects)	Desk analysis of evaluation instruments (interviews, focus-groups, narrative and play-based metods)	N/A	Sociology / social project management	Review paper (peer-reviewed)

Note. F = female, y.o. = years old, N/A = not available

specifically to children in state care. They relied on Myasischev's theory of attitudes and considered a child's subjective well-being as his/her satisfaction with *the system* of his/her attitudes toward:

a) him/herself (e.*g.,* positive self-esteem, satisfaction with one's skills and achievements);
b) others (*e.g.,* availability of a close adult, good relationships with peers);
c) the environment (*e.g.*, physically and psychologically safe living conditions, normalization of life, knowledge of one's rights, adults taking one's opinion into account); and
d) the chronotope (personal history, current situation and future prospects).

In the 2020 review by Archakova and Garifulina, subjective well-being was considered in the framework of monitoring and evaluating social practices (projects) and their results. Each practice provided its own working definition of well-being grounded in its design (theory of change, set of activities, logic model, and results chain) and in particular, characteristics of a target child population (*e.g.*, age, absence/presence of developmental disabilities). The results of separate practice-oriented measurements of children's well-being were further consolidated into high-level umbrella indicators (comparable to domains).

While the reviewed definitions of well-being varied in scope and structure, it was possible to combine the insights into a general "formula:" *"Children's well-being is [a vision of good life situation = objective factors], experienced by children as [a vision of positive cognitive and emotional assessment = subjective factors] in the presence of supportive interpersonal relationships [the most significant factor of child development, mediating his/her attitudes towards the situation]."* After being formulated, such a definition should be translated into a plain language wording.

Domains

The works included in this scoping review had moderate variations in determining separate domains of child well-being. We attempted to compare them and highlight equivalent or synonymic ones (*Table 2*). Interestingly, the results of focus groups where children discussed the meaning of "well-being" and "happiness" (Rogozin, Ipatova, & Garifulina, 2019) supported the Innocenti/UNICEF model of well-being domains (Adamson, 2007).

Instruments and Validity Issues

All the research we considered used large sets of close-ended questions and scales, and all the research teams adapted them to meet children's needs in terms of design (language, visual prompts) and procedure (timing, adult assistance).

Comparison of measurements used in two large-scale Russian research projects revealed variations by academic discipline: the "psychological" approach by Oslon et al. (2019, 2020) led to inclusion of clinical diagnostic items, such as the Children's Depression Inventory, in contrast with the "sociological" approach by Odinokova et al. (2017), that used a standardized measure as a validity test but not as part of the questions set.

Table 2

Child well-being domains

Oslon (2018); Oslon, Semya, Prokopeva & Kolesnikova (2020)	**Odinokova, Rusakova & Usacheva (2018)**	**Bruk, 2019**	**Rogozin, Ipatova & Garifulina, 2019**	**Archakova & Garifulina, 2020**
Skills and abilities	Education		Education	Knowledge and skills
Self-esteem & self-evaluation		Self		
Overall well-being		Overall well-being	Overall subjective well-being	Overall subjective well-being
	Mood and emotional states / Physical activity			Emotional well-being
Supportive network	Relationships with adults and peers	Family / Friends / School / Neighbourhood	Relationships with family and peers	Child-parent relationships Social communication skills
Safety	Safety		Behavior, risks and experiences of abuse / health and safety	Physical well-being
Rights	Knowledge of rights	Children's rights		
Taking a child's view into consideration	Participation in decision-making			
Normalization of life				
Satisfaction with life in general and living conditions in a children's home	Living conditions in children's homes	Home context Economic / material context	Material well-being	
Satisfaction with personal chronotope (past, present, future)		Time use		

In the Children's World project, extensive testing and statistical work was done to ensure good functioning of the items , and to check the relevance of the domains and the items for children in different socio-cultural regions. The questionnaires were comprehensively piloted in various countries and languages, using large-scale samples as well as focus groups and interviews with children (Casas & Rees, 2015).

Odinokova et al. (2018) used the Strengths and Difficulties Questionnaire to evaluate the convergent validity of their child well-being questionnaire. They also analyzed the frequency of missing answers and their correlation with well-being level

Table 3

Instruments used in quantitative research

	Admission format	Number and types of questions	Standardized measures	Child-friendly adaptations
Bruk, 2019; Rees, Savahl, Lee, & Casas, 2020	Both paper-and-pencil and online forms are available	Total of 69 questions (set for 12 y.o.) and 80 questions (set for 10 y.o.). Close-ended questions and scales — agreement, frequency and satisfaction	Context-free: The Student Life Satisfaction Scale (SLSS, Huebner, 1991) and the one item Overall Life Satisfaction (OLS). Domain-specific: the Personal Well-being Index — School Children (PWI-SC, Cummins & Lau, 2005); The Brief Multidimensional Student Life Satisfaction Scale (BMSLSS, Seligson, Huebner & Valois, 2003); Russell's Core Affect scale (Russell, 2003)	Consultations on correct and culture-sensitive translation and adaptation of items; child-friendly language with short and clear wordings
Oslon, 2019; Oslon, Semya, Prokopeva & Kolesnikova, 2020	Online from with technical assistance of an adult (typically, a psychologist)	10 sets of measures, including Likert-scale questionnaires, close-ended questions, sociometric visual maps	Domain-specific: Children's Depression Inventory (Kovac, 1992); Self-Assessment Ladder (Schur, 1982); Rosenberg self-esteem scale (Rosenberg, 1965); brief version of Hardiness test (Osin & Rasskazova, 2013)	Likert-type scales using smiles The procedure is divided into several meetings to keep up with a child's motivation and attention span
Odinokova, Rusakova & Usacheva, 2017	In-person interviews by independent interviewers. Personal interviews for primary school children and\or children with learning disabilities; small groups interviews for adolescents	Total of 61 questions, mostly Likert-type scales, or close-ended questions (excepting the questions "Which children's rights do you know?" and "What are you proud of?")	–	Materials with illustrations; questions on frequency use visual scales with color gradient; Likert-type scales using smiles (based on the pediatric pain scale). Consultations with children on child-friendly language. Certificates of participation to recognize a child's efforts

using Pearson's $\chi 2$. The most frequently skipped questions were about contacts with birth family and relatives (8.7% of answers missing), children's rights (7%) and abuse (4%). That result significantly ($p < 0.05$) correlated with difficulties in interactions with peers and adults at the children's home and psychological abuse from adults.

Oslon et al. (2020) also evaluated the convergent validity of their index scales, comparing them with standardized measures using Pearson's $\chi 2$ and Cronbach's alpha. The standardized measures included Rosenberg's self-esteem scale (Rosenberg, 1965) and a short version of the Hardiness test (Osin & Rasskazova, 2013).

The qualitative research by Rogozin and Istomina (2019) employed triangulation of child participants', parents', and practitioners' points of view to support content validity. Triangulation of data obtained from various groups of respondents and/or with various measures is typically implemented for monitoring and evaluating of child well-being in social projects (Archakova & Garifulina, 2020).

Findings

The overall results of the Children's Worlds study for the Russian (Tyumen region) sample were quite optimistic: 90.6% of the 10-year-olds and 12-year-olds were satisfied with their lives in general. A total of 78.4% of 12-year-olds felt positive about their future (Bruk, 2019). At the same time Russia ranked 26th of 35 countries in the study, basing on mean scores on life satisfaction and feelings of happiness and sadness (Children's Worlds, 2020).

The population of children in state care, by contrast, started to worry about their futures from the age of seven. The prevalence of such worries slightly decreased in adolescence but increased again on the eve of graduation. The absolute majority of children at children's homes had not developed an image of a preferred future (Oslon, 2018), and they strongly doubted the possibility of achieving any positive results. They did not believe they would be able to receive a good education (57%), become a successful professional (44%), or find a desirable job and earn enough (40%). A total of 39% of adolescents assessed their readiness for future independent life as insufficient (Semya, 2020).

In the Children's Worlds study in the Russian sample, the majority of children reported themselves to be very satisfied with the people they lived with (89.2%). The most frequently reported issue was that parents did not always listen to their children and take their views into account. Satisfaction with family relationships has the greatest impact on overall life satisfaction, being the most significant predictor of SWB and overall life satisfaction in 12-years-olds (Bruk, 2019).

The most problematic field of interpersonal relationships for the Russian sample was school. Children in the 10-year-old and 12-year-old age groups rated satisfaction with family and friends higher than satisfaction with school. Just slightly over 50% of the children (totally) agreed that their teachers cared about them, listened to them, and took their views into account. A total of 32.1% of the children said that there were a lot of arguments between children in their class; 37.6% reported having been hit by schoolmates at least once in the last month; 54.6% said they had been called names; and 44.1% said they were ostracized by peers at least once during the previous month.

Focus-groups with children (Rogozin & Ipatova, 2019) have also demonstrated the high importance of family and satisfaction with family relationships for their well-being; the group of children with disabilities also highlighted the issues of social contacts and friendship with peers. In the sample of children in state care, the availability of close relationships with an adult (positive answers to the question "Do you have an adult who you can trust in your children's home?") significantly correlated ($p<0.001$) with the overall well-being scale (Odinokova, 2018). At the same time, children in state care were basically unsatisfied with the quality or relationships in their support networks, with the most prominent dissatisfaction among adolescents (Oslon, 2018).

Subjective well-being in children depends on their ability to be heard. In both the 10- and 12-year-old groups of participants in the Children's Worlds study, the overall life satisfaction and the level of subjective well-being most strongly correlated with the indicator "My parents listen to me and take what I say into account." Nevertheless, this important aspect of well-being was underrepresented in the answers: the children rated the indicator "My parents and I make decisions about my life together" the lowest (Bruk, 2019). The subjective well-being of children in children's homes also depended heavily on their having their opinions taken into account: children who believed their views to be "completely" or "partially" considered by adults, demonstrated higher levels of well-being (Semya, 2020).

Alhough the works in this review emphasized children's right to be heard, their subjective well-being depended on proper execution of the whole system of children's rights, as well as a child's subjective experience of observance or violating his/her rights. The well-being scale developed by Odinokova et al. (2018) significantly correlated ($p<0.001$) with answers to the question "Do you think that your rights have ever been violated at the children's home?" At the same time, children in state care are poorly informed about their rights (Oslon, 2018), which contrasts with the results for general population, where most children know what rights they have (70.3%); in the Children's Worlds study, Russia ranked 8th out of 34 countries on this indicator (Bruk, 2019).

The study of subjective well-being of children in state care by Oslon et al. (2018) discovered an important protective factor linked to higher levels of well-being, *i.e.,* having a personal mentor. Having a positive assessment of a relationship with a mentor increased satisfaction in all the fields that children in care viewed as problematic (support networks, future prospects, participation in decision-making), as well as adolescents' satisfaction with living conditions in the care settings.

Discussion

This review has shown that the approaches of Russian research teams to the development of a national CWBI are quite compatible with international practice. Although in the Children's Worlds study Russia ranked 26th on children's well-being, in the PISA subjective well-being domain, the proportion of Russian students who were satisfied with their lives (reported between 7 and 10 on the life-satisfaction 10-points scale), was higher than the OECD average. On the other hand, the proportion of Russian students who were dissatisfied with their lives was also higher than the OECD

average. So the PISA results presented the situation with children's subjective well-being in Russia as more optimistic but more polarized, compared to the results of the Children's Worlds study. This might have related to significant variations in age groups, since the PISA focuses on 15-year-olds.

Like most of (inter)national models of children's subjective well-being, the Russian developments toward a CWBI rely on variations of a socio-ecological approach. The structure of domains varies but is generally compatible with the UNICEF/Innocenti model. Some of the reviewed papers, along with a body of collaborative research with adolescents (*e.g.,* see Ipatova, 2020; Filippova, 2020) have indicated the importance of having an "alternative thesaurus" of CWBI, which promotes debates on subjective well-being in plain language, using terms like "happiness" and "sadness."

The instruments used by Russian research teams included questionnaires developed specifically for CWBI purposes; standardized psychometric questionnaires (as a part of CWBI measures or as a control for various types of validity of new measures); and qualitative methods such as focus-groups, and creative and play-based tools used with small samples of children. Tools for children of various age groups and levels of abilities were available.

The development of CWBI prototypes proceeded more actively in relation to children living in state care (children's homes); there were several comprehensive sets of tools addressed specifically to that population. Methodologically they were unusual because of their reliance on a restorative model of subjective well-being, which focuses on possibilities and resources for successful development while experiencing and overcoming adverse situations (Lent, 2004), rather than on a normative approach. Measurements were aimed at capturing the severity and dynamics of problematic behaviors and symptoms, the development of coping-strategies, and promoting access to social support and related resources, as well as changes in well-being as a core indicator of the effectiveness of social projects or reforms of the state care system.

Approbation of complex indexes for evaluation of children's well-being in Russia has already allowed us to draw some valuable conclusions about the subjective well-being domain. Personal relationships with parents (or other significant adults) are of great importance for all the children, while the most problematic field of interpersonal relationships with adults and peers is school. For children in state care, the domain of interpersonal relationships was rather unsatisfactory, but having a personal mentor, who can become an attachment figure, increased their levels of well-being. This finding suggests that using both positive and negative indicators provides insights into the interplay between risk and protective factors.

Interestingly, an important role in children's well-being belongs to the observance of children's rights, and especially the right to be heard by adults. In the other words, the "hot spot" for subjective well-being is the intersection of close interpersonal relationships, respect, and confidence in fulfillment of one's rights; that makes children's participation in development of the CWBI especially important. It also exposes two types of low well-being contexts: 1) dissatisfaction with one's social network by children in care, which might be mitigated by a mentor but cannot be completely avoided in their life situation; and 2) poor knowledge of children's rights, a problem that can be a good target for educational interventions.

