10.17951/j.2020.33.3.123-144

ANNALES
UNIVERSITATIS MARIAE CURIE-SKŁODOWSKA
LUBLIN – POLONIA

VOL. XXXIII, 3 SECTIO J 2020

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The Development and Psychometric Properties of the Polish Version of the Self-Control Scale

Opracowanie i właściwości psychometryczne polskiej wersji Skali Samokontroli

How to quote this paper: Kwapis, K., Bartczuk, R.P. (2020). The Development and Psychometric Properties of the Polish Version of the Self-Control Scale. *Annales Universitatis Mariae Curie-Skłodowska. Sectio J, Paedagogia-Psychologia*, *33*(3).

ABSTRACT

Self-control was recognized as an important function of the human self, whereby the person can override or alter its impulses, moods, emotions, and behaviors. Tangney, Baumeister, and Boone developed a scale for the measurement of individual differences in self-control – Self-Control Scale (S-CS). This article presents the adaptation of S-CS to Polish conditions, which was started when there was no method for testing self-control in Poland. The aim of the present study was fivefold: (1) development of the Polish version of the Self-Control Scale (S-CS-Pv); (2) examination of the properties of the SC-S-Pv's items; (3) estimation of the SC-S-Pv's reliability; (4) comparison of the S-CS-Pv's internal structure with the original scale, and (5) assessment of the SC-S-Pv's content validity. In the process of S-CS adaptation, a back-translation procedure was used. Polish adaptation is a reliable method with validity proven, both by correlation with other tests and by group comparisons. However, the factor analysis results suggested its multidimensionality.

Keywords: Self-Control Scale; Polish adaptation; reliability; validity

Self-control, as a personality construct, has been widely studied in various fields of psychology and is regarded as a capacity to change and alter the self to fit the environment. June Tangney, Roy Baumeister, and Angie Boone (2004) treat self-control as a vital function of the human self, whereby the self is able to override or alter its impulses, moods, emotions, and behaviors. They define self-control as the ability to override or change one's inner responses (such as emotion, thoughts), as well

as to interrupt undesired behavioral tendencies (such as impulses) and refrain from acting on them (p. 274). Roy Baumeister, Brandon Schmeichel and Kathleen Vohs (2007) identified four domains of self-control: controlling thoughts, emotions, impulses, and performance. Self-control understood in this way does not belong to the sphere of motivation, because it does not galvanize into action. Its nature is rather volitional, related to cognitive processes, and subject to rules specific for these processes, i.e. it depends on attention and learning.

Moreover, as Baumeister's studies showed (Baumeister et al., 2007; Gailliot, Baumeister, 2007), the processes of self-control require an effort of will and rely on energy resources, operationalized in studies as blood glucose levels (cf. Kwapis, 2011; Gailliot, Baumeister, 2007). The development of self-control is determined by multiple factors related to culture and parental attitudes, child's sex, peer pressure, school, and neuropsychological factors (Botchkovar, Marshall, Rocque, Posick, 2015). Longitudinal studies conducted on the samples of twins and non-twins aged 5 to 11 indicated a potentially dominant role of the genetic factor (76%) and stability of self-control across childhood (Coyne, Wright, 2014). Also, gender-dependent differences were observed. Studies conducted in 30 countries showed that self-control is lower in men than in women, and these differences are related to parenting strategies for daughters and sons (Botchkovar et al., 2015; Duckworth, Shulman, Mastronarde, Patrick, Zhang, Druckman , 2015). The results indicate that self-control is affected by biological factors as well as by the environment. Therefore, it may be subject to change in the course of life.

INDIVIDUAL DIFFERENCES IN CAPACITY FOR SELF-CONTROL

Numerous authors identified individual differences in capacity for self-control (Baumeister et al., 2007; Carver, 2004). In some people, we can observe various manifestations of a considerable deficit of self-control, e.g. borderline personality disorder, or self-control which reaches a maladaptive level, like in perfectionists or individuals with obsession issues. On the continuum between these two extremities, self-control usually has an adaptive level. However, we may observe that also individuals within the psychological norm may, from time to time, experience struggles related to low or high self-control, e.g. outbursts of anger or impulsiveness in the realm of drives.

Numerous studies on self-control have shown that it is an important capacity in the self and that people with high dispositional self-control have better outcomes in various domains. Empirical evidence shows its relation to achievements and task performance, impulse control, adjustment, interpersonal relationships, moral emotions (like shame and guilt), and personality features, such as conscientiousness and perfectionism (Tangney, Baumeister, Boone, 2004).

Generally, high-level self-control has many beneficial outcomes, whereas low-

level self-control is associated with undesirable and maladaptive behavior. Students with higher self-control receive better grades than those with low self-control (Duckworth, Shulman, Mastronarde, Patrick, Zhang, Druckman, 2015). Moreover, high self-control in job seekers correlates with a higher frequency of actions aimed at finding the job than people with low self-control (Baay, de Ridder, Eccles, van der Lippe, van Aken, 2014). A simultaneous observation was that, in achieving grades and job-seeking alike, self-control is more important than motivation. Moreover, low self-control is linked with procrastination and eveningness preference (Digdon, Howell, 2008). Next, studies have shown an important role of self-control in entrepreneurship, manifesting itself in the shift from intention to action. It turned out that the level of self-control determines the intention-action relationship in such a way that intention strength influences action to a greater extent in individuals with higher self-control (Van Gelderen, Kautonen, Fink, 2015).

