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Psychometric properties and correlates of the Polish version of the Self-Control Scale (SCS)

Abstract: *Theory and research have both characterized self-control as a vital human strength. Tangney, Baumeister, and Boone's (2004) Self-Control Scale (SCS) is a 36-item self-report questionnaire that assess individual differences in multiple aspects of self-control. The scale is now considered the preeminent measure of self-control in social and psychological research. This article presents studies that evaluated: (a) the psychometric properties of the Polish version of the SCS, and (b) whether higher SCS scores correlated with positive outcomes in Poland. A total of 441 Polish university students took part in the studies. Psychometrically, the Polish SCS proved to be reasonably sound, with good internal consistency (α = .89). Correlations with criteria measures showed that both full and brief self-control scores were positively related to self-esteem, perspective taking, and guilt-proneness, while negatively related to personal distress, proneness to shame, externalization, and unconcern. High self-control was also associated with being conscientious, emotionally stable, and open. It is concluded that the Polish SCS offers a viable option for assessing trait self-control and for studying its relationship with a broad spectrum of psychological and social variables.*

Keywords: *self-control, self-regulation, adjustment, measurement*

Introduction

The present investigation was designed to create a Polish language version of a trait measure of self-control, based on translating and refining the Self-Control Scale originally published in English by Tangney, Baumeister, and Boone (2004). Self-control is related to the broader concept of self-regulation and is both an important trait for succeeding in life and an important dimension along which there are stable individual differences.

Definitions

Self-control is defined as the capacity to alter one's responses. Its applications include controlling thoughts, such as by forcing oneself to concentrate or to stifle unwanted thoughts; controlling emotions, such as escaping from a bad mood or prolonging righteous anger; impulse control, such as resisting urges to eat, have sex, take drugs, aggress, or do other things that are personally or socially inappropriate; and regulating performance, such as be persevering, or trading off speed and accuracy. Many writers use *self-control* and *self-regulation* interchangeably. Among those who make a distinction, self-control is typically understood as conscious efforts to regulate oneself in connection with long-term goals and values, whereas self-regulation also encompasses unconscious processes, even extending to homeostatic processes such as how the body maintains constant temperature and heart rate.

Trait and state

The capacity for effective self-control is not constant either across or within individuals. Nonetheless, some people reliably have better self-control than others. State fluctuations have been well documented, most notably in

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connection with ego depletion (e.g., Baumeister & Vohs, 2016; Hagger, Stiff, Wood, & Chatzisarantis, 2010). The widely (though not universally) replicated finding of ego depletion is that after an initial exertion of self-control, subsequent performance on other self-control tasks is often impaired.

State fluctuations do not rule out stable individual differences. People may fluctuate in their self-control around different baselines. Thus, someone with high self-control may occasionally show poor self-control, especially during ego depletion, but the person will likely return soon to the (high) baseline. Recent work suggests that people with high trait self-control do not necessarily have more willpower but instead manage their resources better, such as by not exposing themselves to temptations (Hofmann, Vohs, & Baumeister, 2012).

More broadly, one could distinguish capacity for self-control from desire or motivation to exert self-control. Failure at self-control could in principle occur either because of low ability or low motivation. The original trait scale by Tangney et al. (2004) did not make this distinction, which prompted Uziel and Baumeister (2017) to develop a scale that specifically measures desire for self-control.

Importance of self-control

Both the original Self-Control Scale by Tangney et al. (2004) and the current Polish scale were motivated by recognition of the importance of measuring self-control. The importance of self-control is evident in its extensive contributions to success in life. Longitudinal studies have shown that children with good self-control grow to enjoy many advantages as adults, including greater school and workplace success, less unemployment, greater popularity, better relationships, fewer behavior problems (e.g., fewer arrests and unwanted pregnancies), less substance addiction, and better mental and physical health (e.g., Daly, Baumeister, Delaney, & MacLachlan, 2014; Mischel, Shoda, & Peake, 1988; Moffitt et al., 2011; Shoda, Mischel, & Peake, 1990). Low self-control is a key factor leading to criminality (Gottfredson & Hirschi, 1990). People with high self-control even live longer than other people (Deary, Weiss, & Batty, 2010). Some might suspect that high self-control means self-sacrifice or joyless dutifulness, but that impression is contradicted by evidence that people with high self-control are happier than other people (Hofmann, Luhmann, Fisher, Vohs, & Baumeister, 2014).

A meta-analysis by de Ridder, Lensvelt-Mulders, Finkenauer, Stok, and Baumeister (2012) focused specifically on studies that had used Tangney et al.'s (2004) Self-Control Scale. The authors found many significant correlations, and the general pattern was that higher self-control led to better outcomes. The strongest effects were for work and school performance. Intermediate effects were found for interpersonal relations and personal adjustment (e.g., self-esteem). Correlates with success at dieting, weight control, and quitting smoking were small but still positive and significant. Thus, self-control is broadly beneficial. As in the original study by Tangney et al. (2004), a quest for any drawbacks of very high self-control was unsuccessful. The more self-control one has, the better.