Our review was focused on approaches to subjective well-being indicators. A set of such indicators for the "Health and safety" domain was piloted by the Russian CWBI task force in 2020. Seven hundred and fifty children from ages 10 to 17 took part in in-person structured interviews in five regions (Moscow, Bashkortostan Republic, Kemerovo, Novgorod, and Nizhny Novgorod regions). Distribution of the answers to the question "*Do you have any safety concerns or experience anxiety when you go along a street in your town alone? With peers? With your close adults?*" showed that children who lived in Moscow, experienced the highest level of anxiety in the city environment (31% in Moscow vs. 26% in the whole population). Surprisingly, objective indicators picture Moscow as one of the safest Russian regions in terms of both *outcomes* (with 11 child victims of crimes per 10,000 children[1]) and *contexts* (with low incidence of violent street crimes)[2]. Such a direct juxtaposition of subjective and objective indicators reveals discrepancies between the actual situation and children's emotional experiences, which suggests the need to test hypotheses about the underlying reasons, and to make relevant decisions in social policy.

Conclusion

The Russian professional community has gained enough experience to develop an integral index of children's well-being, including the subjective well-being indicators for each domain, which will allow tracking the national dynamics in the level of children's well-being, as well as comparing it with the results obtained with analogous international indexes.

The following recommendations, drawn from our review, can inform this process:

- The Russian CWBI may be grounded in the six UNICEF/Innocenti well-being domains, but individual subjective well-being indicators should be adapted for Russian cultural realities.
- Maintain balance between objective and subjective indicators in the multidimensional CWBI model and search for the optimal number of items, since there are risks in making the CWBI too broad or, on the contrary, excluding some meaningful indicators, especially those difficult to measure. "Positive" and "negative"/"deficiency" indicators should also be balanced with a reasonable preference for "positive" ones.
- The balance between objective and subjective indicators can be achieved by comparing their values on the same issue, *e.g.*, police statistics of street crimes against minors vs. street (un)safety as perceived by children. Further piloting of the CWBI may prove that some objective or subjective indicators contribute little to the overall picture (*e.g.,* when subjective assessments strongly correlate with the objective data); such indicators may be removed. On the other hand, it is important to figure out subjective indicators that have no objective "proxies," and thus make a unique contribution in our understanding of children's well-being.

[1] https://tochno.st/problems/childhood

[2] https://tochno.st/problems/crime

- Determine the core composition of the CWBI for longitudinal tracking in both the whole child population, as well as variations to be used with narrower target groups (*e.g.,* children in care, children with disabilities) or for cross-sectional studies to more deeply understand certain aspects of children's well-being.
- Develop a multi-level mixed-methods model of data analysis, and supplement statistical data and large-sample questionnaires with in-depth qualitative studies using child-friendly tools (*e.g.*, storytelling- or play-based). It is also important to plan for triangulation schemes, considering both children's and adults' (parents' and practitioners') points of views.
- Children, including those from the most vulnerable groups, should be engaged in all the stages of developing and implementing the CWBI, from discussing the methodological model and indicators, to piloting measures, and collecting and interpreting the data. That will both allow making the CWBI questionnaires comprehensive and adequate for child respondents and increase the validity of obtained results.
- The roadmap for the CWBI development should embrace organizational, financial, and ethical resources and issues. On the one hand, the results of the CWBI implementation and their discussion should be made available to the public so that the relevant stakeholders could rely on them in decision-making and improvement of child and family services. To get maximum benefit from the CWBI, its implementation should be supported with an informational campaign; the results should be published in plain language and be regularly discussed by officials and expert communities (with child participation). On the other hand, the CWBI will highlight "zones of concern" in children's well-being, which might or might not be influenced by child protection actors. It is necessary to prevent the usage of the CWBI as a tool for manipulations or punishment. To promote improvements, there should be a public system for tracking fulfillment of recommendations made on the grounds of the CWBI results.
- Since collecting comprehensive data across several domains requires lots of resources, before piloting and implementing the national CWBI, it is necessary to perform pilot research in three to five Russian regions.

Limitations

The limitations of the current work are inherent in the scoping review approach: it relies on a relatively small number of sources that are embedded in the current national, sociocultural, and organizational contexts.

Ethics Statement

Ethics approvals were obtained in the frameworks of each study and included in the review. Ethical considerations, available from the reviewed papers, were presented in *Table 1*.

Informed Consent from the Participants' Legal Guardians (if the participants were minors)

In the framework of each study included into the review, written informed consent to participate in this study was provided by the participants' legal guardians, including birth parents, foster parents, or directors of children's homes.

Author Contributions

T.A. and E.G. conceived the idea. E.G. selected sources for the review as well as background information; T.A. elaborated the analysis criteria for the review. All authors equally contributed to analysis of the sources and to the Russian version of the final manuscript. T.A. translated it into English.

Conflict of Interest

The authors are members of the task force working on the Russian Child Well-being Index.

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Coping and Co-creation: One Attempt and One Route to Well-being. Part 2. Application to Identity and Social Well-being

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Background. This is the application part of a two-part paper that starts from the assumption that core cognition for promoting agent well-being is shared by all living beings. In Part 1, we derived a number of key terms of core cognition and two behavioral ontologies: coping and co-creation.

Objective. Our first aim is to extend the conceptual framework and two behavioral ontologies, while explaining, from first principles, the observed basic structure in identity development. The second is to apply core cognition on a metatheoretical level to explain how the two theories about fostering well-being show the characteristic features of our two behavioral ontologies.

Results. We demonstrate that the four different combinations of coping, co-creation, adequacy, and inadequacy explain from first principles the underlying structure of identity. Among other things, these accurately leads us to the defining features of authoritarianism. The notion of ontological security, as it is known in the literature, accurately describes the coping mode's restricted capacity for the creation and protection of well-being. Ontological security leads to a self-limiting form of well-being that has been described as "abnormal normality." In contrast, psychological safety provides the preconditions for high well-being and a safe environment, thus promoting the healthy development of coping and co-creation adequacy.

Keywords:
Well-being; ontological security; psychological safety; coping; co-creating; core cognition; identity; authoritarianism

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Introduction

In this second part of a two-part paper, we apply the separate and complementary ontologies we derived in Part 1 (Andringa & Denham, 2021) to human psychology and efforts to promote well-being. **Coping** and **co-creation** are both manifestations of core cognition. **Core cognition**, we posit, is the foundational cognition shared by all living beings. Part 1 focused on a derivation, mainly from first principles, of core cognition as it pertains to a generic living agent. In this part we transition to human cognition by applying the current conceptualization of core cognition to human identity development, and to two theoretical approaches to enhancing human well-being: ontological security (Giddens, 1991; Laing, 1960) and psychological safety (Edmondson, 1999; Clark, 2020). In this process we extend the list of key concepts of core cognition and the two behavioral ontologies with the concepts indicated in **bold**.

In Section 3, we apply the two ontologies of core cognition to identity development and show that the structure of identity development follows logically from the adequate or inadequate use of coping and co-creation. In Section 4, we apply the two ontologies on a metatheoretical level. We demonstrate that the theory of ontological security is a perfect formulation of the coping mode's ultimately doomed attempt to foster well-being. In contrast, the theory of psychological safety sets up the conditions for human flourishing. We numbered the sections, tables, and figures as to align with Part 1. We have indicated the concepts central to core cognition and these two ontologies in bold and listed their definitions in *Tables 5* and *6*.

Section 3 — Identity: Learning Co-creation and Coping Adequacy

Previously (Andringa, van den Bosch, & Wijermans, 2015) we have connected the existence of an individual's unique identity to the self-maintenance of the living state. Here we develop the structure of identity in terms of coping and co-creation adequacy. This leads to an enriched understanding of the interplay between coping and co-creation, and it demonstrates that the conceptual language of core cognition is a productive lens for approaching a well-studied psychological phenomenon. What we describe here connects intimately to the different perspectives on the world that the two brain hemispheres, as described by McGilchrist (2012), produce: *i.e.,* that the left-hemisphere is strongly connected to coping and the right hemisphere to co-creation (Andringa et al., 2015). Editorial constraints prevent us from developing this concept here in detail.

Identity Development

Berzonsky (1989), quoting Epstein, describes **identity** as a self-generated *theory of me as an actor in the world*, or self-theory: an explanatory structure constructed to explain and plan one's interactions with the world. It is the basis for understanding one's position and role in the world and, hence, an expression of one's **worldview** and **agency**. An adequate self-theory allows one to cope with life's challenges and respond to opportunities. In return, these enrich one's self-theory and worldview. One's self-theory is therefore directly related to how one appraises the world, which links with

the way the left and right hemispheres of the brain understand reality (McGilchrist, 2012). Berzonsky (1989) describes this self-theory thus:

> a theory that the individual has unwittingly constructed about him- or herself as an experiencing, functional individual … it contains major postulate systems for the nature of the world, for the nature of the self, and their interaction. Like most theories, that self-theory is a conceptual tool for accomplishing a purpose. Major purposes are to optimize the pleasure/pain balance of the individual over the course of a lifetime … and to organize the data of experience in a manner that can be coped with effectively.

Learning to optimize the pain/pleasure balance fits very well with optimizing well-being of the self through self-development of a worldview and an adequate behavioral repertoire for coping and co-creation. According to Berzonsky, the effectiveness of a self-theory can be measured in terms of whether it helps *"to solve the personal problems it was constructed to handle [and …] serve as a framework within which experience and […] relevant information can be meaningfully organized and understood*" (1989). We refer to this (partial) effectiveness as (partial) **adequacy** (see Part 1) and use that to derive the main structure of identity.

Identity as Co-creation and Coping (In)adequacy

Figure 2 in Part 1 described the development of an agent's behavioral repertoire. In this part we adapt it towards how humans deal with life's challenges and problems

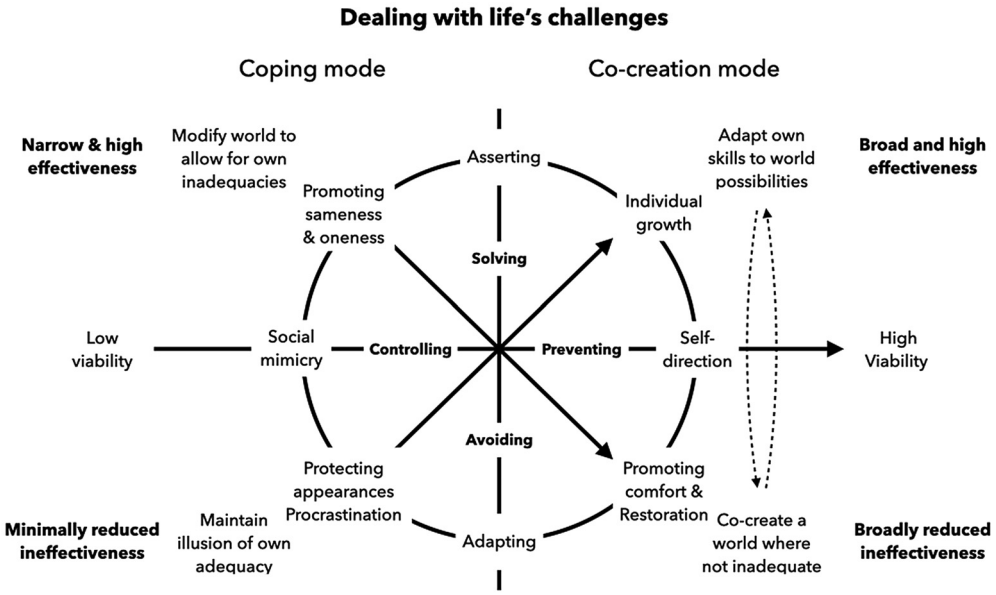

Figure 3. Dealing with life's challenges. Four attitudes toward problems and challenges (on the main axes), coupled with broad strategies (on the circle), effects on the world, and behavioral (in)effectiveness. The dashed arrows represent life's key demands: maintaining and increasing viability of self and habitat (Part 1, *Figure 1*). Alternatively attending to both demands implements core cognition.

(and indirectly to identity research). In Part 1 we described two main strategies to make the world more predictable and hence more manageable. **Coping** aims to make the world more predictable by reducing its complexity and creating systems (of agents or things) with more predictable behavior, thus bringing threats-to-self under control and promoting security. **Co-creation** makes the world more predictable by promoting unconstrained natural behavior and easy need satisfaction, through promoting and communicating efforts that facilitate and maintain habitat viability and overall safety. We defined a highly adequate agent as one that can *prevent* most problems, and quickly and effectively *solve* what cannot be prevented. Problems (and challenges) that cannot be prevented or solved can be controlled (suppressed) or avoided. These four strategies — preventing, solving, controlling, and avoiding — can be included in *Figure 2* of Part 1 to yield *Figure 3* above.

Table 3

Identity as an expression of strategies to deal with life's challenges. The four cells correspond to the quadrants of Figure 3.

Controlling & Solving (Identity foreclosure) Agents modify the world (with great effort) to prevent being confronted with their own inadequacies by promoting a suitable form of sameness and oneness through social mimicry (see Part 1, Coping) which creates an in-group with shared rules (and narratives). Their shared worldview enhances in-group effectiveness, but cannot claim realism since it excludes out-group perspectives because it primarily values sameness and oneness.	**Preventing & Solving (Achieved identity)** Agents are both adequate problem preventers and problem solvers because they continually self-acquire the skills to benefit most from the possibilities of the world. This allows them to exhibit more or less unconstrained natural behavior. Their co-creation and coping effectiveness, and hence life-success, prove they have developed and continually maintain a realistic worldview.
Controlling & Avoiding (Identity diffusion) Agents have neither co-creation nor coping skills and can only maintain an illusion of agentic adequacy through avoiding challenges or engaging in damage control by behavioral mimicry of (seemingly) successful others. They live in a world of intra- and extra-agentic forces that they neither comprehend nor control, and their worldview is incoherent and inconsistent.	**Preventing & Avoiding (Identity moratorium)** Agents aim to co-create or select a world where they are not inadequate because it promotes easy need satisfaction and unconstrained natural behavior. They live in a world that they mostly understand and can handle, but tend to be bothered by long-term problems, which periodically surface, because they lack the skills to address them effectively. In addition, they are blind to the power of complexity reduction and control strategies.

The main horizontal axis denotes preventing problems (associated with wisdom) as the highest manifestation of self-direction since it leads to high viability of self and habitat (*Figure 1* of Part 1). Its fallback strategy is controlling or reducing (unprevented) problems through social mimicry (Chartrand & van Baaren, 2009) as a manifestation of low self-direction. This is a situation where persistent problems require great effort to handle but are not necessarily successfully controlled and signify

low viability. The vertical axis reflects solving problems (associated with intelligence) as a way to assert oneself or, alternatively, avoid them as a way of adapting without changing the situation.

