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SUPPORTING LEARNER AUTONOMY IN THE CONTEXT OF EPISTEMIC DEVELOPMENT

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Abstract

For several decades, learner autonomy has been part of a range of important theories of learning; however, despite the significant interest shown by theoreticians and practitioners alike, effective support of learner autonomy remains a permanent challenge. Based on models of epistemic development, we distinguished three dimensions of learner autonomy and aimed to explore: (1) the level of selected aspects of Czech future teachers´ learner autonomy; (2) the mutual relations of the aspects; and (3) the scope of interpersonal variance and the distribution of value combinations among Czech future teachers into profiles. The Motivated Strategies for Learning Questionnaire (MSLQ) was completed by 129 future teachers from a Czech faculty of teacher education. Descriptive statistics were applied to identify individual scale levels, correlations analysis and explorative factor analysis to explore mutual relations among examined scales and cluster analysis to identify profiles (types) of students in terms of individual level proportions of learner autonomy. The analysis confirmed our assumptions based on previous findings and theoretical conditions of learner autonomy and identified our sample of Czech future teachers as scoring low in critical thinking and in the area of cooperation with peers. Inter-individual differences identified in individual scales were described using three clusters differing in average values of own perspective, cognitive strategies and anxiety scales. Based on all research results, suggestions for differentiated learner autonomy support inspired by the models of epistemic development are made.

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1. Introduction

The absence of societal control mechanisms, the differentiation and fragmentation of public space, and the current availability of an abundance of choices connected with uncertainty and the risk of consequences of free decision-making are the basic attributes of life in a postmodern society, as a result of which individuals and entire communities are forced to permanently search for identity, to autonomously manage their own lives, and to spend their whole life learning (Bauman, 1995). Instruction towards autonomy has thus become one of the priorities of today's education (Winch, 2012).

Defined as "the property or capacity of agents of being self-governing or self-determining" (Stojlar, 2015, p. 314) and as the opposite of functioning under excessive external control (Forbes & Jermier, 2015), learner autonomy has been a vital concept for several decades in theory and research into human growth (Monroe et al., 2016), development (Perez et al., 2015), well-being (Reis et al., 2018) and motivation (Deci & Ryan, 2012), and a desirable goal of tertiary education (Hofer & Sinatra, 2010) corresponding with the idea of lifelong learning and the need to cope with the challenging uncertainties and risks involved as living in a postmodern culture (Bauman, 1995). It has become part of a range of important and widely used theories of learning and motivation, among the most famous being, for example, the self-determination theory (Deci & Ryan, 2012) and models of self-regulated learning (e. g. Boekaerts, 1997; Winne, 2011; Zimmerman, 2013), recognised as an important aspect at all levels of formal education (Little, 1995), but also in the area of lifelong learning (Yurdakul, 2017), e-learning (Lynch a Dembo; 2004) and language learning (Holec, 2009). However, despite the long-term professional interest shown by academics and practitioners in education, effective support of learner autonomy remains a challenge, at least in some areas of education. The Czech Republic belongs among the countries that are behind in this area. Research into Czech university students has so far hinted that during their studies, only a relatively small number of them succeed at functioning autonomously, whereas the majority of them struggle with the management of their own learning, which is related to a number of undesirable consequences, such as a lack of engagement in learning, low scores in critical thinking, a prevalence of reproductive patterns, low self-efficacy, feelings of uncertainty and a lack of readiness, and poor academic results (Juklová, 2019). Similar undesirable findings are known from some other countries (Smith et al., 2018). These findings suggest that a deeper understanding of the circumstances and factors contributing to these adverse results is therefore of key importance with regard to effective support of learner autonomy.

