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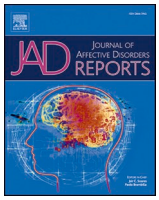

Research Paper

The role of early maladaptive schemas in late adolescents suffering from school burnout and depressive symptoms

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ABSTRACT

Background: The present study aims to distinguish school burnout from depressive symptoms in late adolescents between 17 and 21 years old by exploring their underlying early maladaptive schemas (EMS).
Methods: The cross-sectional sample (T1) consisted of 514 secondary and higher education students between 17 and 21 years old (M_{age} = 19.06 (1.10), 80.9% female). Five months later (T2), 190 adolescents participated in the follow-up measurement (M_{age} = 19.45 (1.18), 81.6% female).
Results: Positive correlations were found between all EMS and school burnout symptoms. When controlling for school burnout symptoms at T1, only the EMS `emotional deprivation', `mistrust', `defectiveness', `social isolation', `failure', `enmeshment', and `emotional inhibition' displayed significant positive associations with school burnout at T2. The EMS `mistrust', `defectiveness' and `failure' showed relations to both school burnout and depressive symptoms. Backwards linear regressions showed that the EMS `vulnerability to harm/illness' and `insufficient self-control' were uniquely related to school burnout symptoms when controlling for depressive symptoms, while the EMS `dependence', `emotional deprivation', `self-sacrifice' and `unrelenting standards' were uniquely related to depressive symptoms while controlling for school burnout symptoms.
Limitations: The gender-unbalanced sample, reduced longitudinal sample size, sole use of self-report measures, and high comorbidity between school burnout and depressive symptoms may have hampered the results.
Conclusions: EMS play an important role in the development of school burnout symptoms. The results point towards transdiagnostic cognitive-focused treatment techniques with attention to disorder-specific schemas to tackle school burnout symptoms. More (longitudinal) research is needed to corroborate these initial findings.

1. Introduction

The majority of prior research considered burnout as a work-related disorder that affects adults in the labor market context. However, growing evidence suggests that burnout also exists among secondary school pupils and higher education students, the so-called school burnout. Prevalence rates are estimated at 13.4% in a community sample but can go up to 53% in specific educational groups (Litjens and Ruijfrok, 2019). School burnout is related to detrimental outcomes, such as cannabis consumption, lower levels of academic achievement, and school dropout. In the long term, school burnout can predict depressive symptoms and occupational burnout later in life (Bask and Salmela-Aro, 2013; Fiorilli et al., 2017; Robins et al., 2018; Salmela-Aro et al., 2009; Walburg et al., 2015). Hitherto, early detection of school burnout in adolescents is under-researched, but the importance for putting it on the research agenda is indisputable.

1.1. (School) burnout and depressive symptoms

A prominent question in burnout research is whether and how burnout can be distinguished from depression, given they share some key symptoms such as exhaustion and a lack of interest (Ahola et al., 2014). To date, study findings in adults are mixed, with some studies showing depression and burnout as manifestations of a single syndrome (Bianchi, 2020) and others evidencing that they are distinct entities (Ahola et al., 2005). This ambiguity needs to be resolved as it has far-reaching implications and can delay the assessment and intervention process (Bakker et al., 2000; Salmela-Aro et al., 2009).

Two important gaps remain in the current literature. Primarily, almost all studies have focused on *adult populations*. One study in university students showed that the negative effects of school burnout remained after controlling for depressive symptoms, suggesting distinctions between the two syndromes (May et al., 2015). From a

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developmental psychological perspective, research on younger age groups is imperative as the course of the disorder is not yet well-articulated and comorbidity issues are rather low, which suggests school burnout in this age group is more straightforward to study. Second, research on the distinction between burnout and depression has focused on their *symptomatology*. Given their symptomatic overlap, the latter approach seems unsuited to distinguish both disorders and may explain the inconclusive adult findings. In order to meet these gaps, the current study aims to explore whether the presence of specific early maladaptive schemas can differentiate between school burnout and depressive symptoms in late adolescents.

1.2. Early maladaptive schemas (EMS)

EMS are beliefs that develop in early childhood and guide our perceptions of others, the world, and ourselves (Young et al., 2003). EMS are latent and inactive during stable times but significantly impact information processing when activated by specific stressors. Chronic EMS activation may burden an individual's resources and leads to psychopathological symptoms (Braet et al., 2013; Van Vlierberghe et al., 2010). Bottom-up research detected 15 EMS in adolescents, grouped into five domains: `Disconnection/rejection', `Impaired autonomy/performance', `Impaired limits', `Other-directedness', and `Overvigilance/inhibition' (Van Vlierberghe et al., 2010). A comprehensive description of the schema domains and their content is described by Van Vlierberghe and colleagues (Van Vlierberghe et al., 2010). Adopting the cognitive vulnerability-stress model to study school burnout and depressive symptoms could throw new light on potential distinct cognitive vulnerabilities.