The four quadrants of *Figure 3* correspond directly to those in *Table 3 (*see below*)*, where the combination of attitudes towards problems and challenges defines each of the four table entries that we are going to connect to matching identity statuses (indicated in brackets). In each quadrant we first give a short description in terms of adequacy, and secondly, we describe the associated worldview.

In *Table 3*, the set of behaviors still pertains mainly to general agents, since we limited ourselves to the generalized concepts and formulations derived in Part 1. In the next sections we will introduce, first, the defining two dimensions of the human identity concept, and secondly, we will describe each of the four described identity statuses in relation to what we outlined in *Table 3*.

The Modern Identity Concept

James Marcia (1967) described late-adolescent development in terms of a transition from "the given" (the dependent) to the (independent) "givers," and an identity (development) crisis. He described (1966) four identity statuses as combinations of high and low scores on two dimensions: stable commitments and (to use a modern formulation) deliberate self-exploration.

1. Stable commitments indicate that personal strategies are effective and, hence, that one can build — self-directedly — on traces left in the habitat (which is related to concepts like **stigmergy** and **authority**). Since effective strategies are further improved through experience, they do not have to be replaced. This leads to stable, albeit developing, life-strategies and a stable, and effective personality. In *Figure 2* of Part 1, this corresponded to an "upward" move towards a more effective behavioral repertoire.
2. Deliberate self-exploration and the development of a self-constructed *theory of me as an actor in the world* is a requirement for the development of a unique self, rather than an identity based on values and beliefs adopted uncritically and unchanged from others (mimicking). The process of deliberate exploration of me-as-an-actor-in-the-world manifests as the broadening of the behavioral repertoire. In *Figure 2* of Part 1 we noted that broadening the behavioral repertoire is more arduous and slower than making it narrowly more effective through mimicking behaviors of those more effective, healthy, or otherwise attractive individuals. But since the broadening contributes to co-creation capacity, it offers higher long-term benefits, and is a preferred choice for individuals who have learned to value co-creation. Valuing these benefits requires the development of co-creation's basic strategy of discovering, and later using, the unconstrained natural behavior of self, others, and the wider habitat.

The shaping of a unique self occurs on the basis of shared or consensually adopted values, beliefs, and strategies to bootstrap self-development. Actualizing a unique

Table 4
The four identity statuses

	No deliberate self-exploration **Coping preference** **PLOC external / Low self-direction**	*Deliberate self-exploration* **Co-creation preference** **PLOC internal / High(er) self-direction**
Stable commitments	***Identity foreclosed*** *Self-exploration prevented through adoption of societal norms.*	***Achieved identity*** *Self-exploration crisis negotiated, resulting in well-explored stable identity.*
Adequate coping	**Focused on dealing with viability threats to self** The world is unstable and dangerous and needs constant surveillance, control, and forceful efforts to prevent disintegration and becoming totally dysfunctional.	**Effectively improving own and habitat viability** World is full of opportunities and solvable problems and promotes self-development.
	Focus on enforcing complexity reduction of habitat and agent behavioral uniformity through promoting oneness and sameness. An effective, but limited behavioral repertoire.	Focus on opportunities of self and habitat. Self-actualization as an expression of a broad and effective behavioral repertoire.
	They only take responsibility for group-level endorsed actions and procrastinate when forced to self-decide.	They take full responsibility for their actions and tend to address challenges as they come (which benefits development of self and habitat).
	Characteristic insistence on others changing or adapting to protect themselves from exposing their inadequacies: forcing others to mimic them by encouraging or enforcing the adoption of their rules (and narratives).	Corresponds to what Maslow (1954) refers to as self-actualization. It is a state of maximal psychological health and self-development. And it fully implements core cognition.
No stable commitments	***Identity diffusion*** *Self-exploration avoided, in combination with a fluid or unstable self-identity.*	***Identity moratorium*** *Self-exploration crisis (still) in progress, not (yet) leading to a crystalized identity structure.*
Inadequate coping	**Contributor to deficient viability of self and habitat** The world is unpredictable and brutal, since actions and outcomes seem unrelated; responsibility for actions is not taken.	**Aimed at protecting the conditions for own existence** The world is sometimes a problematic place but invites continued self-exploration and engagement.
	They focus on strategies that mitigate (public exposure of) inadequacy. Little self-development. Behavioral repertoire is narrow and minimally effective.	They focus on broadening their behavioral repertoire, mastering co-creation strategies and developing a unique identity.
	They take no responsibility for their actions because they can hardly predict the outcomes of their behaviors.	They take responsibility for self-initiated co-creative actions, but procrastinate or evade when faced with serious challenges.
	Their development depends strongly on whether the environment is conducive for it or not. A rich and safe learning environment allows them to progress to the other quadrants, while an unsafe and deprived environment traps them.	Avoidance of challenges deprives them of the learning opportunities to develop high coping skills.

Note. Words in italics are the defining properties of the four types of identity statuses (based on Berzonsky, 1989). The identity-status-related core cognition features are in the normal font.

self requires a shift in one's perceived locus of causality (PLOC) from external (like social mimicry) to internal: "*The more internalized a value or regulation, the more it is experienced as autonomous or as subjectively located closer to the self*" (Ryan & Connell, 1989, p. 750; Andringa, van den Bosch, & Vlaskamp, 2013). It also manifests self-direction.

PLOC internalization is not so much a rejection of previous values, beliefs, and strategies, but a refinement of these by allowing individual experiences to be enriched and generalized. Hence, they can be applied more flexibly (less rigidly), more context-appropriately (*i.e.*, more realistically), and more proactively with long-term benefits; this is a change from explicit rule-following to the use of experience-based tacit knowledge and self-direction. The combined changes of PLOC from external to internal, from explicit to tacit knowledge use, and from group to individual authority, entail emerging self-direction and liberation from self-limiting constraints, adopted via social mimicry, that warrant characterization as a self-exploration crisis.

Identity research uses past or current self-exploration crises as tell-tale indicators of identity development. In this paper, we connect negotiating or avoiding this crisis to the development (or not) of co-creation adequacy. More precisely, a self-exploration crisis does not indicate co-creation adequacy, but only a co-creation preference; the individual notices its benefit over coping, but is not necessarily adequate yet. Similarly, we connect stable commitments to coping or co-creation adequacy, and the absence of stable commitments to inadequacy. Commitments remain unstable until adequacy is reached. *Table 4* shows this for the four identity statuses we outlined above.

Identity from Core Cognition

In the next four subsections we will derive the properties of the four identity statuses described in *Table 4*: achieved, moratorium, foreclosed, and diffusion. Our derivation is based on the framework described in Part 1, and in particular the four-pronged structure to deal with life's challenges outlined in *Figure 3* and *Table 3*. As has been confirmed (Berzonsky, 1993), we assume no gender differences.

Identity Achieved

An *achieved identity* signifies co-creation and coping adequacy: a rich and effective behavioral repertoire ensures that most problems are avoided, and problems that do occur are dealt with quickly and effectively so that co-creation can resume problem prevention. This involves the individual safely and effectively building on past efforts (**stigmergy**) that produce few unintended and adverse side effects. To the *achieved identity* the world is full of opportunities and solvable problems. And they can and do take responsibility for self-initiated actions.

Developmentally, the *achieved identity* emerges from a successfully negotiated self-exploration crisis that results in a well-explored stable identity and full self-direction. With the *achieved identity* comes the *informational identity style* that Beaumont and Pratt (2011, p. 174) summarize for achievers as follows:

> … they address identity-relevant issues by being skeptical of their self-views, questioning their assumptions and beliefs, and exploring and evaluating information that is relevant to their self-constructions [hence making and keeping their worldview in accordance with the state of the world]. The use of an informational style is positively associated with strategic planning [which includes problem prevention], vigilant decision making, and the use of proactive and problem-focused coping [indicating effective coping and co-creation]. The informational style is also associated with such personal and cognitive attributes as autonomy, openness to experience, introspectiveness, self-reflection, empathy, a high need for cognition, and a high level of cognitive complexity.

These listed properties all facilitate high autonomy, strong self-development, and the effective real-world contributions characteristic of co-creation, as well as high well-being (Berzonsky & Cieciuch, 2016) and wisdom, as we have defined them in Part 1. All in all, this expresses both coping and co-creation adequacy.

Identity Moratorium

Identity moratorium develops due to a preference for co-creation and coping inadequacy: a (fairly) broad behavioral repertoire ensures that many problems are avoided, but problems which do occur are often not dealt with quickly and effectively; the individual cannot (yet) rely on stable and reliable strategies (commit) and instead struggles to develop these. To the person with a *moratorium identity*, the world is a place for continued self-exploration and major problems. He or she experiences an ongoing self-exploration crisis and has a self-development focus that, despite efforts, does not yet lead to a stable identity structure, although it expresses a "limited commitment" (Berzonsky & Cieciuch, 2016) through its co-creation preference.

Although co-creation adequacy might not have been achieved, co-creation is still considered superior to coping and, hence, is the preferred strategy. This means that the person with a *moratorium identity* expresses the strengths of co-creation through a focus on contributing to a high-quality habitat, for which the person can take responsibility. However, the strengths of coping — control of problematic situations and effectively ending problems — are minimally expressed and might, when problem solving is structurally avoided, lead to toxic situations. This leads to less time for co-creating than the *achieved identity* status, and comfort, defined as an absence of apparent pressing problems, is highly valued.

People with a *moratorium identity* express many of the features of the informational identity style, but to a lesser degree due to their lower coping skills, which also leads to lower well-being than the *achieved identity* style (Berzonsky & Cieciuch, 2016).

Identity Foreclosure

Identity foreclosure is the identity status that is central for the next section, so we elaborate it in this subsection. Identity foreclosure combines co-creation inadequacy with adequate coping. Co-creation inadequacy leads to structurally unprevented

problems, but coping adequacy ensures that these are managed with effort — *i.e.,* controlled — so that they do not (usually) spin out of control. The concept of **security**, defined as threats brought and kept under control, describes this. The associated worldview is one of an unstable and dangerous world that needs constant surveillance, control, and the need for forceful efforts to prevent disintegration and becoming totally dysfunctional. This motivates the individual with a *foreclosed identity* more often than not (although limited meta-cognition ensures that they are unaware of this).

Identity foreclosure corresponds to prevented (foreclosed) self-exploration through the uncritical adoption of consensual norms (Berzonsky, 1989; Marcia, 1966) and social mimicry. The dominance of the coping mode leads to favoring ingroup level rules and, in general, shared (explicit) knowledge over individual (implicit) knowledge. Foreclosed individuals aim to adopt and express shared rules and narratives with great diligence, and they actively promote the adoption of their shared worldview. Neither the body of shared rules nor the single shared worldview is explored since it is adopted on the basis of superficial effectiveness and social mimicry rather than deliberation on its effectiveness and context appropriateness. The associated worldview is therefore often at odds with actual states of reality, thus perpetuating the body of unprevented problems that have to be controlled.

The resulting strict adherence to the norm and an insistence of oneness and sameness — generating an ingroup — effectively curtails agent and habitat diversity. This is considered moral and responsible behavior because it is intended to manage the threats that keep the coping mode activated. Ironically, "foreclosed" individuals see little value in co-creation's preventative strategies and in questioning its associated assumptions and beliefs. Instead, they view them as **out-groups**: individuals who violate sameness and oneness, and hence, frustrate coordinated coping. This means that the "foreclosed" individual is blind to (superior) strategies that might structurally prevent the problems they try so hard to keep from spinning out of control. Hence, more often than not, the threats and problems persist, which locks this identity status into a self-perpetuated **coping trap**.

Groups of foreclosed individuals manifest a **social level coping trap** that, through their insistence on coordinating the behaviors of others, threatens to dominate the habitat. Groups of foreclosed individuals have the only identity status that insists on others changing and conforming. Their (unspoken) motto is: "We are right and you have to adapt your behavior to match ours." They feel righteous because they have no access to perspectives and worldviews other than their own, and they lack the tools to judge the merits of out-group insights. Hence, they see only potential harm in outgroup strategies.

Worse, they are particularly insensitive to arguments more nuanced or personal than rule-following and other forms of social mimicry. In fact, they prefer cognitive closure (Webster & Kruglanski, 1994) in answering questions on a given topic, over continued uncertainty, confusion, and ambiguity. An even more profound formulation of their motto is: *"Out-group diversity, such as nuanced thoughts and self-directed behaviors, activates a sense of inadequacy in me, through raising doubt on my shared belief system. Diversity, therefore, must be suppressed."*

Individuals with a *foreclosed identity* express a particular form of information processing known as the normative identity style. We referred to this in an autonomy development context as cognition for control, order, and certainty (Andringa et al., 2015). The normative identity style is a form of information processing that latches onto the familiar, the standardized, the expected, and whatever has direct utility (McGilchrist, 2012). As such, it prefers representations that have been stripped of ambiguities and have been made fixed, uniform, invariant, and static. And in its problem-solving, it denies inconsistencies and instead latches on to a single, norm-abiding, in-group-promoting solution, and an associated narrative that has been coupled with totalitarianism and authoritarianism (Beaumont, 2008; Berzonsky, 1989). The normative identity style of the foreclosed identity has been summarized as follows:

> Normative individuals more automatically internalize and conform to the standards and expectations of significant others. Discrepancies between information about how they are and their normative standards evoke feelings of guilt and concern about avoiding failure [to be a good in-group member]. Their primary aim is to defend and maintain existing self-views [to protect a shared worldview that promotes coordinated action]. (Berzonsky, 2008, pp 646)
>
> Normative individuals report high levels of identity commitment as well as dispositional characteristics such as agreeableness, conscientiousness [both facilitating rule following], and extraversion [promoting the adoption of the shared rules]. However, they also report low levels of openness and introspectiveness [which forecloses further identity development], Normative individuals have been found to employ avoidant coping strategies, to procrastinate in the face of [individual] decisions, to have a high need for structure and a low tolerance for ambiguity, and to be conservative, authoritarian, and racist in their sociocultural views (Beaumont, 2009, p. 97)

Karen Stenner (2005) summarizes the foreclosed identity's characteristic urge to reduce complexity as "Intolerance to diversity = Authoritarianism x normative fear level," where authoritarianism is a measure of identity foreclosure. She describes **normative threats** as threats to oneness (shared authority) and sameness (shared values and rules). In particular, she lists questioned or questionable authorities and values, disrespect for leaders or leaders unworthy of respect, and lack of conformity with or consensus in group norms and beliefs (Stenner, 2009, p. 143): all correspond to a disintegration of oneness and sameness. This summarizes the existential threat felt by those with a foreclosed identity when their only strategy to secure well-being — behavioral diversity reduction through (imposed) limits on agency — is frustrated. But when they do not feel threatened, people with a foreclosed identity manifest intermediate levels of well-being (Berzonsky & Cieciuch, 2016), since they are generally able to maintain problems and threats at manageable levels. All in all, this identity status expresses high coping adequacy and co-creation inadequacy.

