GENERAL SELF-EFFICACY ASSOCIATIONS WITH PERSONALITY AND MOTIVATION: PSYCHOMETRIC PROPERTIES AND MEASUREMENT INVARIANCE OF THE POLISH NEW GENERAL SELF-EFFICACY SCALE

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ABSTRACT

This study aimed to determine the validity and reliability of the Polish version of the *New General Self-Efficacy Scale* (NGSE). In four different samples (N = 1,837), adult respondents completed the Polish version of NGSE (NGSEpl) in combination with questionnaires assessing personality, motivation, and behavioral tendencies. Confirmatory factor analysis demonstrated a good fit for the one-factor structure. Cronbach's alpha was above .87 in all samples, and the stability of the scale was .68. Measurement invariance of NGSEpl calculated for different age groups confirmed that the scale measures the same construct in both samples. NGSEpl scores were positively related to the frequency of active coping strategies, mastery-goal orientation, and Big Five model traits and negatively to passive coping strategies. Results supported the reliability, stability, and validity of the NGSEpl.

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INTRODUCTION

With regard to the factors shaping human action, Bandura (1977, 1992) described beliefs in one's capabilities to exercise control over events and successfully execute the behavior. Such beliefs form perceived self-efficacy, influencing people's thoughts, behaviors, and emotional experiences (Bandura, 1997). Self-efficacy has been studied in organizational research (e.g., Chen et al., 2001; Yao et al., 2018), health (e.g., Blank et al., 2016; Bonsaksen et al., 2018), and education (e.g., Ahmad & Safaria, 2013; Dehyadegary et al., 2014; Sharma & Nasa, 2016), however, the need to conduct research in this area using the valid and reliable methods still exists.

Perceived self-efficacy can be analyzed as a trait-like or a state-like construct. The former reflects beliefs about the ability to act effectively across a wide range of different situations (general self-efficacy; GSE), while the latter indicates beliefs about the individual ability to perform in specific tasks or contexts (specific self-efficacy or task self-efficacy; SSE). GSE and SSE are based on the same four sources of information: past performance, vicarious experience, verbal information from others, and physiological arousal (Chen et al., 2001; Eden, 2012; Scholz et al., 2002).

General self-efficacy comprises individual experiences of success and failure (Sherer et al., 1982). Shelton (1990) argues that people with high GSE develop a mastery-oriented attitude toward challenges, which means they rather take credit for successes than blame themselves for the failures in their lives. In contrast, people with low GSE more often blame themselves for failures and rarely take credit for the successes, which leads to a helpless attitude toward challenges. GSE explains the variance of the behavior, especially in ambiguous or new situations (Tipton & Worthington, 1984), and is more useful in the analysis of simultaneously performed actions (Luszczynska et al., 2004). Previous studies show that GSE predicts, among others: adjustment to social changes in life (Jerusalem & Mittag, 1995) and levels of anxiety and depression (Bonetti et al., 2001).

Specific self-efficacy contains experiences of success and failure in particular domains (Sherer et al., 1982) and accounts for the variance of behavior in well-known, unambiguous contexts (Tipton & Worthington, 1984). Meta-analyses of SSE studies indicate the usefulness of this construct as a predictor of work-related performance (Stajkovic & Luthans, 1998), academic performance, and persistence (Multon et al., 1991), and also as a predictor of changes in intention towards health behavior and health behavior itself (Sheeran et al., 2016).

Regarding relations between GSE and SSE, global beliefs about the ability to perform effectively can influence expected success in a specific domain (Chen et al., 2001). Research shows that people with high GSE feel they can execute their behaviors successfully across various tasks and situations (Sherer et al., 1982). Additionally, in the model proposed by Shelton (1990), SSE affected by global self-efficacy determines the initiation of the particular behavior, the amount of effort dedicated to performing it, and persistence in acting when confronted with obstacles. Observable positive or negative outcomes of that behavior contribute to self-attribution of success or failures in the particular task (SSE) and all self-attributed successes and failures (GSE). Thus, the results of task-specific experience influence both SSE and GSE. It is also possible for GSE to moderate the relation between external influences and SSE – people with high GSE tend to have SSE more resistant to challenging situations and negative feedback, while for people with low GSE, adverse circumstances can pose a threat to their SSE (Eden, 2012; Schwarzer & Hallum, 2008).