Besides, high self-control is associated with positive psychological adjustment. Higher self-control correlated negatively with depression, anxiety, anger, somatization, obsessive-compulsive patterns, phobic anxiety, hostile, paranoid ideation, psychoticism, and psychopathy symptoms, unlike low self-control, which is associated with a higher rate of impulsive behavior (e.g. problematic eating, alcohol abuse) (Tangney et al., 2004; Zhu, Luo, Cai, Li, Liu, 2014). Furthermore, there is data that confirms a link between the traits of psychopathy and the deficit in self-control (Prado, Treeby, Crowe, 2015). Self-control correlates positively with self-esteem, secure attachment style, and empathy. People with high self-control demonstrate better interpersonal accommodation (Tangney et al., 2004). Further, the study on jail inmates showed that self-control is negatively related to substance abuse, suicidality, risky sexual behaviors, recidivism, and positive adjustment. Lower self-control is also associated with increases in substance dependence at post-release compared with pre-incarceration (Malouf, Schaefer, Witt, Moore, Stuewig, Tangney, 2014; Malouf, Stuewig, Tangney, 2012). A positive function and importance of self-control were indicated in research on the delayed gratification, which accurately depicts the essence of self-control as the ability to resist impulses (Mischel, 2014).

The results mentioned above show that the capacity for self-control belongs in a broad spectrum of important behaviors related to adaptation and satisfaction with life, strongly related to success. Moreover, these studies support the claim that self-control is also significant risk and protective factor in a sample of criminal offenders. Walter Mischel (2014) sums up these findings aptly: self-control is a brilliant ability that underlies emotional intelligence necessary to build a happy, satisfying life.

For the reasons mentioned above, assessment of the self-control level may be a source of ample information about how a person operates in various areas of life, such as work, education, interpersonal relations, and in the sphere of mental functioning, e.g. controlling his or her thoughts, emotions, and impulses. A voli-

tional nature of self-control makes it possible to foresee perseverance in behavior and resistance to frustration. It may serve as an indicator of the functioning of jail inmates when their sentence was served, a predictor of educational results of students, and a forecaster of coping at work (Malouf et al., 2012). In this respect, measurability of self-control is applicable in clinical and counseling practice, and scientific research alike, because it is the ability related to a series of motivational processes and personality dispositions.

SELF-CONTROL SCALE

Tangney et al. (2004) developed the 36-item Self-Control Scale (S-CS) to assess dispositional self-control. Items of the S-CS encompass all domains identified by (Baumeister, Heatherton, Tice, 2006) (controlling thoughts, emotions, impulses, and performance). Thirty-six items are rated on a 5-point response format, ranging from 1 (= *Not at all like me*) to 5 (= *Very much like me*). The exploratory factor analysis suggested five factors: (1) general capacity for self-discipline, (2) inclination toward deliberate/non-impulsive action, (3) healthy habits, (4) self-regulation in service of a work ethic, (5) work reliability. The reliability of the whole scale was .89 and the test-retest stability was .89.

Following adaptations of the S-CS have been devised so far: German (Bertrams, Dickhäuser, 2009), Turkish (Nebioglu, Konuk, Akbaba, Eroglu, 2012), and Portuguese (Cruz, Sofia, Osório, Valente, Silva, 2013). In all cases, it was a short, 13-item version of the scale (Maloney, Grawitch, Barber, 2012; Tangney et al., 2004).

PRESENT STUDY

After the completion and submission of our findings for publication, we were made aware of the simultaneous research of the Polish version of S-CS by Aleksandra Pilarska and Roy Baumeister (2018). It has to be pointed out that their sample was a group of students ($N = 441$), while our research was a mixed group of various ages. The authors mentioned above obtained a five-factor structure which, compared to the one-dimensional model, better fit to the data. Results also showed that self-control was positively associated with self-esteem, perspective-taking, and guilt-proneness, while negatively related to personal distress, proneness to shame, externalization, and unconcern. Self-control was also found to be positively related to the Big Five traits: Conscientiousness, Emotional Stability, and Openness to Experience.

The aim of the present study is fivefold: (1) development of the Polish version of the Self-Control Scale (S-CS-Pv); (2) examination of the properties of the SC-S-Pv's items; (3) estimation of the SC-S-Pv's reliability, and we expected the S-CS to have satisfactory reliability verified by the values of Cronbach's α, Guttman's $\lambda_{6,}$

McDonald's ω_T; (4) comparison of the S-CS-Pv's internal structure with the original scale, due to the complexity of self-control, which manifests in a variety of behaviors (also reflected in the content of items), we expected a multidimensional structure, as it was in the original version of S-CS as well; (5) assessment of the SC-S-Pv's content validity by the examination of its associations with the measures of similar constructs and by means of the contrasting groups' method.

Based on the theoretical understanding of self-control and the findings presented above, we formulated hypotheses which concern relationships with other personality features, treated as indicators of the theoretical validity of the scale. The expected results were as follows: (1) Self-control correlates negatively with impulsiveness, which stems from the definition of these traits. (2) Self-control correlates positively with conscientiousness and agreeableness, and negatively with neuroticism. The first two traits are related to the ability to control emotions and impulses and delay gratification, whereas neuroticism involves low control of emotions. When it comes to openness and extroversion, there is no indication of their relationship with self-control (Tangney et al., 2004). (3) Self-control correlates positively with the indicators of mental well-being: resiliency, satisfaction with life, and self-esteem. (4) Self-control correlates positively with the strategies of coping with stress, which assumes restraining emotions and impulses, and are focused on action, whereas negatively with the ones focused on avoiding difficult emotions. Also, we tested the extent to which the tendency to present oneself in a favorable light may influence the S-CS-Pv's results.

In order to assess the validity of the Polish version of the S-CS, we also applied the contrasting groups method. This method makes it possible to spot differences in terms of the measured variable across groups separated by a standard that is unrelated to the test itself. We compared three groups: the addicted in treatment, employees of uniformed services, and jail inmates. The expected result was that the three groups differ in terms of self-control.

METHOD

Participants

In total, the Polish version of the Self-Control Scale was administered to five different samples (total $N = 1{,}075$). In order to obtain a heterogeneous sample for structure analysis, the SC-S was administered to adolescents at schools (Sample 1) and an adult sample (Sample 2). Next, we examined three samples in order to test the validity of the S-CS: male repeat offenders serving a sentence (Sample 3), alcohol addicts in treatment (Sample 4), and a sample of male uniformed services' employees: policemen and firemen (Sample 5). Table 1 lists descriptive statistics of the SC-S-Pv in these five samples, including the number of participants, their

sex, and mean age.