1.2.1. EMS in school burnout and depressive symptoms

Although studies on the role of EMS in burnout, especially regarding school burnout, is under-researched, all conducted research points towards a significant underlying role of EMS. A cross-sectional study across several professions (i.e., medical doctors, nurses, clinical psychologists, IT staff and managers) found that all EMS – except the EMS `enmeshment' (i.e., excessive emotional involvement and closeness with significant others at the expense of full individualization or normal social development) – were related to higher levels of occupational stress and emotional exhaustion (Bamber and McMahon, 2008; Young et al., 2003). In addition, the EMS `self-sacrifice', `subjugation', and `unrelenting standards' are frequently reported by psychologists and trainees and have been linked to burnout (D'Souza, 2019; Kaeding et al., 2017; Simpson et al., 2019; Wyman, 2011). The EMS `self-sacrifice' and `subjugation' are displayed in a lack of assertiveness and compromise the balance between an individual's own needs and the needs of others, which results in an increased vulnerability for emotional exhaustion (Rupert et al., 2015). The EMS `unrelenting standards' can take the form of unrealistic expectations of oneself regarding work or academic performances (Simpson et al., 2019). Numerous studies have argued that perfectionism, which is a personality trait that is closely related to the EMS `unrelenting standards', is an important antecedent of burnout in both adults and adolescents (Hill and Curran, 2016). To date, all available research is cross-sectional and has been conducted in specific professions and educational tracks (e.g., psychologist trainees). To the best of our knowledge, no studies yet assessed the relation between EMS and school burnout in a community sample of late adolescents.

Regarding depressive symptoms, the relation with EMS is well evidenced. Earlier studies have linked EMS to an increased risk for adolescent depression (Van Vlierberghe et al., 2010). Schemas that are associated with depressive symptoms are often related to loss or rejection (e.g., EMS `emotional deprivation', `mistrust', `abandonment') and incompetence (e.g., EMS `defectiveness', `dependence') (Calvete et al., 2015; Van Vlierberghe et al., 2010). The EMS related to loss or rejection are displayed in the expectation that significant others cannot adequately meet their need for emotional support (Van Vlierberghe et al., 2010). Furthermore, due to the EMS related to incompetence, depressed individuals perceive themselves as inferior in relation to peers and unable to handle everyday responsibilities.

1.3. Present study

To conclude, previous attempts to distinguish school burnout from depressive symptoms yielded inconclusive results in adults and evidence in students is limited. One potential explanation is the lack of focus on the underlying mechanisms, which may shine a light on potentially distinct developmental trajectories. Specifically, we assume that distinct EMS characterize each of these problems. Therefore, the present study has two main objectives: 1) to investigate the EMS underlying school burnout symptoms in late adolescents between 17 and 21 years old, both cross-sectionally and longitudinally, and 2) to reveal specific distinctions between school burnout and depressive symptoms via different EMS. These findings can have important implications for screening and interventions.

The study focuses specifically on adolescents who are in the transition from secondary school to higher education as this is a stressful phase in which youngsters have to deal with a variety of new developmental tasks and demands simultaneously (e.g., adapting to a new environment, financial strains, meeting academic demands, social insecurities, and career uncertainties) (Owusu and Essel, 2017). Specific EMS related to these demands will be easily triggered in vulnerable adolescents. However, as their brain is still developing, adolescents are not yet fully equipped to adequately manage all the above-mentioned challenges (Cracco et al., 2017), which can lead to a peak in psychopathology.

The following research questions and hypotheses are put forward:

1) Research question 1: Is there a relation between EMS and school burnout symptoms (cross-sectional en longitudinal)

Hypothesis 1a. *Late adolescents with elevated school burnout symptoms experience more EMS compared to healthy adolescents (cross-sectional).*

Hypothesis 1b. *Late adolescents displaying EMS will report higher levels of school burnout symptoms 5 months later, while controlling for baseline school burnout symptoms (longitudinal)*

In the case EMS and school burn out are indeed related, we will explore which specific EMS are related to school burnout symptoms and depressive symptoms. Specifically, we expect differences for the EMS in the domains `Other-directedness' `Overvigilance/Inhibition' and `Impaired Autonomy/Performance'.

2) Research question 2: Do the EMS underlying school burnout symptoms differ from the EMS underlying depressive symptoms?
   a) Hypothesis 2a: EMS related to the domain `Other-directedness' and `Overvigilance/Inhibition' are specific precursors of school burnout symptoms in late adolescents.
   b) Hypothesis 2b: EMS related to the domain `Disconnection/Rejection' are specific precursors of depressive symptoms in late adolescents.

