

## CONTROLLED AND AUTONOMOUS MOTIVATION IN ELEMENTARY SCHOOL: THE ROLE OF BIG FIVE PERSONALITY TRAITS AND SHYNESS

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**Summary.** According to self-determination theory, motivation in school is most often explained by external, situational factors, but more research is needed to explain the motivation through internal factors. The aim of the study was to explore school motivation according to the self-determination theory in terms of the Big Five personality traits and shyness. Participants were 400 eight- to twelve-year-old children for elementary school. Children completed self-reports of the school motivation scale, the personality inventory for children, and the shyness scale. Among the results, controlled motivation was most strongly associated with neuroticism, and autonomous motivation with agreeableness, openness to experience, and conscientiousness. General nervousness (neuroticism subscale) was positively related to amotivation and controlled motivation, and negatively related to intrinsic motivation. Shyness was positively associated with controlled motivation. Moreover, depending on the level of general nervousness and the level of introversion (extroversion subscale), the relationship between shyness and controlled motivation changed significantly and was insignificant at low levels of both general nervousness and introversion. Some differences were revealed according to shyness types: introverted shyness had higher amotivation and lower autonomous motivation than did social shyness. The results and their implications are discussed.

**Key words:** school motivation, autonomous motivation, controlled motivation, personality traits, shyness

### Introduction

Among the different theories of motivation is self-determination theory, according to which behaviour can be related to external sources—rewards or punishments, and internal sources—including the feeling of enjoyment and satisfaction with the task (Ryan, Deci, 2020). Self-determination theory differentiates between

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intrinsic motivation, extrinsic motivation, and amotivation (Deci, Ryan, 2000). The study of motivation in the school context shows that different types of motivation are related to school engagement, school achievements, positive affect, creativity, etc. (Gillet et al., 2012; Ryan, Deci, 2020), which underlines the important role of motivation in the child's school functioning.

According to self-determination theory, motivation is most often explained by external, situational factors such as the type of reward, type of punishment, organizational structure, classroom climate, teacher involvement, and feedback (Deci, Ryan, 2000; Ryan, Deci, 2020). However, more research is needed to explain the above-mentioned types of motivation through internal factors, dispositions, and biologically determined traits, such as temperament, personality traits, or abilities. Explanation of motivation in terms of self-determination theory through internal factors may indicate that different types of motivation depend not only on external factors but also on internal factors that may determine motivation. For example, neuroticism (personality trait) is associated with high negative affect and low positive affect (Costa, McCrae, 1992), and this, as the research results show, may translate into higher extrinsic motivation and lower intrinsic motivation (Gillet et al., 2012). Moreover, the role of internal factors in explaining motivation may differ depending on the type of motivation, e.g., the mentioned neuroticism may significantly explain extrinsic motivation, but its role in explaining intrinsic motivation may be insignificant or significantly lower. Therefore, understanding how types of motivation can be explained by internal factors is important because, on the one hand, it allows for a more precise understanding of the mechanisms determining motivation, and, on the other hand, such results can be applied in practice, because they can indicate how to motivate children who differ in terms of personality traits or abilities; for example, motivating children with high neuroticism may be different from motivating children with low neuroticism.

To answer the theses presented above, a study was conducted in which the five basic personality traits (the "Big Five") were measured. The results of the research indicate the stability of these traits throughout life and significant biological determination (Markey, Markey, Tinsley, 2004; Graham et al., 2020) and their role in explaining motivation. Moreover, shyness was measured to see if personality traits can moderate the relationship between shyness and school motivation. Shy children at school experience many difficulties (Rubin, Bowker, Gazelle, 2010; Sette et al., 2017; Zhang et al., 2017), which may contribute to lower school engagement and lower school motivation. According to the above assumptions, depending on the personality traits, the relationship between shyness and school motivation should change significantly.

## **Personality traits and school motivation**

One of the theories explaining personality is Big Five theory, which proposes five basic personality dimensions (Eysenck, 1956; Costa, McCrae, 1992; Graham et al., 2020). Initial research on the structure of the Big Five came from the lexical

approach (Goldberg, 1992), and since the 1990s it came from the questionnaire approach (Costa, McCrae, 1992), which confirmed five basic dimensions. Research also shows that the five broad personality traits are relatively stable throughout individuals' lives, from childhood to adulthood (Markey, Markey, Tinsley, 2004; Brandt et al., 2020; Graham et al., 2020). There are five basic personality traits: neuroticism, which refers to the tendency to experience negative feelings; extraversion, which refers to the intensity of interactions with other people; openness to experience, which is characterized by tolerance to novelty; agreeableness, which is characterized by an attitude towards other people; and conscientiousness, characterized by persistence in pursuing a goal. The five broad personality traits are significantly related to indicators of children's school adaptation (Brandt et al., 2020) and one of them is school motivation (Judge, Ilies, 2002).