Table 1. Sex and age of the samples

Sample	*N*	% of male	Age
			M (*Min*–*Max*) [*SD*]
Adolescent (Sample1)	320	44	17.7 (16–18) [0.89]
Adult (Sample 2)	440	46	38 (18–69) [1.82]
Criminals (Sample 3)	149	100	36.82 (18–68) [11.26]
Addicts (Sample 4)	81	70	45.5 (22–69) [11.30]
Uniformed (Sample 5)	50	100	3.8 (22–49) [5.43]
Total	1,040	57	29 (16–69) [12.21]

Source: Authors' own study.

Subjects in the adolescent sample were pupils from three secondary schools in Warsaw, whom the researchers contacted at schools. The survey took place during classes. Subjects from the adult sample were gathered by undergraduate students (trained research assistants) who asked their neighbors to complete the S-CS-Pv. Imprisoned subjects were individuals who serve their sentences in three penitentiaries in Poland (in Wiśnicz, Sztum, and Tarnów). The research was conducted in small groups in the penitentiary institution by two trained research assistants. Patients undergoing addiction therapy were surveyed in the public addiction treatment center in Lublin by an employee who collaborated with researchers. The group study was conducted with anonymity assurance. Police officers and firefighters participated in the study in their departments located in the Małopolska province. The study was conducted individually by a trained student researching as part of the master's seminar. Participation in all surveys was voluntary and anonymous.

All protocols with over six values missing were excluded from further analyses. In total, only .48% ($N = 5$) of the subjects needed to be removed across the five samples. For the subjects with six or fewer values missing, these missing values were imputed using the procedure based on canonical variates (Harrel et al., 2015). In total, 115 missing values were replaced (.027% of the individual answers included in this research). We conducted statistical analyses utilizing the R environment (R Core Team, 2015).

Measures

Self-Control Scale – Polish version (S-CS-Pv). The original, 36-item version of the SC-S (Tangney et al., 2004) was translated into Polish using a back-translation procedure. Following recommendations of the International Test Commission (Hambleton, Merenda, Spielberger, 2005), the original scale

was translated independently by three translators: a professional English philologist, a person who is a Pole but has lived in England for many years, and by a psychologist with the theoretical background.

Next, three other translators back-translated these three versions. Items that best reflected the original meaning were chosen. In case of doubts, we consulted translation with one of the authors (June Tangney). The consensus was obtained through discussion, and the Polish version was developed.

However, we decided to keep two translations for five items and make a choice later on an empirical basis. Thus, the experimental S-CS-Pv comprised 41 items. After a pilot study conducted on 300 individuals, we have chosen from items having two translations, the version with a better discriminant power. The final shape of the scale, used in the present study, comprises 36 items rated on a 5-point format, ranging from 1 (= *Not at all like me*) to 5 (= *Very much like me*).

NEO-Five Factor Inventory (NEO-FFI). The NEO-FFI by Paul Costa and Robert McCrae (2004) is a widely used measure of five personality dimensions. The questionnaire consists of 60 items, 12 for each of the five scales. The Polish adaptation of the inventory reflects the psychometric structure of the original (Zawadzki, Strelau, Szczepaniak, Śliwińska, 1998). The reliability values of individual scales in the Polish version are as follows: Neuroticism α = .80, Extraversion α = .77, Openness to experience α = .68, Agreeableness α = .68, Conscientiousness α = .82. In the present study, we used the NEO-FFI questionnaire to survey subjects from Sample 2 (N = 51). The reliability for individual scales is as follows: Conscientiousness α = .81; Extraversion α = .56; Openness to experience α =.46; Neuroticism α =.78; Agreeableness α =.64.

Impulsiveness-Venturesomeness-Empathy Inventory (IVE). The IVE by Hans J. Eysenck and Sybil B. Eysenck (1998) in the Polish adaptation by Aleksandra Jaworowska (2011) boasts three scales that measure Impulsiveness, Venturesomeness, and Empathy. It consists of 54 items to which the subject answers "Yes" or "No". The research conducted on the samples of patients with neurotic disorders, problem drinkers, drug addicts, jail inmates, and various occupational groups confirmed the questionnaire's validity (Jaworowska, 2011). The Cronbach's α coefficients for individual scales were calculated separately for women and men in two age groups. They range from .59 (Empathy) to .81 (Impulsiveness). The reliability in the present study (N = 149) for individual scales is as follows: Empathy α =.73; Venturesomeness α =.67; Impulsiveness α =.75.

Coping Orientations to Problems Experienced Inventory (COPE). The COPE Inventory by Charles Carver, Michael Scheier, and Jagdish Wentraub (1989), adapted by Zygfryd Juczyński and Nina Ogińska-Bulik (2009), is a multidimensional coping inventory applied to assess the different ways in which people respond to stress. It consists of 60 items that belong to 15 coping strategies. The tool serves to measure dispositional coping with stress, i.e. typical ways of

reacting to stressful situations. The subject chooses 1 of 4 answers available. The Cronbach's α coefficients for individual scales range from .48 (Mental disengagement) to .94 (Religious coping). The results for the present study (N = 149) are similar: from .43 (Mental disengagement) to .93 (Substance use).

The Rosenberg Self-Esteem Scale (RSE). RSE (Rosenberg, 1986) is a widely used measure of global self-esteem. The ten items are each answered on a 5-point scale. The Polish adaptation of the scale was conducted by Irena Dzwonkowska, Kinga Lachowicz-Tabaczek, and Mariola Łaguna (2008). The estimates of reliability, discriminant and convergent validity in the Polish version confirmed appropriate reliability (α = .83) and validity of the scale. We obtained satisfactory reliability also in the present study (N = 120), Cronbach's α amounts to .88.