To be sure, self-control can be used to produce negative outcomes. A criminal or torturer with high self-control will presumably do more damage than one lacking that ability. Anorexics cause themselves physical harm by restraining their eating. It is however not appropriate to view these negative outcomes as drawbacks of self-control per se, but rather a misapplication. Self-control can be compared to a tool, such as a hammer. Hammers can inflict harm, such as head injury, but that is not really a fault of the hammer. The quest for downsides of high self-control continues, but recent work continues to find simply that having better self-control is an unmitigated good, even at the highest levels (e.g., Hofmann, Luhmann, Fisher, Vohs, & Baumeister, 2014; Wiese et al., in press).

Apart from practical benefits, self-control is important to study as a way of advancing basic theory about the self. Influential theorists have long pointed out that self-control is not simply another thing that the self does but is central to most of its functions (e.g., Carver & Scheier, 1981, 1998). Understanding self-control is thus an important key to understanding the self.

Development of original (English) scale

The original English scale was developed by Tangney et al. (2004). The researchers sought to create items focusing chiefly on self-reports of relevant behaviours that would be performed with reliably different frequencies by people with high versus low self-control. An initial sample of 93 items was subjected to mass testing and statistical analysis, eliminating items that failed to correlate or failed to differentiate, or were duplicates. The long list was reduced to 36 items, with a brief version consisting of 13 items. The scale showed good reliability and validity. One concern was that it had a relatively high correlation (between .5 and .6) with the Marlowe-Crowne Social Desirability Scale. That scale is sometimes interpreted as measuring lying in order to make a good impression, which would raise validity questions. However, self-control is a special case, because its evolved purpose may be to promote socially desirable behaviour, so self-control should correlate with reports of such responses. Moreover, Tangney et al. (2004) showed that most correlations between self-control and other variables remained significant after controlling for social desirability scores, whereas correlations between the social desirability scale and other variables dropped substantially (often out of the significant range) after controlling for trait self-control. Hence much of the variance that is shared between social desirability and self-control may properly belong to self-control.

The factor structure of the self-control scale was investigated at length by Tangney et al. (2004). Factor analysis yielded different factors, though across different studies not all items reliably loaded on the same factors. The researchers managed to reconcile the differences and name the factors, but, crucially, all the different factors predicted the criterion variables about the same. Hence the

explanatory utility of the factor structure was minimal, and so Tangney et al. decided to ignore the factors and treat the scale as a single dimension. Most other researchers have followed this practice, and so the literature does not have much about differential effects of different subscales. The main exception was an innovation by de Ridder et al. (2011), who sorted the items based on whether they activated or inhibited behavior and found some differential predictive utility.

Overview of the studies

The two studies presented here were conducted with the aim of developing and validating a Polish version of the Self-Control Scale.

The first study aimed to translate the Self-Control Scale (SCS) into Polish, determine the equivalence of the Polish version with the English SCS, and establish the preliminary psychometrics of the translated instrument with a bilingual sample.

The second study was conducted to continue the psychometric evaluation of the Polish version of the SCS. It focused on confirming its reliability and criterion validity. In order to evaluate the structural validity of the SCS and its brief version (BSCS), exploratory and confirmatory factor analysis were used. Tangney et al. (2004) reported that SCS scores make up five factors, identified through exploratory factor analysis: general capacity for self-discipline, deliberate/nonimpulsive action, healthy habits, work ethic, and reliability. However, the authors found that the use of components scores added little to the predictive ability of the total score, and therefore they recommended dispensing with the factor structure and just using the one score. In practice, both the SCS and BSC are generally used as unidimensional measures of trait self-control.

Criterion validity was examined by estimating correlations with hypothesized outcomes. The following correlates were chosen as constructs of interest for this study: self-esteem, empathy, moral emotions, and the Big Five personality traits. These variables were chosen to reflect various aspects of psychological functioning and allow for comparison with the original study of Tangney et al. (2004). Based on this and other studies (e.g., de Vries & van Gelder, 2013; Ghorbani, Watson, Salimian, & Chen, 2013), it was expected that self-control would be positively related to self-esteem and to Big Five conscientiousness and emotional stability. It was also assumed that self-control would have a positive association with perspective taking and guilt-proneness. Finally, it was predicted that those high in self-control would be less prone to problematic shame reactions, externalization, and personal distress.

Study 1[1]

Method

Participants and procedure

Participants were 84 MA English students (73.8% female; $M = 23.01$ yrs, $SD = 1.79$) at the University of Adam Mickiewicz in Poznan, fluent and literate in English and Polish. They were administered the English and the translated Polish version of the SCS, approximately two weeks apart. The participation was voluntary and based on informed consent. No participation payment was made.