Referring to GSE as a relatively stable trait has been, however, criticized. Bandura (1997, p. 42) suggests that GSE constitutes "a decontextualized conglomerate" and cannot predict individual performance in a given task. In response, Chen et al. (2001) state that GSE

should be treated as an addition to models of SES and that the utility of GSE in predicting behaviors is limited to general performance, proven in research (Eden & Aviram, 1993; Eden & Granat-Flomin, 2000). Further critique involved questioning whether GSE constitutes a construct different from self-esteem (Stanley & Murphy, 1997), which is also connected to the evaluation of failures and successes important to the self. Studies addressing this matter confirm the distinctive character of self-esteem and global self-efficacy – the former relates highly to affective variables and the latter to motivational variables (Chen et al., 2001; Chen et al., 2004). Actions taken by individuals depend on what they want to achieve (e.g., goal) and how confident they are that the goal is achievable (self-efficacy; Latham & Locke, 1991). Bandura (1997) suggested that people need more than just high self-esteem to act to achieve their goals. Self-esteem undoubtedly promotes perseverance but is not related to individual abilities or potential, thus not necessarily affects the pursuit of achievements. Therefore, self-efficacy allows initiating action, while self-esteem helps to maintain the action already taken. Some doubts were also raised about the reliability of GSE questionnaires; however, these reservations do not seem justified when juxtaposed with previous empirical analyses (e.g., Scherbaum et al., 2006).

MEASURES OF GLOBAL SELF-EFFICACY

The first scale measuring GSE was the *General Self-Efficacy Scale* (GSES), developed by Sherer et al. (1982) to provide a valuable tool for researchers and therapists. It consists of 17 items measuring self-efficacy without reference to a particular behavior domain. Exemplary statements include "I give up easily" and "Failure just makes me try harder". In the validation study, the scale obtained an internal consistency of .86 and the best fit of the one-factor solution explaining 26.5% of the variance. Research showed that scores obtained in GSES predicted residualized depression levels (Mehler et al., 2018), pulmonary rehabilitation response (Blackstock et al., 2018), and well-being (Soysa & Wilcomb, 2015). The reliability of the scale remains consistently high in analysis (Calogero et al., 2017; Chen et al., 2001); however, its factor structure differs between studies which report a good fit of the unidimensional solution (Juárez & Contreras, 2008), two-factor solution (Zhou, 2016), and three-factor solution (Bosscher & Smit, 1998).

Schwarzer and Jerusalem's *General Perceived Self-Efficacy Scale* (1995) contains ten items such as: "Thanks to my resourcefulness, I know how to handle unforeseen situations" and "It is easy for me to stick to my aims and accomplish my goals". Reliability analysis results from 25 countries showed high internal consistency of the scale (the lowest .75 and the highest .91) and its unidimensional structure (Scholz et al., 2002). General self-efficacy measured with this scale was related to affective psychological reactance (De las Cuevas & Peñate, 2015), mental work capacity (Löve et al., 2012), and lower risk of self-diagnosed depression (Bonsaksen et al., 2018). In Poland, GSE is most often measured (see: Rode & Rode, 2018; Ślebarska, 2014; Zawadzka et al., 2018) with an adaptation of Schwarzer and Jerusalem's *General Perceived Self-Efficacy Scale* (Juczyński, 1997) which requires a fee for usage.

In 2001 Chen et al. developed *New General Self-Efficacy Scale* (NGSE) to address Sherer et al. (1982) *General Self-Efficacy Scale* limitations and to capture the conceptualization of the GSE, defined as "one's belief in one's overall competence to effect requisite performance across a wide variety of achievement situations" (Eden, 2012). The scale consists of eight items which examples are: "Even when things are tough, I can perform quite well" and "In general, I think that I can obtain outcomes that are important to me". In a validation study, the scale's internal consistency ranged from .86 to .90, and factor analysis revealed the best fit of the unidimensional structure, as it explained 52 and 59 percent of the variance. Further research confirmed factor structure and high internal consistency of the scale

(Chen et al., 2004) and showed that its overall score predicted work engagement (Bosch et al., 2018), differentiated entrepreneurs from non-entrepreneurs (Markman et al., 2002), and correlated with self-judgment, self-responding, and over-identification (Neff et al., 2018).