Resiliency Assessment Scale (SPP-25). The SPP-25 by Ogińska-Bulik and Juczyński (2008) measures general resiliency. It consists of 25 items evaluated on the 5-grade scale (from 0 = *Definitely not* to 4 = *Definitely yes*). There are five factors in its structure: 1) persistence and determination in action; 2) openness to new experience and sense of humor; 3) personal competences to cope with life and tolerance of negative emotions; 4) tolerating failures and treating life as a challenge; and 5) optimistic attitude toward life and ability to mobilize action in difficult situations. The scale's psychometric values are acceptable – the Cronbach's α amounts to .89, whereas the test-retest stability measured over a 4-week interval is .85. Finally, the Cronbach's α in the present study (N = 135) amounts to .80.

Satisfaction with Life Scale (SWLS). The SWLS (Diener, Emmons, Larsen, Griffin, 1985) in the Polish adaptation by Juczyński (2011) measures general satisfaction with life. The scale consists of five items assessed on a 7-point scale. The reliability indicator established for the scale's Polish adaptation is high enough (α = .81).

Social Desirability Questionnaire (KAS). The method developed by Jolanta Wilczyńska and Radosław Drwal (1983) serves to measure the intensity of the desire to be accepted by other people and the resulting readiness to behave in a way socially accepted. The questionnaire consists of 29 items describing behaviors and features with evident social desirability or disapproval and which do not include pathological contents. Reliability coefficients of KAS were as follows: Cronbach's α – .81, test-retest stability over a 5-week interval – .79. The validity of the KAS scale was assessed in several ways. Items were saturated with social desirability according to a unanimous opinion of two independent groups of judges; in the experiment, items and the total score discriminated groups with various induced attitudes towards the study; the total score of KAS correlates positively with similar scales and other questionnaires, liable to the influence of social desirability (Wilczyńska, Drwal, 1983). In the present study, the KAS was administered to the random half of respondents (N = 144) in the adolescent sample, and the Cronbach's α for the scale is .68.

RESULTS

Item analysis

We conducted the item analysis for Sample 1 (adolescents) and Sample 2 (adults) separately. Table 2 presents descriptive statistics for items and their respective coefficients, such as discriminant power (r_{corr}).

Table 2. Descriptive statistics and discriminant power of items of S-CS-Pv

	Sample 1 (N = 320)			Sample 2 (N = 440)		
Item	M	SD	r_{corr}	M	SD	r_{corr}
S-CS01	2.7	1.26	.58	2.6	1.28	.55
S-CS02	3.5	1.31	.50	2.8	1.26	.52
S-CS03	2.9	1.23	.52	2.6	1.19	.52
S-CS04 (R)	3.0	1.24	.07	3.1	1.10	.17
S-CS05	2.8	1.27	.66	2.7	1.20	.63
S-CS06 (R)	4.0	1.14	.06	4.0	1.06	.33
S-CS07	3.4	1.49	.45	3.0	1.46	.53
S-CS08	2.5	1.34	.32	2.7	1.28	.34
S-CS09	2.6	1.11	.47	2.3	1.06	.58
S-CS10	2.3	1.18	.47	2.3	1.24	.54
S-CS11	2.8	1.23	.54	2.6	1.32	.55
S-CS12 (R)	3.1	1.23	.16	3.2	1.23	.32
S-CS13	3.2	1.26	.50	3.0	1.19	.31
S-CS14 (R)	3.3	1.13	.21	3.4	1.10	.39
S-CS15	3.6	1.04	.41	3.8	.96	.24
S-CS16	3.5	1.18	.26	3.4	1.19	.20
S-CS17 (R)	3.0	1.11	.15	3.1	1.04	.49
S-CS18	3.4	1.11	.55	3.2	1.14	.62
S-CS19	3.3	1.16	.57	3.1	1.14	.64
S-CS20	2.0	1.10	.34	2.0	1.11	.41
S-CS21 (R)	2.6	1.10	.11	2.9	1.10	.47
S-CS22	3.3	1.36	.28	3.2	1.41	.34
S-CS23 (R)	3.4	1.10	.13	3.4	1.12	.36
S-CS24	3.3	1.17	.28	3.0	1.17	.56
S-CS25 (R)	3.1	1.06	.32	3.1	1.05	.51
S-CS26 (R)	3.0	1.13	.24	3.0	1.13	.45
S-CS27	3.5	1.11	.52	3.2	1.17	.58
S-CS28	3.0	1.12	.49	2.7	1.09	.51

S-CS29 (R)	3.6	1.00	.04	3.7	1.00	.53
S-CS30	3.2	1.11	.60	2.9	1.17	.57
S-CS31	3.1	1.09	.65	2.7	1.08	.66
S-CS32	2.8	1.19	.57	2.6	1.17	.57
S-CS33	2.7	1.20	.46	2.5	1.14	.46
S-CS34	2.1	1.23	.49	2.1	1.35	.46
S-CS35 (R)	3.4	1.21	.21	3.8	1.20	.45
S-CS36 (R)	3.5	1.04	.20	4.0	.94	.56

Reversed items were indicated by (R).
Source: Authors' own study.

The analysis of items showed their generally low discriminant power in both groups (.04–.66, with a median of .43 for adolescents, and .17–.66 with the median of .51 for adults). This result suggests the multidimensionality of the S-CS-Pv; the issue still discussed regarding the original SC-S (cf. Maloney, Grawitch, Barber, 2012; Tangney et al., 2004). Properties of items are better in the adult sample than in the adolescent one. Two items (4 and 16) have low power in both samples and should not be taken into account in scoring. Pilarska and Baumeister's (2018) adaptation has also obtained item 4, which has one of the lower discriminant power. Moreover, all the items of this version, which had low power, also have coefficients not higher than .4 in our present study. It concerns items 6, 12, 15, 20, while in Pilarska and Baumeister's adaptation, they were items 5, 13, 16, 21, respectively.