Measures

Tangney et al.'s (2004) SCS consists of 36 items pertaining to control over thoughts, emotions, impulses, performance, and habit breaking. Each item is rated on a 5-point scale ("not at all" to "very much") and the scores are summed to yield a total score. The SCS has been found to have good internal consistency and test–retest reliability ($\alpha = .89$, $r_{tt} = .89$). The authors also reported a 13-item Brief Self-Control Scale (BSCS), which correlated at above .90 with the full scale and was found highly reliable ($\alpha = .84$, $r_{tt} = .87$).

The translation process of the SCS followed a rigorous methodology that consisted of: 1) three independent forward translations produced by three professional translators; 2) forward translations synthesized into one by three experts (two with PhDs in psychology and one with a PhD in linguistics); 3) three independent blind back translations produced by three professional translators; 4) back translations synthesized into one by two experts (with PhDs in psychology); and 5) the reconciled English version reviewed and accepted by one of the authors of the SCS, i.e., R. F. Baumeister. This process resulted in a pre-final Polish version of the SCS for field testing.

Results

Responses on both versions of the SCS were compared using descriptive statistics, correlation coefficients, and paired *t*-tests or Wilcoxon signed ranks tests (Table 1 and Table 2). Relatively small differences were found between English items and their Polish counterparts (r effect size ranged from .00 to .19; average $r = .07$). These differences were significant only for items 16, 17, and 18. Correlations between corresponding items on the two language versions were all significant and positive (r_s ranged from .27 to .83; average $r_s = .61$), with the exception of item 16 showing no significant correlation ($r_s = .12$, *ns*). The correlation between total scores on the two language versions was high ($r = .89$ and $r = .86$, $p < .001$ for SCS and BSCS, respectively), and the difference between total scores on the two versions was not significant (effect size $d = 0.08$ and $d = 0.04$ for SCS and BSCS, respectively).

Estimates of internal consistency reliability and homogeneity were similar in both the English and Polish versions of the scale (Table 2). Cronbach's alphas were

[1] These results were previously presented in a poster format at the Third Edition of Polish-US Conference: Motivation and Social Perception held on July 19–21 2016 in Gdańsk, Poland.

Table 1. Descriptives and cross-language comparison of item scores

	English version		Polish version		*Z*	r_s
	M	*SD*	*M*	*SD*		
SCS1	3.11	0.85	3.08	1.00	-0.27	.59***
SCS2	2.81	1.02	2.88	1.07	-0.99	.65***
SCS3	2.93	1.18	2.94	1.18	-0.15	.76***
SCS4	3.00	1.17	3.07	1.14	-0.73	.70***
SCS5	3.05	1.08	3.19	0.90	-1.07	.29**
SCS6	2.51	1.07	2.55	0.97	-0.92	.58***
SCS7	4.01	1.11	4.10	0.95	-0.93	.73***
SCS8	2.54	1.46	2.49	1.28	-0.70	.69***
SCS9	3.07	1.16	3.05	1.02	-0.55	.55***
SCS10	3.01	1.09	3.13	1.11	-1.44	.69***
SCS11	3.39	1.12	3.51	1.18	-0.96	.56***
SCS12	3.50	1.08	3.33	1.22	-1.55	.66***
SCS13	3.49	1.00	3.40	1.03	-0.47	.38***
SCS14	2.67	1.37	2.60	1.29	-0.77	.79***
SCS15	3.32	1.13	3.32	1.05	-0.24	.69***
SCS16	2.46	0.91	2.15	0.80	-2.39*	.12
SCS17	2.46	1.27	2.20	1.00	-2.43*	.68***
SCS18	4.18	0.87	4.37	0.77	-2.33*	.65***
SCS19	2.67	1.07	2.45	1.08	-1.75	.49***
SCS20	2.93	1.04	2.71	0.96	-1.79	.46***
SCS21	4.05	1.09	3.80	1.20	-1.47	.27*
SCS22	2.64	1.05	2.68	1.23	-0.48	.67***
SCS23	2.79	1.45	2.61	1.52	-1.32	.60***
SCS24	3.17	1.08	2.98	1.12	-1.65	.58***
SCS25	3.10	1.18	3.10	1.01	0.00	.51***
SCS26	3.07	1.04	3.08	1.11	-0.13	.78***
SCS27	3.30	1.08	3.23	1.19	-1.03	.83***
SCS28	2.64	1.09	2.61	1.08	-0.17	.56***
SCS29	3.06	1.09	2.88	0.99	-1.45	.50***
SCS30	3.42	1.03	3.44	1.09	-0.25	.68***
SCS31	2.82	1.11	2.89	1.08	-0.66	.57***
SCS32	3.40	1.07	3.35	1.09	-0.57	.55***
SCS33	3.29	1.20	3.40	1.18	-0.77	.56***
SCS34	3.35	1.16	3.37	1.17	-0.27	.54***
SCS35	4.08	1.19	3.90	1.18	-1.20	.65***
SCS36	3.69	1.24	3.69	1.32	-0.20	.72***

Note. *M* = mean, *SD* = standard deviation, *Z* = Wilcoxon signed-ranks test, r_s = Spearman's rho.