2. Method

2.1. Participants and procedure

The cross-sectional sample (T1) consisted of 514 secondary and higher education adolescents between 17 and 21 years old (M_{age} = 19.06, SD_{age} = 1.10, 80.9% female, 1.6% no gender declared or other). Out of the total sample, 190 students participated in the follow-up measurement five months later (T2, M_{age} = 19.45, SD_{age} = 1.18, 81.6% female, 1.6% no gender declared or other). An overview of the

participant characteristics for both samples can be found in Table 1. Comparison between the dropped out and included participants at T2 revealed no significant differences regarding school burnout symptoms (p = .450), gender (p = .604), age (p = .952), educational level (p = .914), educational year (p = .474), living situation (p = .914) or working status (p = .218).

Participants were recruited via social media channels and internal communication channels of secondary schools and higher education institutes (i.e., websites and platforms) during October-November 2022. They were contacted again five months later. Participants first read an information letter and then signed an active informed consent online. For participants who were 17 years of age, a parent or legal guardian signed an informed consent form as well. After receiving consent, participants filled in online self-report questionnaires. To thank the adolescents for participating, 50 gift vouchers were randomly distributed among the participants. The study is part of a greater project on the developmental pathways of school burnout and depressive symptoms in students. The data collection and analysis was approved by the ethics committee of the Faculty of Psychology and Educational Sciences (ID number 2021/209).

2.2. Measures

The present study used three self-report questionnaires. We deliberately opted to use validated self-report questionnaires instead of focusing on clinical diagnoses for depression and school burnout for two main reasons. A dimensional approach allows to include all adolescents who experience symptoms to a greater of lesser extent but who may suffer to a similar extent compared to clinical youngsters, especially those who score just below the threshold. Second, while there is a validated clinical interview for depression, no interview yet exists for school burnout.

School burnout symptoms were measured via the Flemish School Burnout Assessment Tool (FS-BAT), consisting of 33 items. All items were measured on a 5-point Likert scale, ranging from `never applicable' (1) to `always applicable' (5). The FS-BAT consists of school burnout core symptoms and secondary symptoms. The core symptoms consist of four subscales that form one total school burnout score: Exhaustion (8 items; e.g., `At the end of my school day, I feel mentally exhausted and drained'), Mental Distance (5 items; e.g., `I am cynical about what my schoolwork means to others'), Emotional Impairment (5 items; e.g., `At school, I may overreact unintentionally') and Cognitive Impairment (5 items; e.g., `At school, I have trouble staying focused'). The total score was computed by calculating the mean of the core symptoms. Higher scores indicate increased school burnout symptoms. The secondary symptoms were measured via 10 items, divided over two subscales: Psychosomatic Complaints (5 items; e.g., `I suffer from headaches') and Psychological Stress Complaints (5 items; e.g., `I have trouble falling or staying asleep'). The FS-BAT is validated in secondary and higher education students, showing good internal consistency and test-retest reliability (Van Royen et al. [manuscript in preparation]). In the current study, the scales showed good to excellent internal consistency, ranging between α = .79 to α = .95 (see Tables 2 and 3). The questionnaire is an adjusted version of the BAT to assess occupational burnout, which shows excellent psychometric qualities and is validated in several countries (Schaufeli et al., 2020).

Depressive symptoms were measured via the Dutch version of the Beck Depression Inventory-II (BDI-II-NL) (Beck et al., 1996; Van der Does, 2002). The questionnaire measures depressive symptoms in adolescents from 13 years and older. The questionnaire consists of 21 items that are scored on a 4-point Likert scale, ranging from zero to three. The items are divided into three subscales: 1) cognitive symptoms (e.g., `I can't concentrate on anything'), 2) somatic symptoms (e.g., `I am too tired or jaded to do most of the things I used to do'), 3) affective symptoms (e.g., `I feel guilty all the time'). The total score can vary from zero to 63, with higher scores indicating increased depressive symptoms. Research by Van der Does found evidence for good internal consistency and convergent validity of the BDI-II-NL (Van der Does, 2002). The present study solely used the total scale which showed excellent internal consistency for the cross-sectional (α = .91) and longitudinal sample (α = .93).

EMS were measured using the short form of the Young Schema Questionnaire (YSQ-SF) (Young et al., 2003). The YSQ-SF consist of 75 items and assesses EMS in adolescents from 12 years and older. Based on factor analysis, the questionnaire consists of 15 scales, representing the 15 underlying EMS, divided over five domains: `Disconnection/Rejection', `Impaired Autonomy/Performance', `Impaired Limits', `Other-directedness', and `Overvigilance/Inhibition'. Each scale is constructed from five items that are measured on a 7-point Likert scale, ranging from `not at all true' to `completely true'. The score for each EMS was computed by calculating the mean of each subscale and higher scores indicate more EMS. In the current study, the scales showed acceptable to excellent internal consistency, ranging between α = .73 to α = .95 (see Tables 2 and 3).

Table 1
Participant characteristics for both samples.