Reliability

In order to assess the reliability of the SC-S-Pv in terms of internal consistency and its stability across samples, we computed Cronbach's α, Guttman's λ_6, and McDonald's ω_T coefficients (Sijtsma, 2009) for each sample (cf. Table 3). The results are satisfactory in all samples.

Table 3. Descriptive statistics and reliabilities of SC-S across samples.

Statistic	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
N	320	440	149	81	50
Min	1.89	1.47	1.86	2.06	2.86
Max	4.44	4.89	4.81	4.36	4.50
M	3.09	3.26	3.35	3.15	3.53
SD	0.47	0.57	0.65	0.42	0.39
Cronbach's α	.85	.91	.90	.79	.83
Guttman's λ_6	.89	.93	.94	.91	.95
McDonald's ω_T	.90	.95	.96	.91	.91

Source: Authors' own study.

Internal structure

The S-CS structure has been discussed heavily in literature. In the research on its construction, the scale's authors (Tangney et al., 2004) obtained a five-dimensional solution, but they concluded that it has only one dimension. Other studies point to a two-dimensional structure of the short S-CS version (Maloney et al., 2012). Pilarska and Baumeister (2018), in their adaptation of S-CS, obtained a 5-factor solution (see Table 4).

The principal component analysis with the use of the Target rotation towards the model matrix, built on the original results by Tangney (personal communication), failed to show convergence between the Polish and the American solution. The Tucker's φ congruence coefficients were as follows: .68 for the whole scale, and $.53 \leq \varphi \leq .82$ for the factors, with the criterion value .9 not reached (Lorenzo-Seva, ten Berge, 2006). The same analysis was done towards loadings obtained by Pilarska and Baumeister (2018), and results were even worse (φ for whole scale .50 and $.51 \leq \varphi \leq .65$ for the factors).

Due to the lack of a definite conclusion regarding the dimensionality of the scale, we decided to apply the exploratory procedure. For the sake of diversity, we included the results of all samples in our study, which is favorable in the factor analysis (Kim, Müller, 2007). The initial data inspection demonstrated that the data is suitable for examination (KMO = .90; Bartlett's test $\chi^2(630) = 10779.61$, $p < .001$). The parallel analysis, conducted to estimate the number of factors, revealed seven factors for extraction. The S-CS-Pv's structure analysis was conducted employing the hierarchical factor analysis using the method of main axes with the Promax rotation on the matrix of polychoric correlations (as postulated by Holgado-Tello, Chacón-Moscoso, Barbero-García, Vila-Abad, 2010). Table 4 shows its results.

The solution accounted for 41% of the common variance of the general factor, with factors explaining 11%, 6%, 6%, 8%, 5%, 3% and 3% of variance. The goodness-of-fit indexes have shown that the obtained model fits the data well ($\chi^2(399) = 1605.49$ ($p < .001$); $\chi^2/df = 4.02$; $RMSEA$ = .055 [.051, .057]).

Based on the analysis described above, we obtained the reliability coefficients based on the saturation of items by the general factor. The coefficient based upon the sum of the squared loadings on all the factors (ω_T) amounted to .93, whereas the coefficient based upon the sum of the squared loadings on the general factor (ω_H) – .68. Having compared the two coefficients, we assume the S-CS-Pv should not be treated as a one-dimensional.

The analysis of the contents of items that belong in the first factor shows its relationship with impulsiveness in terms of emotions and actions (e.g. *I get carried away by my feelings*). We will call this factor Impulsiveness. The second factor comprises items whose content is related to reliability, organization, and

Table 4. Summary of Exploratory Hierarchical Factor Analysis Results for S-CS-Pv (N = 961)

Item	F1	F2	F3	F4	F5	F6	F7	Factor US	Factor PL	Factor PB
S-CS24	.383	.071	.062	.080	.075	-.028	-.204	2	1	2
S-CS32	.705	.007	-.087	.075	-.008	.075	-.152	2	1	2
S-CS31	.521	.009	.043	.251	-.098	-.067	-.045	2	1	2
S-CS18	.763	-.046	.100	-.088	-.040	-.098	.014	1	1	2
S-CS09	.352	-.002	.286	.031	-.001	.110	-.247	1	1	2
S-CS19	.608	-.051	.116	.040	-.089	-.089	.051	2	1	2
S-CS11	.669	-.022	-.053	-.009	-.096	.059	.070	2	1	3
S-CS33	.569	-.027	.035	.046	.026	.158	.059	2	1	3
S-CS10	.497	-.080	-.038	.169	-.042	.257	.071	2	1	3
S-CS35	-.037	.796	-.077	.010	-.017	.059	-.055	5	2	5
S-CS36	-.030	.814	.013	-.033	.007	-.040	.028	5	2	5
S-CS14	.130	.320	-.238	-.002	.128	.025	.133	5	2	5
S-CS06	.013	.486	.098	-.065	.019	-.102	.174	5	2	5
S-CS21	-.013	.307	-.187	.041	.130	.216	.231	3	2	1
S-CS27	.154	.015	.431	.231	.008	-.183	-.017	4	3	4
S-CS07	.097	-.087	.603	-.035	-.017	-.039	-.014	4	3	1
S-CS02	-.048	-.054	.762	.055	-.010	.057	-.010	4	3	1
S-CS03	.151	-.064	.332	.173	-.127	.230	.143	2	3	3
S-CS30	.242	-.023	.076	.581	-.022	-.289	.083	1	4	2
S-CS05	.041	.007	.110	.730	-.003	-.022	-.022	3	4	3
S-CS01	-.006	.079	.099	.566	-.117	.114	-.101	1	4	1
S-CS34	-.027	-.150	-.056	.665	-.049	.236	.025	3	4	3
S-CS12	.099	.159	.168	-.381	.132	.124	.168	3	4	5
S-CS25	-.020	.040	-.021	.012	.848	.003	.002	3	5	1
S-CS26	-.009	-.059	.039	.001	.872	.005	-.011	3	5	1
S-CS20	.204	-.100	.103	.101	.018	.529	-.108	2	6	5
S-CS29	.046	.211	-.164	.047	.177	-.134	.389	5	7	1
S-CS23	.005	.103	.008	-.002	.035	-.050	.518	1	7	1
S-CS04	-.159	.081	.273	.014	-.055	.221	.336	2	7	2
S-CS16	.134	.204	.281	.048	.076	-.055	-.111	1		4
S-CS28	.272	-.019	.236	.165	.056	.018	-.238	1		4
S-CS15	.184	.288	.175	.199	-.041	-.144	.102	4		4
S-CS08	.134	.134	.197	.071	-.069	.190	-.229	1		2

Table 4. cont.