Identity Diffusion

The fourth identity status is referred to as *identity diffusion* and is characterized by inadequate co-creation and inadequate coping. People with this status live in a world of

unprevented and unsolvable problems, with dynamics that they do not comprehend, with rules they do not know how to apply skillfully, and where effort and hoped-for outcomes are only weakly related. Given their low adequacy, their well-being depends predominantly on environmental factors. For people with identity diffusion the world is unpredictable and often brutal despite the best of intentions. Hence, they procrastinate in the face of self-decision and will not take responsibility for their actions.

Identity diffusion is characterized by prevented or avoided self-exploration in combination with a fluid or unstable self-identity. While aiming to improve their well-being, people with *identity diffusion* are often confronted with the consequences of their own inadequacy. Their intentions are good; their realization is not. And one often ends up in, or even self-perpetuates, low viability states. And without the benefit of self-exploration, they do not understand the causes of their problems. Much more than with the other identity statuses, people with identity diffusion live in a random (and brutal and unjust) world of problems in which they cannot take responsibility for their actions. This contrasts with achievers who live in a world of opportunities to be explored and responsibly realized. Beaumont and Pratt (2011, p. 174) describe the associated identity style thus:

> A diffuse-avoidant identity style is associated with procrastination and attempts to evade identity conflicts and decisional situations as long as possible [all due to self-perceived inadequacy and mitigating efforts to prevent adverse outcomes and being exposed as inadequate]. … The use of a diffuse-avoidant style is characterized by low agreeableness, conscientiousness, introspectiveness, [complicating rule following] and cognitive complexity [indicating a shallow worldview], and high neuroticism. A diffuse-avoidant style is also associated with less adaptive cognitive and behavioral strategies, such as using avoidant coping strategies, engaging in task-irrelevant behaviors, expecting to fail, having a low feeling of mastery, and performing less strategic planning. [all indicating coping and co-creation inadequacy]

This description clearly demonstrates that people with a diffusion identity exhibit a narrow range of marginally effective or ineffective behavioral options that lock them into this status and curtail their well-being (Berzonsky & Cieciuch, 2016). They express both coping and co-creation inadequacy. Nevertheless, self-development occurs, and they can, although later than others, adopt narrowly effective strategies (towards the *foreclosed identity* status), develop self-exploration abilities (towards the *identity moratorium* status), or both (towards the *achieved identity* status).

Psychology from Core Cognition

In Section 3, we have connected the four combinations of co-creation, coping, adequacy, and inadequacy to the four identity statuses. The psychological literature has derived the properties of these statuses and the associated information-processing styles via careful experimentation and observation (in particular the copious body of research by Berzonsky). But to our knowledge, we are the first to derive the structural properties of identity from first principles (in fact, this might be a first for any phe-

nomenon in psychology). This provides evidence that human psychology is indeed rooted in the core cognition shared by all life.

We also suggest a phylogenetic scaffolding which has coping and co-creation (as essentials of core cognition) as the foundation; identity status and associated information-processing styles building on this; and then personality traits like the Big Five on top. This is not new; two personality meta-traits, referred to as plasticity and stability (DeYoung, Peterson, & Higgins, 2002), have been proposed with a similar scaffolding model. More recently, DeYoung (2015) posited the underlying role of plasticity and stability in a cybernetic Big Five theory of *goal-directed* adaptive systems. This is similar to DeYoung's proposal, although its goal-directedness suggests that it pertains predominantly to the coping mode.

Section 4 — Two Routes to General Well-being

This section addresses two routes to social well-being. There are many routes to prospective well-being; in fact, all self-help literature and political, economic, or religious ideologies propose them. We have selected the "ontological security" framework and a recent formulation of "psychological safety" to represent very clear, actionable, and precisely-worded coping and co-creation alternative approaches to general well-being. In this section we will apply our core cognition framework as a metatheoretical lens to inspect the "theories" described below. This requires us to focus on the mindsets that spawned the theories behind either the coping or co-creation ontology.

Ontological security and psychological safety refer to seemingly similar, but essentially different, concepts of avoiding danger. We address that first.

Safety versus Security

Safety is a situation or state with positive indicators of the *absence* of viability threats. It is a precondition for co-creation and for achieving and maintaining the higher levels of well-being. Adequately co-creating agents self-organize a shared habitat while minimizing tension and conflict and maximizing natural unconstrained behavior. Their co-creation adequacy prevents danger, harm, or injury because it allows agents to focus on restoration and growth.

In humans, the role of this absence of threats is exemplified by the difference between calm and boring sonic environments, *i.e.,* the presence or absence of audible safety (Andringa & Lanser, 2013; Van den Bosch et al., 2013; van den Bosch et al., 2018). Similarly, squirrels infer safety from bird chatter (Lilly, Lucore, & Tarvin, 2019). In addition, recent studies on how to improve the well-being of people with dementia (where reduced higher cognition opens a window to more basic processing) show marked reduction in problematic behavior by just reducing the prevalence of (unpleasant) sounds which are indicative of unsafety (Koster et al., submitted 2021).

While safety is a precondition for co-creation, security is the objective of coping. The Concise Oxford dictionary defines **security** as *"the state of being free from danger or threat."* Here we sharpen this definition to "a state where viability-threats-to-self have been brought under control," to stress its deliberate manifestation in coping.

In our modern societies, increased coping prevalence is manifested by the changing role of the (national) security state from a sole focus on international war, to include policing domestic and foreign populations (Andreas, 2001; Raskin, 1976). It is no longer other states that are the problem, but our own domestic population represents a security threat to be controlled (Zedner, 2003). Similarly, organizations can both trust or distrust worker autonomy. Distrust of worker autonomy promotes coercive formalization of work as bureaucracy (Adler & Borys, 1996; Andringa, 2015). These examples suggest that "greater security" does not necessarily signify "more safety." It just indicates more coordinated behaviors and stricter control of potential (even imagined) threats.

"Security" and "safety" play central roles in the two attitudes towards the creation of well-being that we will discuss. Security provides actively maintained **short-term** sanctuary by controlling threats to viability and through enhancing control over diversity and complexity to promote oneness and sameness. It is a manifestation of coping, associated with the *foreclosed identity* status, and the normative identity style. In contrast, safety provides and creates environmental conditions conducive to **long-term** well-being through avoiding problems, actively signaling the absence of threats, and maintaining an environment for restoration, growth, and, in general, co-creation. It is associated with the *achieved identity* status and its informational identity style.

Ontological Security

The Origins of Ontological Security

Creating "security" is associated with reducing fear by excluding "the unknown" and controlling whatever activates feelings of inadequacy. An **in-group**, as a defining feature, shares common adequacy limits and aims to control the environment to make it more orderly, stable, structured, predictable, and therefore, less threatening to the in-group by imposing limits on agency via routines, norms, and rules. This method of creating well-being is defined by theorists in Sociology and International Relations as "ontological security," and we interpret it here as a perfectly formulated attempt by individuals in the coping mode to improve their well-being. However, since it has the coping mode's limitations, it can only improve low well-being to a situation of no symptoms. It cannot bring about the higher levels of well-being achievable by co-creation.

The concept of **Ontological Security** was popularized by Anthony Giddens who described it as the secure feeling an individual derives from attaining *"on the level of the unconscious and practical consciousness, 'answers' to fundamental existential questions* [*i.e.*, problems] *which all human life in some way addresses"* (1991, p. 47). However, the origins of ontological security can be found in Laing's *The Divided Self* (1960). For Laing, psychoanalysis is about helping the patient reconstruct his identity, or "way of being himself in his world," so as to show no overt symptoms (Laing, 2010, p. 25). Laing states that individuals who have a "partial or almost complete absence" of this "person-in-the-world" theory are more likely to develop psychosis and schizophrenia (1960, p. 39). He describes such individuals thus:

> His identity and autonomy are always in question. He may lack the experience of his own temporal continuity. He may not possess an overriding sense of personal consistency or cohesiveness. He may feel more insubstantial than substantial, and unable to assume that the stuff he is made of is genuine, good, valuable (Laing, 1960, p. 42).

Here Laing describes the diffusive identity status; inadequate, unskilled, with an underdeveloped self-theory, and with an inadequate behavior repertoire that is often ineffective, and potentially or progressively disconnected from the inner (self) and outer reality. He does not describe the other identity statuses because, as a mental health practitioner, his concern is with removing the *symptoms* of schizophrenia and psychosis. In the absence of a diagnosis, he has no tools to promote optimal mental health, or maximize human potential or self-actualization (Maslow, 1954). Hence, the concept of ontological security emerges exclusively from the logic of the coping mode, as its formulation and conceptualization are ignorant of co-creation.

Giddens (1991) provides a sociological interpretation of Laing's insights, arguing that our identity and autonomy, and by extension our ontological security, depend on our ability to trust in social narratives and routines in which we are contextually embedded, and through which our identity is constituted. Adhering to norms and routines means individuals are not *"obsessively preoccupied with their contingent, and fragile nature"* (Rossdale, 2017, p. 371).

For Giddens the aim of gaining security is not to "accept" reality, or broaden and deepen adequacy by developing a richer self-theory through exploration of self and the world. Instead, its purpose is *"to create ontological reference points"* which simplify reality so that inadequate agents can deal with *"the contexts of day-to-day life"* (1991, p. 48) without learning and growth towards full self-actualization. In the terms laid out in *Figure 2* in Part 1, the aim is to make the behavioral repertoire more effective through social mimicry via the adoption of behaviors of (authoritative) others. It does not promote broadening the scope of behaviors. Hence it promotes both the normative identity style as much as it promotes authoritarianism.

Normative Threats to Ontological Security

According to Giddens, norms and routines which coordinate behavior, provide us a *"cognitive and emotional anchor"* from which (inadequate) individuals derive the "trust" (Giddens, 1991, p. 36) that continuity and stability will prevail in everyday relations, so that they are not confronted with their own inadequacy. Routines rely heavily on a complex body of shared knowledge, constituting a societal status quo that can be mimicked wholesale: taken-for-granted local practices, cultural narratives, institutional structures, and "common" knowledge (Berger & Luckmann, 1991, p. 35). In other words, the status quo is the "*anchor*" from which security is derived. Ontological security is associated with (normative) individuals who have acquired a narrow but conditionally effective skill set for coping; they lack the behavioral breadth to deal with a world that is not under control of their in-group, and they feel an existential threat when so confronted.

This is a direct reference to Stenner's book *The Authoritarian Dynamic* (2005) that we addressed in Section 3 on the *foreclosed identity* status, which predicts au-

thoritarianism. Individuals with a foreclosed identity status respond with intolerance to diversity when confronted with normative threats, and hence they promote common authority (oneness) and shared values (sameness). The most threatening conditions to oneness and sameness "are questioned or questionable authorities and values, for example, disrespect for leaders or leaders unworthy of respect, and lack of conformity with or consensus in group norms and beliefs" (Stenner, 2009, p. 143).

Here, the normative "threat" to oneness and sameness concerns the condition of the self, more than of the perceived disturbance: "the self is unsure what to expect of the new: the exact boundary and inclusion or exclusion of the newcomer are not clear" (Chernobrov, 2016, p. 586). In general, the unfamiliar "new" exposes the individual's inadequacy; uncertainties regarding the unfamiliar "hamper calculation and increase risk, jeopardize perceived or actual security, or signal indeterminacy and lack of meaning" (Chernobrov, 2016, p. 582). Consequently, security is concerned with maintaining one's relationship with the environment as it is, via purging it of sources of uncertainty. This makes sense since inadequate agents are not equipped with the skills to understand or deal with the unknown outside of in-group-controlled environments. (See Part 1, Section 2 "Coping," and the subsection on the foreclosed identity style).

Attempting Well-being via Ontological Security

The process of gaining ontological security is the process of becoming partially adequate via adoption of normative strategies (the mimicking of status quo behaviors) to minimize viability threats. As Mitzen (2006, p. 342) puts it, *"for theorists of ontological security, individual identity is formed and sustained through relationships"* with significant others, as is expected of people with the foreclosed identity status and the associated normative identity style (Berzonsky, 2008), who express the coping mode structurally and preferentially.

Berger and Luckmann (1991, p. 71) refer to the adoption of empowering routines and norms as "habitualization." **Habitualization** is the consolidation of routines via reference to socially constructed symbols, myths, and heritage — shared knowledge — that sustain an in-group identity, which, in the words of Kinvall, provides *"a guide for future actions"* (2004, p. 756). Norms, rules, and routines impose in-group level limits on agency and reduce diversity (Rossdale, 2017), while increasing the probability of intended outcomes. All moves to achieve or retain ontological security enact limitations which restrain political critique and possibility, and securitizes subjectivity (Rossdale, 2017, p. 370). Interestingly, habitualization activates resistance in the form of the psychological phenomenon of **reactance**: the motivation to liberate oneself from limits on self-directed behaviors (Miron & Brehm, 2006).

Individuals don't only ascribe meaning to their own normative experience but are able to "*unite* [...] *in a way that promotes order and predictability*" (Gergen, 2001, p. 18 in Skey, 2010). The resulting less complex environment no longer confronts inadequate individuals with their inadequacy because it is, for them, more manageable and predictable, and hence it appears and is appraised as less threatening. However, this complexity reduction also stipulates that security is achieved via adherence to the

status quo at the expense of personal freedom, options for self-directed contributions (by implementing authoritarianism), and diminished congruence with the actual state of reality. Inevitably, the façade of a less complex environment needs continual and effortful maintenance so as not to crumble in the face of reality. The weaker the façade appears, the stronger the normative threat, and the more frantically the façade is defended and diversity suppressed.