Demographics	Cross-sectional	Longitudinal
Educational level		
Secondary school	1.4%	–
College	3.1%	4.7%
University	95.1%	93.2%
Elsewhere	.4%	1.6%
Quit studies	–	.5%
Living situation		
Student room	51.8%	52.1%
Cohousing (e.g., partner, friends)	3.5%	4.2%
Parent(s)/legal guardian	44.0%	43.7%
Alone	.8%	–

Note: $N_{\text{cross-sectional}} = 514$, $N_{\text{longitudinal}} = 190$.

2.3. Data analysis

SPSS v. 29 was used to analyze the data. Primarily, preliminary analyses were conducted. Correlations between the study variables and descriptive statistics of both the cross-sectional and longitudinal sample were calculated (i.e., means, standard deviations, and Cronbach's Alpha's). An overview can be found in Table 2 (cross-sectional sample) and Table 3 (longitudinal sample). In the main analysis, to assess Hypotheses 1a and 1b, correlation analyses were used. Regarding Hypothesis 1a, correlations between the EMS and the core school burnout components at T1 were assessed. For Hypothesis 1b, partial correlations between EMS at T1 and the core school burnout components at T2 were calculated, while controlling for the total school burnout symptoms at T1.

To assess the distinctions in EMS between school burnout and depressive symptoms (Hypotheses 2a and 2b), separate backwards regression analyses were conducted in the cross-sectional sample for school burnout and depressive symptoms. At each step, variables were chosen based on p-values, and the p-value threshold of .05 was used to set a limit on the total number of variables included in the final model. Two separate regressions were run for school burnout and depressive symptoms. All 15 schemas were included as predictors. Given the high correlation and comorbidity between school burnout and depressive symptoms, we included school burnout symptoms as a confounding variable for depressive symptoms and vice versa.

3. Results

Regarding Hypothesis 1a, the results show positive correlations between all EMS and school burnout symptoms (see Table 2). In general, school burnout symptoms show the strongest correlation with the EMS `failure' (r = .51). The components exhaustion, mental distance, and

Table 2
Overview of the means, standard deviations, correlations, and Cronbach's Alpha's of the study variables (cross-sectional data).

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9
1. SBAT tot	2.73	.68	(.94)								
2. SBAT ex	3.14	.82	.91***	(.89)							
3. SBAT dis	2.54	.81	.79***	.63***	(.81)						
4. SBAT cog	2.89	.79	.84***	.68***	.61***	(.86)					
5. SBAT emo	2.09	.83	.75***	.59***	.41***	.53***	(.85)				
6. EMS_ED	2.35	1.06	.46***	.41***	.42***	.36***	.32***	(.87)			
7. EMS_A	3.24	1.34	.40***	.37***	.22***	.31***	.40***	.37***	(.89)		
8. EMS_M	2.58	1.11	.41***	.35***	.29***	.35***	.38***	.52***	.49***	(.88)	
9. EMS_SI	2.76	1.21	.45***	.41***	.33***	.36***	.40***	.58***	.36***	.49***	(.92)
10. EMS_Def	2.09	1.11	.46***	.41***	.36***	.34***	.41***	.56***	.44***	.52***	.64***
11. EMS_F	2.67	1.16	**.51*** **	.44***	.44***	.43***	.36***	.44***	.37***	.37***	.49***
12. EMS_Dep	2.13	.93	.42***	.33***	.33***	.34***	.36***	.32***	.43***	.33***	.50***
13. EMS_V	2.64	1.13	.46***	.43***	.27***	.31***	**.50*** **	.34***	.46***	.47***	.41***
14. EMS_Enm	2.14	.92	.25***	.21***	.18***	.20***	.25***	.17***	.40***	.34***	.35***
15. EMS_S	2.50	1.02	.44***	.38***	.35***	.36***	.36***	.46***	.49***	.49***	.59***
16. EMS_Self	3.45	1.11	.28***	.27***	.13**	.23***	.28***	.23***	.47***	.38***	.21***
17. EMS_EI	2.83	1.21	.33***	.29***	.32***	.28***	.21***	.45***	.23***	.40***	.54***
18. EMS_US	3.85	1.16	.31***	.31***	.10*	.22***	.36***	.23***	.32***	.33***	.34***
19. EMS_Ent	2.12	.73	.25***	.17***	.21***	.20***	.27***	.17***	.18***	.20***	.13***
20. EMS_IS	3.02	1.06	.49***	**.51*** **	**.51*** **	**.47*** **	.29***	.31***	.19***	.24***	.26***