S-CS22	.106	-.012	.184	.210	.017	-.134	.154	4		4
S-CS13	.217	.096	.152	.284	.026	.041	.049	3		3
S-CS17	.030	.006	-.017	-.218	.218	.170	.224	1		2
g	.735	-.324	.575	.716	-.446	.088	-.227			

Factor membership indication: Factor PL – present study, Factor US – original Tangney et al. (2004) study, Factor PB – Pilarska and Baumeister (2008) study.
Source: Authors' own study.

self-discipline (e.g. *I am reliable*; *I am always on time*). We call it Reliability and Self-Discipline. The third separated factor may be designated as Willpower because its items refer to behaviors that indicate efficiency in forcing oneself or mobilizing to act (e.g. *I am lazy*; *Getting up in the morning is hard for me*). As all items which belong in the fourth factor refer to autodestructive and habitual behaviors (e.g. *I do certain things that are bad for me, if they are fun*; *I sometimes drink or use drugs to excess*), we called it "Autodestructive Behaviors". The fifth factor – Healthy Habits – with two items, refers to habits related to a healthy lifestyle (*I eat healthy foods*; *I engage in healthy practices*). In all likelihood, separating this factor in analyses is a result of the firm conviction, present in society and mass culture, that maintaining a healthy lifestyle is important and valuable. Interpretation of the sixth factor, with the item *I don't keep secrets very well*, is the most difficult. In the original version, this item is part of a factor similar in content to the first factor obtained in the Polish version. This result was probably produced by the interaction between the influence of culture and the influence of social desirability; presumably, revealing secrets, lack of loyalty, and betrayal are condemned strongly in the Polish culture. The last factor may be designated as Persistence and Resistance to Failures. It includes three items (e.g. *I'm not easily discouraged*; *I am able to work effectively toward long-term goals*).

The analysis has revealed that the factor loading of Impulsiveness and Autodestructive Behaviors is the strongest in the general factor. Factors Healthy Habits, Reliability and Self-Discipline, and in particular Persistence in Action fall into the general factor to a smaller extent. Finally, based on the results obtained, we may say that the separated sixth factor, represented by one item, lacks significance for the overall result.

Validity

Correlations with other measures. We applied the following inventories for the assessment of the theoretical validity of the S-CS-Pv: IVE, NEO-FFI, COPE, RSE, SPP-25, SWLS. The KAS questionnaire was used to identify rela-

tionships with social desirability. Our expectations were that self-control would correlate: (1) negatively with impulsiveness; (2) positively with conscientiousness and agreeableness, and negatively with neuroticism; no correlations with extroversion or openness; (3) positively with the mental well-being measured by means of: satisfaction with life, resiliency, and self-esteem; (4) positively with strategies which assume restraining emotions and impulses and focus on action, whereas negatively with those which focus on avoiding difficult emotions; (5) positively with social desirability.

We conducted the analyses of relationships between the variables mentioned in our hypotheses on various samples using Pearson's correlation coefficient. The results for the first hypothesis confirmed our expectations. We obtained a significant (r = -.66; p < .001) and relatively strong correlation between self-control and impulsiveness (Sample 4, cf. Table 1).

Further on, we verified the second hypothesis on 51 subjects from the adult sample (Sample 1). Thirty-five percent of them were men. The median, standard deviation, and the minimum and maximum values in terms of age were as follows: M = 36.45; SD = 12.48; Min = 21; Max = 69). We confirmed our expectations related to the correlation between self-control and traits of personality; following relationships of self-control were significant: with neuroticism (r = -.28; p < 0.05), agreeableness (r = .55; p < .0001); moreover, there is a tendency for relationship of self-control with conscientiousness (r = .25; p = .073). The results were similar in the sample of jail inmates (Sample 4) – self-control correlated: negatively with neuroticism (r = -.54; p < .001), positively with agreeableness (r = .43; p < .001), and positively with conscientiousness (r = .68; p < .001).

Next, in our verification of the hypothesis regarding relationships between self-control and the measures of mental well-being, we applied data from various samples. The analysis of the relationship between self-control and resiliency was conducted on the sample of 135 adults, of which 43% were men, whereas, in terms of age, the parameters were as follows: M = 27.19; SD = 2.63; Min = 22; Max = 36. We received a significant positive relationship between self-control and resiliency (r = .45; p < .001). The relationship of self-control with self-esteem was examined in two samples: young adults (N = 70), of which 39% were men (age: M = 28; SD = 2.7; ranged from 25 to 36 years) and men working as policemen or firemen (N = 50; age: M = 30.84; SD = 5.43; ranged from 22 to 49 years). We obtained results indicating a positive correlation of self-control and self-esteem in young adults (r = .37; p < .05). In policemen and firemen this relationship is also positive (r = .48; p < .001) – the higher self-control, the higher self-esteem. Satisfaction with life was the last indicator of mental well-being. The analyses were conducted on the sample of 70 men (37% men; age: M = 28; SD = 2.7; Min = 25; Max = 36). The results indicate that the higher self-control, the higher satisfaction with life (r = .33; p < .05).