Any out-group identity is constructed via **othering, "***which denotes exclusionary and antagonistic differences"* (Rossdale, 2017, p. 374; Kinvall, 2004). Inadequate co-creators are only familiar with and comfortable in their own in-group context, so they construct the unfamiliar individual's identity comparatively to their own, with a focus on difference rather than similarity (Skey, 2010), and exclude everything, even things of great value, when they fall outside the knowledge base of the in-group. This results in the construction of identities and routines as *"relative to other identity constructions"* (Kinvall, 2004, p. 762), making each in-group seemingly incompatible and inherently separate. By viewing each other as stereotyped members of a group relegated to a foreign status (Skey, 2010), they create **out-groups**. As the foreign is threatening to inadequate co-creators, out-groups perceived as "different" are almost always seen as a problem (threat-to-self). This process of othering leads to polarization, which traps the in-group deeper in the coping ontology.

The resulting security is short term because it relies on exerting continual control through the suppression of unwanted diversity (which exposes one's inadequacies). *"The process of achieving (or seeking to achieve) ontological security frequently involves forms of exclusion and othering which may be both violent and counterproductive"* (Rossdale, 2016, p. 370). As there is only coping, there is zero-gain; *"Increasing ontological security for one person or group* [...] *is thus likely to decrease security for those not included"* (Kinvall, 2004, p. 763). Routines and rules are advantageous to the in-group, as they stipulate order and increased predictability. However, members of the out-group are disadvantaged by these rules and, in turn, are threatened and feel insecure. In-groups provide the out-group with grievances: exclusion, suppression, supervision, et cetera. Silke (2008, p. 112) asserts that if *"marginalized groups are discriminated against or* [...] *believe that there is discrimination, then there will always be sections within such communities who will be receptive to radical ideologies,"* thereby jeopardizing the security of the environment. *"Empirically and normatively* [ontological security] *push*[es] *us in the wrong direction"* (Nesbitt-Larking, 2016, p. 13).

Searching for security by relying on in-group norms and routine also can distract from real-world threats, and actually make the group less safe and effective. When speaking of the failure of commercial organizations such as Radio Shack, Blockbuster, or Kodak, Clark (2020) stated: "*These organizations were filled with large numbers of highly intelligent people, and yet they all fell prey to competitive threats that were hiding in plain sight. The countervailing strategies their competitors put in place were not mysterious. They were, in fact, obvious. What these organizations failed to do was challenge the status quo and disrupt themselves.* [...] *They allowed the status quo to fossilize and would not allow themselves to change it."* In other words, protecting the status quo might actually degrade one's situation in a changing world. This is the fate of

individuals existing exclusively under the coping mode's limitations: it may postpone death, but it provides no guarantee for being or becoming well.

Pathological Normality as the Coping Mode's Ideal of Well-Being

What does the ideal of ontological security look like? It would be a symptomless perfect adaptation to a carefully controlled environment, protected from everything that might freak out the foreclosed personality. Aldous Huxley (1958), quoting Erich Fromm, noted that symptoms means conflict, which indicates

> that the forces of life which strive for integration and happiness are still fighting. The really hopeless victims of mental illness are to be found among those who appear to be most normal. "Many of them are normal because they are so well adjusted to our mode of existence, because their human voice has been silenced so early in their lives, that they do not even struggle or suffer or develop symptoms as the neurotic does." They are normal not in what may be called the absolute sense of the word; they are normal only in relation to a profoundly abnormal society. Their perfect adjustment to that abnormal society is a measure of their mental sickness.
>
> These millions of abnormally normal people, living without fuss in a society to which, if they were fully human beings, they ought not to be adjusted, still cherish "the illusion of individuality," but in fact they have been to a great extent de-individualized. Their conformity is developing into something like uniformity. But "uniformity and freedom are incompatible. Uniformity and mental health are incompatible too … Man is not made to be an automaton, and if he becomes one, the basis for mental health is destroyed."

This corresponds with Maslow's observations about the suppression of an essential human core, of which he says "even when its existence is denied, it never goes away, even in a sick person; and is constantly trying to get out. Discipline, deprivation, frustration, pain, and tragedy are necessary because these experiences foster and fulfill his inner nature" (Maslow, 1968, pp. 3-4). Maslow argued that "psychologically speaking, that which designates a normal human being is in reality a psychopathology of the average. It depicts a lifestyle that is so widespread and nondramatic that we don't even notice it ordinarily. In general, this normal life is one of general phoniness, illusion, and fear; showing that it is a sickness that is widely spread." (1968, p. 16).

Striving for ontological security then fosters a psychopathology of the average: a state of marginal well-being and psychological emptiness which is the best that coping can produce: it is **pathological normality**. Unfortunately, it is also what Hannah Arendt (1963) refers to as the "banality of evil" in her description of the normality of Eichmann who "would have had a bad conscience only if he had not done what he had been ordered to do."

The question then is how to promote and achieve higher levels of well-being.

Psychological Safety

Psychological safety is a term that was first derived in teamwork research where it helped to predict which teams would work well and which would not. Psychological safety promotes interpersonal risk taking (Edmondson, 1999) and signifies a change

from a defensive and self-protective team member to being a fully collaborating member without any motivation to self-protect.

Feeling safe is conditioned on positive **indicators of safety**. Safety is an outcome of successful previous behaviors (both coping and co-creation), and signifies that all is well. Therefore, safety signifies high adequacy, pervasive optimization (wisdom), inclusion, and **wu wei**. In such an environment, changes are attended to before they become pressing problems because in an inherently safe environment enough individuals have adequate skills to approach and adapt to the (natural dynamic of the) unfamiliar, without feeling threatened and defensive.

Whereas ontological security has a focus on maximizing environmental mastery through minimizing habitat complexity, **psychological safety** has a focus on maximizing agentic contributions in ways that benefit the whole. Via anthropological fieldwork conducted on organizations *"from every sector of society,"* Clark (2020) described the concept this way: Psychological safety is a condition in which you feel 1) included; 2) safe to learn; 3) safe to contribute; and 4) safe to challenge the status quo — all without fear of being embarrassed, marginalized, or punished in some way. Step four exemplifies interpersonal risk-taking most clearly.

Clark (2020) argued that the progression toward psychological safety is derived from the natural sequence of human needs; the pre-conditions required for co-creation to occur. Maslow's hierarchy of needs (1943) has five stages (physiological, security, belongingness, esteem, and self-actualization) that correspond directly to Clark's progression towards psychological safety. The most basic needs for Maslow are physiological: food, water, and shelter; these needs are not included in Clark's psychological safety because each one "is a postmaterialist need" (2020). Maslow's next three stages (security, belongingness, and esteem) are the needs that Clark conceptualized as the three needs on which psychological safety depends. Psychological safety "is no less a human need than food or shelter," since it is the manifestation of the need for agentic self-preservation, which has as much to do with "social and emotional needs as physical ones" (Clark, 2020). Once the basic needs of food, water, and shelter are met, psychological safety becomes a priority so that an individual's maximum potential is unleashed; self-actualization and co-creation preconditions are satisfied.

Fours Steps of Psychological Safety

The first step for psychological safety is inclusion. The concept of inclusion underpins the difference between safety and security. When creating well-being via security, in-group membership is always conditional. In-group members feel unthreatened because of sameness and oneness: security derived by the suppression of diversity. When creating well-being via safety, membership in the community is *"based on the sole qualification that they possess flesh and blood"* (Clark, 2020) (which is easily generalized to include all living agents).

For *inclusion safety*, agents must be equipped with the skills to negotiate the unfamiliar by extending both respect and permission. By respect, Clark means the average level of esteem agents afford to each other; how much agents value and appreciate

the unfamiliar. By permission, Clark means the degree to which the group allows the unfamiliar to influence them; that all, including newcomers, are permitted to participate as members of the community. Permission and respect are important affordances that agents grant one another in order to create an environment that provides safe passage for maximizing agentic potential and cultivating confidence, resilience, and independence (Clark, 2020). All in all, unconditional membership allows full access to the co-creation side of *Figures 2* and *3*.

The next level of safety is *learner safety*. Learner safety implies that you feel safe to participate, engage with the discovery process, ask questions, and make mistakes. The transition to learner safety means the agent faces the anxiety of the unknown (all signs of in-groupiness) and is not limited by it.

As individuals feel increasingly safe in a nurturing environment that offers respect and permission, we enter the stage of *contributor safety*. This is the stage where the individual is invited to participate as a full-fledged member of the community, and his/her esteem needs are fulfilled (Maslow, 1943). The agent's contributions are successful; he feels adequate, skilled, and valuable. Hence, he gains self-esteem and, in turn, is increasingly respected by the community. Contributor safety emerges when the individual has acquired skills and is able to apply them adequately to produce shared benefits. The community has to provide both encouragement and appropriate autonomy to the agent (Clark, 2020). If the individual is hampered by discrimination, prevailing norms, internal bias, a lack of empathy, or general aloofness, he or she is denied contributor safety.

The final and crucial stage of psychological safety is *challenger safety*; an individual feels free to challenge the status quo without fear of retribution or reprisal (Clark, 2020). Challenger safety enables individuals to overcome the pressure to conform and, hence, can enlist themselves in co-creative processes; improvement, innovation, development, and hence communal growth (the more-than-zero-sum feature of co-creation).

While allowing and promoting challenger safety is a defining feature of psychological safety, challenges to the status quo are exactly what is to be suppressed from an (ontological) security perspective. Here the in-group's focus is on protecting and defending the rules, routines, and norms that define the ingroup by suppressing diversity. Since ingroups feel inadequate under normative threats (challenges to sameness and oneness), any challenge is interpreted as an assault on precisely what constitutes the normative and authoritarian identity. And that is why suppressing diversity is incompatible with psychological safety.

Psychological safety is achieved via maximizing member contributions so that 1) members are equipped with the skills to confidently negotiate the unknown and unfamiliar; and 2) new and current members feel free to join, learn, contribute, and criticize freely, and, therefore, never harbor the motivation to threaten the well-being of the **community**. The result is a community or habitat presenting a high concentration of safety indicators in the form of unscripted contributions to the community. The progression towards psychological safety and fulfilling the natural sequence of human needs provides a recipe for co-creative well-being and growth.

Metatheoretical Considerations

The very formulation of the theory of ontological security shows that it is possible to formulate, with the best of intentions, a framework that is almost guaranteed to lead to a deeply pathological state of individual and societal non-development. Ideally this results in a situation of no symptoms, populated by individuals perfectly adapted to a world that is kept within the limits of their underdeveloped co-creation adequacy: *pathological normality*. Additionally, maintaining a world within tight constraints is arduous and wasteful compared with societal developing of the skills to deal with full real-world complexity, threats, and opportunities, as effective co-creation allows to be done.

Although this argument might be convincing for some, it is not acceptable for in-groups (*i.e.,* authoritarians), especially not for those under normative threats, who simply assume that out-groups must either comply with their in-group rules or be dealt with otherwise (eliminated, removed, or made irrelevant). Due to the absence of self-exploration and the associated lack of broadening of the behavioral repertoire towards co-creation adequacy, this means that the coping worldview is simply not rich enough to adequately assess its own limitations, let alone understand full human potential. Possibly, this also characterizes the formulators of ontological security, since they seem unaware of the existence of co-creation. The formulation of psychological safety, on the other hand, expresses co-creation very clearly, but it is concurrently aware of coping and its limitations because it straddles co-creation and coping skills.

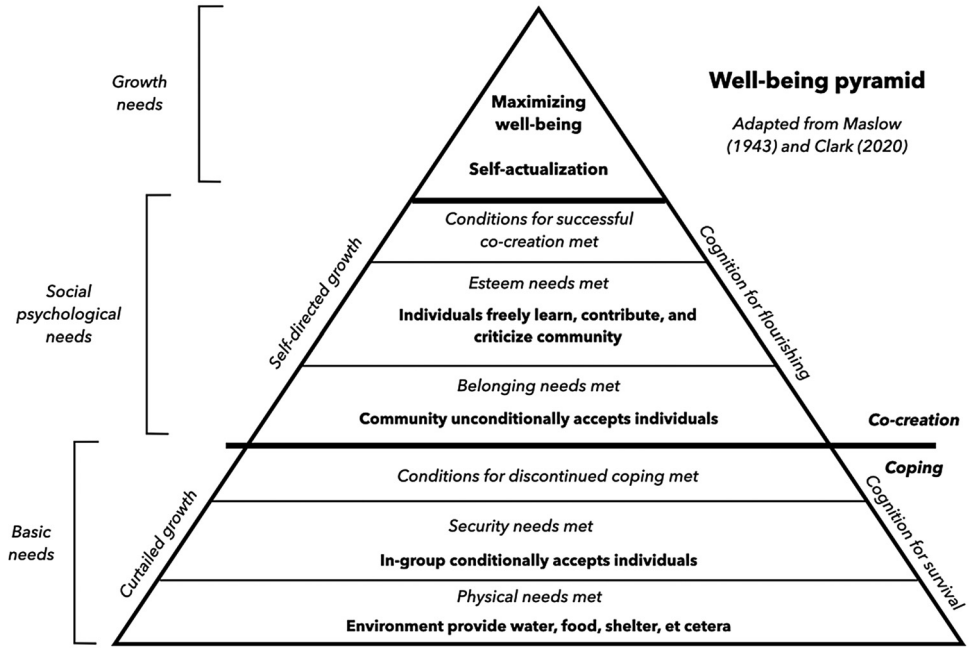

Figure 4. Well-being pyramid. The key transition is from conditional acceptance by ingroups to unconditional acceptance by a (diverse) community.

Clark's (2020) description of the preconditions for psychological safety, in combination with the internal logic of the ontological security framework, inspired us to produce a metatheoretical summary (*Figure 4*) which builds on Maslow's pyramid of needs (1943). The key transition in this well-being pyramid occurs between the lower level and access to self-directed growth towards self-actualization (Maslow, 1954).