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 2. Descriptives, internal consistency reliability, and cross-language comparison of total scores

	English version				Polish version				*t*(83)	*r*
	M	*SD*	α	avg. r_{it}	*M*	*SD*	α	avg. r_{it}		
SCS	112.96	17.84	.88	.39	111.56	18.50	.89	.41	1.51	.89***
BSCS	38.28	8.15	.83	.49	38.00	8.26	.84	.49	.62	.86***

Note. *M* = mean, *SD* = standard deviation, α = Cronbach's alpha, avg. r_{it} = average corrected item–total correlation. *t* = *t*-test, *r* = Pearson's correlation, SCS = Full Self-Control Scale, BSCS = Brief Self-Control Scale.
*** $p < .001$

.89 and .84 for the Polish versions of the SCS and BSCS, respectively. The majority of item–total correlations were above .30 (r_{it} ranged from .09 for item 16 to .60 for item 3, and from .15 for item 4 to .64 for item 3, for the Polish SCS and BSCS, respectively). The mean inter-item correlations were generally higher for the BSCS (average $r_{ii} = .28$ and $r_{ii} = .29$ for the English and Polish BSCS, respectively) than for the full SCS (average $r_{ii} = .18$ and $r_{ii} = .19$ for the English and Polish SCS, respectively). The Polish SCS and BSCS were correlated at $r = .93$ ($p < .001$).

Discussion

Overall, the Polish version of the SCS appeared to be compatible with the original English scale and similarly reliable. The most problematic item, that generated further discussion to produce an appropriate translation, was item 16 (i.e., *I am self-indulgent at times*). The research team decided to offer an alternative translation for this item and further examine the two different versions for it.

Study 2

Method

Participants and procedure

The sample included 357 Polish students in different faculties in universities in Poznan (59% female), whose age ranged from 18 to 31 years ($M = 21.19$ yrs, $SD = 1.88$). The order in which participants completed the questionnaires was counterbalanced. They were informed that the participation was voluntary and that anonymity and confidentiality were guaranteed. No financial incentives were offered.

Measures

All participants completed the Polish version of the SCS, developed in Study 1 (37 items, including one alternative item).

Self-esteem was evaluated using the Polish adaptation of Rosenberg's Self-Esteem Scale (SES; Rosenberg, 1965). The SES is a 10-item scale in a 4-point Likert format, with higher scores indicating greater self-esteem. The Polish version of the SES has good internal consistency (Cronbach's α = .81–.83), stability over time ($r = .50$ and $r = .83$ over a year and over a week interval, respectively), and construct validity (Łaguna, Lachowicz-Tabaczek, & Dzwonkowska, 2007). The internal consistency of the SES in this study was deemed good (Cronbach's α = .88).

Empathy was measured using the Empathic Sensitiveness Scale (ESS; Kaźmierczak, Plopa, & Retowski, 2007), based on the Interpersonal Reactivity Index (IRI; Davis, 1983). It assesses dispositional empathy in three aspects: empathic concern (i.e., an other-oriented tendency to sympathize with others), personal distress (i.e., a self-focused tendency to experience the other's distress), and perspective taking (i.e., a cognitive component of empathy, a tendency to take someone else's perspective in daily social situations). The measure consists of 28-items scored on a 5-point Likert scale, with higher scores on a given scale representing higher levels of that particular empathic dimension. Satisfactory reliability was demonstrated for all subscales (Cronbach's α from .74 to .78). In the present study, reliability values for internal consistency, as measured by Cronbach's α, ranged from .76 to .81 (average α = .79),

Moral emotions were assessed with the Polish adaptation of the Test of Self-Conscious Affect (TOSCA-3; Tangney, Dearing, Wagner, & Gramzow, 2000). The instrument uses 16 scenarios with sets of responses, each representing a different tendency: shame-proneness, guilt-proneness, externalization, detachment/unconcern, alpha pride, and beta pride. All responses are rated on a 5-point Likert scale, with higher scores indicating a greater degree of proneness to that reaction. The Polish version of the scale has acceptable internal consistency (Cronbach's α on the subscales range from .44 to .80; Adamczyk & Sobolewski, 2014). Internal consistencies for the TOSCA-3 subscales in this sample ranged from .53 to .78 (average α = .66).

The Big-Five personality traits (i.e., extraversion, agreeableness, conscientiousness, emotional stability, intellect) were measured by the short form of Goldberg's (1992) 50-item Big Five Markers questionnaire from the resources of the International Personality Item Pool. The IPIP-BFM-20 (Topolewska, Skimina, Strus, Cieciuch, & Rowiński, 2014) consists of 20 items rated on a 5-point Likert scale, with higher scores indicating that the trait describes the individual better. The reliability (range of Cronbach's α .65–.78), factor structure, and concurrent validity of the scale are satisfactory. Cronbach's alpha for all subscales in the current study ranged from .70 to .84 (average α = .75).