One of the assumed roots of this current state may be a discord between the conditions for autonomy development and value settings and the convictions of the broader educational system. The majority of theoretical models which conceptualise learner autonomy either as a central or a closely related concept have been described using students from the West; however, they may not fully correspond to the conditions in different educational contexts. The presence of certain different cultural patterns could be the reason why in some educational environments, the application of theoretical principles of learner autonomy in educational practice can have less favourable results. Learning motives and behaviour can have different meanings within different cultural contexts, which can complicate students' development towards learner autonomy. Ma (2022) described some typical patterns embedded and defined in Eastern culture where Asian pupils differ from their Western peers and, for example, found that critical thinking within the context

of Asian culture may be considered as disrespecting one's teacher. Similarly, in the Czech educational environment, one cannot rule out the existence of some deeply rooted, culturally determined beliefs that do not benefit the development of learner autonomy in terms of authority-independence and engagement in self-management. The perception of learner autonomy as a culturally situated phenomenon, and its investigation within the context of the wider conditions of one's learning environment, therefore seems to be necessary in order to support it. Studies dealing with the learning of Czech university students have so far been largely focused on results, whereas only a few of them have focused on the context of these results within the culture of the broader educational environment. This study is aimed at helping to fill this gap and, relying on theoretical models of epistemic development, looks at learner autonomy as a comprehensive phenomenon that is part of cultural patterns embedded in a broader educational environment.

2. Literature review

2.1. Learner autonomy as a pedagogical consequence

In the expert literature, learner autonomy has been conceptualised in many different ways. For instance, within the context of self-determination theory (SDT; Deci & Ryan, 2012), it was described as a consequence of the interpersonal conditions of a specific pedagogical situation. SDT describes the interpersonal styles teachers use to motivate students, which differ on the basis of the extent of support of learner autonomy and range from a highly controlling style through a somewhat controlling and somewhat autonomy-supporting style to a highly autonomy-supporting style. Within the context of this theory, learner autonomy is considered the ability to allow one's motivation to come from internal, volitional sources (i.e. intrinsic motivation and identified regulation) as opposed to external (external regulation), non-volitional (e.g. introjected) regulation. Autonomously motivated students have an internal perception of causality, feel freedom (high volition) and are capable of making choices within the framework of their own actions.

2.2. Learner autonomy as attributes enabling self-regulated learning

The theory of self-regulated learning conceptualises learner autonomy as a summary of those attributes which enable and determine a student's self-regulated learning (e. g. Boekaerts, 1997; Winne, 2011; Zimmerman, 2013). Such students metacognitively, motivationally and behaviourally engage in achieving task-specific learning objectives they set themselves, and use appropriate strategies to achieve them. They monitor their own progress and adapt their learning strategies as needed. They motivate themselves and focus on eliminating distracting elements. If needed, they look for help and make sure that their learning environment supports their learning. They are active creators of meaning and control significant aspects of their cognition, behaviour and environment in achieving their own learning objectives (Pintrich, 2000). In a similar sense, within the framework of language learning, Holec (2009) described a relationship between learner autonomy and self-directed learning and considered self-directed learning to be a desirable learning situation in which students use their autonomy to the fullest. Similarly, Lynch and Dembo (2004) used the theory of self-regulation and in their overview of expert sources identified five self-regulatory attributes of special importance for distance learners: motivation (self-efficacy and goal orientation), internet self-efficacy, time management, learning environment management, and learning

assistance management. All of the aforementioned conceptualisations of learner autonomy share the socio-cognitive perspective of self-regulated learning (Bandura, 1997), which assumes a triadic reciprocality among motivation, environment and action and which considers learner autonomy to be a contextually embedded phenomenon rather than a static learner trait (Duncan & McKeachie, 2005).

Despite the impressive breadth of defined attributes and the number of models theorising on their interaction during learning (Panadero, 2017), very little attention has been given to development questions and the connection of learner autonomy with aspects of a broader educational context. These questions are the subject of interest of epistemic development models.

2.3. Learner autonomy as the ability to construct one's own personal meaning

Epistemic development refers to the development of ways of creating meaning and of relating to authority, oneself and cognition (Muis, 2007). Within the context of development models, learner autonomy corresponds to one of the development positions – contextual relativism – which follows dualism and multiplicity in cognition (Baxter Magolda, 2004; King & Baxter Magolda, 1996; Kuhn & Weinstock, 2002; Perry, 2013). Contextual relativism is characterised by the ability to adopt one's own stance while concluding and creating a meaning (Moore, 2002). Its essence lies primarily in the ability to accept uncertainty in knowledge and to construct one's own perspective by means of evaluating evidence in relation to the context. At the same time, this ability implies a possibility to break away from authorities and to develop one's own tools (strategies) to construct and evaluate knowledge.