Table 5

Core cognition key terms used in this part

Core cognition key concepts with definition used in this paper	
Core Cognition	The cognition shared by all life
Agent	"An autonomous organization that adaptively regulates its coupling with its environment and contributes to sustaining itself as a consequence." (Barandiaran, Di Paolo, & Rohde, 2009, p. 1)
Behavior	Agent-initiated and context-appropriate activities with expected future utility that counteract life's precariousness and maximizes agent and habitat viability.
Viability	Probabilistic distance from death (*i.e.*, discontinued agency)
Agency	The ability to self-maintain viability (through need satisfaction) for survival and thriving
Cognition	The ability to select behavior in the service of the agent's continued existence and flourishing.
Coping and co-creation	Two complementary forms of cognition. Coping is in the service of continued existence and flourishing in the service of flourishing. (These two forms of cognition are opposed in *Table 2*)
Stigmergy	Building on the constructive traces that past behaviors left in the environment (increasing habitat viability)
Authority	Expressing stigmergy
Habitat	The environment from which agents can derive all they need to survive (and thrive) and to which they contribute to ensure long-term viability (of self and others), Note that we use the term habitat to include other agents, but to exclude the agent. Hence, we can speak of agent + habitat to refer to the whole of existence relevant to the agent
Habitat viability	A measure of the degree to which the habitat can satisfy the conditions for agentic existence *(i.e.*, satisfies its needs)
Well-being	Process of co-creation leading to high viability agents, increased habitat viability, and long-term protection of the conditions on which existence depends. Note that this is a process, not a state or the evaluation of a state.
Context	Agent's assessment of the (current) state of the habitat
Behavioral repertoire	The set of context-appropriate behaviors the agent has access to
Learning	The process to extend the behavioral repertoire and tune its effectivity to the context
Worldview	The set of all that an agent takes as reliable (true) enough to base behavior on.
Appraisal	A worldview-based motivational response to the perceived viability consequences of the present.
Realism	A measure of whether individual behavior leads to intended and/or viability enhancing outcomes
Identity	A theory of me-as-actor-in -the-world

Table 6
Ontologies of survival and thriving (expanded from Part 1)

Ontology of survival (coping)		**Ontology of thriving (co-creation)**	
Languishing	Low viability state as the outcome of a pattern of ineffective or limited behaviors	High viability state as the outcome of a pattern of broadly effective behaviors	Flourishing
Danger	Agent appraisal of viability threats, entailing a *reduction* of the set of context appropriate behavioral options to include only those that allow the agent to survive.	Agent appraisal of the *absence* of viability threats, entailing an *enlarging* of the set of context appropriate behavioral options to include more options that allow the agent to thrive	Safety [freedom]
Problem	A perceived threat to agent viability that activates a pressing need and hence motivates reactive behavior	A perceived possibility to improve (agent or habitat) viability which hence motivates proactive behavior	Opportunity
Coping	The reactive fallback mode of behavior aimed at protecting agent viability by ending problem states. Quick and effective deactivation of coping is the measure of success of the coping mode	The pro-active default mode of behavior aimed at producing indirect viability benefits through habitat contributions that improve the conditions for future agentic existence	Co-creation
Reactive behavior	Behavior in response to perceived threats to viability	Behavior aimed at setting up or protecting the conditions for co-creation	Proactive behavior
Main mode of cognition: Intelligence	The ability to solve problems (or end states of pressing needs)	The ability to avoid problems and co-create: (Also: The balancing skills to contribute to the biosphere)	Main mode of cognition: Practical wisdom
Coping trap (Coping failure)	The continual or predominant activation of the coping mode of behavior through ineffective or counterproductive problem-solving strategies.	Prolonged or near continual activation of co-creation	Successful co-creation
Inadequacy	The tendency to self-create, prolong, or worsen problems that keep on activating the coping mode. An inadequate agent is predominantly coping, but unsuccessful in ending the activators of coping.	The skill to avoid problems or end them quickly so that coping is rare and co-creation prevalent. An adequate agent is predominantly a co-creator	Adequacy
Coping adequacy	The skill to solve pressing problems (ending the need to cope) or mitigate their impact through control of the environment and constraining agency (continuing coping)	The skill to avoid and end problems through harmonizing relations and (inter-agent) conflict mitigation	Co-creation adequacy

Ontology of survival (coping)		**Ontology of thriving (co-creation)**	
Power	The ability to realize intended outcomes by effortfully shaping and controlling the habitat and the activities of the agents that comprise it. Exercising power is a way to be authoritative.	Effortless action aimed at being authoritative through harmonizing a diversity of agentic interests by promoting natural agentic dynamics and development	Wu wei
Security	A situation or state where viability threats-to-self are brought under control	A situation or state with positive indicators of the absence of viability threats	Safety
Well-being - short term	Self-evaluation of one's agentic viability	Holistic self-valuation of one's own and the habitat's viability	Well-being - long term
Ontological security	The secure feeling an individual derives from attaining "on the level of the unconscious and practical consciousness, 'answers' to fundamental existential [problems] which all human life in some way addresses" (Giddens, 1991)	Self-realizing one's full individual potential	Self-actualization
Rules of ontological security	I am accepted when I contribute to sameness and oneness I learn rules and routines of my in-group I adhere to in-group roles I protect the in-group against unmanageable diversity	I can join freely I can learn freely I can contribute freely I can criticize freely	Rules of psychological safety
Habitualization	The consolidation of routines via reference to socially constructed rules and routines, sustaining a group identity and the security on derives from in-group membership.	The motivation to liberate oneself from imposed limits on self-guided behavior and the restoration of the safety associated with co-creative processes	Reactance
In-group	A group of individuals sharing similar limits on adequacy (and worldview)	A group of individuals that each freely and self-guided contribute whatever benefit their adequacy can bring	Community
Out-group	Individuals who are not in-group and hence frustrate coordinated coping		
Othering	The process of assigning individuals with other or less limits to adequacy to out-groups (possibly disgust — driven)	Unconditional acceptance	Acceptance
Pathological normality	Complete and symptomless adaptation to a world shaped through coping that imposes limits on individual agency and self-development	The ability to co-create and cope in the service of full self-development	Healthy normality
Normative threat	Threats to oneness (shared authority) and sameness (shared values and rules)	Perceivable indications of other agents engaged in unforced activities	Indicators of safety

The transition occurs when coping strategies stop being dominant and co-creation takes over, while coping remains a valuable fallback to address pressing problems quickly and effectively. This corresponds to a change from in-groups that conditionally accept individuals — namely if and only if they accept the in-group worldview and, hence, direct and curtail their behaviors according to shared adequacy limits — to a community that offers unconditional **acceptance** to individuals and allows them to learn, contribute, and criticize. This makes the group diverse in its ability to solve problems and realize opportunities, and it offers ample context for individual and community growth. The transition also corresponds to a switch from "cognition for control, order, and certainty" (coping) to "cognition for exploration, disorder, and possibility" (co-creation) that we described in *Figure 2* of Andringa et al. (2013b).

Conclusion

In this (long) two-part paper we aimed to derive central aspects of cognition from first principles and called the resulting framework core cognition. We summarized the key terms we used in this part in *Table 5*. We derived two separate forms of cognition: 1) coping, which addresses pressing problems and hence is aimed at their termination; and 2) co-creation, which is aimed at optimizing everything in the context of everything else and aimed at its perpetuation. We assert that both strategies are essential; but it is the interplay of their strengths that, somewhat unexpectedly but logically, leads to the dominance of one of them: co-creation. Because we derive our conclusions from studying generic living agents, we claim that our results not only pertain to human well-being, but to well-being in general: well-being for all living beings, and by extension, for the biosphere.

The different purpose and character of coping and co-creation lead to two complementary ontologies of cognition (*Table 6*), each of which follows its own internal logic and has separate key concepts. Coping expresses cognition for survival, and co-creation expresses cognition for flourishing. The differences between the goals and internal logic of coping and co-creation means that individuals who approach the world from these different logics do not understand each other at all. Coping and co-creation adequacy has to be learned from real-world interactions on top of innate abilities (to acquire these). But not everyone becomes adequate in both.

Section 3 showed that the four combinations of coping, co-creation, adequacy, and inadequacy underlie the structure of identity in humans, and shed new light on why the various identity statuses have their characteristic properties and how this connects to how each status approaches information. In particular, the combination of adequate coping and inadequate co-creation leads to individuals who strive to control their environment by promoting a single shared world-view and a single set of appropriate behaviors; this is to prevent it spinning out of their control, and hence exposing their narrow basis of adequacy. This is the authoritarian mindset as reflected by the foreclosed identity and its normative information processing style. Stenner's concept of the authoritarian dynamic (2005) — intolerance of diversity equals the degree of authoritarianism times the normative threat level — follows directly from these properties.

In Section 4, we applied core cognition as a metatheoretic tool. We concluded that striving to realize what is known in the literature as "ontological security" is a precise

expression of the coping mode's (limited and doomed) capacity for well-being. In fact, we concluded that ontological security leads to a self-limiting form of well-being — pathological normality — that has been described as "*abnormal normality*" by Huxley (1958) and Fromm, and as *"the pathology of the average"* by Maslow (1968, p. 16). By contrast, Maslow's understanding of well-being and self-actualization exemplifies co-creation. We concluded that psychological safety provides the preconditions that maximize well-being and the **healthy normality** of developing coping and co-creation adequacy.

Already in 1973, Newell wondered about psychology's ability to produce wonderful scientific papers (Newell, 1973). He asked himself the question of whether psychology would have achieved *"a science of man"* by his assumed retirement age in 1992, or whether another multi-decade period of paper production would be necessary to *"home in on the essential structure of the mind."* Newell concluded: *"I am worried that our efforts, even the excellent ones I see occurring here, will not add up"* (to the formulation of *"a science of man"*). He speculated: *"Maybe we are reaching the day of the theorist in psychology, much as it exists in other sciences such as physics. Then the task of putting things together falls to them and experimentalists can proceed their own way"* (Newell, 1973, p. 306)

Perhaps we have contributed a unifying perspective — by assuming core cognition shared by all life — that helps make sense of the huge body of data that psychology has compiled. We hope we have, and we will investigate this further by applying core cognition insights to such diverse domains as happiness and education research; separate brain systems such as dual type processing (Evans & Stanovich, 2013) in the left & right hemisphere (McGilchrist, 2012); the structure of values (Fontaine et al., 2008); and radicalization and extremism. Our hope is not to fragment knowledge and understanding any further, but to find more ways in which to unify the acquired body of evidence into a more manageable framework.

Author Contributions

Denham and Andringa conceived, discussed, and wrote the paper equally. Andringa developed Section 3; Denham developed Section 4.

Conflict of Interest

The authors declare no conflict of interest

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The Relationship between Happiness and "Deadly Sins" among Middle-Aged Persons

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Background. The contradictory results of studies on the relationship of happiness and well-being to norm-prohibitions make further work on this subject urgent. This topic is of particular relevance in connection with the current crisis of the value system.

Objective. Our research was devoted to the study of happiness, life satisfaction, and compliance with norm-prohibitions in middle-aged Russians. We hypothesized that happiness is associated not only with life satisfaction but also with the ability to resist temptations (such as what are known as "mortal sins"). The survey used six temptations: wrath, greed, envy, sloth, gluttony, and extra pride. Resistance to these "sins" represented adherence to "norm-prohibitions".

Design. The study involved 1,520 respondents (222 male and 1,298 female). The mean age of the participants was 40.37 ± 6.01 years. The socio-demographic questionnaire included items related to gender, age, marital status, number of children, level of education, and financial situation. Happiness, life satisfaction, and adherence to "norm-prohibitions" were measured on a 10-point scale.

Results. Happiness was associated with marital status, the number of children, and income per family member. It also correlated with life satisfaction, mostly in the area of relationships. Both men and women felt equally happy. The happiest people were less likely to manifest the "deadly sins" of wrath, greed, envy, and sloth. At the same time, happiness, calmness, and optimism were positively associated with pronounced gluttony and extra pride.

Conclusion. The results indicate that a significant contribution to happiness is made by the ability of a person to adhere to norm-prohibitions.

Keywords:
Happiness; life satisfaction; "deadly sins;" middle age; socio-demographic factors

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Introduction

The problem of human happiness is being actively investigated in the framework of positive psychology. In most languages of the world, there are words for happiness, but so far, there is no consensus among scientists about its essential meaning (Leontiev & Rasskazova, 2006; Dzhidaryan, 2013; Moyano Diaz, Dinamarca, Mendoza-Llanos, & Palomo-Vélez, 2018). On the one hand, its interpretation is close to the hedonic approach (Argyle, 2003; Diener, 2020; Seligman, 2006), according to which happiness is subjective well-being. In this sense, happiness includes cognitive (life satisfaction) and affective (balance of positive and negative emotions) components. On the other hand, according to the eudaimonic approach (Keyes & Waterman, 2003; Robinson & Ryff, 1999), the concept of happiness is closer to psychological well-being. In this case, happiness is an indicator of the positive functioning of the personality and is associated with self-actualization.

There is an active discussion between the proponents of the hedonic and eudaimonic approaches, and ideas expressed about the possibility and productivity of their integration (Demenev, 2016; Rikel, 2017; Sozontov, 2006; etc.). In that context, Dmitry Leontiev (2020) has offered a Two-level Model of Happiness. The first level is deficit (passive) happiness, which reflects the measure of satisfaction of basic needs and has a saturation point. The second one is self-deterministic (active) happiness; it is the subjective experience of achieving meaning and one's chosen goals. At the same time, one feels and evaluates one's level of happiness as a holistic experience.

Empirical studies of happiness have been devoted to research on its predictors and correlates. For each person, happiness is determined by his or her peculiar combination, since there are no universal recipes for happiness. Sources of happiness can be internal and external. External factors are socio-economic, ecological, and ethnocultural conditions that characterize the human environment. Internal factors of happiness include personal characteristics such as gender, age, temperament, character, family, satisfaction with one's financial situation, work, interpersonal relationships, availability of free time for leisure, hobbies, success, self-actualization, values, faith, etc. (Leontiev & Rasskazova, 2006).

Studies have shown that feeling happy — high subjective well-being — leads to better health and increases life expectancy. Happy people rate their health level higher, regardless of the objective indicators. Physiological responses to stress among happy people are less pronounced (Diener & Chan, 2011; Eddington & Shuman, 2006). The hallmarks of happy people are optimism, high self-esteem, and a sense of personal control (Myers & Diener, 1995; Seligman, 2006). Happiness is negatively correlated with depression and anxiety. Studies on the Big Five personality traits have shown that happiness is negatively associated with neuroticism, and positively with extraversion and openness to new experiences (Diener & Seligman, 2002).