Note that this study did not utilize the exact same instruments to assess empathic tendencies and the Big Five personality traits as in Tangney et al.'s (2004) study. The measures used here could, however, be considered as essentially equivalent to the measures used by those authors.

Results

All the main analyses were run twice to compare the results obtained with each of item 16's translation. The alternative translation for this item performed better on the psychometric criteria, and so these analyses are reported here (see Appendix 1 for the final translations of each item; the corresponding original items can be found in Tangney et al., 2004).

First, the internal consistency of the Polish SCS was assessed. Both the full and brief versions of the Polish SCS were found to have satisfactory reliability with Cronbach's α of .89 and .79, respectively. As Table 3 indicates, for both,

Table 3. Descriptive statistics, reliability information, and CFA standardized factor loadings

Item	*M*	*SD*	r_{it}		Standardized factor loading					
					Model 1	Model 3				
			SCS	BSCS	F1	F1	F2	F3	F4	F5
SCS1	2.86	1.00	.45	.39	.62		.69			
SCS2	2.78	1.18	.44	.46	.56	.64				
SCS3	2.61	1.15	.56	.54	.53	.64				
SCS4	3.08	1.24	.39	.35	.44			.57		
SCS5	3.00	1.12	.31		.48		.59			
SCS6	2.60	1.16	.42	.40	.45			.58		
SCS7	3.97	0.95	.36		.40					.65
SCS8	2.33	1.41	.39		.46	.53				
SCS9	2.88	1.24	.40		.43		.50			
SCS10	3.21	1.13	.40		.54		.63			
SCS11	3.47	1.22	.48		.46			.61		
SCS12	3.31	1.25	.37		.40			.53		
SCS13	3.43	1.10	.27	.20	.36					.48
SCS14	2.63	1.28	.43		.48			.60		
SCS15	3.39	1.15	.36		.36					.53
SCS16	2.69	0.92	.39		.40				.49	
SCS17	2.17	1.12	.41	.42	.43				.50	
SCS18	4.33	0.72	.22		.32					.52
SCS19	2.38	1.11	.38		.48		.59			
SCS20	2.63	1.14	.48		.47		.59			
SCS21	4.08	1.08	.33		.49					.71
SCS22	2.51	1.10	.48	.46	.60	.72				
SCS23	2.66	1.41	.31		.27				.34	
SCS24	3.19	1.11	.32		.50	.60				
SCS25	2.87	1.17	.48		.46		.55			
SCS26	3.09	1.08	.42		.86	.90				
SCS27	3.09	1.11	.42		.87	.92				
SCS28	2.85	1.22	.36	.40	.43				.54	
SCS29	2.91	1.17	.51	.50	.51				.61	
SCS30	3.34	1.00	.32	.35	.46	.55				
SCS31	2.74	1.11	.51	.47	.54		.62			
SCS32	3.13	1.16	.54	.46	.68		.79			
SCS33	3.33	1.26	.53		.52		.63			
SCS34	3.46	1.13	.40		.48			.66		
SCS35	3.72	1.33	.38		.43			.55		
SCS36	3.63	1.19	.29		.31					.53

Note. *M* = mean, *SD* = standard deviation, r_{it} = corrected item–total correlation, SCS = Full Self-Control Scale, BSCS = Brief Self-Control Scale.

Table 4. Fit statistics of the SCS in Polish

	χ^2	df	CFI	RMSEA (90% CI)	GFI	AGFI
Model 1 – single factor	1138.79***	594	.75	.09 (.08–.10)	.89	.85
Model 2 – five factors	973.90***	584	.82	.08 (.07–.09)	.92	.88
Model 3 – five factors	910.17***	584	.85	.07 (.06–.08)	.93	.90

Note. *** $p < .001$.

the corrected item–total correlations were all positive and not less than the rule of thumb minimum value of .20 (Kline, 1986). For the SCS the lowest item–total correlation was for item 18 ($r_{it} = .22$) and the highest was for item 3 ($r_{it} = .56$; average $r_{it} = .40$). The lowest item–total correlation for the BSCS was found for item 13 ($r_{it} = .20$), while the highest was found for item 3 ($r_{it} = .54$; average $r_{it} = .42$). However, in both cases, deletion of the item with the lowest item–whole correlation did not result in an increase in the α coefficient. In fact, deletion of none of the items resulted in an increase in α. The average inter-item correlation was .18 and .22 for the full and brief scale, respectively.

The total and brief SCS scores correlated highly at $r = .91$ ($p < .001$). No gender differences were found for either total, $t(354) = .51$, *ns*, or brief scores, $t(354) = 1.79$, *ns*.