The self-authorship model (King & Baxter Magolda, 1996) is focused on university students' meaning-making process, conceptualised as a phenomenon with three dimensions to which epistemically important intrapersonal and interpersonal aspects contribute along with cognitive and metacognitive factors. At the centre of this process is the student's self (intrapersonal dimension), which can "coordinate, integrate, act upon, or invent values, beliefs, convictions, generalizations, ideals, abstractions, interpersonal loyalties, and intrapersonal states" (Kegan, 1994, p. 185). The maturity of the self is closely related to the way students construe knowledge (cognitive and metacognitive dimension) and relate to others. Within the framework of this autonomous position, others are perceived as partners in joint meaning-making (interpersonal dimension). In this model, the optimal development of these processes is related to several conditions: (1) validating students as those who know; (2) situating learning within a student's experience; and (3) defining learning as joint meaning-making.

2.4. The development of learner autonomy within the context of the long-term characteristics of the Czech educational environment

For four decades (1948–1989), Czech society developed under undemocratic political conditions, and, in general, pedagogy was defined mostly by teacher-oriented concepts of instruction that were theoretically and empirically related to a strongly asymmetric relationship between the teacher and the pupil and with the obeying of authority (Kember, 1997). The prevailing educational goal was the acquisition of declarative and abstract knowledge of a significant extent for which Czech students had until recently been encouraged to utilise reproductive methods of working with knowledge, such as memorising. Curricula excessively rich in content, which put time pressure on teachers and prevented any realisation of construing

one's own knowledge, emphasising one's own perspective, and thinking critically, were also in discord with the development of higher-quality methods of working with knowledge. Despite ongoing reforms since 1989, these values remain part of broader, deeply rooted educational conditions, any changes to which are slow and often resistance-provoking (CSI, 2018).

The present study is focused on understanding learner autonomy as a complex phenomenon embedded in the cultural patterns of the broader educational environment. Based on the assumption that learner autonomy is at least partially a product of contextual influences, its aims are: (1) to identify the overall self-reported level of selected epistemically significant learning characteristics in relation to the learning autonomy of Czech university students; (2) to explore mutual relationships among them; and (3) to find the degree of inter-individual differences between university students and identify the prevailing types of learner autonomy in our student sample so as to propose possibilities for differentiated, targeted contextual support.

3. Method

3.1. The participants

The participants were 129 (males = 98; females = 31) full-time first year university students enrolled in a master's degree in teaching program in a medium-size public university in the Czech Republic. Prior to the data collection, ethics approval was obtained from the University Human Resources Ethics Committee and the University Institutional Review Board. The participants were informed about their voluntary participation and written consent was sought if they indicated a desire to participate. The questionnaire was distributed online through the LMS and the students were instructed that their answers to the questionnaire should reflect their learning as a whole.

3.2. Measures

Selected scales of the Motivated Strategies for Learning Questionnaire (MSLQ; Duncan & McKeachie, 2005) were used to operationalize the cognitive, intrapersonal and interpersonal dimensions of epistemically significant indicators of learner autonomy. Some of these self-report measures were used earlier and adapted for the Czech university-student population (Jakesova & Hrbackova, 2014). Some of the scales were modified according to the Czech educational environment, and their reliability and validity have been examined and reported in previous research. For the remaining scales, EFA, CFA and Cronbach's alpha were first used to verify psychometric properties (construct validity and reliability), with satisfactory results.

The cognitive dimension of epistemic development is related to the method of processing information, the level of critical thinking, and the quality of metacognition. For its operationalization, we used five scales from the MSLQ: Rehearsal (4 items, e.g. *I make lists of important terms for this course and memorize the lists*), Elaboration (6 items, e.g. *When I study for this class, I pull information together from different sources, such as lectures, readings and discussions*), Organization (4 items, e.g. *When I study the reading material for this course, I outline the material to help me organize my thoughts*), Critical Thinking (5 items, e.g. *I often find myself questioning things I hear or read in this course to decide if I find*

them convincing), and Metacognitive Self-Regulation (12 items, e.g. *When reading for this course, I come up with questions to help focus my reading*).