THE AIM OF THE STUDY

The objectives of this research were to prepare and validate the Polish version of Chen et al. (2001) *New General Self-Efficacy Scale* resulting from a desire to provide Polish researchers with a new, freely available, reliable, and valid tool enabling GSE measurement. Measuring general self-efficacy also allows exploring the connections between global beliefs about the ability to perform behaviors effectively and personality traits, achievement goals, or coping. Choosing the *New General Self-Efficacy Scale* was motivated by its slight psychometric advantage over the other described methods in terms of item discrimination, item information, and relative efficiency of the test information function (Scherbaum et al., 2006) and consistent factor structure (Aamir et al., 2017).

METHOD

DEVELOPMENT OF THE ORIGINAL SCALE

The *New General Self-Efficacy Scale* consists of eight items to which participants answer on a 5-point scale (1 = *strongly disagree*; 5 = *strongly agree*). A high score on the scale indicates a high level of general self-efficacy. The scale's reliability in validation studies (Chen et al., 2001) was satisfactory: internal consistency above .80 and test-retest coefficients above .60. Factor analysis in all three samples showed a unidimensional structure of the scale. Content validity assessed by eight graduate psychology students resulted in sorting 98% of the scale items to the category general self-efficacy, defined as: "one's estimate of one's overall ability to perform successfully in a wide variety of achievement situations, or to how confident one is that she or he can perform effectively across different tasks and situations" (Chen et al., 2001, p. 79). Overall results correlated positively with scores obtained from the *General Self-Efficacy Scale* (.78 and .74) and predicted specific exam self-efficacy (β = .44, p < .01).

DEVELOPMENT OF THE POLISH VERSION

Six psychologists working as university faculty members translated the original items (Chen et al., 2001) into Polish. The first author compared the translations and chose the final version based on their compatibility with the original meaning and consistency in phrasing between all translators. The next step involved back-translation of the Polish items to English carried out by a certified translator and a comparison of the original and back-translated versions performed by an English native speaker with a psychology degree. All back-translated items were evaluated as consistent in meaning with their original versions. The final items are available in the *Appendix*. Below we describe the results of scale analyses conducted on data obtained from four samples.

PARTICIPANTS AND PROCEDURE

Sample 1

Data (N = 716; 344 women, 233 men, 139 missing data; M_{age} = 23.32, SD_{age} = 8.13) were collected from the general Polish population recruited by undergraduate psychology students as a part of the course assignment. Respondents received a set of tests from students and filled them out alone or accompanied by the students conducting research.

Sample 2

Three hundred and ninety Polish students (290 women; M_{age} = 23, SD_{age} = 3.39) of social sciences (66 persons), humanities (48 persons), business and law (84 persons), medical science (90 persons) and natural and formal science (95 persons; 7 missing data) participated in the study. Participants were evenly distributed in terms of year of study, with a slightly higher number of third-year students. Data were collected for three months through Lime-Survey online platform to maximize the anonymity of the participants. A link to the survey with a short project description was sent to 28 Polish universities.

Sample 3

Data were collected from 201 people from the general Polish population (176 women; M_{age} = 25, SD_{age} = 4.18). Concerning years of education, one participant studied for less than ten years, 88 participants for more than ten but less than 13 years, and 112 participants for more than 13 years. The measurement was conducted online via the LimeSurvey platform. Invitation to participate in the study was published on student social platforms and social media (e.g., Facebook).

Sample 4

The study design included two measurements of GSE among Polish women conducted shortly after their return to work (up to one month) after the maternity leave and after the re-adaptation period (13 to 15 weeks later). The first survey was completed by 530 women, and the second one by 166 women. The average age was 31 (SD = 3.8), and most participants had a university degree (90%). The NGSEpl was completed both times online, using Google Forms®, available through a link sent by email.

MEASURES

General self-efficacy was measured with the NGSEpl.

The Brief COPE scale (Carver, 1997; Polish version Juczyński & Ogińska-Bulik, 2009) was used to assess a broad range of coping reactions during difficult situations. It consists of 28 items (e.g., "I've been criticizing myself") describing 14 coping strategies. Every item is rated on a four-point scale (0 = *I do this almost never*, 3 = *I do this almost always*). Higher summed scores indicate higher levels of particular coping strategies.