Next, exploratory factor analysis (EFA) was used to identify meaningful factors underlying the Polish version of the SCS. EFA was performed using a random sample of 65% of the initial data (sample 1, $n = 214$ after listwise deletion) and evaluated using CFA against the remaining 35% of the data (sample 2, $n = 112$ after listwise deletion). Settings for EFA (principal component analysis with varimax rotation) were chosen based on the original study (Tangney et al., 2004). The suitability for analysis was examined by Bartlett's test of sphericity, χ^2 (630) = 2776.79, $p < .001$, and the Kaiser-Meyer-Olkin measure of sampling adequacy (.79). The number of factors to be retained was guided by several criteria, including Kaiser's criterion (eigenvalues above 1), inspection of the screeplot, consideration for the amount of variance explained by the factor solution, parallel analysis, and interpretability of the factor structure. The convergence of these criteria favoured the five-factor structure. The solution explained 44.47% of the total variance, only slightly more than the corresponding 42.26% obtained by Tangney et al. (2004). Four of the factors resembled, although not exactly, those reported by Tangney et al. (2004). Factor 1 (10.45% of the variance) seemed to represent self-discipline and healthy lifestyle, factor 2 (10.42% of the variance) – resistance to impulsivity, factor 4 (8.12% of the variance) – work-related performance, and factor 5 (6.39% of the variance) – reliability and orderliness. Factor 3 (9.10% of the variance) considered personally and/or socially desirable behaviors[2]. However, the factor structure and the factor interpretability was not entirely clear-cut. Substantial cross-loadings (i.e., with a difference between loadings of less than .10) were noted for some items (items 8, 17, 25, and 31), and one item (item 13) cross-loaded with all its loadings just below .30.

The factorial validity of the Polish version of the SCS scale was then tested using confirmatory factor analysis (CFA) with a robust-weighted least-squares estimator (WLSMV). Three models were compared: the unidimensional model (i.e., Model 1), Tangney et al.'s (2004) five-factor model (i.e., Model 2), and the five-factor model derived from the EFA based on sample 1 (i.e., Model 3). In the latter model, the cross-loading items were set to load only on the factors for which they had the highest loading. The results are reported in Table 4.

In general, multidimensional models provided better fit indices than did the unidimensional model. Nonetheless, in each of the models tested, all of the factor loadings were significant ($p < .01$ or less), and all, except one (item 23 in Model 1), were above .30 (Table 3). Although Model 2 and Model 3 were able to fit the data better than Model 1, the discriminant validity of the factors in each case was rather low. Correlations among the factors ranged from .37 to .84 (average $r = .57$) and from .43 to .70 (average $r = .57$) for Model 2 and Model 3, respectively, suggesting that those with high (or low) scores on one factor tended to score high (or low) on other factors. In light of the above results, and following Tangney et al. (2004), it is suggested that the scale be scored additively to generate a total composite score.

After examining the structure and reliability of the SCS, correlations between the SCS and the other four scales were estimated to test whether high self-control would predict a range of positive outcomes (Table 5)[3, 4].

[2] The difference found between the current and original factor solution may be due to differences between Poland and the United States in important cultural dimensions. For example, Poles have higher preference for avoiding uncertainty and appear to be more restrained than Americans (Hofstede, 2001). Such differences can influence the way people perceive deviant and socially undesirable behavior.

[3] For all measures, person-mean substitution was used to replace missing values for participants missing up to 20% items in the (sub)scale. For participants missing a greater number of items, the score on that (sub) scale was not calculated.

[4] The data were screened for outliers using the so-called boxplot outlier labeling rule. That rule declares observations as outliers if they lie outside the interval ((Q1 – g(Q3 – Q1), Q3 + g(Q3 – Q1)), where g = 2.2 (Hoaglin & Iglewicz, 1987). Identified outliers (three altogether) were retained, because results did not differ from when they were excluded.

Table 5. Correlations of self-control with self-esteem, empathy, moral emotions, and the Big Five personality traits

Variable	Tangney et al. (2004)		Current study			
			Zero-order		Controlling for self-esteem	
	SCS	BSCS	SCS	BSCS	SCS	BSCS
Rosenberg's Self-Esteem Scale	.47*** .44***	.49*** .40***	.36***	.38***	–	–
Empathic Sensitiveness Scale						
Empathic concern	-.03 .19**	-.02 .21***	.00	.02	.03	.06
Personal distress	-.28*** -.18**	-.29*** -.13*	-.38***	-.34***	-.26***	-.20***
Perspective taking	.16** .27***	.14* .25***	.15**	.10†	.16**	.11*
Test of Self-Conscious Affect						
Shame-proneness ("guilt-free")	-.33*** -.26***	-.35*** -.22***	-.26***	-.24***	-.16**	-.13*
Guilt-proneness ("shame-free")	.13* .30***	.13* .27***	.12*	.11*	.11*	.11*
Externalization	-.23* -.23***	-.14** -.23***	-.27***	-.25***	-.26***	-.25***
Detachment/unconcern	–	–	-.16**	-.17***	-.23***	-.24***
Alpha pride	–	–	.00	.06	-.08	-.02
Beta pride	–	–	-.07	-.02	-.14**	-.09
International Personality Item Pool-Big Five Markers-20						
Extraversion	.09	.11	.00	.06	-.15**	-.10†
Agreeableness	.29***	.29***	.06	.05	.05	.04
Conscientiousness	.54***	.48***	.62***	.57***	.60***	.55***
Emotional stability	.50***	.42***	.28***	.26***	.12*	.08
Intellect/Openness to experience	.04	.05	.24***	.28***	.11*	.14**