The intrapersonal dimension corresponds to the ability to put the self into the centre of knowledge construction. A high level of learner autonomy corresponds to a high level of confidence in one's own academic abilities, feelings of internally located control, and internally motivated learning orientation. For its operationalization, we used six scales from the MSLQ: Intrinsic Goal Orientation (3 items, e.g. *In a class like this, I prefer course material that really challenges me so I can learn new things*), Extrinsic Goal Orientation (4 items, e.g. *Getting a good grade in this class is the most satisfying thing for me right now*), Task Value (6 items, e.g. *I think I will be able to use what I learn in this course in other courses*), Control of Learning Beliefs (4 items, e.g. *If I study in the appropriate way, then I will be able to learn the material in this course),* Self-Efficacy for Learning and Performance (6 items, e.g. *I am confident that I can do an excellent job on the assignments in my studies*), and Test Anxiety (5 items, e. g. *When I take a test I think about how poorly I am doing compared to other students*).

The interpersonal dimension of epistemic development is manifested by achieving authority-independence and by perceiving others as partners to cooperate on joint meaning-making. For its operationalization, we used two scales from the MSLQ: Peer Learning (3 items, e.g*. When studying for this course, I often set aside time to discuss the course material with a group of students from the class*) and Help Seeking (4 items, e.g. *When I can't understand the material in this course, I ask another student in this class for help*). All the items were measured on 7-point Likert scales, with 1 representing not at all true of me and 7 indicating very true of me.

3.3. Data analysis

To verify the construct validity of the individual scales, the exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were used. Cronbach's alpha was calculated to verify the reliability of the individual scales. To identify the level of learner autonomy on individual scales, descriptive statistics (e. g. mean, std. deviation) were calculated. Correlation analysis and EFA were used to explore the mutual relationships among the individual scales and dimensions of learner autonomy, while cluster analysis (K-means) was applied to identify types in terms of the level in individual dimensions.

4. Results

4.1. Level of self-reported characteristics in relation to learner autonomy

Table 1 summarises the results of self-reported characteristics important in relation to learner autonomy on 13 scales. Students assessed their methods and beliefs on scales 1 to 7. The arithmetic mean for all scales is between 3.5 and 5.3, with mean values related to cognitive and metacognitive strategies (cognitive dimension) varying between 3.98 and 4.92. The least often used cognitive strategies include critical thinking (M=3.68), whereas elaboration (M=4.92) and organisation (M=4.76) are the most frequently used strategies for processing knowledge. However, students also use rehearsal (M=4.5) at a comparable rate.

Table 1. Descriptive characteristics of individual scales in relation to personal autonomy

Scale name	Mean		Skewness		Kutosis	
	Statistic	Std. dev.	Statistic	Std. dev.	Statistic	Std. dev.
Cognitive dimension						
Critical thining	3,6760	1,16812	,190	,213	-,119	,423
Rehearsal	4,4981	1,29244	-,361	,213	-,165	,423
Metacong. regulation	4,5449	,71349	-,228	,214	-,314	,425
Organization	4,7597	1,35871	-,107	,213	-,803	,423
Elaboration	4,9199	1,09550	-,240	,213	-,315	,423
Intrapersonal dimension						
Intrisic goal orientation	4,8236	1,10724	-,377	,213	-,176	,423
Extrinsic goal orient.	3,5000	1,44698	,219	,213	-,669	,423
Text anxienty	4,4388	1,21374	,016	,213	-,608	,423
Self-efficacy	4,6870	,98513	-,129	,213	-,283	,423
Task value	5,1266	1,17367	-,544	,213	-,382	,423
Control of lear. beliefs	5,2868	,92180	-,592	,213	,328	,423
Interpersonal dimension						
Peer learning	3,7597	1,26173	,290	,213	-,232	,423
Help seeking	4,5310	,82503	,048	,213	-,533	,423

Mean values of scales related to motivational variables (intrapersonal dimension) amounts between 3.5 and 5.29. The lowest self-assessed scale is Extrinsic Goal Orientation (M=3.5), while Control of Learning Beliefs (M=5.29) and Task Value (M=5.13) belong to the scales with the highest self-assessment. However, the Test Anxiety scale (M=4.44) also scored relatively high. The mean values of the two scales related to the intrapersonal dimension – Peer Learning and Help Seeking – differs, with values of 3.76 and 4.5, respectively.

4.2. Mutual relations of selected aspects of learner autonomy

Table 2 outlines the mutual correlations of all scales. The majority of scales relate to each other in a statistically significant manner. Except for the Rehearsal scale, the relations between cognitive-dimension scales are highly significant. The Rehearsal scale is significantly correlated to the Organisation and Metacognitive Self-regulation scales, while there is no significant relation between it and the Elaboration or Critical Thinking scales.