Motivation is related to the effort students are able to devote to achieving the goal, for example success in learning (Judge, Ilies, 2002; Gillet et al., 2012). Among the theories of motivation is self-determination theory, which distinguishes intrinsic motivation, extrinsic motivation, and amotivation. Intrinsically motivated children take on school tasks because the task itself is of some satisfaction to them. Extrinsically motivated children carry out school tasks because doing so has an external value that is not necessarily related to the task itself. Children with amotivation are characterized by a lack of motivation due to the lack of interest in the task or the lack of competence to achieve it. Extrinsic motivation can be additionally divided according to the types of regulation: external regulation—behaviour depends on external reward or punishment; introjected regulation—behaviour depends on internalized rewards and punishments, e.g., guilt, duty, or shame; identification regulation—behaviour depends for example on the benefits of the task; and integration regulation—behaviour depends on task value for the individual, but this type of motivation differs from intrinsic motivation because it is not accompanied by the feeling of enjoyment and satisfaction, but rather a sense of the meaning of performing a given task or a sense of value for what is being done (Deci, Ryan, 1985; Saeed, Zyngier, 2012). According to self-determination theory, the three psychological needs, i.e., autonomy, competence, and relatedness, have a significant impact on motivation types. Among the three psychological needs, special importance is attached to the autonomy need, because depending on this need, the mentioned motivation types can be organized on a continuum—which means that the autonomy need refers to any type of motivation. Thus the greater the extrinsic motivation, the less it is characterized by autonomy, and the greater the intrinsic motivation, the more it is characterized by autonomy (Howard, Gagné, Bureau, 2017). Moreover, external regulation and introjected regulation are characterized by low autonomy, and identification regulation, integration regulation, and intrinsic motivation are characterized by high autonomy (Ryan, Deci, 2020). Therefore, external regulation and introjected regulation are a form of controlled motivation, and identification regulation, integration regulation, and intrinsic motivation are a form of autonomous motivation (Deci,

Ryan, 2000; Gillet et al., 2012; Howard, Gagné, Bureau, 2017). Experimental research has confirmed that the motivation types may change depending on the reward and feedback (Deci, Ryan, 2000; Ryan, Deci, 2020).

The types of motivation according to self-determination theory, apart from external factors (Deci, Ryan, 2000), may also depend on internal factors—personality traits (Chue, 2015; Delaney, Royal, 2017), which are something constantly observed throughout life and biologically determined (Markey, Markey, Tinsley, 2004; Graham et al., 2020). People who are highly agreeable and extroverted have higher social competences (Szczygiel, Mikolajczyk, 2018), which may be associated with meeting the relatedness need of individuals and, as a result, with higher intrinsic motivation (Ryan, Deci, 2020). Or, for example, people with high neuroticism in task performance may experience a tendency toward negative feeling, which is associated with lower satisfaction and less happiness (Gillet et al., 2012; Sosnowska, Hofmans, De Fruyt, 2020) and, as a result, with higher extrinsic and lower intrinsic motivation (Ryan, Deci, 2020).

The results of research on the five broad personality traits and motivation within self-determination theory show that extraversion, agreeableness, conscientiousness, and openness to experience are usually positively related to intrinsic motivation, and neuroticism is associated negatively with intrinsic motivation and positively with extrinsic motivation and amotivation (Chue, 2015; Romero, Alonso, 2019). These results may suggest that neuroticism will mainly explain extrinsic motivation—because it has the strongest relationship with it (Chue, 2015), and intrinsic motivation will be explained mainly by conscientiousness (Komarraju, Karau, Schmeck, 2009). For example, on the one hand, depending on the level of neuroticism (tendency toward negative feeling), children at school may differ in terms of high or low extrinsic motivation, and on the other hand, the level of conscientiousness may differentiate children in terms of intrinsic motivation (Ryan, Deci, 2020). Moreover, the relationship of neuroticism with both intrinsic and extrinsic motivation may indicate that neuroticism allows for the ordering of types of motivation, from extrinsic motivation to intrinsic motivation on a continuum, as in the case of the autonomy need (Howard, Gagné, Bureau, 2017; Ryan, Deci, 2020); i.e., as neuroticism decreases, extrinsic motivation will decrease and intrinsic motivation will increase. This thesis may be confirmed by the results of research showing that positive mood is more closely related to intrinsic than to extrinsic motivation, and negative mood is related positively to extrinsic motivation and negatively to intrinsic motivation. Moreover, when the performance of a task is associated with positive affect, both intrinsic motivation and the task performance level increase (Gillet et al., 2012). Similar results were obtained in a study of happiness and extrinsic and intrinsic motivation. These results revealed that as happiness increases, extrinsic motivation decreases and intrinsic motivation increases (Batista et al., 2017). Based on the summarized results above, the present study aims to examine the relationship between the five broad personality traits and motivation according

to self-determination theory and to answer the question regarding which of the five broad personality traits explains to the highest degree the different types of motivation among children in elementary school.

## **The role of shyness**

Shyness is characterized as the dominance of inhibition over stimulation (Rubin, Bowker, Gazelle, 2010; Colonnaesi, Napoleone, Bögels, 2014), which results in passivity and the avoidance of new and potentially dangerous situations. For instance, shy children may avoid new situations, avoid eye contact, and visibly react with embarrassment, for example going red or having a shaky voice during public speaking (Rubin, Bowker, Gazelle, 2010; Colonnaesi, Napoleone, Bögels, 2014). According to Briggs (1988), shyness is a personality disposition, characterized by stability of behaviour in various situations. Among the personality traits, shyness is most often associated with low extraversion and high neuroticism (Eysenck, 1956; Briggs, 1988; Paulhus, Trapnell, 1998), but this relationship is not completely clear, as some researchers point to a greater role in explaining the shyness of extraversion and others of neuroticism (Afshan, Askari, Manickam, 2015; Kwiatkowska, Rogoza, 2019). Some research results have indicated that it may depend on developmental changes (Buss, 1986; Cheek, Krasnopero, 1999; Kwiatkowska, Rogoza, 2019).