Variable	10	11	12	13	14	15	16	17	18	19	20
1. SBAT tot											
2. SBAT ex											
3. SBAT dis											
4. SBAT cog											
5. SBAT emo											
6. EMS_ED											
7. EMS_A											
8. EMS_M											
9. EMS_SI											
10. EMS_Def	(.93)										
11. EMS_F	.55***	(.91)									
12. EMS_Dep	.49***	.52**	(.85)								
13. EMS_V	.43***	.36***	.42***	(.83)							
14. EMS_Enm	.32***	.36***	.44***	.32***	(.75)						
15. EMS_S	.60***	.49***	.55***	.39***	.49***	(.83)					
16. EMS_Self	.30***	.25***	.18***	.31***	.34***	.47***	(.87)				
17. EMS_EI	.46***	.37***	.34***	.30***	.29***	.44***	.17***	(.87)			
18. EMS_US	.32***	.22***	.23***	.38***	.22***	.29***	.31***	.31***	(.85)		
19. EMS_Ent	.12***	.08	.19***	.25***	.17***	.16***	.09*	.17***	.27***	(.73)	
20. EMS_IS	.25***	.42***	.34***	.23***	.18***	.33***	<−.01	.28***	.05	.30***	(.84)

Note: $N = 514$, $p^{***}<0.001$, $p^{**}<0.01$, $p^{*}<0.05$, EMS_ED = Emotional deprivation; EMS_A = Abandonment, EMS_M = Mistrust, EMS_SI = Social isolation, EMS_Def = Defectiveness, EMS_F = Failure, EMS_Dep = Dependence, EMS_V = Vulnerability to harm/illness, EMS_Enm = Enmeshment, EMS_S = Subjugation, EMS_Self = Self-sacrifice, EMS_EI = Emotional inhibition, EMS_US = Unrelenting standards, EMS_Ent = Entitlement, EMS_IS = Insufficient self-control.

cognitive impairment are most strongly correlated to the EMS `insufficient self-control' ($r = .51$, $r = .51$, $r = .47$ respectively). Finally, emotional impairment has the strongest correlation with the EMS `vulnerability to harm/illness' ($r = .50$).

When taking into account the longitudinal data (Hypothesis 1b, see Table 3) and while controlling for school burnout symptoms at T1, the EMS `social isolation' ($r = .22$) and `defectiveness' ($r = .22$) are most strongly related to school burnout symptoms at T2. The component exhaustion is most strongly related to the EMS `defectiveness' ($r = .26$). Cognitive impairment is most strongly correlated to the EMS `social isolation' ($r = .16$). Mental distancing is most strongly related to the EMS `failure' ($r = .20$) and emotional impairment shows the strongest relations with the EMS `social isolation' ($r = .18$) and the EMS `unrelenting standards' ($r = .18$).

With regard to Hypothesis 2, backwards linear regressions for school burnout symptoms show that the best fitting model contains five EMS (adj $R^2 = .603$, $F(6, 507) = 130.855$, $p = <.001$), while for depressive symptoms the model contains seven EMS (adj $R^2 = .671$, $F(8, 505) = 131.894$, $p = <.001$). The EMS `vulnerability to harm and illness' and `insufficient self-control' appear uniquely related to school burnout symptoms while controlling for depressive symptoms. The EMS `dependence', `emotional deprivation', `self-sacrifice', and `unrelenting standards' are uniquely related to depressive symptoms while controlling for school burnout symptoms. The EMS `mistrust', `defectiveness', and `failure' show relations to both school burnout and depressive symptoms. The relation with the EMS `defectiveness' was trend-significant negative for school burnout symptoms and positive for depressive symptoms. The relation with the EMS `mistrust' was positive for school burnout symptoms and negative for depressive symptoms. The EMS `failure' was positively associated to both school burnout and depressive symptoms. Tables 4 and 5 provide a detailed overview of the results for school burnout and depressive symptoms respectively.

4. Discussion

Still little is known about the specific underlying mechanisms of school burnout and its differentiation from depressive symptoms. Deriving from a vulnerability-stress perspective, the present study had a dual aim: 1) examine whether EMS underly school burnout symptoms, both cross-sectionally and longitudinally, and 2) explore potential distinctions in EMS between school burnout and depressive symptoms in late adolescents.

Higher levels of school burnout symptoms were related to the presence of more EMS. Especially the EMS `social isolation', `emotional deprivation', `failure', `vulnerability to harm/illness', `self-sacrifice', `unrelenting standards', and `insufficient self-control' show strong

Table 3
Overview of the means, standard deviations, partial correlations, and Cronbach's Alpha's of the study variables (longitudinal data).