Likewise, the intrapersonal-dimension scales are close to each other in value, except for the Test Anxiety scale; however, some relations between intrapersonal-dimension scales are stronger than others. For instance, there is an apparent difference between the Intrinsic Goal Regulation and Extrinsic Goal Regulation scales, whose mutual relations with the Control of Learning Beliefs, Task Value and Self-efficacy for Learning and Performance scales differ. The values of the Pearson correlation coefficient imply that internal motivation is related to one's own control of ideas about performance, a higher perceived task value and self-efficacy far more than external motivation.

Table 2. Mutual correlations of the scales

	1	2	3	4	5	6	7	8	9	10	11	12
Cognitive dimension												
1. ELAB												
2. ORG	**,571**											
3. CRIT	**,632**	**,281**										
4. MC	**,649**	**,539**	**,510**									
5. REH	ns	**,428**	ns	**,248**								
Intrapersonal dimension												
6. ING	**,600**	**,353**	**,512**	**,414**	ns							
7. EXG	**,327**	**,358**	**,256**	**,427**	**,278**	**,254**						
8.CONT	**,403**	ns	**,271**	**,311**	ns	**,456**	ns					
9. TASK	**,443**	**,327**	**,223**	**,325**	ns	**,621**	**,243**	**,431**				
10.SELF	**,526**	**,283**	**,374**	**,334**	ns	**,593**	**,338**	**,498**	**,599**			
11.TEST	ns	ns	ns	**,231**	**,328**	,209	**,255**	,176	**,288**	ns		
Interpersonal dimension												
12.PEER	**,273**	**,302**	**,305**	**,393**	,194	,196	**,317**	ns	ns	**,265**	ns	
13.HELP	**,267**	,207	**,297**	**,328**	,246	ns	,220	ns	ns	,184	ns	**,418**

Note: 1.ELAB = Elaboration; 2.ORG = Organization; 3.CRIT = Critical thinking; 4.MC = Metacognitive self-regulation; 5.REH = Rehearsal; 6.ING = Intrinsic goal orientation; 7.EXG = Extrinsic goal orientation; 8.CONT = Control of learning beliefs; 9.TASK = Task value; 10.SELF = Self-efficacy for learning and performance; 11.TEST = Test anxiety; 12. PEER = Peer learning; 13. HELP = Help seeking; values written in bold numbers = correlation is signitficant at the 0,01 level; other values = correlation is significant at the 0,05 level; ns = correlation is not significant;

In terms of the relations between intrapersonal-dimension scales and cognitive-dimension scales, it is possible to observe that, except for the Rehearsal and Test Anxiety scales, the mutual relations of all the other scales are statistically significant. The Intrinsic Goal Orientation scale is much more strongly related to the cognitive-dimension scales than the Extrinsic Goal Orientation scale which, on the other hand, is statistically significantly related to the Rehearsal scale. The Self-efficacy for Learning and Performance scale is similarly strongly related to the cognitive-dimension scales. Except for the Rehearsal and Metacognitive Self-regulation scales, the Test Anxiety scale is not related to any other cognitive-dimension scale, whereas it is related to scales 7 to 9.

Both scales in the interpersonal dimension (Peer Learning and Help Seeking) are significantly related to the cognitive-dimension scales, while they are insignificantly related to the Control Beliefs for Learning, Task Value and Test Anxiety scales.

With regard to the mutual proximity of a majority of the scales that were nominated based on theory, an EFA was performed. The KMO test and Bartlett's test of sphericity (KMO=0.797; approx. Chi-square=659.530; df=78; sig.=0.000) showed that the data was suitable for use of an EFA. Through principal component analysis using Oblimin with the Kaiser Normalization rotation method (0.2), three factors were extracted that together explained 60.31% of variance (see Table 3).