In an analysis of personality questionnaires, Crozier (1979) identified shyness as an independent, replicable factor with moderate correlations with neuroticism and extraversion. Although shyness is associated with low extraversion and high neuroticism, above all it is characterized mostly by the experience of discomfort and excessive self-awareness in various social situations (Colonnaesi, Napoleone, Bögels, 2014)—which shows a different conceptual framework of shyness than extraversion (which can also refer to vigour, action, activity, etc., and introverted children avoid peer contacts rather because of low relatedness need, and in shyness more because of the anxiety and general nervousness in social situations) and neuroticism (which also includes self-esteem, emotional stability, distress, and impulsiveness).

The relationship between shyness and personality traits such as openness to experience, agreeableness, and conscientiousness is not fully understood; some studies have found a negative relationship between shyness and openness to experience, whereas others have not (Arslan, Bülbül, Büyükbayraktar, 2017; Sato, Matsuda, Carducci, 2018). Also, the strength of the relationship between shyness and neuroticism and extraversion may vary depending on the study. For example, Kwiatkowska and Rogoza (2019) revealed that the main contributor to variance in adolescent shyness was low extraversion, followed by high neuroticism, and in another study in individuals of similar age, a stronger association with shyness was found in neuroticism followed by extraversion (Afshan, Askari, Manickam, 2015). The relationship of shyness with neuroticism and extraversion has been observed in various studies—despite methodological differences between studies (e.g., different

age of the individuals, different research tools), which may indicate shyness types, with the predominance of neuroticism or extraversion.

A popular division of shyness into types is the theory proposed by Buss (1986), who distinguished shyness as having a predominance for self-consciousness or fear. Fearful shyness is associated more with anxiety, e.g., fear of a stranger, and self-consciousness is associated with the feeling of embarrassment that you are being socially evaluated or in the spotlight. Later research results indicated that different types of shyness are associated with various difficulties, e.g., fearful shyness with negative emotionality, and with anxiety in new social situations (which may indicate an important role of neuroticism) and self-conscious shyness, which manifests itself more in social relations, which is associated with the fear of social evaluation, which in some way can be explained by introversion, which relates to the quality and quantity of social relationships (Eggum-Wilkens et al., 2014). The division of shyness due to neuroticism and that due to extraversion was proposed by Eysenck (1956), who distinguished social shyness—high neuroticism and high extraversion—and introverted shyness—high neuroticism and low extraversion. The division of shyness into two types, one more related to reacting with anxiety in new social situations, and the other related to high relatedness need and fear of social evaluation, has also been justified in later studies (Tang et al., 2017; Poole, Schmidt, 2019; Schmidt, Poole, 2019).

Shyness, in addition to the link to personality traits discussed above, is also linked to school motivation. One study found a negative relationship between shyness and engagement at school (Hughes, Coplan, 2010; Saeed, Zyngier, 2012; Wang, Eccles, 2013). Fallah (2014) observed a relationship, finding that shy students were less motivated to learn English than their bolder peers. In elementary school, shy children are likely to have low motivation to learn because they are reluctant to engage in classroom and school activities, reluctant to learn, and reluctant to attend school, all of which are closely related to low motivation to learn (Hughes, Coplan, 2010; Saeed, Zyngier, 2012; Wang, Eccles, 2013).

Shy children experience various difficulties at school. Especially at the beginning of their education, shy children encounter new situations and individuals—new teachers, new peers, a new place. The sensitivity in social situations that characterizes shyness may affect appropriate school adjustment. For example, a school may set standards for shy children that they cannot meet (Rubin, Bowker, Gazelle, 2010; Sette et al., 2017; Zhang et al., 2017). As a result, shy students experiencing many school difficulties are likely to feel more obliged to learn and cannot derive enjoyment and satisfaction from learning like their bold peers, which may be associated with low intrinsic and high extrinsic motivation (Chue, 2015; Romero, Alonso, 2019).

Shyness is related both to the Big Five personality traits and to school motivation. The current study explores whether and how shyness is related to motivation according to self-determination theory.

## Current study

The aim of the current study was to examine the relationship between the Big Five personality traits and motivation according to self-determination theory. In addition, it aimed to explore whether personality traits moderate the effects of shyness on school motivation (Model 1, Figure 1).

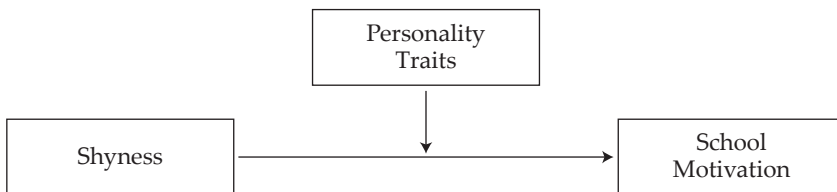


Figure 1. Theoretical model examining moderators effect on the relationship between shyness and school motivation

The literature review produced the following hypotheses: (H1) neuroticism and shyness will be associated positively with extrinsic motivation and negatively with intrinsic motivation, openness to experience, conscientiousness, and extraversion; and agreeableness will be positively associated with intrinsic motivation; (H2) extrinsic motivation will be explained to the highest extent by neuroticism and intrinsic motivation by conscientiousness; (H3) social shyness (high neuroticism and high extraversion) will have higher intrinsic motivation and lower extrinsic motivation than introvertive shyness (high neuroticism and low extraversion); (H4) neuroticism and extraversion will moderate the relationship between shyness and motivation.

