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ASSOCIATIONS BETWEEN ACADEMIC BURNOUT AND SOCIAL-COGNITIVE FACTORS: DOES GENERAL COGNITIVE ABILITY MATTER?

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Abstract

Self-regulated learning theories emphasise the interaction of cognitive, motivational, behavioural, social and emotional factors. The current study examined how general cognitive ability moderates the association between academic burnout and social-cognitive factors, such as academic buoyancy and cognitive emotion regulation strategies. The sample of 289 Estonian 8th-grade students completed the questionnaires assessing academic burnout, academic buoyancy and cognitive emotion regulation strategies; 12 tasks on Raven's matrices' D-set were administered to measure students' general cognitive ability. While maladaptive emotion regulation strategies explained more of the variance in academic burnout than adaptive strategies, none of these had a significant interaction effect with general cognitive ability. On the contrary, a unique pattern emerged regarding general cognitive ability as a moderator of the association between adaptive social-cognitive factors and academic burnout. More specifically, students with higher general cognitive ability, but lower academic buoyancy and/or who use less frequently adaptive strategies for emotion regulation, such as positive refocusing, positive reappraisal and putting into perspective, are more prone to academic burnout than the other student groups. Therefore, the study indicates that higher cognitive abilities can either be a blessing or a curse, depending on whether the student tends to apply or not to apply adaptive coping strategies. The findings support the idea of explicitly teaching proactive practices to prevent academic burnout in schools. Beyond that, the results support a deeper investigation of the role that cognitive abilities play in the relationship between academic burnout and social-cognitive factors (including behavioural emotion regulation strategies).

Keywords: Academic burnout, cognitive abilities, moderation.

1. Introduction

Academic burnout is shown to be a serious problem among adolescents (for a review see Walburg, 2014) that should be explicitly addressed. Previous research has suggested that academic buoyancy, as well as cognitive emotion regulation strategies, may play an important role in preventing and/or mitigating academic burnout and proven that adolescents with better coping abilities have reported fewer burnout symptoms than their peers with worse ones (Vinter, (under review); Vinter, Aus, & Arro, under review, 2019). Self-regulated learning theories expand the use of more domain-specific concepts of students' learning and well-being, like cognitive, metacognitive, motivational, behavioural, social and emotional components, by integrating these into the same conceptual framework (Panadero, 2017). Therefore, the constructs belonging rather to one or the other self-regulation domain, are still considered to interact strongly as it has been already shown in previous studies (Stevens, Holmberg, Lovejoy, & Pittman, 2014). Therefore, we may ask if already known associations between well-being constructs, such as academic burnout, and social-cognitive factors, such as academic buoyancy and cognitive emotion regulation strategies, can have different significance in student groups with different cognitive abilities. In order to pay more specific attention to student groups that may need different support for preventing or mitigating academic burnout, more research is needed in this domain.

1.1. The concepts of academic burnout, general cognitive ability, academic buoyancy and cognitive emotion regulation

Academic burnout has been conceptualised as three-dimensional construct (Salmela-Aro, Kiuru, Leskinen, & Nurmi, 2009) which is related to the feelings of exhaustion due to disproportionate excessive schoolwork, cynical (or indifferent) attitudes and losing interest in schoolwork, and feelings of inadequacy that refers to reduced competency and achievement (Salmela-Aro, Kiuru, & Jokela, 2008; Salmela-Aro, Kiuru, et al., 2009; Salmela-Aro, Savolainen, & Holopainen, 2009).

General cognitive ability or intelligence has been defined as a general mental capability that is related to reasoning, planning, solving problems, thinking abstractly, comprehending complex ideas, learning quickly and learning from experience (Gottfredson, 1997).

Academic buoyancy refers to students' ability to successfully cope with academic difficulties occurring in everyday school-life, such as poor grades (Martin, 2013; Martin & Marsh, 2008).

Cognitive emotion regulation is related to cognitively handling the information that arises emotionally (Garnefski, Kraaij, & Spinhoven, 2001). Nine specific strategies have been distinguished concerning cognitive emotion regulation. The adaptive strategies for cognitive emotion regulation have considered to be *acceptance*, *refocus on planning, positive refocusing, positive reappraisal* and *putting into perspective* and maladaptive strategies are *self-blame, rumination, catastrophising* and *blaming others* (Garnefski et al., 2001).