M. Csikszentmihalyi's experience sampling method (ESM) revealed that happy people feel involved in their activities and are satisfied with them (Myers & Diener, 1995). They use productive coping strategies to deal with life's challenges (Dzhidaryan, 2013). Less important for the feeling of happiness are material security, gender, and education (Eddington & Shuman, 2006; Myers & Diener, 1995). As for religious

faith, there is no consensus on its significance. For example, Myers and Diener (1995) and Seligman (2006) found faith to be a significant factor. Religiously active people were less susceptible to psychological discomfort and stress, lived longer, and on average were happier than those who did not adhere to any religion. However, there is also an opinion that faith has little effect on the feeling of happiness (Argyle, 2003; Permiakova & Ershova, 2015).

Blanchflower (2020) studied the relationship between happiness and age in 145 countries, and confirmed the existence of a U-shaped age-of-happiness curve. The least happy people were around the age of 50. Based on the analysis of data from the European social survey (ESS) on the level of happiness and satisfaction with various aspects of life in 25 countries, Monusova (2012) concluded that Russia has the sharpest decline in subjective well-being with age of all the European countries.

At the same time, in all age groups, indicators of emotional assessment (happiness) are higher than from a rational assessment (life satisfaction). A small rise was observed only from 55 to 64 years, and after 65 years of age happiness declined. Such a non-linear tendency is due to the non-identical contribution of various partial satisfaction indicators to the integer index of subjective well-being in different age periods. For example, Russians are less satisfied with their financial situation, especially at the age of 45–50 years. At the same time, their job satisfaction increases dramatically after the age of 50. Young people look at life more optimistically than older generations of Russians, who have one of the lowest rates of optimism in Europe. Satisfaction with oneself and one's health declines steadily with aging.

Background

Despite the rather deep development of the described problems, the most studied component of happiness is life satisfaction (Temiz, 2020). At the same time, there has been very little research on the connection between happiness and compliance with human universal norms. Baumeister and Exline (1999) noted that psychology has always sought the scientific ideal, and tried not to make value judgments. This may have hindered the study of "virtue" and "sin." According to Poddiakov (2012), in positive psychology it is quite rare to find an explicitly formulated attitude toward the problems of good and evil. Seligman (2006) described six common virtues for all peoples, but argued that science should take a neutral position in relation to morality, since the task of science is to describe, not prescribe. According to him, happiness implies the spiritual satisfaction of realizing one's individual virtues and using them to serve a higher purpose.

A number of authors have pointed to a positive relationship between happiness and moral values. Philips, Freitas, Mott, Gruber, and Knobe (2017) noted that the concept of happiness is related not only to the components of subjective well-being but also to moral values. According to Bloomfield (2015), morality is necessary for self-esteem, and self-respect is necessary for happiness; therefore, morality is necessary for happiness. Waytz and Hofmann (2020) experimentally proved that ethical behavior and thoughts strengthen self-concept and empathy. Moreover, they are effective means of increasing subjective well-being. Data from a study by Deb, Thomas,

Bose, and Aswathy (2020) showed that there was a significant positive correlation between spirituality and happiness.

Today, Russia is still working out ways of studying value orientations in the context of happiness and well-being. At the same time, the results of a few studies on the subject have been contradictory. Muravyova and Popkova (2010) investigated the relationship between subjective well-being and value orientations in students and found that emotional well-being was higher in those young people who focused on the values of understanding, tolerance, and protection of humanity and nature. Beskova (2015) showed that psychological well-being was associated with an orientation towards good/evil and humanity. The stronger a person was oriented towards evil, the more he felt his trouble subjectively. But at the same time, there was no significant connection with the orientation toward good.

Nekhorosheva (2012) found that people with a negative orientation (for example, selfishness, plagiarism, bribery) were more satisfied with their lives, while people with a positive orientation were less happy. Bocharova (2016) investigated ethnic features of subjective well-being of young people in samples of respondents of Armenian and Russian nationality. The results suggested a link between subjective well-being and morality in both samples, but the predictors differed. Semenova (2014) determined that psychological well-being positively correlated with religious self-awareness, with faith in God. At the same time, Permiakova and Ershova (2015) found no differences in the level of happiness between orthodox believers and atheists.

Shcherbatykh (2010) developed the concept of a moral norm, discussing both general aspects of morality and specific moral codes (for example, religious ones). A norm is a set of rules and regulations that determines human behavior in all spheres of life (family, interpersonal relationships, professional activities, and so on), and is aimed at achieving the good for oneself and others. Norms are in the form of a social contract. Society evaluates the "rightness" or "wrongness" of an individual's behavior. At the same time, compliance with these norms is the individual person's choice. Yao (2015) considered morality a special form of social value, which contains criteria for evaluating good and evil, and is aimed at making people happy.

There are different classifications of norms, including their division into norm-prohibitions (undesirable norms of behavior for society, immoral tendencies, or vices) and norm-commands (positive, desirable norms of human behavior, or virtues). Historically, norm-prohibitions have always preceded the rules-commandments. Each generation and community of people has developed its own understanding of good and evil, "virtues" and "vices." Useful norms are fixed and passed down from generation to generation, becoming social attitudes and part of individual consciousness. Some of them have emerged within the framework of a religious concept and gradually became universal, because, despite cultural differences, most societies have common goals in terms of security, justice, and harmony. Such norms and prohibitions include the "seven mortal sins" from the Christian doctrine: pride, wrath, greed, envy, sloth, lust, and gluttony. They are called deadly because, according to religious beliefs, they lead to the destruction of the soul. The concepts of sin and virtue have been considered unscientific, but religious. Nevertheless, over the last two decades, they have become the object of research in psychological science (Shcherbatykh, 2010).

In religion, these sins are evaluated based on the dichotomy between good and evil, and are clearly considered bad and unworthy. In psychology, both the negative and positive aspects of sin are discussed: Examples include Shcherbatykh (2010) in the book *The Seven Deadly Sins, or the Psychology of Vice for believers and non-believers*; Ilyin (2014) in the book *Psychology of Envy, Hostility, and Vanity*, and Laham (2012) in the book *The Joy of Sin: Psychology of the Seven Deadly Sins*. Laham argued that these sins are not only beneficial but can also make a person successful and happy. The psychological definition of the essence of sin was based on the sin's religious content, but each author introduced his own aspects, mainly due to linguistic and cultural differences.

The "seven deadly sins" are well known in everyday consciousness, but they are also described in the scientific literature (Barkley, Barkley, Curtis, & Hatvany, 2018; Laham, 2012; Shcherbatykh, 2014; Veselka, Giammarco, & Veron, 2014). Wrath includes excessive feelings of rage and a desire for revenge directed at people who offend or harm. Greed implies an excessive desire for money and material values. Envy arises because of the comparison with people who are more successful. Sloth is the emotional state when a person assesses his or her situation as almost hopeless and the outcome as inevitably unfavorable, and either hesitates or does not make efforts to get out of it. Lust is characterized by an excessive desire for sexual satisfaction. Gluttony is the excessive consumption of food and alcohol. Extra pride is expressed in vanity and excessive self-admiration. According to Laham (2012) and Shcherbatykh (2014), all of these temptations have both negative and positive aspects.

Khvostov and Gadzhimuradova (2016) showed that pride, wrath, greed, envy, sloth, lust, and gluttony are condemned by the majority of modern young Russians, regardless of gender, nationality, religion, or atheistic views. The differences related only to the degree of condemnation of each sin, depending on the person's ethnic and cultural affiliation. In most empirical psychological studies, the "seven deadly sins" are used in their negative meaning. Thus, Barkley et al. (2018) investigated the relationship between self-control and the resistance to temptation. According to the authors, the most common temptations experienced by people are the "seven deadly sins," which have stood the test of time and represent a powerful and useful taxonomy. Baumeister and Exline (2001) analyzed vice, sin, and virtue from the perspective of self-control theory. In their opinion, self-control is the main virtue because it allows overcoming antisocial urges and sinful behavior.

Veselka et al. (2014) investigated the relationship of subclinical forms of socially aggressive behavior, namely, the traits of the Dark Triad (Machiavellianism, narcissism, and psychopathy) with the seven deadly sins. All the Dark Triad traits were associated with major sins. The exception was a weak relationship between narcissism and sloth. Vrabel, Zeigler, McCabe, and Baker (2019) studied the links between the pathological personality traits included in the DSM-5 (negative affectivity, alienation, antagonism, disinhibition, and psychoticism) and the seven deadly sins. According to the authors, mortal sins are a taxonomy of destructive and self-destructive behaviors. People who do not follow moral norms ("who sin") are prone to selfish, aggressive, and antagonistic thoughts and behavior.

Permiakova, Glinskikh, and Ershova (2018) investigated the relationship of happiness and psychological well-being with the observance of norm-prohibitions de-

fined by the seven deadly sins in a sample of students. Contradictory data was obtained: namely, they showed a positive relationship with a sense of happiness and a negative correlation with psychological well-being. Thus, in psychology, there is still no clear answer to the question of whether happiness and psychological well-being are connected with the adherence to specific norm-prohibitions.

The Current Study

The aim of our study was to determine how the violation of norm-prohibitions is associated with the feeling of happiness in people of middle age. This is the period of a person's greatest working capacity. It is at this age that there is a steady decline in the level of subjective well-being. What we have added is the study of the relationship between happiness and compliance with norm-prohibitions as defined by the "deadly sins". We hypothesized that happiness is negatively associated with such "deadly sins" as wrath, greed, gluttony, envy, extra pride, and sloth. Additionally, the relationship between happiness and life satisfaction was studied.

Methods

Participants

The study was conducted in 2018. It included 1,520 people (222 men and 1,298 women). The sample consisted of adults with one or more children. The mean age of the participants was 40.37 ± 6.01 years. *Table 1* describes the sample.

Table 1

Description of the Sample

Sample's Parameters	Total	Female	Male
Respondents	**1520**	**1298**	**222**
	Marital Status		
Married	1165	969	196
Not married	355	329	26
	Number of Children		
One	556	483	73
Two	754	647	107
Three and more	210	168	42
	Housing Conditions		
Owner	1369	1174	195
Renting	151	124	27
	Education		
Secondary	476	398	78
Higher	1034	895	139

Measures

The respondents were given a questionnaire that included points of a socio-demographic and psychological nature. The socio-demographic questionnaire included items related to gender, age, marital status, number of children, level of education, and financial status (*Table 1*).

All psychological parameters were assessed using a 10-point system, based on previously obtained data on the validity of the indicators, which are an alternative to "cumbersome" methods (Permiakova et al., 2018). The psychological parameters were:

1) *Life satisfaction.* The subjects used a 10-point scale (1 = the minimum level of satisfaction; 10 = the maximum level) to assess their level of satisfaction with the following aspects of their lives: work; health; financial situation; relationships with children, friends, and partner; and the opportunity for getting a good rest.
2) *Happiness.* The subjects rated how happy they were on a 10-point scale (1 = absolutely unhappy; 10 = absolutely happy). Additionally, the subjects assessed their level of optimism (1 = absolute pessimist; 10 = absolute optimist) and anxiety (1 = maximum level of anxiety; 10 = minimum).
3) *"Deadly sins."* To determine the degree of observance of norm-prohibitions, the participants evaluated on a 10-point scale the level of their greed, wrath, envy, and sloth (1 = maximum; 10 = minimum level of sinfulness), as well as the severity of their gluttony and extra pride (1 = minimum; 10 = maximum level). The exception was "lust," which was not included in the assessed parameters due to the context (given within the framework of parent meetings of secondary schools).

Procedure

The survey of respondents was timed to coincide with parent-teacher conferences held in 12 secondary schools in Ekaterinburg (Ural Region, Russia). The study participants were parents who attended a parent-teacher meeting. All subjects were informed about the purpose of the study, and gave their voluntary consent to participate. As an incentive to participate, subjects were given the opportunity to receive free psychological counseling on any problems affecting their children's educational success. The study was anonymous, and the participants were informed about the conditions of confidentiality.

Data Analysis

Statistical analysis included Fisher's φ*-angular transform; ANOVA analysis; Pearson's correlation coefficient; and Factor Analysis (Principal Components, Varimax Normalized).

Results and Discussion

Comparative Analysis

A comparison of the percentage of men and women with different levels of happiness, life satisfaction, and compliance with norms-prohibitions showed the following. Among men, the percentage of those who were completely satisfied with their marital relations (60.4 %; $\varphi^* = 2.18$, $p \leq 0.05$) and the possibility of full rest (27.5%; $\varphi^* = 2.64$, $p \leq 0.01$) was significantly higher than among women (52.5% and 19.4%, respectively). Among men, there were more respondents with a low level of satisfaction with their relationships with friends compared to women (5.9% vs. 2.7%; $\varphi^* = 2.21$, $p \leq 0.05$).

Although the level of happiness and optimism of respondents was evenly distributed regardless of gender, men were a little more anxious (14.4%; $\varphi^* = 1.94$, $p \leq 0.05$) than women (9.8%). There were more women who failed to abstain from greed (29.0%; $\varphi^* = 1.74$, $p \leq 0.05$) than men (23.4%). However, among men, there were more respondents who could not resist extra pride (49.6% vs. 42.9%; $\varphi^* = 1.85$, $p \leq 0.05$). Men were significantly more resilient (6.3% vs. 3.0%; $\varphi^* = 1.74$, $p \leq 0.05$). Greater numbers of men than women were satisfied with their financial situation, marital relations, and the possibility of getting a full rest.

Table 2 presents the results of variance analysis for all the variables in the groups of women and men, as well as in the groups of respondents who were married and not married (one-factor analysis separately for gender and marital status).