Note. SCS = Full Self-Control Scale, BSCS = Brief Self-Control Scale.

† < .10; * $p < .05$; ** $p < .01$; *** $p < .001$

In line with the results of Tangney et al.'s (2004) study, the general pattern was that the higher the self-control, the better the outcomes reported by individuals. Both total and brief SCS scores were positively correlated with self-esteem, indicating that people with high self-control hold more favorable views of themselves. Self-control was also positively related to perspective taking, while negatively to personal distress. Thus, those high in self-control tend to engage in understanding others' mental states, and rarely become overaroused and experience personal discomfort. Again, these findings were observed for both total and brief SCS scores. No correlation was found between self-control and empathic concern. This might perhaps be explained by the dual nature of empathic concern. On the one hand, it refers to the "affective" component of empathy, on the other hand, it is other-oriented concern that draws on an ability to apprehend others' perspectives. Indeed, the empathic concern subscale of the ESS overlaps considerably with the other two ($r = .33$, $p < .001$ and $r = .44$, $p < .005$ for personal distress and perspective taking, respectively; Kaźmierczak et al., 2007).

Further, as expected, self-control was negatively related to "guilt-free" shame-proneness (i.e., independent of the variance shared with guilt) as well as to externalization

and detachment, while it was positively associated with proneness to "shame-free" guilt (i.e., independent of the variance shared with shame). This was true when considering both the total and brief SCS scores, and suggested that individuals low in self-control tend to experience shame following negative events and focus on a bad self, whereas those high in self-control are inclined to take responsibility for their transgressions and errors, rather than to deflect blame or try to ward off the potential shame experience.

Finally, consistent with predictions and prior studies, self-control was found to be positively related to conscientiousness and emotional stability, indicating that high-self-control individuals tend to be diligent and prone to order and dutifulness; they also exhibit better capacity for emotional control and higher tolerance to frustration. However, comparing the present findings to those of Tangney et al. (2004), two notable differences emerged. First, there was no significant correlation between self-control and agreeableness (compared to $r = .29$, $p < .001$ in the original study); and second, there was a significant association of self-control with intellect/openness to experience (compared to $r = .04$, *ns* in the original study). Statistical comparisons indicated that, the differences between correlation coefficients for these relationships were significant ($Z = 2.84$, $p = .005$ and $Z = 2.39$, $p = .017$, respectively). These differences could be attributable to differences in the equivalence of the measures used in the current and original study (IPIP-BFM-20 vs. Mini Marker). They might also reflect small cultural differences.

In addition, given that self-esteem is a well-known correlate of most of the variables under consideration in this study (e.g., Davis, 1983; Robins, Hendin, & Trzesniewski, 2001; Tangney & Dearing, 2002), a set of partial correlations was run to examine whether the relations observed for self-control were robust with respect to self-esteem. As Table 5 shows, most of the relationships held up when the effect of self-esteem was partialled out, despite small increases or decreases in magnitude. Comparisons between zero-order and partial correlations revealed that the correlations of the SCS scores with emotional stability ($Z = 2.12$, $p = .034$) and extraversion ($Z = 2.04$, $p = .041$) changed significantly, suggesting that self-esteem had considerable influence in controlling for these relationships. As for the BSCS scores, analysis of zero-order and partial correlations found that the relationships of the BSCS with extraversion ($Z = 2.10$, $p = .036$), emotional stability ($Z = 1.94$, $p = .052$), and personal distress ($Z = 2.04$, $p = .041$) changed when controlling for self-esteem. Of importance, the nonsignificant correlation between self-control and extraversion became significant and negative after controlling for self-esteem scores, suggesting that people high in self-control may tend to have a somewhat reserved attitude. None of the other changes were conceptually noteworthy.