## Method

### Participants

A total of 400 ( $M = 9.54$  years,  $SD = .90$ ) children attending an elementary school in Poland participated in the current study. The minimum age of the participating individual was 8 years and the maximum age was 12 years. There were 53 (13.3%) children at the age of 8, 134 (33.5%) at the age of 9, 159 (39.8%) at the age of 10, 52 (13%) at the age of 11, and two (.5%) at the age of 12. In the study, 197 girls and 203 boys participated, which represents 49.3% and 50.7% of the total sample, respectively.

### Procedure

Before and during the current study, all ethical standards related to social research were followed. Institutional permission were obtained for the study. Before the study initiation, parental consent was obtained. During the study, the children's

consent was obtained, and privacy was maintained when completing the questionnaires. In addition, the study was anonymous and confidential. The study was conducted during class hours and in group form. During the study, the researcher answered children's questions, e.g., those related to any incomprehensible or ambiguous terminology.

## Measures

**School Motivation.** The Elementary School Motivation Scale (Rufini, Bzuneck, Oliveira, 2011) in the Polish adaptation (Nikel, 2021) was designed to assess the different types of motivation derived from self-determination theory (Deci, Ryan, 1985). The scale consists of two example items and 25 test items and is organized into five subscales: amotivation (e.g., *I do not want to go to school*), external regulation (e.g., *I go to school in order to receive attendance marks*), introjected regulation (e.g., *I go to school to make my parents happy*), identification regulation (e.g., *I go to school because I can learn there*), and intrinsic motivation (e.g., *I go to school because I feel happy there*). The internal consistency of the subscales ranged from  $\alpha = .67$  to  $\alpha = .90$  in our sample.

**Big Five Personality Model.** The B5P-C was constructed to test personality traits in school-aged children. The authors of the method are Little and Wanner (1998) and the Polish adaptation is by Oleś (2010). Factor analysis confirmed five independent personality dimensions that follow five scales: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness (Zupančič, Fekonja, Kavčič, 2003). The B5P-C's scales consist of three subscales, each with three items. The subscales for neuroticism are (general nervousness, inferiority, social worries), for extraversion are (extraverted, introverted, adventurous), for openness to experience are (problem solver, curiousness, sensitivity), for agreeableness are (empathy-sympathy, helping behaviours, prosociability), and for conscientiousness are (determined, hard-working, orderly). The inventory contains 45 self-reporting test items. The participants give answers on a 4-point scale (*definitely untrue, untrue, true, definitely true*). The final score for each of the five personality dimensions can be between 9 and 36. Example items are *I often feel unhappy* (neuroticism); *I prefer to be with others than to be alone* (extraversion); *I often wonder how things work* (openness to experience); *When someone succeeds in doing something I am happy for him or her* (agreeableness); and *I can do one thing for a long time* (conscientiousness). The internal consistency of the scales ranged from  $\alpha = .53$  to  $\alpha = .88$  in our sample.

**Shyness.** During the study, children completed the Children's Shyness Questionnaire (Crozier, 1995) in the Polish adaptation (Tucholska, 2007). The version of the questionnaire consists of 26 items (e.g., *I am intimidated when I have to enter a room full of people*) and is used for testing children between 8 and 12 years old. The answer is given on a 4-point scale: *yes, rather yes, rather no, no*. The questionnaire is constructed to study shyness defined as a trait that manifests itself in various social situations. The internal consistency of the questionnaire in the validation study was  $\alpha = .80$ .



Table 1. Descriptive statistics and correlations between the study variables

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Amotivation	-	.35***	.54***	-.57***	-.73***	-.00	-.25***	-.24***	-.30***	-.19***	.08
2. External Regulation		-	.71***	-.03	-.10*	.23***	-.01	-.01	.04	.12*	.21***
3. Introjected Regulation			-	-.25***	-.36***	.17**	-.09	-.09	-.08	-.01	.18***
4. Identification Regulation				-	.77***	.10*	.19***	.32***	.28***	.35***	.03
5. Intrinsic Motivation					-	.08	.23***	.36***	.38***	.36***	-.01
6. Neuroticism						-	-.01	.06	.12*	.07	.42***
7. Extraversion							-	.42***	.53***	.37***	-.14**
8. Openness								-	.57***	.59***	-.02
9. Agreeableness									-	.62***	.01
10. Conscientiousness										-	-.03
11. Shyness											-
M	9.72	12.78	12.20	21.60	18.95	22.04	29.89	28.93	30.50	26.93	58.04
SD	5.91	4.85	6.70	4.78	5.77	4.91	4.52	4.61	4.67	3.84	11.50