1.2. Associations between academic burnout and general cognitive ability, academic buoyancy and cognitive emotion regulation strategies

Associations between academic burnout and general cognitive ability have not been researched a lot but it has been shown that academic burnout is related to lower level of academic achievement (May, Bauer, & Fincham, 2015; Salmela-Aro et al., 2008; Salmela-Aro, Read, Minkkinen, Kinnunen, & Rimpela, 2018; Tuominen-Soini & Salmela-Aro, 2014) and diminished attention and problem solving skills (May et al., 2015). However, the associations between academic burnout and academic achievement (as well as general cognitive ability) are not consistent in every study. Many studies have found a negative significant association between Grade Point Average (GPA) and academic burnout (May et al., 2015; Salmela-Aro et al., 2018). On the contrary, the study conducted among Estonian middle school students (Vinter et al., 2019) reported no significant direct associations between academic burnout and math skills as well as general cognitive ability. In another study (Kikas, Jõgi, Palu, Mädamürk, & Luptova, 2016) it was found that students who reported themselves being more indifferent achieved lower results in the math exam. However, at the same time, 9% of high achievers in math also reported themselves being rather indifferent (Kikas, Jõgi, et al., 2016).

Significant associations between burnout and buoyancy have been well documented. The research has shown moderate or strong negative correlations between these constructs, especially among nursing students (Garcia-Izquierdo, Rios-Risquez, Carrillo-Garcia, & de los Angeles Sabuco-Tebar, 2018; Ríos-Risquez, Sabuco-Tebar, Carrillo-Garcia, García-Izquierdo, & Solano-Ruiz, 2018), and also among adolescents some research has been done (Anyan & Hjemdal, 2016; Vinter et al., 2019; Ying, Wang, Lin, & Chen, 2016).

While frequent use of adaptive cognitive emotion regulation strategies has been associated with higher level of buoyancy (Mestre, Nunez-Lozano, Gomez-Molinero, Zayas, & Guil, 2017; Min, Yu, Lee, & Chae, 2013), using maladaptive strategies, on the contrary, has been shown to be related to higher levels of depressive symptoms (Garnefski & Kraaij, 2014; Garnefski et al., 2001, 2002; Martin & Dahlen, 2005; Zlomke & Hahn, 2010), which, in turn, have been closely related to academic burnout (Salmela-Aro, Savolainen, et al., 2009). Although research on emotion regulation strategies in the academic context, is quite recent (Burić, Sorić, & Penezić, 2016), there are some studies that have shown the association specifically between academic burnout and emotion regulation (Seibert, Bauer, May, & Fincham, 2017; Vinter, under review; Vinter et al., under review).

1.3. Interaction effects of general cognitive ability and academic buoyancy and/or cognitive emotion regulation strategies explaining the level of academic burnout

In addition to direct associations between academic burnout and cognitive abilities, academic buoyancy and cognitive emotion regulation strategies, previous research has also found moderation effects regarding these constructs. For example, buoyancy has been found to moderate between emotional states and psychological health (Garcia-Izquierdo et al., 2018; Anyan & Hjemdal, 2016;Ying et al., 2016) as well as moderation effects of cognitive emotion regulation strategies have been documented. For example, moderation effects of several adaptive as well as maladaptive cognitive emotion regulation strategies

between bully victimization and emotional problems, such as depressive symptoms and anxiety, have been found among adolescents (see Garnefski & Kraaij, 2014).

All mentioned research has mainly focused on testing the moderation effects of conceptually related constructs. Still, there is some evidence of how conceptually not directly related constructs interact, such as cognitive, motivational and social-emotional constructs. For example, some person-oriented research has been done regarding this topic among Finnish-speaking ninth-grade students, where low emotional well-being was not found to be related to poor math and reading performance directly, but only together with low school motivation (Parhiala et al., 2018). Among university students, formal operational thought and verbal abstract reasoning were found to moderate the relation between depressive symptoms and actual vs ideal discrepancies (Stevens et al., 2014). Vinter and colleagues (2019) have also reported the association between academic burnout and buoyancy being significantly different in Estonian middle school student groups with different math skills; however, the same association was not found to exist in student groups with different general cognitive ability in the same study. The present study aims to broaden the scope of research mentioned above and test the same association in student groups with different general cognitive ability as measured by Raven progressive matrices (Raven, 1981). Moreover, the associations between academic burnout and cognitive emotion regulation strategies are also tested the same way.