We used the Polish translation (Baran, 2020) of the Achievement Goal Questionnaire-Revised (AGQR; Elliot & Murayama, 2008) to evaluate goal orientation. AGQR consists of 12 items measuring mastery (six items, e.g., "My aim is to completely master the material presented in this class") and performance (six items, e.g., "My aim is to perform well relative to other students") goals on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher summed scores on the scale indicate higher mastery and performance goals.

The declared frequency of committing acts of academic dishonesty was measured with the *Academic Dishonesty Scale* (Sanecka & Baran, 2015), including 16 types of dishonest behaviors. Participants evaluated on a 5-point scale (0 = *not once*, 4 = *many times*) how often

they have committed each form of academic dishonesty (e.g., using crib notes on a test or helping someone else cheat on a test) during their studies. A high summed score on the scale indicates a high declared frequency of academic dishonesty.

The Polish version (Sorokowska et al., 2014) of the *Ten-Item Personality Inventory* (Gosling et al., 2003) was used to assess personality traits. The 10-item scale measures the Big Five personality dimensions (extraversion, agreeableness, conscientiousness, emotional stability, openness to experience) on a 7-point scale ranging from 1 (*disagree strongly*) to 7 (*agree strongly*). High averaged scores indicate a high level of the particular personality trait.

RESULTS

RELIABILITY AND FACTOR STRUCTURE

Reliability analyses were conducted in IBM SPPP Statistics 28.0.1.0. All calculations were run first on the pooled data ($N = 1837$; 1340 women; $M_{age} = 25.6$, $SD_{age} = 6.84$) and then separately on data from particular samples. Descriptive statistics, sex differences, and Cronbach's αs for NGSEpl are presented in Table 1.

Table 1. Descriptive statistics, sex differences, and Cronbach's α for NGSEpl scores in pooled data and four samples

	M	*SD*	*t*	*d*	α [95%CI]
Pooled data	30.24	5.66	-1.39	-.08	.89 [.88; .90]
Sample 1	29.78	5.38	-5.49*	-.47	.87 [.85; .88]
Sample 2	30.45	5.85	1.80	.21	.89 [.97; .92]
Sample 3	28.71	6.50	-0.93	-.20	.91 [.89; .93]
Sample 4 T1	31.29	5.35	-	-	.90 [.89; .92]
Sample 4 T2	30.98	5.57	-	-	.92 [.90, .94]

Note. T1 – first measurement, T2 – second measurement

* *p* < .05

Results show high internal consistency of the Polish version on NGSE for the pooled data and in all samples. To assess the scale's structure, we conducted a series of confirmatory factor analyses in JASP 0.17.1.0. We chose maximum likelihood (ML) as an estimator for pooled data and sample 1. For samples 2, 3, and 4, we used diagonally weighted least squares (DWLS) because it is recommended for calculating model fit in cases when the sample is small and variables have skewed distribution of scores (Li, 2016; Mîndrilă, 2010; Rhemtulla et al., 2012). Bootstrap was set at 10,000 samples. The results in Table 2 indicate a good fit of the one-factor solution for pooled data and all samples (Nye & Drasgow, 2011).

Table 2. Results of confirmatory factor analysis in pooled data and four samples

	χ²	χ²/*df*	NFI	CFI	GFI	RMR	RMSEA [90% CI]
Pooled data	318.07*	15.90	.95	.96	1	.03	.09 [.08;.10]
Sample 1	84.19*	4.21	.96	.97	1	.03	.07 [.05,.08]
Sample 2	16.17	0.80	.99	1	1	.04	.00 [.00,.03]
Sample 3	11.65	0.60	.99	1	1	.05	.00 [.00,.02]
Sample 4	29.55	1.48	.99	1	.99	.04	.03 [.00,.05]

* *p* < .05

MEASUREMENT INVARIANCE

Because the data from the presented studies were obtained from participants aged 15 to 65, we could calculate the measurement invariance (MI) of NGSEpl across different age groups. The purpose of testing MI is to establish whether, under different conditions, the measurement provides results of the same attributes (Horn & McArdle, 1992). Conducting tests for MI includes several stages, each characterized by specific restrictions of the factor models. The initial model tests configural invariance, and model parameters from all groups are treated as potentially independent. The next model tests metric invariance in which factor loadings for items are invariant across groups. In the scalar invariance model, we hypothesize that factor loadings and intercepts of items' regressions on the latent variable are invariant across groups. Finally, in the strict invariance model, restrictions are placed on the items' unique variances, which are expected to be invariant across groups (Grygiel, 2016; Vandenberg & Lance, 2000).