Note. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

Table 2. Correlations between the neuroticism subscales and school motivation

Variable	Amotivation	External Regulation	Introjected Regulation	Identification Regulation	Intrinsic Motivation
General Nervousness	.16**	.18***	.23***	-.06	-.11*
Inferiority	-.03	-.22***	-.16**	-.04	-.02
Social Worries	-.20***	.09	-.01	.23***	.26***

Note. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

## Results

### Descriptive statistics and correlations analysis

Descriptive statistics for study variables and the correlations (H1) between the Big Five, shyness, and school motivation are presented in Table 1. Amotivation was significantly negatively associated with extraversion, openness to experience, agreeableness, and conscientiousness. External regulation and introjected regulation were significantly positively associated with neuroticism and shyness; moreover, external regulation was positively associated with conscientiousness. Identification regulation and intrinsic motivation were significantly positively associated with extraversion, openness to experience, agreeableness, and conscientiousness; moreover, identification regulation was positively associated with neuroticism.

Because neuroticism was not significantly related to intrinsic motivation (although such assumptions were made on the theoretical part – H1), an exploratory, post-hoc analysis was conducted to examine the relationship between elements of the subscale of neuroticism (general nervousness, inferiority, social worries) and school motivation. The results are presented in Table 2. Amotivation was associated positively with general nervousness and negatively with social worries, external regulation and introjected regulation were positively associated with general nervousness and inferiority, and identification regulation and intrinsic motivation were positively associated with social worries; moreover, intrinsic motivation was negatively associated with general nervousness.

### Regression analysis

A regression analysis was carried out to determine which personality traits contributed most to school motivation (H2). In terms of significant predictors and the degree to which they explained the variance, they were the following: for amotivation it was agreeableness (11%); for external regulation they were neuroticism and conscientiousness (8%); for introjected regulation it was neuroticism (5%); for identification regulation they were openness to experience and conscientiousness (15%); and for intrinsic motivation they were openness to experience, agreeableness, and conscientiousness (19%). The results are presented in Table 3.

### Shyness types and school motivation

Analysis aimed to verify whether there are differences in school motivation depending on the type of shyness (H3). Scores on the shyness scale were divided into two parts (equal to 50% percentiles), and then children with high shyness (above 50% percentile,  $n = 186$ ) were divided into groups according to high neuroticism (above 50% percentile) and low extraversion (below 50% percentile) or high

Table 3. Regression analysis predicted school motivation from the Big Five

Model	School Motivation														
	Amotivation			External			Introjected			Identification			Intrinsic		
Predictors	B	SE	$\beta$	B	SE	$\beta$	B	SE	$\beta$	B	SE	$\beta$	B	SE	$\beta$
Neuroticism	.03	.06	.02	.22	.05	.22***	.24	.07	.18***	.07	.05	.07	.05	.05	.04
Extraversion	-.13	.07	-.10	-.03	.06	-.03	-.06	.09	-.04	.02	.06	.02	.02	.01	.01
Openness	-.12	.08	-.10	-.12	.07	-.11	-.13	.09	-.09	.16	.06	.15*	.20	.08	.16**
Agreeableness	-.28	.09	-.22**	-.03	.07	-.03	-.12	.10	-.08	.05	.07	.05	.25	.08	.20**
Conscientiousness	.05	.10	.03	.25	.09	.20**	.17	.12	.10	.27	.08	.22**	.20	.09	.13*

Note. \*  $p < .05$ , \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

Table 4. Means and standard deviations for school motivation in social shyness and introversion shyness

Variable	M						SD					
	Introversion Shyness		Social Shyness		Introversion Shyness		Social Shyness		Introversion Shyness		Social Shyness	
Amotivation	11.88	14.67	8.93	13.81	6.39	5.17	11.88	14.67	8.93	13.81	6.39	5.17
External Regulation	15.11	20.77	13.28	22.69	7.44	7.32	15.11	20.77	13.28	22.69	7.44	7.32
Introjected Regulation	17.94	20.04	20.04	20.04	5.80	5.24	17.94	20.04	20.04	20.04	5.80	5.24

extraversion (above 50% percentile). Two groups were created: social shyness (high neuroticism and high extraversion,  $n = 55$ ) and introversion shyness (high neuroticism and low extraversion,  $n = 63$ ). Independent samples  $t$  tests were executed. The results indicated that social shyness was statistically significantly different from introversion shyness on amotivation ( $t(116) = 2.78, p < .01, d = .51$ ) and identification regulation ( $t(116) = -2.55, p < .05, d = .47$ ) and intrinsic motivation ( $t(116) = -2.06, p < .05, d = .38$ ). Means and standard deviations are presented in Table 4.

### Moderator analysis

Further steps in the statistical analysis included the effects of moderators – neuroticism and extraversion (according to the theoretical framework presented, neuroticism and extraversion are considered the most important personality traits in relation to shyness. These traits allow for a clear differentiation between different types of shyness displayed by individuals) on the relationship between shyness and both external regulation and introjected regulation (H4). The SPSS macro PROCESS was used (Hayes, 2019). Neuroticism and extraversion were found to not significantly moderate the direct path between shyness and both external regulation and introjected regulation. To further explore the relationship between personality traits and shyness, an exploratory post-hoc analysis was conducted to investigate the potential differences among subtests of neuroticism (general nervousness, inferiority, social worries) and extraversion (extraverted, introverted, adventurous) moderate the relationship between shyness and both external regulation and introjected regulation. It turned out that general nervousness was a significant moderator between shyness and both external regulation ( $B = .02, SE = .01, t = 1.77, 90\% CI = [.001, .03]$ ) and introjected regulation ( $B = .03, SE = .01, t = 2.62, 90\% CI = [.01, .05]$ ), and introversion was a significant moderator between shyness and external regulation ( $B = .02, SE = .01, t = 1.80, 90\% CI = [.001, .03]$ ).