2.   Problem Statement

Although the literature on self-regulated learning theories suggests cognitive, motivational, social and emotional factors to interact, there are still mixed results in this topic. For example, some studies have shown that cognitive factors predict burnout directly (May et al., 2015), but other studies have not found direct, but indirect association, predicting academic burnout through interaction between math skills and academic buoyancy (Vinter et al., 2019). However, there is a lack of research concentrating on moderated studies in this field and especially associations between academic burnout and social-cognitive factors among middle school students with different levels of cognitive abilities have not been widely explored.

It could be suggested that general cognitive ability might be a moderator between academic burnout and social-cognitive factors and therefore, explain the level of academic burnout among student groups with different general cognitive ability. As a further idea, in case these relationships will become more clear, it might be suggested that to achieve emotional well-being in academic settings, students with different general cognitive ability should be slightly differently addressed.

3.   Research Questions

Resulting from discussion mentioned above, the following research question was raised:
How is academic burnout associated with academic buoyancy and cognitive emotion regulation strategies in student groups with different general cognitive ability?

4.   Purpose of the Study

The aim of the study is to examine whether and how general cognitive ability would moderate the associations between academic burnout and social-cognitive factors, such as academic buoyancy and

cognitive emotion regulation strategies. In other words, whether these associations are different in student groups with different cognitive ability. To our best knowledge, no previous studies have yet examined general cognitive ability as a moderator in the relationship between social-cognitive factors and academic burnout among middle school students.

5. Research Methods

5.1. Participants and procedure

The study was a part of a larger project "General competencies and their assessment 2011-2014" (Kikas, Aus, et al., 2016). The sample consisted of 289 eighth-grade middle school students (146 girls and 143 boys) from seven Estonian schools in Tallinn.

The school principals from Tallinn middle schools were contacted and letters of informed consent were also sent for the schools who agreed to participate in the study. Only the students, whose parents did not return the letters of refusal, participated in the study. The data were gathered in January 2016 by researchers. The confidentiality of students' answers was assured. The students completed online questionnaires and tasks assessing different forms of skills and social-cognitive aspects. All the tasks and questionnaires were prepared in Estonian.

5.2. Measures

Academic burnout was measured with nine items (questionnaire adapted from Salmela-Aro, Kiuru, Leskinen, & Nurmi, 2009) using the total sum score of all items (see also Salmela-Aro, Savolainen, et al., 2009). Sample item: "I feel a lack of motivation in my schoolwork and often think of giving up". Students rated the items on a 6-point scale (1 = strongly disagree; 6 = strongly agree). Higher score points to a higher level of reported academic burnout.

General cognitive ability was measured with Raven's Standard Progressive Matrices' (Raven, 1981) D-set to measure students' non-verbal reasoning, executive functions, planning skills and finding of visual analogies. The test consists of 12 tasks; the sum of correct answers of the D-set was used for analysing the results.

Academic buoyancy was measured with seven items (questionnaire adapted from Martin & Marsh, 2006). Sample item: "I think I'm good at dealing with schoolwork pressures". Students rated the items on a 6-point scale (1 = strongly disagree; 6 = strongly agree). Higher score points to a higher level of reported academic buoyancy.

Cognitive emotion regulation strategies were measured with four items for each of the nine subscales from the CERQ - Cognitive Emotion Regulation Questionnaire (Garnefski et al., 2001) to assess what students tend to think after experiencing stressful events. As an exception, the strategy of catastrophising was measured with three items as one item was not accurately shown by the computer. The students rated the items on a 5-point scale (1 = almost never; 5 = almost always). Higher score points to a higher frequency of using the corresponding strategy. The subscales were the following. *Self-blame*, sample item: "I feel that I am the one to blame for it". *Acceptance*, sample item: "I think that I must learn to live with it". *Focus on thought/rumination*, sample item: "I often think about how I feel about what I have

experienced". *Positive refocusing*, sample item: "I think about pleasant experiences". *Refocus on planning*, sample item: "I think of what I can do best". *Positive reappraisal*, sample item: "I look for the positive sides to the matter". *Putting into perspective,* sample item: "I think that it hasn't been too bad compared to other things". *Catastrophising,* sample item: "I continually think how horrible the situation has been". *Blaming others,* sample item: "I feel that others are to blame for it".