Table 3. Dimensions extracted by explorative factor analysis

Scale name	Component		
	1	2	3
Intrinsic goal orientation	**,843**	,383	
Self-efficacy for learning and perf.	**,809**	,349	-,107
Task value	**,778**	,264	,328
Control of learning beliefs	**,723**	,179	
Metacognitive self-regulation	,460	**,777**	,143
Elaboration	,681	**,690**	
Organizing	,341	**,682**	,301
Peer learning	,168	**,654**	,110
Critical thinking	,478	**,648**	-,320
Help seeking		**,625**	
Extrinsic goal orientation	,300	**,560**	,359
Test anxiety	,221	,168	**,782**
Rehersal	-,179	,457	**,702**
% of explained variance	36,43 %	14,22 %	9,66 %
Cummulative % of explained variance			60,31 %

We named the first factor, explaining 36.43% of variance, "own perspective". It is loaded by the Intrinsic Goal Orientation, Self-efficacy for Learning and Performance, Task Value, and Control of Learning Beliefs scales. These scales provide evidence of orientation towards one's own learning, confidence in one's own learning abilities, the perceiving of tasks as valuable, and the ability to control one's own motivation in relation to learning; this factor corresponds to the intrapersonal dimension of personal epistemology postulated by King and Baxter Magolda (1996). We named the second factor, explaining 14.22% of variance, "cognitive strategies". It is loaded by a total of seven scales ordered according to the level of their factor load (Metacognitive Self-regulation, Elaboration, Organization, Peer Learning, Critical Thinking, Help Seeking, and, somewhat surprisingly, Extrinsic Goal Orientation). This factor corresponds to the method of processing knowledge called the "cognitive dimension" by King and Baxter Magolda (1996). As is obvious from Table 3, the Extrinsic Goal Orientation scale loads this factor, but also contributes to the other two factors. The third factor, explaining almost 10% of joint variance, is loaded by two scales only, the Test Anxiety and the Rehearsal scales, and therefore we named it "anxiety".

The results of the Pearson correlation coefficients showed that two of the identified factors are significantly related to each other – "own perspective" and "cognitive strategies" (r = .337); and "anxiety" and "cognitive strategies" (r = .154), while the correlation between "anxiety" and "own perspective" was found to be around zero (r = .004).

4.3. The extent of inter-individual differences between university students in selected aspects of learner autonomy

When looking at the mean values of whole dimensions (see Table 1), it is apparent that there is little difference between them. With regard to the relation between the anxiety and own perspective dimensions being zero and the relation between cognitive strategies and anxiety being relatively weak, however, it is

possible that our research participants differ significantly also within the framework of the individual dimensions. To verify this assumption, a cluster analysis that included all 13 scales was performed. We used the K-means method and gradually set two and three resulting factors, assessing the result with three factors as being more meaningful. Average values of the 3 identified clusters in terms of individual scales are summarized in Table 4.

Table 4. Mean values of three identified clusters

Scale name	Cluster		
	1	2	3
Intrinsic goal orientation	5,45	5,10	3,58
Extrinsic goal orientation	4,63	2,70	2,97
Task value	5,74	5,53	3,89
Control of learning beliefs	5,56	5,57	4,56
Self-efficacy for learning and perform.	5,14	5,09	3,64
Test anxiety	4,86	4,20	4,12
Rehearsal	5,07	3,78	4,67
Elaboration	5,67	4,88	3,90
Organizing	5,81	4,24	3,99
Critical thinking	4,24	3,58	2,94
Peer learning	4,53	3,22	3,38
Metacognitive self-regulation	5,08	4,29	4,12
Help seeking	4,78	4,38	4,37

Note: 1 = actively reproductive; 2 = actively elaborative; 3 = passively reproductive

The first type was named "actively reproductive" (N=49) and is characterised by high activity. While learning, this type relies equally on quality (critical thinking) and lower-quality (rehearsal) learning strategies. At the same time, a relatively high degree of test anxiety is present. The second type was named "actively elaborative" (N=43); similarly to the first type, this type also scores high in internal motivation and in quality learning strategies, but does not use lower-quality learning strategies as frequently and is not as highly anxious when it comes to knowledge testing. The third type was named "passively reproductive" (N=36); compared to the first two types, it scores low in motivation to find one's own perspective and in confidence in one's own abilities (self-efficacy), relies mainly on non-quality learning strategies (rehearsal), and is quite anxious.