Discussion

This study's objective was to further evaluate the psychometric properties of the Polish Self-Control Scale. The construct validity of the scale was examined through the use of factor analysis and internal consistency. In general, both analyses showed favorable results, while maintaining compliance with the original version. Concerning dimensionality, although the five-factor models showed slightly superior fits as compared to the one-factor model, suggesting some ability of these models to discriminate between specific self-control facets, the content overlap between the five factors (as shown by the estimated correlations) was high in both cases. Cronbach's α indicated good internal consistency for the sale as a whole ($\alpha = .89$). Thus, it appeared that one overall self-control factor represented the data with reasonable accuracy. With regard to the criterion validity, there were adequate associations between the total and brief SCS scores and the variables used – high SCS scores corresponded to higher self-esteem, higher perspective-taking ability, and higher guilt-proneness, whilst low scores were associated with greater personal distress and greater propensity to respond with shame, externalization, and detachment. The SCS scores were also found to be related to broad personality traits such as the Big Five, with those high in self-control being more conscientious, emotionally stable, and open to experience. In other words, high self-control was related to more positive outcomes, both intra- and interpersonally.

Conclusions

To date, the Self-Control Scale has been translated and adapted to suit a number of languages and socio-cultural contexts, achieving satisfactory psychometric properties in all (e.g., Bertrams & Dickhäuser, 2009; Finkenauer, Engels, & Baumeister, 2005; Unger, Bi, Xiao, & Ybarra, 2016). The present findings bolster the international validity of Tangney et al.'s (2004) SCS scale, and they allow the scale to be used reliably with Polish samples. Given that many problems of personal and social nature seem to be consequences of disorders of self-regulation, scientific insights into self-regulation phenomena are certainly needed. For such explorations, a valid and reliable tool is vital.

The reported studies provide promising findings in favor of the validity and usefulness of the Polish SCS. However, a few limitations should be noted. First, the studies involved students only, thus raising concerns regarding the generalizability of the findings. Future work with other demographic and cultural groups should therefore be alert to the possibility of different findings. Second, all variables were measured through self-report, so shared method variance could inflate some of the correlations. It should also be mentioned that the cross-sectional method prohibits firm causal inferences and conclusions.

For now, we are pleased to report the Polish version of the scale. If the success of the original English version is a guide, this will be a very helpful tool to enable researchers to study the effects and correlates of trait self-control with Polish-speaking research samples.

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Appendix 1

Items of the Polish Self-Control Scale

SCS1[†]	Jestem dobra/dobry w opieraniu się pokusom.
SCS2[R†]	Trudno jest mi pozbyć sie złych nawyków.
SCS3[R†]	Jestem leniwa/leniwy.
SCS4[R†]	Mówię niestosowne rzeczy.
SCS5	Nigdy nie pozwalam sobie na utratę kontroli.
SCS6[R†]	Robię pewne rzeczy, które są dla mnie złe, jeśli sprawiają mi one przyjemność.
SCS7	Można na mnie liczyć w dotrzymywaniu terminów.
SCS8[R]	Poranne wstawanie jest dla mnie trudne.
SCS9[R]	Mam problem z odmawianiem.
SCS10[R]	Dość często zmieniam zdanie.
SCS11[R]	Mówię, co mi ślina na język przyniesie.
SCS12[R]	Ludzie opisaliby mnie jako osobę impulsywną.
SCS13[†]	Nie godzę się na rzeczy, które są dla mnie złe.
SCS14[R]	Wydaję za dużo pieniędzy.
SCS15	Utrzymuję porządek wokół siebie.
SCS16[R]	Czasami sobie folguję.
SCS17[R†]	Chciałabym/Chciałbym mieć więcej samodyscypliny.
SCS18	Można na mnie polegać.
SCS19[R]	Daję się ponieść uczuciom.
SCS20[R]	Często działam pod wpływem chwili.
SCS21[R]	Nie jestem dobra/dobry w dotrzymywaniu tajemnic.
SCS22[†]	Ludzie powiedzieliby, że mam żelazną samodyscyplinę.
SCS23[R]	Zdarza mi się pracować lub uczyć na ostatnią chwilę przez całą noc.
SCS24	Nie zniechęcam się łatwo.
SCS25[R]	Wyszłoby mi na dobre, gdybym pomyślała/pomyślał, zanim cokolwiek zrobię.
SCS26	Prowadzę zdrowy styl życia.
SCS27	Odżywiam się zdrowo.

SCS28[R†]	Przyjemność i zabawa czasem przeszkadzają mi w ukończeniu pracy.
SCS29[R†]	Trudno jest mi się skoncentrować.
SCS30[†]	Potrafię skutecznie działać na rzecz długoterminowych celów.
SCS31[R†]	Czasem nie umiem się powstrzymać przed zrobieniem czegoś, nawet jeśli wiem, że to jest złe.
SCS32[R†]	Często działam bez przemyślenia wszystkich opcji.
SCS33[R]	Zbyt łatwo tracę panowanie nad sobą.
SCS34[R]	Często przerywam innym.
SCS35[R]	Czasami nadużywam alkoholu i/lub narkotyków.
SCS36	Zawsze jestem punktualna/punktualny.

Note. [R] = reversed items, [†] = items included in the Brief Self-Control Scale.