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9
1. SBAT tot	2.64	.69	(.95)								
2. SBAT ex	3.05	.86	.87***	(.92)							
3. SBAT dis	2.55	.74	.62***	.37***	(.79)						
4. SBAT cog	2.79	.79	.73***	.51***	.36***	(.88)					
5. SBAT emo	1.95	.79	.65***	.45***	.18*	.32***	(.85)				
6. EMS_ED	2.28	1.10	.17*	.22**	.16*	.04	.03	(.90)			
7. EMS_A	3.28	1.36	.06	.09	−0.5	−.03	.12	.31***	(.89)		
8. EMS_M	2.50	1.03	.17*	.22**	.05	.05	.13	.50***	.43***	(.87)	
9. EMS_SI	2.80	1.24	**.22****	.18*	.11	**.16***	**.18***	.42***	.23**	.37***	(.92)
10. EMS_Def	2.11	1.18	**.22****	**.26*****	.17*	.04	.09	.47***	.28***	.44***	.56***
11. EMS_F	2.75	1.26	.18*	.16*	**.20****	.09	.08	.21**	.23**	.17*	.38***
12. EMS_Dep	2.19	1.00	.08	.09	.03	<.01	.10	.15*	.27***	.24***	.44***
13. EMS_V	2.68	1.17	.09	.15*	.02	−.06	.09	.20**	.31***	.37***	.27***
14. EMS_Enm	2.15	.89	.21*	.19**	.11	.14*	.16*	.14*	.37***	.33***	.29***
15. EMS_S	2.54	1.08	.13	.15*	.03	.12	.05	.36***	.38***	.47***	.53***
16. EMS_Self	3.43	1.12	−.02	<.01	−.15*	<−.01	.07	.13	.41***	.32***	<.01
17. EMS_EI	2.69	1.13	.16*	.21**	.08	.05	.09	.32***	.02	.23***	.40***
18. EMS_US	3.89	1.15	.04	.07	−.18*	.03	**.18***	.18*	.23**	.26***	.25***
19. EMS_Ent	2.08	.75	.12	.05	.09	.07	.17*	−.05	<.01	.02	−.05
20. EMS_IS	2.97	1.04	.07	.12	.10	.11	−.17*	.05	−.07	−.03	.07

Variable	10	11	12	13	14	15	16	17	18	19	20
1. SBAT tot											
2. SBAT ex											
3. SBAT dis											
4. SBAT cog											
5. SBAT emo											
6. EMS_ED											
7. EMS_A											
8. EMS_M											
9. EMS_SI											
10. EMS_Def	(.95)										
11. EMS_F	.47***	(.92)									
12. EMS_Dep	.41***	.55***	(.87)								
13. EMS_V	.32***	.18*	.30***	(.84)							
14. EMS_Enm	.21**	.32***	.44***	.21**	(.73)						
15. EMS_S	.47***	.32***	.45***	.21**	.39***	(.84)					
16. EMS_Self	.04	.08	.01	.23**	.15*	.37***	(.86)				
17. EMS_EI	.34***	.31***	.26***	.17*	.22**	.27***	−.03	(.85)			
18. EMS_US	.20**	.11	.17*	.26***	.17*	.19**	.24***	.32***	(.85)		
19. EMS_Ent	−.11	−.02	.19**	.20**	.11	−.01	−.03	.06	.15*	(.76)	
20. EMS_IS	.03	.29***	.21**	.01	.10	.19**	−.12	.20**	−.15*	.20**	(.83)

Note: $N = 190$, $p^{***} \leq .001$, $p^{**} \leq .01$, $p^{*} \leq .05$, partial correlations controlling for school burnout symptoms at T1. EMS_ED = Emotional deprivation, EMS_A = Abandonment; EMS_M = Mistrust, EMS_SI = Social isolation, EMS_Def = Defectiveness, EMS_F = Failure, EMS_Dep = Dependence, EMS_V = Vulnerability to harm/illness, EMS_Enm = Enmeshment, EMS_S = Subjugation, EMS_Self = Self-sacrifice, EMS_EI = Emotional inhibition, EMS_US = Unrelenting standards, EMS_Ent = Entitlement, EMS_IS = Insufficient self-control.

Table 4
Backwards linear regression results for school burnout symptoms.

Variables	B	SE	Beta	*t*	*p*
EMS_M	.050	.021	.081	2.352	.019
EMS_Def	−.045	.024	−.074	−1.855	.064
EMS_F	.045	.022	.077	2.092	.037
EMS_V	.062	.020	.103	3.063	.002
EMS_IS	.138	.020	.216	6.867	< .001
Depressive symptoms	.037	.003	.569	14.427	<. 001

Note: $N = 514$, EMS_M = Mistrust, EMS_Def = Defectiveness, EMS_F = Failure, EMS_V = Vulnerability to harm/illness, EMS_IS = Insufficient self-control.

Table 5
Backwards linear regression results for depressive symptoms.

Variables	B	SE	Beta	*t*	*p*
EMS_ED	1.047	.324	.107	3.231	.001
EMS_M	−.664	.308	−.071	−2.157	.031
EMS_Def	2.155	.339	.231	6.361	< .001
EMS_F	.679	.302	.076	2.246	.025
EMS_Dep	.796	.348	.072	2.287	.023
EMS_Self	.572	.263	.062	2.175	.030
EMS_US	1.366	.250	.154	5.457	< .001
School burnout symptoms	7.198	.491	.472	14.650	< .001

Note: $N = 514$, EMS_ED = Emotional deprivation, EMS_M = Mistrust, EMS_Def = Defectiveness, EMS_F = Failure, EMS_Dep = Dependence, EMS_Self = Self-sacrifice, EMS_US = Unrelenting standards.

associations with school burnout symptoms. Moreover, the specific EMS `social isolation' and `defectiveness' predict school burnout symptoms at five months follow-up, while controlling for initial symptoms. These findings are in line with the proposed hypotheses (Hypothesis 1a and 1b). In addition, the cross-sectional findings are in line with previous research on EMS in school burnout, indicating that EMS are more prevalent in adolescents and adults suffering from (school) burnout symptoms (Bamber and McMahon, 2008; Simpson et al., 2019; Wyman, 2011). Regarding the longitudinal findings, no studies yet exist and therefore, results cannot be compared.