5. Discussion

Our study investigated (1) selected aspects of learner autonomy; (2) their mutual relations; and (3) the distribution of the combination of their values among future teachers at one faculty in the Czech Republic. Leaning on epistemic-development models, learner autonomy was defined as a specific level of epistemic development based on the ability to accept uncertainty in cognition and adopt one's own perspective in learning, which is understood as the ability to construct knowledge by evaluating evidence

in relation to the context which occurs in collaboration with other people (Moore, 2002). To operationalise this learner autonomy, 13 MSLQ scales (Duncan & McKeachie, 2005) were used.

The mean values of the majority of the monitored scales imply that students assess their strategies related to learner autonomy as slightly above average (M=4.5–5.3). However, they deviate more significantly from these self-assessments on three scales (Critical Thinking, Extrinsic Goal Orientation, and Peer Learning) that lie in the interval of below-average values (mean values of approximately 3.5). A below-average level of external motivation (Extrinsic Goal Orientation; M=3.5) together with above-average values of internal motivation (Intrinsic Goal Orientation; M=4.8) as well as the values of other intrapersonal-dimension scales (Task Value, Control of Learning Beliefs, and Self-efficacy for Learning and Performance) seem to constitute a favourable development trend towards their readiness to look for their own personal perspective and meaning. However, the students' efforts are not yet completely successful, as documented by below-average use of critical thinking (Critical Thinking scale; M=3.68) with simultaneous above-average use of memorisation (Rehearsal scale; M=4.5), being related to the reproductive method of learning (Kember, 1997). This implies that students lack strategies for more effective learning yet, and taking into account the below-average values on the Peer Learning scale (M=3.76), implying primary emphasis on the teacher, we can also imply their learning context is not rich in supporting neither appretiating the students´detachment from the teacher's authority and creation of their own personal meaning. These findings are in accordance with the findings of studies carried out on other groups of Czech university students that used different tools to measure learner autonomy aspects (Juklová, 2019). Similarly to this study, the main findings were the insufficient use of critical thinking and the prevalence of reproductive learning strategies such as memorisation. Cross-cultural research has also reached similar results, especially for the countries, where, with regard to cultural specifics (Hofstede et al., 2010), a teacher-oriented instruction style, can be expected (Yurdakul, 2017).

A correlation analysis showed that all of our 13 monitored scales are significantly mutually related to each other, but they differ in the strength of these relations. From the results it appears that students reliably distinguish between intrinsic and extrinsic goal orientation whose relations to the scales focused on control over one's learning, perceived task value, and self-efficacy, as well as all cognitive-dimension scales, differ in strength. However, except for the Rehearsal scale, students do not make much of a distinction between the cognitive-dimension scales, which may be interpreted, in accordance with the findings of some authors (Marambe et al., 2012; Vermunt et al., 2014), as a non-differentiated approach to choosing strategies and insufficient awareness and utilisation of higher-quality methods. Another interesting finding is the fact that they do not relate the success and control of their own learning (Self-efficacy, Task Value, and Control of Learning Beliefs) to that of their peers, which confirms, as mentioned above, the dominant orientation towards their teacher's authority.

An exploratory factor analysis further showed that the factor named "own perspective" in learning, which is related to Intrinsic Goal Orientation, Self-efficacy, Task Value and Control of Learning Beliefs, is the most important factor with regard to explaining variance in the data. In terms of the mean scale values of the factor, our sample of students score the highest as a group (M=4.98). The second most significant factor is the one named "cognitive strategies", which includes Metacognitive Regulation, Elaboration, Organisation, Peer Learning, Critical Thinking, Help Seeking, and Extrinsic Goal Orientation. These

findings are in accordance with the theoretical model by King and Baxter Magolda (1996), which postulates the central role of the self and confrontation with the context and one's peers in constructing one's own perspective.

The last extracted factor, named "anxiety", consists of only two scales, namely Test Anxiety and Rehearsal. Its relation to the other two factors is both interesting and somewhat surprising: whereas this factor as a whole does not have a significant relation to the own perspective factor, it is perceived as strengthening in relation to cognitive strategies. When looking at the factor load of cognitive scales on the anxiety factor (see Table 3), however, it is apparent that these results are valid only for some cognitive strategies, whereas we find significant negative correlations with critical thinking and self-efficacy. Students thus consider test anxiety and memorisation to be aspects that contribute somewhat to cognitive activity when using reproductive learning strategies; however, in the case of a prevailing reliance on critical thinking, it is detrimental. The results of correlation analysis and exploratory factor analysis similarly confirm the results of the values achieved on individual scales and are also in accordance with the findings of other authors (Juklová, 2019; Marambe et al., 2012; Vermunt et al., 2014) who similarly discovered factors that do not distinguish between higher- and lower-quality learning strategies used by students in some learning environments.