5.3. Data analysis strategy

For data analysis statistical package SPSS 25.0, as well as Process Macro for SPSS (Hayes, 2019), were used. To test for the moderation effect of general cognitive ability, a separate set of ten hierarchical regression analyses were conducted with each exploring moderation of the relationship between academic burnout and social-cognitive factors. The analyses were conducted in two steps. In the first step, one of the social-cognitive factors and the moderator were entered into the regression model. In the second step, also the interaction effect between the social-cognitive factors and the moderator were entered into the regression models and it was checked if the interaction effect, as well as the change in explained variance (R^2) of the model, were significant. After identifying significant interaction effects, more specific analyses were conducted for specifying and visualizing these effects (Hayes, 2019).

6. Findings

6.1. Descriptive analyses and relationships between measures

Descriptive statistics, including means, standard deviations, minimum and maximum values, correlation matrices and internal consistencies of all measured constructs are presented in Table 1.

Table 01. Descriptives between the measures

	1	2	3	4	5	6	7	8	9	10	11	12
1	-											
2	.056	-										
3	−.45**	.01	-									
4	.35**	.14*	−.26**	-								
5	.13*	.16**	.13*	.58**	-							
6	.35**	.10	−.25**	.74**	.53**	-						
7	−.08	.04	.36**	.10	.41**	.12*	-					
8	.01	.17**	.26**	.42**	.61**	.43**	.50**	-				
9	−.15**	.07	.36**	.24**	.53**	.24**	.64**	.72**	-			
10	−.07	.11	.29**	.27**	.57**	.29**	.59**	.66**	.72**	-		
11	.35**	−.12	−.26**	.52**	.30**	.58**	.07	−.19**	.05	.10	-	
12	.05	−.19**	.11	.12*	.20**	.26**	.30**	.32**	.28**	.31**	.42**	-
M	3.60	7.71	3.71	2.88	3.07	2.94	2.73	3.20	3.01	3.01	2.47	2.25
SD	1.01	2.74	1.05	.88	.84	.94	.96	.92	.98	.97	.92	.77
Min	1	0	1	1	1	1	1	1	1	1	1	1
Max	6	12	6	5	5	5	5	5	5	5	5	5
α	.88	.80	.91	.80	.78	.81	.84	.84	.84	.84	.74	.80

Notes: * $p < .05$; ** $p < .01$; M = Mean; SD = Standard Deviation; Min = Minimum value; Max = Maximum value; α = Cronbach α. 1 = academic burnout; 2 = general cognitive ability; 3 = academic buoyancy; 4 = self-blame; 5 = acceptance; 6 = rumination; 7 = positive refocusing; 8 = refocus on planning; 9 = positive reappraisal; 10 = putting into perspective; 11 = catastrophising; 12 = blaming others.

The bivariate correlation coefficients between all measures were moderate, and therefore, referring to the distinctiveness of the measures used in the study. Also, the internal consistencies were good for every measure (Cronbach α values ranging between 0.74 and 0.91).

To answer the research question, at first, ten separate hierarchical regression analyses of each of the ten social-cognitive factors on academic burnout were performed, including general cognitive ability as a potential moderator. The results of the moderation analyses are presented in Table 2.

Table 02. Moderation effects of general cognitive ability on the associations between social-cognitive factors and academic burnout

Model	Social-cognitive factor coefficient (β)	Moderator coefficient (β)	Interaction coefficient (β)	*F*-statistic
Academic buoyancy				
$R^2 = .206^{***}$	−.451***	.062		36.754***
R^2 change = .041***	.217	.839***	**−.1.051*****	30.852***
Self-blame				
$R^2 = .125^{***}$	.354***	.003		20.223***
R^2 change = .001	.429*	.086	−.123	13.524***
Acceptance				
$R^2 = .017$	.121*	.033		2.434
R^2 change = .006	.312*	.278	−.344	2.210
Rumination				
$R^2 = .120^{***}$	.344***	.020		19.290***
R^2 change = .001	.416*	.090	−.108	12.886***
Positive refocusing				
$R^2 = .009$	−.080	.057		1.305
R^2 change = .023*	.328*	.447**	**−.598***	3.160*
Refocus on planning				
$R^2 = .003$	.003	.052		.396
R^2 change = .015*	.314	.433*	**−.548***	1.724
Positive reappraisal				
$R^2 = .028^*$	−.159**	.066		4.069*
R^2 change = .034**	.348*	.605**	**−.791****	6.205***
Putting into perspective				
$R^2 = .009$	−.077	.062		1.228
R^2 change = .022*	.327	.484**	**−.635***	2.914*
Catastrophizing				
$R^2 = .131^{***}$	.361***	.096		21.323***
R^2 change = .000	.313	.050	.065	14.205***
Blaming others				
$R^2 = .007$	.066	.065		.987
R^2 change = .012	.327*	.364*	−.375	1.765

Notes: * $p < .05$; ** $p < .01$; *** $p < .001$; β = standardised coefficient; statistically significant interactions are presented in bold.