For the purpose of the analysis, NGSEpl polled data have been divided into two age groups with a split point at age 24. The decision to compare groups created in this way was caused by the fact that GSE comprises all individual experiences of success and failure (Sherer et al., 1982) and thus should vary between younger and older participants due to a different amount of previously experienced successes and failures. If NGSEpl data proved to be invariant for those groups, any differences in GSE obtained for them would result from actual differences in GSE and not from different properties of the scale itself. Additionally, a data distribution analysis showed that a selected split point allows the creation of groups of even sizes, which is important in calculating measurement invariance. Because of the missing information about age 30, participants have to be excluded from this analysis. Descriptive statistics for both groups are presented in Table 3.

Table 3. Descriptive statistics for global self-efficacy in two age samples

Group	N		Age		GSE		t-test	Cohen's d [95% CI]
	Women	Men	M	SD	M	SD		
1	642	289	20.66	1.64	29.64	5.74	-4.914*	-.234 [-.324;-.139]
2	763	113	30.98	6.22	30.94	5.53		

*p < .001

Measurement invariance was calculated in the R Studio program with the lavaan package. Results are presented in Table 4.

Table 4. Tests of measurement invariance for NGSEpl results in two age samples

Model	χ^2 (df)	$\Delta\chi^2$ (Δdf)	RMSEA	RMSEA 90% CI	ΔRMSEA	CFI	ΔCFI	TLI	SRMR
Configural invariance	65.172** (40)		.026	.014-.038		.997		.995	.036
Metric invariance	71.526* (47)	6.354 (7)	.026	.014-.038	.000	.997	.000	.996	.038
Scalar invariance	105.752*** (54)	34.226*** (7)	.033	.023-.042	.007	.993	-.004	.993	.043
Stricte invariance	123.443*** (62)	17.691* (8)	.033	.025-.042	.007	.992	-.005	.993	.050

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

According to the criteria of evaluating goodness-of-fit indexes for measurement invariance in large samples (over 300 participants), CFI should not decrease by more than .01 and RMSEA by more than .007 (Byrne & Van de Vijver, 2010; Cheung & Rensvold, 2002;

Meade et al., 2008). The results presented in Table 4 did not exceed those limits at any level, which indicates metric, scalar, and strict NGSEpl measurement invariance for both age groups. Confirming equivalence enables us to interpret intergroup differences in NGSESpl scores as caused by actual differences in GSE between age groups and not by differences in the scale statistical properties in those groups. At the computational level, it means we are allowed to test relations between GSE and other variables and to test differences in latent group means (Lubiewska & Głogowska, 2018).

STABILITY

The stability of NGSEpl results was examined in a specific group (Sample 4) of women who returned to work after giving birth to a child. The purpose of assessing scale stability in this sample was to evaluate them in work-related contexts in which most self-efficacy studies took place in the past. The stability of the scale measured with Pearson's r coefficient (calculated in IBM SPPP Statistics 28.0.1.0) was .68 ($p < .001$). Results of the t-test for dependent samples reveal a significant difference between the first ($M = 31.74$, $SD = 5.18$) and the second ($M = 30.98$, $SD = 5.57$) measurement ($t = 2.26$, $p = .01$), with effect size $d = .18$. The obtained results showed that stability of the scale was satisfactory, especially considering that participants were going through a transitional period in a work context during which overall GSE level had decreased, probably due to difficulties in adapting to the new situation. These results suggest that NGSEpl is sensitive to changes in GSE and helpful in measuring differences in their levels through time.

VALIDITY

Concerning scale validity, we hypothesized that GSE measured with the NGSEpl would be related to coping strategies (Sample 1), goal orientation, academic dishonesty (Sample 2), and personality traits (Sample 3). Previous studies showed that active coping and planning correlate positively with goal commitment and goal progress and negatively with self-distraction, denial, and disengagement (Monzani et al., 2015). In light of those results and the fact that self-efficacy affects the initiation and persistence of coping behavior (Bandura, 1977), it may be assumed that it corresponds to the frequency of active coping strategies in stressful situations, such as solving problems or planning (Chodkiewicz & Gruszczyńska, 2013; Piergiovanni & Depaula, 2018), and it is negatively related to counterproductive ones, such as problem avoidance or self-blaming (Luque Salas et al., 2017).