As for the results of cluster analysis, from a developmenal perspective, the three identified types of students can be viewed as different positions in the development of learner autonomy, to which leaning on the self-authorship model (King & Baxter Magolda, 1996), differential interventions can be recommended. The passively reproductive type can be considered to be the least developed level of learner autonomy, characterised by below-average confidence in one's own abilities and intrinsic goal orientation together with dominant reliance on non-quality learning strategies. The development of this student group should focus primarily on supporting confidence in one's own abilities (see validating students' potential as scholars), be it by assigning manageable tasks of appropriate difficulty, including group work (see defining learning as the mutual construction of meaning), providing formative feedback, or situating learning within a student's experience. Designing the learning environment that requires accepting responsibility for one's own learning would also be of benefit for students of this type. The actively reproductive type can be thought of as a transitional position on one's path towards learner autonomy. This group of students will benefit mainly from support related to the development of more effective learning strategies – by the inclusion of new forms and methods of instruction based more on peer learning and metacognitive reflection as well as tasks provoking higher-order thinking (e.g. dialogic learning, refutational texts or dilemmas, problem solving). Finally, the actively elaborative type can be considered, in accordance with the theory of epistemic development, the most mature position, which will benefit from having more space for one's own initiative (possibility of choice, individualised instruction) together with a learning environment that encourages further development of one's own potential and active learning.

With all our findings, it can be stated that our assumptions about the still-persisting patterns of the broader learning context that are not of benefit to the development of learner autonomy were confirmed. In the context of King and Baxter Magolda's recommendations as to the benefit of (1) validating students' potential as scholars, (2) situating learning within a student's experience, and (3) defining learning as the mutual construction of meaning, it is possible to state that the traditional settings of a broader learning

contexts and beliefs are of insufficient benefit to learner autonomy. We consider strong beliefs about the usefulness of a highly asymmetrical relationship between the teacher and the student, which keeps the student in a subordinate position and complicates the construction of their own perspective in learning, to be one of the most significant obstacles. Together with long-term used methods of academic assessment, focused primarily on control and remedying errors instead of providing formative and non-judgemental feedback, they can be detrimental to building confidence in a student's own abilities. In addition, insufficient use of the potential of peer interaction in learning has a similar effect; it is considered to be significant in relation to detaching oneself from the teacher's authority and to constructing one's own perspective. Without breaking the dominance of the teacher´s role and shaping a learning environment in which the acceptance of uncertainty in cognition and responsibility for searching one´s own effective strategies is not only tolerated, but also deliberately supported, the development of learner autonomy in the Czech environment cannot be reached.

Our study has several limitations. One of them is a relatively small and non-representative student group based on voluntary participation. The identified student types and other results thus cannot be considered a representative depiction of global reality. Another limitation of the study is the use of the MSLQ, which does not look directly for epistemic characteristics such as accepting uncertainty in cognition or defining learning or the role of the teacher or peers. For more in-depth understanding of learner autonomy, future studies should include measures that would measure directly significant epistemic aspects (e.g. the concept of one's own learning, the degree of certainty in cognition, methods for substantiating findings, etc.) as well to accompany the self-report scales with objective methods (e. g. observation or monitoring epistemic cognition while learning). At the same time, for verifying the effectiveness and development aspects of identified individual profiles/types, the inclusion of an appropriate level of academic performance measure would be beneficial.

6. Conclusion

This study investigated learner autonomy on a sample of 129 student teachers at one faculty in the Czech Republic as a desirable objective of contemporary tertiary education. Leaning on epistemic-development models, it conceptualised learner autonomy as a position in the epistemic cognition development characterized by the acceptance of uncertainty in knowing and the ability to adopt one's own perspective in cognition based on evaluating evidence in relation to context. Analysis of data obtained by selected MSLQ scales revealed favourable as well as problematic aspects of the learner autonomy of Czech future teachers. Results were discussed within the context of cultural specifics of the Czech educational system and became a starting point for practical implications in the area of teacher preparation.

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