The strongest interaction effect between social-cognitive factors and general cognitive ability on academic burnout was found between general cognitive ability and academic buoyancy (see Table 2). Regarding cognitive emotion regulation strategies, the change in explained variance of the model and the interaction effect itself were significant only for adaptive strategies of emotion regulation such as positive refocusing, refocus on planning, positive reappraisal, and putting into perspective. Although concerning an

adaptive strategy of refocus on planning, the interaction effect and the change in explained variance of the model were significant, the model itself was not statistically significant. For this reason, this strategy was excluded from further analyses. It is noteworthy that despite the models with maladaptive strategies (especially self-blame, rumination, and catastrophising) accounted for more of the variance in academic burnout than the adaptive strategies, the interaction effects with general cognitive ability were statistically significant only for the 'adaptive strategy'-models (see Table 2).

Summarising, the negative association between academic burnout and academic buoyancy as well as adaptive emotion regulation strategies (e.g., positive refocusing, positive reappraisal and putting into perspective) tends to get stronger as a person's general cognitive ability increases. In other words, the present findings provide evidence of a moderation effect of general cognitive ability on the relationship between social-cognitive factors and academic burnout. For further exploring the extent and nature of how social-cognitive factors and academic burnout are related in groups with different general cognitive ability, separate analyses on the factors showing significant interactions with general cognitive ability were performed (see Table 2). The conditional effects of the social-cognitive factors at levels of general cognitive ability as a moderator are shown in Table 3.

Table 03. Conditional effects of the social-cognitive factors at levels of general cognitive ability

| Social-cognitive factor	Level of moderator	Unstandardised coefficient	*SE*	*p*-value
Academic buoyancy	High	−.54	.07	.000
	Average	−.42	.05	.000
	Low	−.30	.08	.000
Positive reappraisal	High	−.32	.08	.000
	Average	−.15	.06	.012
	Low	.02	.09	.818
Positive refocusing	High	−.21	.08	.014
	Average	−.07	.06	.239
	Low	.06	.09	.503
Putting into perspective	High	−.23	.08	.007
	Average	−.07	.06	.283
	Low	.10	.09	.269

Note: High = 1 *SD* above the mean; Low = 1 *SD* below the mean.