Next, regarding specific distinctions between school burnout and depressive symptoms, the results disclosed both distinct and overlapping EMS. These findings indicate potential differences between school burnout and depressive symptoms. In addition, the trend-significant negative relation between the EMS `defectiveness' and school burnout symptoms and the negative relation between the EMS `mistrust' and depressive symptoms was unexpected. The negative associations

potentially represent suppressor effects due to the inclusion of the confounding variables. Suppressor variables can change the strength and direction of the relation between one or more predictor variables and the dependent variable. Post-hoc backwards linear regression analysis without the inclusion of the confounding variables indeed disclosed an inverse but non-significant association for the EMS `defectiveness' and school burnout symptoms ($B = .027$, $t = .864$, $p = .366$). The latter result suggests suppressor effects when the confounding variable is included in the regression. However, the relation between the EMS `mistrust' and depressive symptoms remained negative and significant ($B = -.759$, $t = -2.018$, $p = .044$), suggesting other suppressor variables than the proposed confounding variables. The latter hypothesis is further strengthened by the positive post-hoc Pearson correlation between the EMS `mistrust' and depressive symptoms ($r = .426$, $p < .001$). Given the high correlation between the EMS, especially those related to the same domain, collinearity checks were performed. The checks revealed all VIF-factors ranging between 1 and 3 for all EMS, so the negative correlation could not be due to multicollinearity. Although no multicollinearity was observed, elimination of the three most strongly related EMS of the same domain (i.e., `social isolation', `defectiveness', and `emotional deprivation') led to a positive relation between the EMS `mistrust' and depressive symptoms. Therefore, the post-hoc analyses do suggest an interference of suppressor variables due to the high correlation between all the EMS. Further research should take the effects of suppressor variables into account.

Although the present study revealed distinct EMS between school burnout and depressive symptoms, Hypothesis 2 cannot be confirmed as the specific EMS are not part of the proposed domains. Specifically, we hypothesized that the EMS related to the domain `Other-directedness' and `Overvigilance/Inhibition' are specific precursors of school burnout symptoms in adolescents, while the EMS related to the domain `Disconnection/Rejection' would be specific precursors of depressive symptoms. The findings of the present study indicate that the domains are not disorder-specific.

To conclude, both overlapping (i.e., the EMS `mistrust', `defectiveness', and `failure') and distinct EMS were discovered (i.e., `vulnerability to harm and illness', `insufficient self-control', `emotional deprivation', `self-sacrifice', `unrelenting standards', and `dependence'). Therefore, the findings point towards the idea that school burnout and depressive symptoms are separate but strongly related constructs, which provides evidence for a transdiagnostic schema-focused approach with attention for symptom-specific underlying EMS. In addition, exploring the specific EMS 'vulnerability to harm and illness', `insufficient self-control', `emotional deprivation', `self-sacrifice', `unrelenting standards', and `dependence', which showed uniquely relations with respectively school burnout or depressive symptoms, may be relevant for the assessment and treatment process as these EMS may influence the way the symptoms are expressed (i.e., as school burnout or as depression). However, the latter has to be corroborated in further (longitudinal) research.

The present study has several strengths. Primarily, it is the first, to the best of our knowledge, to explore potential underlying differences in EMS between school burnout and depressive symptoms. Therefore, the study contributes to the current literature and to the ongoing debate on whether or not burnout and depression are distinct entities. Second, the cross-sectional study sample is in line with ad hoc power analysis ($N = 500$ participants for $1\text{-}\beta = .08$ to detect small differences in correlations of .15 at $\alpha = .05$). Third, the present study focuses on an at-risk group for the development of psychopathology (Cracco et al., 2017; Owusu and Essel, 2017; Salmela-Aro and Upadyaya, 2014).