The significant interactions were further examined with a simple slope analysis. According to the simple slope regression analysis, the relationship between shyness and external regulation was (a) insignificant in low general nervousness ( $b = .04, t = 1.28, 90\% CI = [-.01, .09]$ ), significant in middle general nervousness ( $b = .07, t = 3.20, 90\% CI = [.03, .10]$ ), and the most significant in high general nervousness ( $b = .10, t = 3.74, 90\% CI = [.06, .15]$ ), and (b) insignificant in low introversion ( $b = .05, t = 1.45, 90\% CI = [-.006, .10]$ ), significant in middle introversion ( $b = .08, t = 3.59, 90\% CI = [.04, .11]$ ), and the most significant in high introversion ( $b = .12, t = 4.20, 90\% CI = [.08, .17]$ ). The relationship between shyness and introjected regulation was insignificant in low general nervousness ( $b = -.01, t = -.13, 90\% CI = [-.07, .06]$ ), significant in middle general nervousness ( $b = .06, t = 2.01, 90\% CI = [.01, .11]$ ), and the most significant in high general nervousness ( $b = .13, t = 3.35, 90\% CI = [.06, .19]$ ). The interaction results are plotted in Figures 2–4.

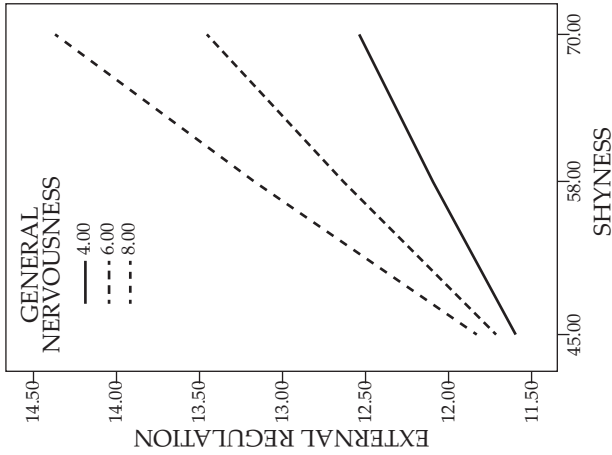


Figure 2. Shyness and general nervousness predicting external regulation

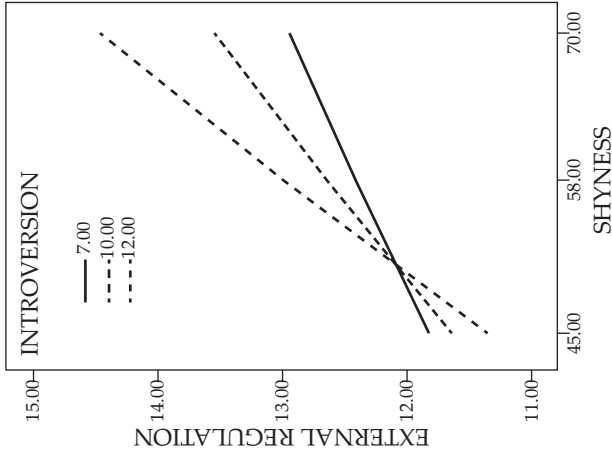


Figure 3. Shyness and introversion predicting external regulation

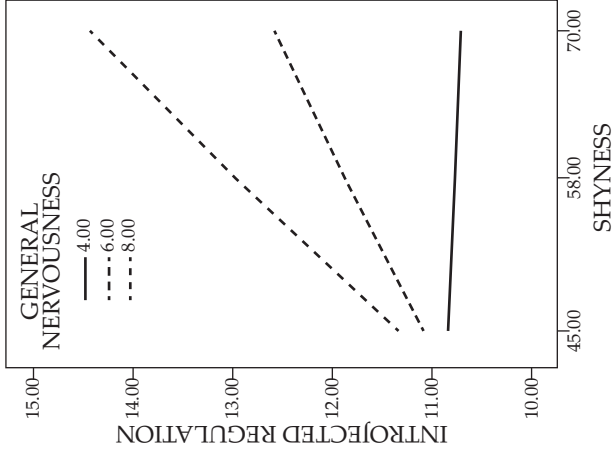


Figure 4. Shyness and general nervousness predicting introjected regulation

## Discussion

The aim of the study was to explore the relationship between the Big Five personality traits and motivation according to self-determination theory and explore whether the personality traits moderate the effect of shyness on motivation among children in elementary school. Because the results for both external regulation and introjected regulation as well as both identification regulation and intrinsic motivation were related, in the following discussion, external regulation and introjected regulation will be referred to as controlled motivation, and identification regulation and intrinsic motivation as autonomous motivation (Deci, Ryan, 2000; Gillet et al., 2012; Howard, Gagné, Bureau, 2017).