The GSE's specificity also involves its relation to motivational traits and states, such as the need for achievement or SSE in a particular domain (Kanfer & Heggestad, 1997). Previous researches show that individuals with high GSE are oriented more toward the learning goals based on the need for achievement and less or not at all on the performance goals based on the reduction of anxiety (Bell & Kozlowski, 2002; Chen et al., 2000; Phillips & Gully, 1997). Moreover, through SSE, GSE indirectly influences specific performance, such as students' academic performance (Chen et al., 2004; Phillips & Gully, 1997). Some analysis of the relationship between global self-efficacy and goal orientation also suggests that a perceived competence to be effective, as a component of self-efficacy, precedes the motivation for achievements which in turn influences behavior (Elliot & Church, 1997). Thus, we wanted to determine whether general self-efficacy measured with NGSEpl will be related to mastery-goal orientation (but not to performance-goal orientation), which in turn will be associated with the frequency of particular behavior – committing academic dishonesty.

Academic fraud among students is a common phenomenon (McCabe, 2005) caused very often by unfavorable situational factors such as pressure or lack of time to study (Beasley, 2014; Whitley, 1998) but also by a specific set of motivational traits. Students focused on mastery goals, who study to acquire knowledge, cheat less frequently than those focused on performance goals, who study to prove their competence and ability to others (Bong et al., 2014; Rettinger & Kramer, 2009; Yang et al., 2013). In line with mentioned above relation between goal orientation and self-efficacy, we hypothesize that individuals with a high general self-efficacy focused on the mastery-goals will engage in less dishonest academic behaviors because of strong beliefs in their ability to succeed and an orientation toward mastery in studies resulting from them (Bong et al., 2014; Cerino, 2014; Murdock & Anderman, 2006).

Finally, previous research shows a specific pattern of relations between personality traits and GSE involving its positive correlation with extraversion, conscientiousness, emotional stability, and openness to experience (Chen et al., 2004; Judge et al., 2002; Noe et al., 2013; Yao et al., 2018; Wang et al., 2014). This means that people with high GSE tend to explore and learn through new experiences, may appear more dominant, efficient, hardworking, and less prone to unstable emotional reactions driven by anxiety. In the case of agreeableness, the results are somewhat inconclusive, showing strong positive (Noe et al., 2013), weak negative (Ebstrup et al., 2013), or no relation (Kaczmarek & Kaczmarek-Kurczak, 2014) to GSE. Since agreeableness is associated with the tendency to cooperate or compete with others, its association with individual beliefs about effectiveness might be moderated by contextual factors such as occupation or professional position. Extensive studies by Judge et al. (2002) suggest that although the relationships between GSE, conscientiousness, and extraversion are stronger than between GSE, openness to experiences, and agreeableness, all of those traits are related to GSE and can be treated as an indicator of its level.

CORRELATION ANALYSIS

Correlation analysis was conducted in IBM SPPP Statistics 28.0.1.0. Because of the missing data, analyses concerning coping styles and GSE (Sample 1) were conducted on data from 573 participants (336 women, 231 men, 6 no data). Descriptive statistics and correlations between GSE and other variables are presented in Table 5.

Results of NGSEpl correlated positively with active coping planning, positive reframing, acceptance, humor, mastery-goal orientation, all personality traits, and negatively with religion, use of instrumental support, denial, venting, substance use, behavioral disengagement, and self-blame. They did not correlate significantly with the use of emotional support, self-distraction, performance-goal orientation, or declared academic dishonesty.

We conducted structural equation modeling using JASP 0.17.1.0 with DWLS as an estimator and 10000 bootstrap samples to confirm expected relations between GSE, mastery-goal orientation and declared academic dishonesty. The obtained model showed good fit indexes: χ^2 = .30 (df = 1; p = .58); χ^2/df = .30; NFI = .994; GFI = .994; CFI = 1; RMR = .013; RMSEA = .000 [.000, .110] (Nye & Drasgow, 2011). GSE was positively related to mastery-goal orientation (β = .21; p < .001), which was negatively related to declared academic dishonesty (β = -.38; p < .001).