However, the strengths of the present study have to be seen in the light of some limitations. Given the reduced sample size for the longitudinal sample ($N = 190$), we were unable to explore longitudinal distinctions in EMS between school burnout and depressive symptoms. Second, the majority of the sample reported increased school burnout and depressive symptoms, which may have hampered the detection of differences. In addition, given the symptomatic overlap between school burnout and depressive symptoms, the measurement scales BDI-II-NL and FS-BAT contain overlapping items. The latter overlap may have hampered the study objective. This assumption was tested via post-hoc analyses. Principal component analysis showed six overlapping items. However, after excluding the overlapping items from the analysis, the conclusion of our results remained. These findings further indicate that school burnout and depressive symptoms are separate constructs. Third, the results of the present study cannot be generalized to the general student population. The majority (80.9%) of the sample is female. In addition, the present study did not include demographic characteristics which could influence school burnout symptoms, such as socio-economic status or the participants' specific educational program. Insight in these factors could highlight specific at-risk subgroups of adolescents. Fourth, the present study used a convenience sampling method, which may have impacted to representativeness of the sample. Given the topic on mental health and stress, it is possible that adolescents suffering from mental health complaints may have felt more motivated to participate. Future studies should focus on collecting a large, balanced and representative sample of adolescents who do not report comorbid symptoms. Fifth, the measures on school burnout and depressive symptoms use a different type of scales. The school burnout scales range from `never applicable' to 'always applicable', indicating temporal measurements. The measurements on depressive symptoms are based on severity. The scaling difference may have impacted the comparison between both symptoms. However, the burnout scores are considered valid predictors of symptom severity according to Schaufeli et al. (2023). Evidently, future studies could potentially re-assess the current research questions while focusing on categorical measurements (i.e., disorders) of school burnout and depression. Given the lack of clinical interviews to assess school burnout as a disorder, future studies should also invest in developing valid measures. Sixth, the present study solely relies on self-report measurements. Although we deliberately chose to focus on self-report measurements due to the dimensional perspective, self-report is subject to social desirability and recall bias, which could have distorted the results. In addition, self-report requires awareness of and insight in stress levels. Since the cognitive capacities of adolescents that age are still maturing, some adolescents might not be able to provide sufficient insight in their stress levels. Lastly, the information which can be collected using self-report is limited and only captures trait-like characteristics. Future studies should therefore incorporate a multi-method approach, including real-life measurements (e.g., EMA), qualitative research techniques, and objective measures (e.g., physiology measures such as heart rate) on school burnout and its determinants to gain an in-depth insight.

Since school burnout is a multi-component disorder, objective stress measurements on physical stress are also important to assess, besides psychological stress. A particular example of a physical stressor that is associated with symptoms of depression, anxiety, and burnout is tension-type-headache (Lee et al., 2023). This type of headache is even considered as an official secondary symptom of (school) burnout (Schaufeli et al., 2020). Future research could thus include the presence of physical illness/complaints as a demographic variable. In addition, physiological research measures may increase insight in the physical components of school burnout.

To summarize, given that the present study is the first of its kind, the results cannot provide conclusive evidence. More (longitudinal) research is needed to corroborate these initial findings. Based on the current findings, EMS seem to play an important role in the development of school burnout symptoms in late adolescents. As both distinct and overlapping EMS were found between school burnout and depressive symptoms, the results point towards transdiagnostic cognitive-focused treatment techniques with attention to symptom-specific components to tackle school burnout symptoms.

5. Conclusion

One of the most prominent questions in (school) burnout research today is its distinction with depressive symptoms. As some researchers point towards substantial differences, others have argued that burnout can be considered a depressive disorder. The lack of conclusive evidence is potentially due to the focus on the symptomatology as the symptomatic overlap between (school) burnout and depressive symptoms hampers clear distinctions. Insight in the underlying mechanisms might provide a fresh perspective. Therefore, the present study assessed the developmental pathways, more specifically the underlying EMS, of school burnout and depressive symptoms both cross-sectionally and longitudinally in late adolescents between 17 and 21 years old.

The results indicate positive relations between all EMS and school burnout symptoms. When controlling for school burnout symptoms at T1, only the EMS `emotional deprivation', `mistrust', `defectiveness', `social isolation', `failure', `enmeshment', and `emotional inhibition' displayed significant positive associations with school burnout five months later. Regarding research question 2, the EMS `mistrust', `defectiveness', and `failure' showed relations to both school burnout and depressive symptoms. The EMS `vulnerability to harm and illness' and `insufficient self-control' appeared uniquely related to school burnout symptoms, while controlling for depressive symptoms. The EMS `emotional deprivation', `dependence', `unrelenting standards', and `self-sacrifice were uniquely related to depressive symptoms, while controlling for school burnout symptoms.

Since the findings point towards an important role of EMS in the development of school burnout symptoms, cognitive-focused treatment techniques might be valuable to tackle school burnout symptoms. More (longitudinal) research is needed to corroborate these initial findings. When corroborated, the findings can have important implications for the assessment and treatment of school burnout.

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Author statement contributors

All authors contributed to the study design. AVR was responsible for the data collection and statistical analysis, under the supervision of LW and CB. AVR wrote the first draft of the manuscript and all authors have edited subsequent drafts and have approved the final version.

CRediT authorship contribution statement

Annelies Van Royen: Writing – original draft, Software, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Laura Wante:** Writing – review & editing, Supervision, Conceptualization. **Caroline Braet:** Writing – review & editing, Supervision, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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