Sample 4 served to test the hypothesis concerning relationships between self-control and coping with stress. The results showed that self-control aids action-oriented strategies (Planning, Positive reinterpretation and growth, Suppression of competing activities, Active coping, and Restraint) and hinders strategies based on avoidance and protection from unpleasant emotions (Substance Use, Denial, Behavioral Disengagement, Mental Disengagement). In support-oriented strategies, only Focus on and Venting of Emotions correlated positively with Self-control (Table 5).

Table 5. Correlations between Self-Control and Coping ($N = 81$)

Variables	r
Action-oriented strategies	.47***
Strategies based on avoidance	-.58***
Support-oriented strategies	-.09
Active coping	.36***
Planning	.47***
Use of instrumental social support	.02
Use of emotional social support	-.07
Suppression of competing activities	.37***
Religious coping	-.01
Positive reinterpretation and growth	.38***
Restraint	.29***
Acceptance	-.03
Focus on and venting of emotions	-.28***
Denial	-.46***
Behavioral disengagement	-.36***
Mental disengagement	-.39***
Substance use	-.66***

*** $p < .001$
Source: Authors' own study.

The last hypothesis for verification involved the relationship of self-control with social desirability. The studies were conducted on 141 subjects from the sample of adolescents, 36.5% of whom were men. The mean for age was $M = 17.7$, $SD = 0.86$. The age ranged from 16 to 20 years. The results obtained were in line with our expectations; self-control correlated positively with social desirability ($r = .45$; $p < .001$).

Contrasting groups comparison. The validity study by means of contrasting groups also confirmed our expectations. We tested the hypothesis that

addicts, jail inmates, and uniformed services differ in terms of self-control. The parameters of individual samples were as follows: alcohol addicts in treatment (N = 81; M = 3.15; SD = 0.430); jail inmates (N = 149; M = 3.35; SD = 0.646); uniformed services' employees (N = 50; M = 3.53; SD = 0.387). We applied the ANOVA and Games-Howell's post-hoc test because the variance was heterogeneous ($F(2) = 17.65$; $p < 0.001$). The results indicated that the difference is significant statistically ($F(2, 277) = 7.560$; $p = 0.001$; $\eta^2 = .05$). The post-hoc test revealed significant differences in all pairwise comparisons: between jail inmates and addicts ($p = 0.018$), between jail inmates and uniformed services' employees ($p = 0.049$), and between addicts and uniformed services' employees ($p < 0.001$).

DISCUSSION

The initial assessment of the Polish adaptation of the S-CS has shown that this method is reliable. Three coefficients were a measure of reliability, calculated separately for 5 samples; the results are consistent and indicate high reliability. The discriminant power of items is relatively low, in particular in adolescents. Because it is the measure of correlations of items with the overall result, its low value may indicate the multidimensionality of the scale. Items 4 and 16 have very poor discriminant power and should be excluded from the calculation.

The results of the factor analysis revealed that the scale measures various self-control-related traits. Although some of these traits are not the essence of self-control, they are indicators of its efficiency. Despite heterogeneity, the distribution of the variances explained by individual factors suggests that only the overall score should be calculated. Among the factors obtained, we may separate the ones which are related to the general factor strongly (Impulsiveness, Autodestructive Behaviors, and Willpower) and factors with weaker correlations: Reliability and Self-Discipline, Healthy Habits, and Persistence in Action. The first group is direct manifestations of self-control, e.g. control of emotions, impulses, habitual behaviors, and resistance to pleasures (delaying gratification). The second group is manifestations of self-control in various fields of life, e.g. at work or in maintaining a healthy lifestyle. This group of sub-scales refers to actions and mental processes whose result depends on (among others) the ability to control oneself, but they do not express self-control as such. They can be called "secondary" or "functional" factors because they pertain to the functioning in specific domains of life.

The result for the seventh factor (Persistence in Action), which is the least strongly correlated with the overall result, is particularly interesting. The reason for this may be that persistence in action is a complex psychological category, comprising various processes and abilities, whereas self-control is only one of them. Persistence in action is driven, apart from self-control, also by motivational arousal (internal motivation, setting goals, internalized values, etc.). In general,

well-established motivation is essential for persistence. Therefore, items related to this category are linked with self-control to a smaller degree. Undoubtedly, persistence in action is related to self-control, but it may be a separate trait (Duckworth, Gross, 2014). Therefore, self-control may only be its component, next to other traits, such as motivation.

Separating so many different factors raises a question of whether the scale measures only self-control or also the self-control-related traits, which are not self-control. For instance, the Autodestructive Behaviors factor is related rather to the inability to cope with tension than to the capacity for self-control. Similarly, the Healthy Habits factor is a manifestation of values that are appreciated in culture; therefore, it may be inaccurate to treat it as an element of self-control. It is particularly apparent in Persistence in Action, which falls into the general factor only to a small extent. Further development of the scale should be directed either at selecting items that would measure only self-control or at extending it by measuring volitional-motivational aspects. However, there is already Achievement Motivation Inventory (*Leistungsmotivationsinventar* [LMI]; Schuler, Prochaska, 2001; Polish adaptation: Klinkosz, Sękowski, 2006), which measures volitional-motivational features, so the first solution is better. The results obtained confirm the theoretical validity of the scale. Particular evidence for this are the relationships of self-control with impulsiveness, neuroticism, agreeableness, conscientiousness, and self-esteem – they conform to theoretical predictions and existing study results.

Further, we confirmed the hypotheses regarding the relationships between self-control and coping with stress. Self-control is related positively to the application of action-oriented strategies and negatively to taking actions directed at avoidance and protection from unpleasant emotions. As expected, self-control correlated positively with social desirability. It means that individuals who are sensitive to social desirability may score higher as a result of the tendency to present oneself in a favorable light. This is the Achilles hill of the adapted method, but it is still in line with other self-report methods. We also tested the hypotheses related to differences among addicts, jail inmates, and uniformed services' employees. The results obtained indicate significant differences in all pairwise comparisons. The lowest self-control marks addicts, while uniformed services' employees achieve the highest result. Self-control in jail inmates is higher than in addicts and lower than in those working for uniformed services.