Table 5. Descriptive statistics and Pearson's r coefficients for global self-efficacy and coping strategies, goal orientations, declared academic dishonesty, and personality traits

	M	SD	r
Active coping	4.28	1.21	.44**
Planning	4.28	1.25	.34**
Positive reframing	3.42	1.44	.24**
Acceptance	3.61	1.50	.10*
Humor	2.26	1.52	.18**
Religion	1.93	2.03	-.09*
Use of emotional support	3.66	1.66	-.05
Use of instrumental support	3.62	1.60	-.11**
Self-distraction	3.27	1.46	-.05
Denial	1.51	1.46	-.20**
Venting	3.04	1.40	-.15**
Substance use	1.26	1.64	-.10*
Behavioral disengagement	1.48	1.31	-.54**
Self-blame	3.15	1.67	-.32**
Mastery-goal orientation	22.29	4.05	.23**
Performance-goal orientation	19.56	5.23	.04
Declared academic dishonesty	13.12	10.21	-.05
Extraversion	4.88	1.63	.51**
Agreeableness	5.31	1.25	.15*
Conscientiousness	5.05	1.73	.22**
Emotional stability	3.79	1.85	.55**
Openness to experience	4.80	1.25	.40**

$^*p < .05, ^{**}p < .01$

DISCUSSION

Results of all four presented studies confirm good psychometric properties of the Polish version of the *New General Self-Efficacy Scale*. The obtained data showed high internal consistency and a unidimensional structure of NGSEpl in various populations and measurement invariance of the scale. The previously described relations of GSE measured with NGSE with behavioral tendencies, personality, and motivational traits were confirmed by validity analysis.

As previously (Chodkiewicz & Gruszczyńska, 2013; Freire et al., 2020; Luque Salas et al., 2017; Piergiovanni & Depaula, 2018), relations between global self-efficacy and active coping strategies were positive, and with passive coping strategies were negative. This means that people who believe they can act in a particular way to achieve goals may perceive stressful situations as a problem to solve and engage in planning and specific actions to do that, or if something is out of their control – accept it, reframe the problem positively or engage in humor. On the other hand, people with low self-efficacy who do not believe in their ability to face challenges effectively may feel helpless in stressful situations and thus engage in behavioral disengagement, denial, or self-blame. As a result, people with high GSE may not only cope better with the challenges but also gain experiences in handling problems that might reinforce their GSE. The passive strategies used by people with low GSE reduce their chances of facing difficult situations and thus strengthen the belief that coping successfully with them is beyond their capabilities.

Our findings are also consistent with the thesis formulated by Elliot and Church (1997) about the indirect effect of GSE on behavioral tendencies and with previous research reporting a significant relationship between GSE and goal orientation (Bell & Kozlowski,

2002; Diseth, 2011). For individuals with high GSE, who believe in their global competence to deal with a variety of situations effectively, the academic context seems to offer an opportunity to master the knowledge and to become as good as possible in the chosen area of study. The common property of GSE and mastery-goal orientation, probably responsible for their relation, is the focus on personal resources in striving for excellence and acquiring new skills or knowledge. By contrast, GSE and performance-goal orientation do not correlate with each other significantly, probably because performance-oriented people are motivated to achieve a certain level of task performance compared to others (better, the same, or not worse as them) which does not allow them to shape global and stable belief about their efficiency. Moreover, students who experience a high sense of global self-efficacy tend to incorporate mastery-oriented goals in their studies and, thus, less frequently engage in academic dishonesty. The small and non-significant correlation between GSE and the frequency of committing academic fraud supports a theoretical model in which GSE, as a general tendency, is to a lesser degree or not at all related directly to a specific behavior (Kulik & Frańczyk, 2016) and instead influence it through other variables such as SSE or goal orientation in a particular domain (Shelton, 1990).