Current research results revealed that motivation according to self-determination theory depends on external, situational factors (Deci, Ryan, 2000; Ryan, Deci, 2020). In the present study, motivation according to this theory was explained by personality traits (H2). In previous studies, similar results were obtained in adults (Komarraju, Karau, Schmeck, 2009; Chue, 2015). In the current study, controlled motivation was positively related to conscientiousness and neuroticism, and autonomous motivation positively and amotivation negatively to extraversion, openness to experience, agreeableness, and conscientiousness (H1). These results are consistent with the assumptions (Chue, 2015) and show that children who are focused on external goals and experience negative emotion in various school activities will have a sense of compulsion and a high degree of responsibility, which will be associated to a greater degree with high controlled motivation than in children with more stable emotionality. Moreover, it will probably be more difficult to change the controlled motivation in children with high neuroticism and high conscientiousness compared to children with low neuroticism and low conscientiousness by external, situational factors, e.g., positive feedback, appropriate class organization, and supporting role of the teacher (Ryan & Deci, 2020). It will be different in the case of autonomous motivation, when children with a sense of competence, relatedness, and high need for cognition will experience satisfaction and happiness in school activities (Batista et al., 2017). In addition, regression analysis results revealed that amotivation was mostly explained by agreeableness. This indicates that aggressive, impulsive, and uncooperative children may have difficulty engaging in school activities and may engage in school refusal (Komarraju, Karau, Schmeck, 2009).

Despite the theoretical assumptions, neuroticism was not significantly related to intrinsic motivation. Perhaps intrinsic motivation is more dependent on positive affect, and extrinsic motivation is more dependent on negative affect (Gillet et al., 2012). Moreover, neuroticism in the present study consisted of the general nervousness, inferiority, and social worries subscales, and as correlation analysis revealed, each of these neuroticism subscales was related to school motivation in a different way. In particular, interesting results were obtained for the general nervousness subscale, which refers to general anxiety and distress—depending on the

type of motivation, the relationship was either positive or negative—while for intrinsic motivation it was on the border of statistical significance, which rather indicates some tendencies that require further research. The relationship of the general nervousness subscale with school motivation shows that the distress and general anxiety accompanying various school activities may, on the one hand, increase the feeling of compulsion, and on the other hand, make it difficult to enjoy activities. Therefore, depending on the distress associated with school activities, both amotivation and controlled motivation and autonomous motivation may change significantly. This may indicate that, similar to the autonomy need, and also depending on distress and general anxiety, the types of motivation can be ordered on a continuum (Ryan, Deci, 2020). Another significant correlation was found for the social worries subscale, which, instead of being positively related to controlled motivation, was positively related to autonomous motivation. This was probably due to the fact that the social worries subscale refers to situations that are related to awareness of being observed and judged by others, which is related to self-consciousness in social situations, which in turn is positively related to involvement in relationships with another person, task performance, and psychological well-being (Plant, Ryan, 1985; Realo, Allik, 1998; DaSilveira, DeSouza, Gomes, 2015; Muris, Meesters, van Asseldonk, 2018), so in school situations it can translate into higher autonomous motivation.

Another significant result refers to the relationship of shyness with both the Big Five personality traits and school motivation (H3). According to research by Eysenck (1956) and Buss (1986), there are two types of shyness: social shyness, characterized by the predominance of self-awareness in social situations; and introvertive shyness, characterized by a negative emotions and social fears. This study showed that children with social shyness had lower amotivation and higher autonomous motivation than children with introvertive shyness. These results show that, despite the high level of anxiety in both groups, a higher level of extraversion in social shyness than in introvertive shyness may be a resource for these children. That is, firstly, a higher level of extraversion will be associated with higher self-awareness in social situations (Tang et al., 2017; Poole, Schmidt, 2019), which will translate into school engagement (Plant, Ryan, 1985; Realo, Allik, 1998; DaSilveira, DeSouza, Gomes, 2015; Muris, Meesters, van Asseldonk, 2018); and secondly, higher extroversion will be associated with relatedness need (Costa, McCrae, 1992), which will be a motivation for children with social shyness to relations with their peers (Ryan, Deci, 2020). Summarizing the above, the study of the shyness type is important (Poole, Schmidt, 2019; Schmidt, Poole, 2019) because it shows that introverted shyness may be differently related to school difficulties than social shyness, which better explains the school functioning of shy children.

The last significant results from the current study concern the moderation analyses (H4). Shyness among the five broad personality traits is explained to the highest extent by neuroticism and extraversion (Afshan, Askari, Manickam, 2015;

Kwiatkowska, Rogoza, 2019). Although neuroticism and extraversion insignificantly moderate the relationship between shyness and school motivation, an exploratory post-hoc analysis revealed that the general nervousness–neuroticism subtest and the introversion–extraversion subtest were significant moderators. These results show that although shyness is related to controlled motivation, this relationship depends on the level of general nervousness and introversion of shy children: the relationship between shyness and controlled motivation was insignificant in low general nervousness and low introversion, and the relationship became more and more significant with increases in these two traits. Summarizing the moderation analysis, the results indicate that it is not so much that shyness significantly explains controlled motivation, but a low level of general nervousness and introversion, the effect of shyness on controlled motivation is insignificant.