Let us summarize the essential information. The Polish adaptation of the Self-Control Scale is a reliable method with proven validity. The factor analysis results suggest its multidimensionality, but it is advisable to calculate only the total score. The scale can be applied in scientific research in various contexts (in the psychology of motivation, the psychology of personality, and the clinical psychology) and as a proper external criterion for other methods. As for the individual diagnosis,

its advantages are limited, and the results should be approached with the necessary caution, primarily because its results may be influenced by the willingness to present oneself in a favorable light.

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STRESZCZENIE

Samokontrola jest ważną funkcją ludzkiego Ja, dzięki której osoba może przezwyciężyć lub zmienić swoje impulsy, nastroje, emocje i zachowania. Tangney, Baumeister i Boone opracowali skalę do pomiaru indywidualnych różnic w samokontroli – Skalę Samokontroli (Self-Control Scale, S-CS). W artykule przedstawiono adaptację S-CS do polskich warunków kulturowych, nad którą prace rozpoczęto, gdy nie było metody pomiaru samokontroli w Polsce. Cele niniejszego badania były następujące: 1) opracowanie polskiej wersji Skali Samokontroli (S-CS-Pv); 2) ocena właściwości pozycji testowych SC-S-Pv; 3) oszacowanie rzetelności SC-S-Pv; 4) porównanie wewnętrznej struktury S-CS-Pv z oryginalną skalą; 5) ocena trafności teoretycznej SC-S-Pv. W procesie adaptacji S-CS zastosowano procedurę tłumaczenia zwrotnego. Polska adaptacja jest rzetelną metodą o trafności wykazanej zarówno przez korelację z innymi testami, jak i przez porównania grup. Wyniki analizy czynnikowej sugerują jednak jej strukturę wielowymiarową.

Słowa kluczowe: Skala Samokontroli; polska adaptacja; rzetelność; trafność

APPENDIX

J.P. Tangney, R.F. Baumeister and A.L. Boone
S-CS
adapt. K. Kwapis and R.P. Bartczuk; v. 1.0

Przy użyciu zamieszczonej poniżej skali proszę zaznaczyć, w jakim stopniu każde z poniższych stwierdzeń oddaje to, jaki/jaka jesteś zazwyczaj.

		Zupełnie niepodobne do mnie				Bardzo podobne do mnie
1.	Mam kłopoty z porzucaniem złych nawyków	1	2	3	4	5
2.	Jestem leniwy	1	2	3	4	5
3.	Mówię niestosowne rzeczy	1	2	3	4	5
4.	Nigdy nie pozwalam sobie na utratę kontroli	1	2	3	4	5
5.	Robię pewne rzeczy, które są dla mnie złe, jeśli tylko mnie one bawią	1	2	3	4	5
6.	Ludzie mogą na mnie liczyć, że dotrzymam terminów	1	2	3	4	5
7.	Wstawanie rano jest dla mnie trudne	1	2	3	4	5
8.	Mam problem z mówieniem „nie”	1	2	3	4	5
9.	Zmieniam zdanie dosyć często	1	2	3	4	5
10.	Wygaduję wszystko, co mam w głowie	1	2	3	4	5
11.	Ludzie opisaliby mnie jako osobę impulsywną	1	2	3	4	5
12.	Odmawiam rzeczy, które są dla mnie złe	1	2	3	4	5
13.	Wydaję zbyt wiele pieniędzy	1	2	3	4	5
14.	Mam wszystko schludnie utrzymane	1	2	3	4	5
15.	Czasami lubię sobie dogadzać	1	2	3	4	5
16.	Chciałbym być bardziej zdyscyplinowany	1	2	3	4	5
17.	Dobrze potrafię opierać się pokusom	1	2	3	4	5
18.	Daję się ponosić emocjom	1	2	3	4	5
19.	Robię wiele rzeczy pod wpływem chwili	1	2	3	4	5
20.	Nie dotrzymuję tajemnic zbyt dobrze	1	2	3	4	5
21.	Ludzie powiedzieliby, że mam żelazną samodyscyplinę	1	2	3	4	5
22.	Zdarzyło mi się pracować lub uczyć się przez całą noc – na ostatnią chwilę	1	2	3	4	5
23.	Nie zniechęcam się łatwo	1	2	3	4	5
24.	Byłoby lepiej, gdybym zatrzymał się, aby pomyśleć przed działaniem	1	2	3	4	5

		Zupełnie niepodobne do mnie				Bardzo podobne do mnie
25.	Prowadzę zdrowy tryb życia	1	2	3	4	5
26.	Jem zdrową żywność	1	2	3	4	5
27.	Przyjemność i zabawa czasami odciągają mnie od wykonania pracy	1	2	3	4	5
28.	Mam kłopoty z koncentracją	1	2	3	4	5
29.	Potrafię pracować efektywnie dla osiągnięcia odległych celów	1	2	3	4	5
30.	Czasem nie mogę się powstrzymać przed zrobieniem czegoś, nawet jak wiem, że jest to złe	1	2	3	4	5
31.	Często działam bez przemyślenia wszystkich alternatyw	1	2	3	4	5
32.	Zbyt łatwo tracę panowanie nad sobą	1	2	3	4	5
33.	Często przerywam ludziom	1	2	3	4	5
34.	Czasami bez umiaru piję lub biorę narkotyki	1	2	3	4	5
35.	Zawsze jestem na czas	1	2	3	4	5
36.	Jestem rzetelny	1	2	3	4	5

Płeć: M K Wiek:.....
Wykształcenie (zakreślić właściwe): podstawowe / zawodowe / średnie / wyższe
Miejsce zamieszkania (zakreślić właściwe): wieś / miasto do 50 tyś. / miasto od 50 do 200 tyś. / miasto powyżej 200 tyś.