Finally, our results confirm the hypothesized and previously reported relations between GSE and emotional stability, extraversion, and openness to experience (Judge et al., 2002; Noe et al., 2013; Yao et al., 2018; Wang et al., 2014). Regarding conscientiousness, its relationship with GSE was significant and positive, as expected, although lower than this obtained in Judge et al. (2002) meta-analysis. The correlation coefficient for agreeableness and GSE were similar to the one in the studies reporting its magnitude of up to .20 (Ebstrup et al., 2011; Strobel et al., 2011) and its positive direction (Djigić et al., 2014; Noe et al., 2013). Similarly to our results, previous research in Poland concerning personality traits and GSE did not confirm a significant relationship between GSE and agreeableness. However, they revealed heterodox correlations between personality traits and GSE depending on the types of participants. For example, among teachers, the relationships between GSE, openness to experience, and extraversion were weaker compared to a sample of unemployed persons (Zawadzka et al., 2018; Zięba et al., 2018) and a sample from the general population reported by Judge et al. (2002). Thus, it seems that the relationship between GSE and personality traits may be influenced by the character of the sample or by specific cultural differences.

Described project is not free of limitations. First, the research groups consisted mainly of young adults, so obtained relations between self-efficacy and other variables could be slightly different in other age groups, which should be explored in future studies. Second, based on age division of the data used for measurement invariance tests has more empirical than theoretical character, and thus further confirmation of MI could be obtained among groups distinguished based on clear theoretical criteria. Third, validity analysis may be somewhat limited by measuring the declared behavior frequency, which the participants might underestimate or overestimate. Finally, the results of the structural equation modeling need to be interpreted cautiously since all variables were measured at the same time. Future research should attempt to replicate those results in experimental design and longitudinal analysis.

Despite those limitations, obtained results have practical implications for psychological interventions in health, educational, and occupational domains, which seem to be worth further exploration. Described GSE associations with personality traits may be important for psychological counseling and coaching in which shaping the client's self-efficacy is a crucial element leading to behavioral change, such as smoking cessation (Mudde et al., 1995) or change of eating habits (Schwarzer & Renner, 2000). Dealing with academic dishonesty and student motivation to learn require individual and group interventions in which developing the described relation between GSE and achievement goals could be considered. Creating opportunities for students to develop their academic self-efficacy, for example, through

adaptive learning and testing, might lead to setting more mastery-oriented goals and also to better overall academic performance (see Dehyadegary et al., 2014; Honicke & Broadbent, 2016; Talsma et al., 2019). It also seems important to address the observed decrease in GSE among women who return to work after maternity leave, perhaps through psychoeducation, psychological counseling, or self-efficacy training during the return-to-work phase. Interventions of those types seem particularly important in light of the described relationships between self-efficacy and passive coping strategies. Individuals who act counterproductively in the face of challenges might have difficulties undertaking actions strengthening SSE, which affects the level of GSE (Chen et al., 2001; Shelton, 1990).

In sum, based on the obtained data, we established psychometric properties of the NGSEpl, confirming the usefulness of that measure in assessing general self-efficacy. We described relationships between global self-efficacy measured with NGSEpl and various psychological characteristics in different contexts, and we have indicated research areas for further exploration in which self-efficacy is a significant predictor of individual psychological functioning.

APPENDIX

NGSEpl
Na skali od 1 do 5 określ, na ile zgadzasz się z każdym z poniższych stwierdzeń. Przyjmij, że poszczególne cyfry oznaczają:
1 – zdecydowanie nie zgadzam się
2 – raczej się nie zgadzam
3 – nie mam zdania
4 – raczej się zgadzam
5 – zdecydowanie się zgadzam

Jestem w stanie osiągnąć większość celów, które sobie wyznaczyłem/łam.	1	2	3	4	5
Gdy staję przed trudnymi zadaniami, jestem pewny/a, że uda mi się je zrealizować.	1	2	3	4	5
Generalnie uważam, że jestem w stanie osiągnąć rezultaty, które są dla mnie ważne.	1	2	3	4	5
Wierzę, że mogę osiągnąć sukces w prawie każdym przedsięwzięciu, którego się podejmę.	1	2	3	4	5
Jestem w stanie skutecznie sprostać wielu wyzwaniom.	1	2	3	4	5
Jestem pewny/a, że potrafię skutecznie wykonać wiele różnych zadań.	1	2	3	4	5
W porównaniu do innych ludzi, potrafię wykonać większość zadań bardzo dobrze.	1	2	3	4	5
Nawet, gdy sytuacja jest trudna, potrafię działać całkiem dobrze.	1	2	3	4	5

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