### **Limitations**

The results must be regarded as tentative for the following reasons. Firstly, personality traits, school motivation, and shyness were measured using self-report questionnaires. Although the validity and reliability of measurements were satisfactory, the results revealed only some relationships between variables instead of a cause–effect relationship. Secondly, the study group was characteristic—children between the ages of 8 and 12 from urban areas. In the future, it would be worth extending the study to a different socio-cultural context. Thirdly, it is worth noting that many of the results obtained in this study are novel and some of them have emerged through exploratory post-hoc analysis. For instance, the relationship between shyness and school motivation, as well as the moderating effect of general nervousness and introversion on this relationship, or the relationship between social worries, general nervousness, and school motivation were discovered through exploratory analysis. However, given the exploratory nature of these findings, caution should be exercised in interpreting them, and further confirmatory analyses are required to validate these results. Nonetheless, these findings may provide valuable insights for designing future confirmatory studies.

### **Implications**

These findings have implications for how to motivate children in elementary school. Controlled motivation among children, also in highly shy children, will depend on the level of negative emotions. Therefore, in order to reduce distress and anxiety in school situations, it is worth using appropriate interventions (Yang et al., 2019; Cuijpers et al., 2021), which may, for example, translate into greater school engagement and school performance. In turn, autonomous motivation in elementary school children and highly shy children will depend on enjoyment in interaction with peers and feeling of competence in school activities (Ryan, Deci, 2020).



Another important implication relates to shyness types. Our results indicate that the study of shyness types is important (Poole, Schmidt, 2019; Schmidt, Poole, 2019), because each shyness type probably predicts different behaviour and motivation; for example, introverted shyness had higher amotivation and lower autonomous motivation than social shyness, which may indicate different difficulties in elementary school for children with introverted shyness rather than social shyness.

The last important implications may relate to self-determination theory. Although it is assumed that motivation according to self-determination theory depends on three needs, i.e., autonomy, competence, and relatedness, the current results may suggest for example that the relatedness and competence needs play a more important role in explaining autonomous motivation than does controlled motivation, because personality traits such as agreeableness, openness to experience, and conscientiousness, which are significantly related to the quality and quantity of social relationships, as well as the level of competence (Costa, McCrae, 1992; Paulhus, Trapnell, 1998), largely explain autonomous motivation. On the other hand, controlled motivation, related to a low level of autonomy, is mostly predicted by neuroticism and the neuroticism subscale: general nervousness is related positively to extrinsic motivation and negatively to intrinsic motivation, which may suggest that when children's level of anxiety and distress decrease, it will translate into lower extrinsic motivation and higher intrinsic motivation, which will be observed in behaviour through greater engagement in school activities (Gillet et al., 2012). These results also indicate that the distinction between two forms of motivation, i.e., autonomous and controlled, is justified, with a split between introjected regulation and identification regulation (Howard, Gagné, Bureau, 2017), because both external regulation and introjected regulation as well as both regulation identification and intrinsic motivation were similarly explained in the study and similarly related to the five broad personality traits and shyness. This indicates a significant finding of the same relationship with personality traits for both external regulation and introjected regulation as well as both identification regulation and intrinsic motivation.

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ROLA CECH OSOBOWOŚCI WG WIELKIEJ PIĄTKI I NIEŚMIAŁOŚCI  
W WYJAŚNIANIU MOTYWACJI KONTROLOWANEJ I AUTONOMICZNEJ  
U UCZNIÓW SZKÓŁ PODSTAWOWYCH

**Streszczenie.** Motywację szkolną według teorii autodeterminacji wyjaśnia się najczęściej poprzez czynniki zewnętrzne, sytuacyjne. Niewiele jednak wiadomo na temat wyjaśniania takiej motywacji poprzez czynniki wewnętrzne, osobowościowe. Celem badania było poszerzenie wiedzy o motywacji szkolnej za pomocą cech osobowości według Wielkiej Piątki oraz nieśmiałości. W badaniu wzięło udział 400 dzieci w wieku od 8 do 12 lat ze szkół podstawowych. Dzieci wypełniły kwestionariusze badające motywację szkolną, cechy osobowości oraz nieśmiałość. Pośród uzyskanych wyników motywacja kontrolowana była głównie wyjaśniana za pomocą neurotyzmu, a motywacja autonomiczna – za pomocą ugodowości, otwartości na doświadczenia i sumienności. Ogólna nerwowość (podskala neurotyzmu) była dodatnio powiązana z amotyacją i motywacją kontrolowaną, a ujemnie – z motywacją wewnętrzną. Nieśmiałość była pozytywnie powiązana z motywacją kontrolowaną. Ponadto w zależności od poziomu ogólnej nerwowości i poziomu introwersji (podskala ekstrawersji) związek pomiędzy nieśmiałością a motywacją kontrolowaną ulegał istotnej zmianie i był nieistotny zarówno przy niskim poziomie ogólnej nerwowości, jak i introwersji. Wykazano pewne różnice w zależności od typów nieśmiałości: nieśmiałość introwertywna charakteryzowała się wyższą amotyacją i niższą motywacją autonomiczną niż nieśmiałość społeczna. Omówiono wyniki i ich implikacje.

**Słowa kluczowe:** motywacja szkolna, motywacja autonomiczna, motywacja kontrolowana, cechy osobowości, nieśmiałość

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