Table 2

*Results of one-factor analysis of variance (ANOVA)**

	Scales	Gender				Marital Status			
		Ma	Fe	$F_{эмп}$	p	Mr	nMr	F	p
Life Satisfaction Areas	Financial Situation	6.77	6.41	4.77	0.03	6.63	5.91	29.30	0.00
	Partner's Relationship	8.21	7.76	5.92	0.02	8.43	5.82	350.46	0.00
	Relationship with Children	8.38	8.54	1.55	0.21	8.64	8.10	25.91	0.00
	Friends' Relationship	8.15	8.42	3.79	0.05	8.47	8.06	13.42	0.00
	Opportunity of Full Rest	6.46	6.24	1.46	0.23	6.40	5.85	13.83	0.00
	Health	7.08	6.94	0.95	0.33	7.03	6.72	6.64	0.01
Well-being	Happiness	7.77	7.97	1.95	0.16	8.03	7.67	9.12	0.00
	Anxiety – Calm	3.55	3.92	5.86	0.02	3.80	4.07	4.94	0.03
Resistance to greed		3.28	2.93	4.45	0.04	2.99	2.97	0.01	0.91

Note. Ma = male, Fe = female; Mr = married, nMr = not married.

Table 2 shows that gender and marital status affected some parameters of life satisfaction, as well as the level of happiness and anxiety. At the same time, these factors did not affect adherence to norm-prohibitions, with the exception of resistance to greed. Men had a higher level of satisfaction with their financial situation and marital

relations; they had higher anxiety and were more resistant to greed. Married persons were more satisfied with their financial situations, relationships with children, spouses, and friends, as well as being more satisfied with their health and the possibility of getting a full rest. In general, married people were happier, irrespective of gender.

Correlation Analysis

Initially, it appeared that the feeling of happiness closely correlated with calm and optimism. We have combined all these parameters into the "well-being" group. Correlation analysis confirmed a close relationship between happiness and calmness (r = 0.39) and optimism (r = 0.549). A significant correlation between the parameters of well-being and life satisfaction with various aspects of life, compliance with norm-prohibitions, and some socio-demographic indicators is presented in *Table 3*.

Table 3

Happiness, life satisfaction, and norms-prohibitions scales

		Well-being Parameters		
	Parameters	**Happiness**	**Calm**	**Optimism**
Life Satisfaction Areas	Job	.39***	.29***	.28***
	Financial Situation	.38***	.31***	.26***
	Partner's Relationship	.39***	.21***	.22***
	Relationship with Children	.48***	.28***	.31***
	Friends' Relationship	.47***	.23***	.34***
	Health	.38***	.32***	.26***
	Opportunity of Full Rest	.38***	.32***	.31***
Resistance to…	…wrath	.43***	.47***	.58***
	…greed	.41***	.26***	.50***
	…envy	.43***	.29***	.48***
	…sloth	.53***	.35***	.55***
Gluttony		.16***	.16***	.17***
Extra Pride		.51***	.37***	.55***
Socio-demographic Factors	Age	–.09*	–.02	–.04
	Income per Family Member	.12**	.12**	.06*
	Number of Children per Family	.13***	.04	.10*
	Marital Status	.07*	.06*	–.01

*Note. *p ≤ .05; **p ≤ .01; ***p ≤ .001.*

Correlation analysis revealed a positive relationship of happiness with all indicators of satisfaction with various aspects of life, as well as with optimism and calmness. These results correspond to numerous empirical data obtained in similar studies. Happiness was positively associated with such socio-demographic indicators as in-

come per family member, the number of children, and positive marital status, and did not depend on education and the availability of comfortable housing. The only negative correlation was found between happiness and the age of the respondents: the closer the respondents were to the age of 50, the lower the level of happiness. At the same time, age was not associated with calmness and optimism.

Positive associations of well-being parameters with compliance with such norm-prohibitions as wrath, greed, envy, and sloth were observed. However, at the same time, happiness, calmness, and optimism were associated with pronounced gluttony and extra pride.

Factor Analysis

Factor analysis of the indicators of "norm-prohibitions," life satisfaction, and happiness parameters was performed using principal components analysis. According to the scree plot, three factors were identified: Factor I, Eigen. = 5.85, Var. Expl. = 0.40; Factor II, Eigen. = 1.95, Var. Expl. = 0.13; and Factor III, Eigen. = 1.01, Var. Expl. = 0.06) (see *Figure 1*).

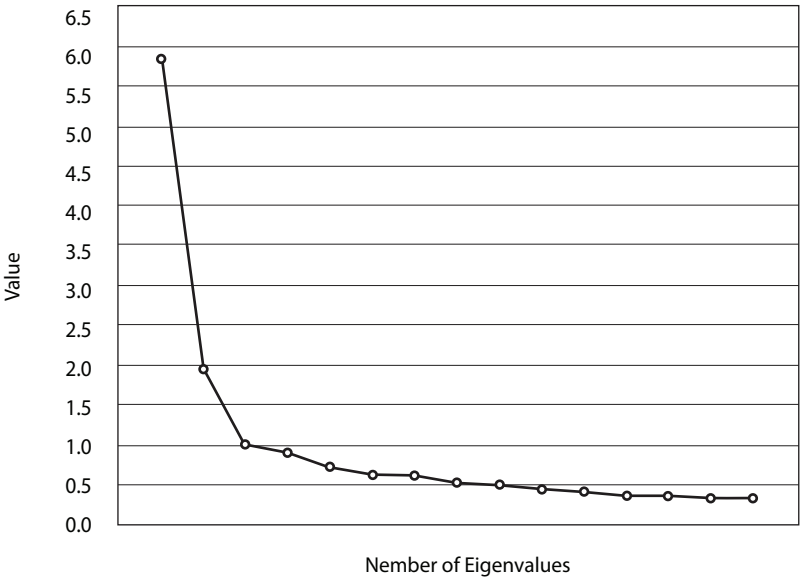

Figure 1. The Plot of Eigenvalues

Next, the procedure of normalized rotation of the three factors was performed (Varimax Normalized). As a result of rotation, the following results were obtained: Factor I, Eigen. = 4.24, Var. Expl. = 0.26; Factor II, Eigen. = 2.96, Var. Expl. = 0.19; and Factor III, Eigen. = 2.11, Var. Expl. = 0.13). (See *Table 4.*)

Factor I consisted of norm-prohibitions' scales, while the second and third factors measured satisfaction with various aspects of life. This factor structure indicated the relative independence of these aspects of life. At the same time, life satisfaction was not homogeneous. It clearly differentiated into the areas of physical, material,

Table 4

Results of factor analysis of life satisfaction, happiness, and norm-prohibitions scales (n = 1520)

	Parameters	Factor I	Factor II	Factor III
Life Satisfaction Areas	Job	.14	.72	.26
	Financial Situation	.08	.82	.20
	Partner's Relationship	.10	.33	.65
	Relationship with Children	.23	.30	.74
	Friends' Relationship	.25	.28	.72
	Health	.12	.73	.24
	Opportunity of Full Rest	.19	.68	.23
Well–being Parameters	Happiness	.57	.32	.42
	Anxiety – Calm	.48	.48	–.07
	Optimism	.74	.21	.14
Resistance to…	…wrath	.73	.22	.05
	…greed	.75	.01	.12
	…envy	.74	.02	.18
	…sloth	.76	.13	.18
Gluttony		.37	.22	–.30
Extra Pride		.77	.15	.15
Eigenvalues		4.24	2.96	2.11
Proportion of Explained Variance		.26	.19	.13

and business satisfaction on the one hand (II Factor Eigen. = 2.96; Var. Expl. = 0.19), and the sphere of personal relations (III Factor Eigen. = 2.11; Var. Expl. = 0.13) on the other. It is noteworthy that calmness (-0.07) and optimism (0.14) did not contribute to the relationship factor. As for happiness, it distributed among the three factors almost evenly, yet had a greater contribution (0.57) to the factor of norm-prohibitions.

Factor analysis conducted separately for pairs of descriptors "satisfaction/happiness" (Eigen. = 4.05, Var. Expl. = 0.51), and "norm-prohibitions/happiness" (Eigen. = 3.63, Var. Expl. = 0.52), showed the following. In the first case, the Happiness scale received a high load (0.68), but was insufficient in comparison with the satisfaction scales in various spheres of life. For comparison, see the following loads: satisfaction with job (0.73); financial situation (0.75); marital relations (0.66); relationships with children (0.74) and friends (0.72); the possibility of full rest (0.72); and health (0.70). This result confirmed our assumption that satisfaction, although an important factor in happiness, does not completely determine it. On the contrary, in the factor analysis of the scales of norm-prohibitions and the level of happiness, the Happiness scale received a high load (0.71). For comparison, see the following loads: resistance to "sinful manifestations" of wrath (0.74); greed (0.75); envy (0.76); and sloth (0.81). At the same time, happiness (0.71) did not exclude extra pride (0.81) and a slight degree of gluttony (0.35).

Discussion

Our study of happiness levels showed that the majority of respondents of middle age (83.3%) rated their level of happiness as high. This does not contradict the data of the happiness level monitoring conducted by the Russian Center for the Study of Public Opinion in 2018, according to which 84% of respondents called themselves rather happy. On the other hand, based on the U-shape of the curve of the relationship of happiness with age (Monusova, 2012), the level of happiness obtained in the study was considerably higher than the average for this age group of Russians. Perhaps this is due to the fact that the study was conducted among the inhabitants of the Urals. According to a sociological study, they are the happiest Russians (Smoleva, 2020).

A person evaluates his or her level of happiness as a holistic experience, but behind this feeling is an individual combination of satisfaction with various areas of life, and a tendency toward more frequent manifestation of positive or negative emotions. These cognitive and affective components of happiness have been studied in numerous cross-cultural research projects. Our results once again confirmed the repeatedly proven data on the positive relationship of happiness with optimism and low anxiety, as well as with satisfaction with the most important areas of life: job, financial situation, health, and relationships with children, partner, friends, and the possibility of full rest.

However, men were more satisfied with their financial situation than women. This has objective causes. According to the calculations of The Institute of Economics of the Russian Academy of Sciences, the ratio of women's wages to men's wages is currently 72.1% (RIA Novosti, 2020). More men were satisfied with their marital relationships, but they did not have enough communication with friends. Perhaps this was due to the men making fewer demands on women, and communication with friends being one of their main needs. In such communication, men's desire for independence is realized and their masculinity is confirmed. In Russia, traditionally, domestic duties and raising children are carried out by women; women objectively have less time to communicate with friends, so they make higher demands on marital relations.

The main part of the study was devoted to the relationship of happiness with norm-prohibitions. This topic is most deeply developed within the framework of philosophy and religious concepts. Aristotle noted that happiness is the goal of human activity, and defined it as the activity of the soul according to virtue. Happiness requires both the fullness of life and the fullness of virtue (Paleev, 2018). Achieving happiness is always associated with the problem of choice, with a constant struggle between Good and Evil. Happiness consists of overcoming temptations and constant spiritual development (Korko & Fomenko, 2020; Lyubetsky & Samygin, 2019).

Therefore, we suggested that happiness might be associated with adherence to norm-prohibitions. Today's universal norms and prohibitions include the "seven deadly sins." Correlation analysis confirmed links between the happiness of Russians in middle age with all "sins:" negative with wrath, greed, envy, and sloth; positive with extra pride; and weak positive with gluttony. Permiakova et al. (2018) have obtained similar results on a sample of students ages 17 to 20 years. Among the respondents

were people of different faiths. These data confirmed that norm-prohibitions (confronting deadly sins) are universal values. Perhaps, for modern respondents, gluttony and extra pride have a different meaning and do not contradict norms. This may be due to the values of a market society, where the theme of success and consumption comes first. This aspect requires additional research.

Three relatively independent factors that determine a person's happiness were identified. These were satisfaction with relationships, material and business satisfaction, and compliance with norm-prohibitions. For happiness, the most important factor was adherence to norm-prohibitions. The parameters of satisfaction depend on external circumstances and living conditions, while compliance with norm-prohibitions is an internal factor. According to Laurie Santos, a professor at Yale University, there is no clear correlation between happiness and external circumstances. The way to happiness is to change yourself (Santos, 2018). Professional practice shows that the reasons for a large number of the psychological problems that come to psychologists, especially concerning relationships between people, are due to non-compliance with these norm-prohibitions. Everyone knows what is "good" and what is "bad". The discrepancy between this knowledge and a person's actual actions is the cause of internal and external conflicts, which inevitably reduce life satisfaction and happiness.

Conclusion

1. Happiness connected with some socio-demographic factors. Those who were married and had more than one child felt happier. Married respondents showed a higher level of satisfaction in all areas of life. The tendency to adhere to social norm-prohibitions among respondents with children did not depend on whether they were married or not.
2. Happiness was associated with life satisfaction and was clearly divided into two areas – satisfaction with the vital, material side of life and satisfaction with relationships. Happiness closely related to satisfaction with relationships. Gender characteristics must also be taken into account: men were more satisfied with their financial situation and marital relations. At the same time, both men and women felt equally happy.
3. A high level of happiness was associated with an assessment of one's own tendency to adhere to norm-prohibitions. The happiest people were less likely to report manifestations of "deadly sins" – wrath, greed, envy, and sloth. At the same time, happiness did not contradict gluttony and pride.

The results indicate that, at the level of representations and self-assessment, the ability of a person to adhere to norm-prohibitions makes a significant contribution to happiness. We focused on "mortal sins" (prohibitions) but did not study the "norm-decisions" (behest) that are relevant to human virtue. It is possible that virtues contribute even more to subjective well-being and happiness. We plan to explore the relationship of happiness not only with adherence to norm-prohibitions but also with norm-decisions and virtues in the future.

Limitations

The study sample consisted of middle-aged persons permanently residing in the territory of Ekaterinburg (Ural region). The respondents who took part in the study were parents who attended parent-teacher conferences at school and expressed a desire to take the survey. Accordingly, the results cannot extend to childless people and those who live outside the Ural region. Moreover, the study included significantly more women than men and did not use a scale of social desirability.

Ethics Statement

The ethical aspects of the study were discussed and approved at a meeting of the Department of General and Social Psychology, Ural Humanitarian Institute (Protocol No. 12, December, 2018). All subjects were informed about the purpose of the study, and gave their voluntary consent to participate in it.

Author Contributions

Conceptualization, supervision, and project administration were done by Margarita Permiakova. Methodology, review, investigation, and writing, were carried out by Margarita Permiakova and Olga Vindeker. Data Curation and Editing were done by Olga Vindeker. Both authors have read and endorsed the published version of the manuscript.

Conflict of Interest

The authors declare no conflict of interest.

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