The association between academic burnout and academic buoyancy was negative and significant among all students regardless having high, average or low general cognitive ability (see Table 3 and Figure 1) indicating that academic buoyancy plays an important role in predicting burnout in all student groups despite different levels of general cognitive ability. However, the strongest effect between academic burnout and academic buoyancy was found among students with higher general cognitive ability.
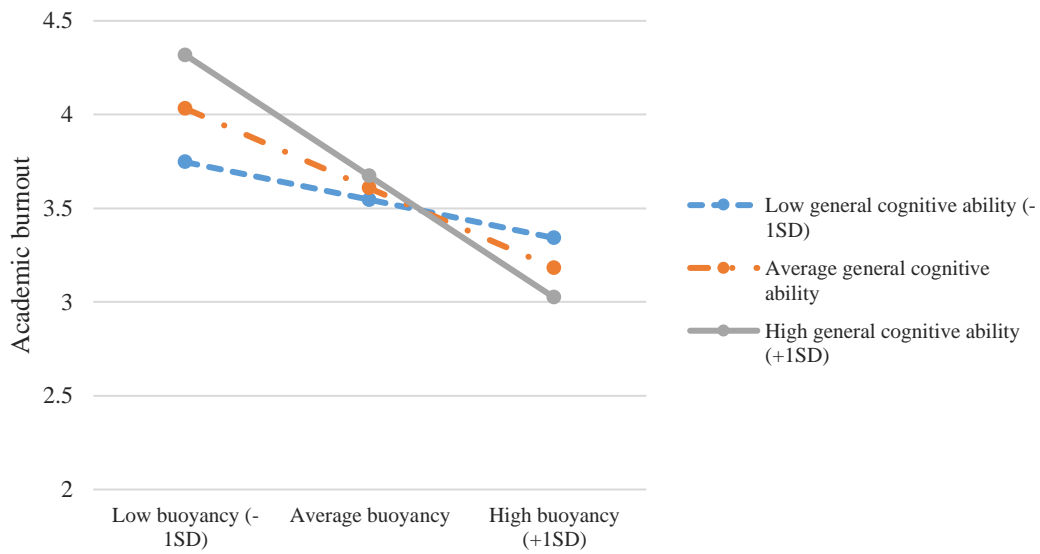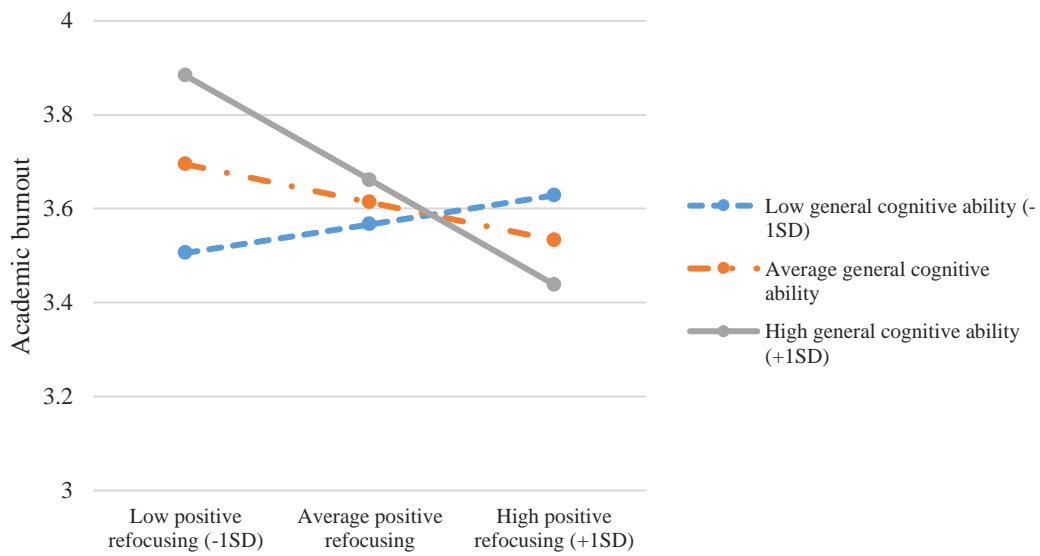
Figure 01. Academic buoyancy and general cognitive ability predicting academic burnout
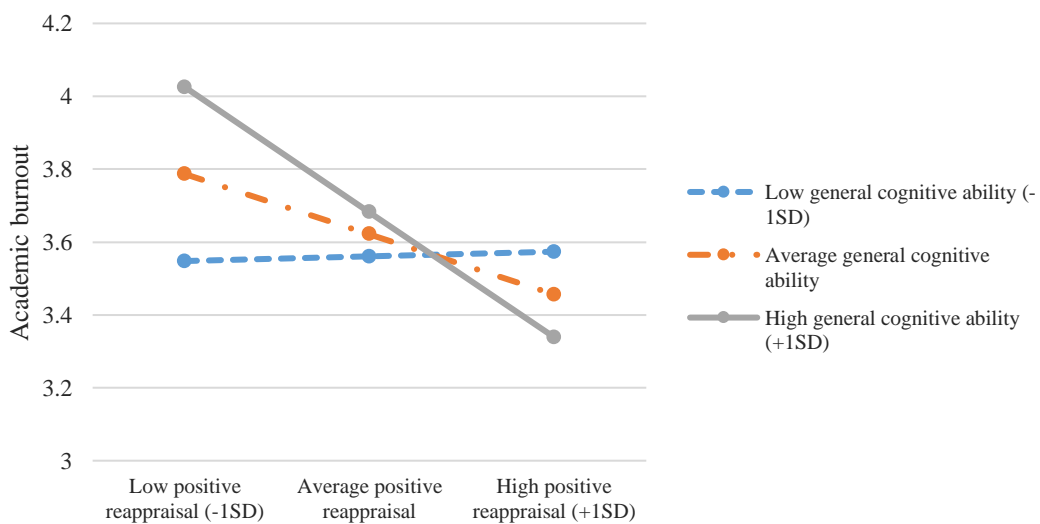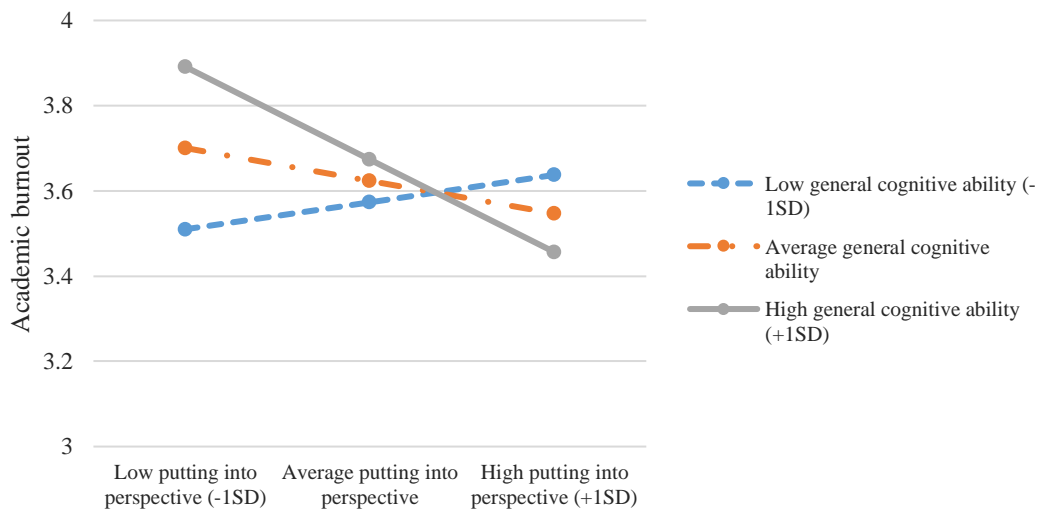

Figure 02. Positive reappraisal and general cognitive ability predicting academic burnout

Regarding the association between academic burnout and positive reappraisal, it was negative and significant among students who had either high or average general cognitive ability (see Table 3 and Figure 2). Regarding adaptive strategies of positive refocusing and putting into perspective, analogous interaction effect for predicting academic burnout was found with an exception that the association between academic burnout and these strategies was significant only among students with high general cognitive ability (see Table 3, Figure 3 and Figure 4).

Figure 03. Positive refocusing and general cognitive ability predicting academic burnout

Figure 04. Putting into perspective and general cognitive ability predicting academic burnout

In sum, the results revealed that only associations between adaptive cognitive emotion regulation strategies and academic burnout were moderated by general cognitive ability. The strongest effects between academic burnout and academic buoyancy, positive reappraisal, positive refocusing and putting into perspective, were found among students with higher general cognitive ability. More specifically, students who have higher general cognitive ability, but low academic buoyancy and/or who use less frequently above-mentioned adaptive strategies for emotion regulation, are more prone to academic burnout (see Figures 1−4). On the other hand, the lowest levels of academic burnout were also found among students with high general cognitive ability who, at the same time, exhibit a high level of academic buoyancy and/or use more frequently adaptive strategies like positive reappraisal, positive refocusing and putting into perspective (see Figures 1−4).

7. Conclusion

As there is not very clear understanding of how cognitive, motivational, social and emotional factors and psychological well-being interact, this study aimed to examine whether and how general cognitive ability would moderate the associations between academic burnout and social-cognitive factors, such as academic buoyancy and cognitive emotion regulation strategies. In other words, whether these associations are different in student groups with different general cognitive ability.

At first, the results provided evidence that the most relevant and strongest factor in predicting academic burnout among all the student groups is academic buoyancy. This indicates that all students who have more problems with recovering from everyday school problems are more prone to academic burnout, despite the level of general cognitive ability. Previous research has also shown buoyancy acting as a protective factor against burnout (Anyan & Hjemdal, 2016; Garcia-Izquierdo et al., 2018; Vinter et al., 2019; Ying et al., 2016). However, the strongest was the effect among the students with higher general cognitive ability: they are less prone to burnout if they have higher level of academic buoyancy and more prone when having lower level of buoyancy. In this context, this finding replicates the study where the analogous pattern was found especially for the students with high math skills (Vinter et al., 2019).

Although none of the maladaptive cognitive emotion regulation strategies had any significant interaction effects with general cognitive ability on predicting academic burnout, it is important to note that maladaptive strategies accounted for more variance of academic burnout than adaptive strategies. This finding is in line with previous studies which have also shown associations between low academic well-being and using maladaptive patterns of functioning in school (Korhonen, Linnanmaki, & Aunio, 2014) and students who report more psychopathological symptoms, such as depressive symptoms and higher level of anxiety, report also using more frequently maladaptive emotion regulation strategies (Garnefski et al., 2001, 2002; Legerstee, Garnefski, Verhulst, & Utens, 2011).

On the contrary, concerning adaptive cognitive emotion regulation strategies, namely positive reappraisal, positive refocusing and putting into perspective, a significant interaction effect emerged between general cognitive ability and these adaptive strategies for predicting academic burnout. More specifically, the students with higher general cognitive ability and a reduced tendency towards using adaptive emotion regulation strategies are more likely to suffer from academic burnout than the group with higher general cognitive ability who use more frequently adaptive strategies. Moreover, this student group is more prone to burnout than all the groups with lower general cognitive ability. From this viewpoint, academic buoyancy and adaptive emotion regulation strategies have an analogous interaction effect on students with higher general cognitive ability. Previous studies have also reported that successful students can be more prone to academic burnout while reporting more depressive symptoms and higher level of stress, and/or higher performance orientation (Salmela-Aro et al., 2018; Tuominen-Soini & Salmela-Aro, 2014; Tuominen-Soini, Salmela-Aro, & Niemivirta, 2008) or lower academic buoyancy (Vinter et al., 2019). This pattern refers to the possible problem quite many Estonian middle school students may have: although they have shown excellent results in PISA studies (OECD, 2016), they may be more prone to academic burnout under pressure to achieve academically, especially when they have low social-emotional skills.

The results point to the need for teaching academic buoyancy and cognitive emotion regulation strategies in schools to help to prevent and/or mitigate academic burnout among students. In addition to paying more attention to academic buoyancy and using maladaptive strategies, also teaching adaptive cognitive emotion regulation strategies is important, especially for students with higher general cognitive ability, as the results of the study show, especially this group of students can benefit more from this.

Intervention programs, targeted to improve students' coping skills, have proven to be successful, but they also have been characterised by inevitable context-specificity and short-term effects (Dray et al., 2017; Yeager & Walton, 2011). Therefore, it may be important to combine and integrate the elements of supporting students' coping skills into a larger curriculum framework (Garcia-Izquierdo et al., 2018; Ríos-Risquez et al., 2018) and paying explicitly more attention to teaching these across all subjects. However, as the results indicated that adaptive social-cognitive factors were associated with academic burnout especially among students with higher levels of general cognitive ability, but not among students with lower levels (except for academic buoyancy), it can be contemplated that using cognitively more advanced strategies is more common for students with higher cognitive abilities. It has been proposed before that students with lower levels of cognitive abilities may benefit more from behavioural strategies (Stevens et al., 2014). Therefore, not only cognitive emotion regulation strategies should be taken into account while teaching emotion regulation strategies, but emotion regulation topics might cover teaching cognitive as well as behavioural emotion regulation strategies.

The current study is not without limitations. First, the cross-sectional data have limited potential for making conclusions about causality and longitudinal studies are more useful in examining the causality of the measures. Second, mainly self-reported questionnaires were used (except for general cognitive ability) which are subject to different biases, such as response bias. Also, because of the small sample size, the results are not directly generalisable to different contexts, and more studies with larger sample sizes and in different educational contexts should be conducted to confirm or reject the patterns found in this study. The results also further support a deeper investigation of the role that cognitive abilities play in the relationship between social-cognitive factors (including behavioural emotion regulation strategies) and academic burnout.

In conclusion, the current study provides insights into how cognitive factors, such as general cognitive ability, and social-cognitive factors, such as academic buoyancy and cognitive emotion regulation strategies and psychological well-being (burnout) interact. The results of the study show that the associations between academic burnout and academic buoyancy and cognitive emotion regulation strategies can have a different impact on student groups with different cognitive abilities. The study indicates that higher cognitive abilities can either be a blessing or a curse depending on whether the student tends to apply or not to apply adaptive coping strategies. Teaching explicitly cognitive emotion regulation strategies may help to reduce students' level of academic burnout. In addition, behavioural emotion regulation strategies should be investigated further and might also be integrated into the curriculum framework as students with lower levels of general cognitive ability may benefit more from them. Therefore, special attention needs to be paid to educational measures helping all students to acquire constructive and effective ways to reflect on and react to negative school-related events and situations.

Acknowledgments

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