



School Pressure and Depressive Thoughts in Early and Middle Adolescence and the
Moderating Effect of Personality Traits and Sex

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Abstract

School pressure is a serious and increasing problem among young adolescents. So far it is unclear what the consequences are for the adolescent development and in particular for the development of depressive thoughts. The current study examined whether school pressure (T1) was a predictor for depressive thoughts (T3) among early and middle adolescents. In addition, it was studied whether this relation was moderated by sex and the personality traits neuroticism and extraversion. Longitudinal data from the TRacking Adolescents' Individual Lives Survey (TRAILS) at wave 1 and wave 3 was used ($N = 2229$, 49,3% boys, $M_{ageT1} = 11.11$, $SD = .56$). The hierarchical multiple linear regression analyses revealed that school pressure predicts depressive thoughts later in life. Furthermore, the results indicated that neuroticism was a significant moderator. This indicates that having a more neurotic personality style increases the risk for developing depressive thoughts when experiencing school pressure. Further research should focus on other personality traits that might function as a risk or protective factor in the relationship between school pressure and depressive thoughts. Furthermore, personality targeted interventions for adolescents should support the development of coping skills to deal with school pressure.

Key words: school pressure, school related stress, depressive thoughts, adolescence, positive and negative emotionality, neuroticism, extraversion

Samenvatting

Schooldruk is een serieus en groeiend probleem onder jonge adolescenten. Tot nu toe is het onduidelijk wat de gevolgen zijn voor de ontwikkeling van adolescenten en in het bijzonder voor de ontwikkeling van depressieve gedachten. De huidige studie heeft onderzocht of schooldruk (T1) een voorspeller was voor depressieve gedachten (T3) in vroege en midden adolescentie. Daarnaast werd onderzocht of deze relatie werd gemodereerd door sekse en de persoonlijkheidskenmerken neuroticisme en extraversie. Longitudinale data van de TRacking Adolescents' Individual Lives Survey (TRAILS) op wave 1 en wave 3 werd gebruikt ($N = 2229$, 49,3% jongens, $M_{leeftijdT1} = 11.11$, $SD = .56$). De hiërarchische multi-pele regressie analyse liet zien dat schooldruk depressieve gedachten op latere leeftijd voorspelt. Bovendien lieten de resultaten zien dat neuroticisme een significante moderator was. Dit duidt erop dat het hebben van een meer neurotische persoonlijkheidsstijl het risico op het ontwikkelen van depressieve gedachten vergroot wanneer schooldruk wordt ervaren. Toekomstig onderzoek moet zich gaan bezighouden met andere persoonlijkheidskenmerken die eventueel

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functioneren als een risico of beschermende factor in de relatie tussen schooldruk en depressieve gedachten. Bovendien moeten op persoonlijkheid gerichte interventies voor adolescenten ondersteuning bieden in het ontwikkelen van copingvaardigheden om te leren omgaan met schooldruk.

Trefwoorden: schooldruk, school gerelateerde stress, depressieve gedachten, adolescentie, positieve en negatieve emotionaliteit, neuroticisme, extraversie

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Introduction

Adolescence is the transitional period from childhood to adulthood, in which young people discover and learn how to deal with new social challenges. Adolescents go through many physical, cognitive and emotional changes. Consequently, adolescence is also a time where negative health problems can emerge (Crone & Dahl, 2012). According to the most recent Health Behaviour in School-aged Children (HBSC) study there has been a decrease over the years in well-being both for boys and girls in secondary education between 2009 and 2017, while emotional problems seem to increase with age among adolescents. In addition, findings from the HBSC study show that 12% among 12- to 16-year-old adolescents feel unhappy more than once a week (Stevens et al., 2017). Depressive feelings during childhood and adolescence are a great public health concern as it can result in persistent feelings of depression and numerous negative outcomes in the long term, including substance abuse, high-risk sexual behaviour, physical health problems and impaired social relationships (Horowitz & Garber, 2006). It is essential to look at the development of depressive thoughts already at an early age, as 75% of all mental disorders in adulthood find their origin in adolescence or early adulthood (Sawyer et al., 2012). The early onset of depression increases the risk of depressive episodes later in adulthood with recurrence rates ranging from 45% to 72% (Horowitz & Garber, 2006).

A possible explanation for the development of depressive thoughts in adolescence is experiencing school pressure. When adolescents get older and move through the educational system, they will encounter higher academic expectations and demands (Klinger et al., 2015). This increase in expectations can result in feelings of pressure to succeed in school. School related pressure is likely to be one of the most significant stressors in a student's life (Hystad, Eid, Laberg, Johnsen & Bartone, 2009). Moreover, according to research by Murberg and Bru (2004) worries about school achievement and schoolwork pressure all contribute to school related stress. The excessive pressure and stress experienced by adolescents can have a negative influence on their mental health (Klinger et al., 2015).

According to the HBSC study of 2017 the percentage of students that experience quite a lot of school pressure has almost doubled compared to 2001, both for boys and girls. The percentage of the total group that experienced a lot of school pressure has increased up to more than 35% (Stevens et al., 2017). A study by Klinger and colleagues (2015) shows similar findings. According to Klinger et al. (2015) adolescents feel an increased pressure at school as they become older.

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School pressure is a phenomenon that has increased drastically over the last few years and can be seen as a possible explanation for the development of depressive thoughts among adolescents (Stevens et al., 2017). Therefore, this study will examine the relation between school pressure and depressive thoughts. Since personality differences as well as sex differences might moderate the relationship between school pressure and depressive thoughts, they will be taken into account as well.

School pressure

The pressure to succeed in school and schoolwork pressure collectively contribute to school related stress. This school related stress or so called school pressure is one of the most significant stressors in an adolescents' life (Hystad et al., 2009). School pressure can in turn lead to the development of depressive thoughts. MacGeorge, Samter and Gilihan (2005) results' showed that there is a significant positive association between academic stress and symptoms of depression. Eremsoy, Çelimli and Gençoz (2005) give an explanation for this association. They state that when someone is confronted with stressful life experiences, maladaptive cognitions are activated which can make someone susceptible for developing depression. Maladaptive cognitions are thinking patterns which are false or otherwise rationally unsupported. The authors state that those negative automatic thoughts eventually reinforce further depressive underlying assumptions and beliefs, which would ultimately lead to the development of depressive thoughts.

According to research by Jayanthi, Thirunavukarasu and Rajkumar (2015) school related matters are the most important sources of stress among young people and school stress might predict mental health problems such as depression. Therefore, there is an increasing concern regarding school pressure and its relationship with mental health problems among school children. Jayanthi et al. (2015) found that academic stress was significantly positively associated with depressive thoughts. Expectations of parents and teachers were the main reason for the development of academic stress among adolescents. These results are consisted with another study done by Chen, Rubin and Lee (1995), who also focused on the relationship between academic stress and depression.

Chen and colleagues (1995) showed that school related stress and low academic achievements predict depressive mood. Moreover, the authors found that poor academic achievements for students at age 8 was associated with depression at age 10. This suggests that it is likely that performance at school can increase the development of depressive thoughts. It was suggested that children who experience academic difficulties in school often

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receive negative feedback regarding their academic performances and consequently are more likely to develop depressive thoughts (Chen et al., 1995). Based on these results, it is expected that school pressure predicts an increase in depressive thoughts in young adolescents.

Personality dimensions

Individual differences such as motivation, coping style and personality dispositions all contribute to how an individual responds to stressful situations. Therefore, it is possible that individual differences, such as personality traits, moderate the association between school pressure and depressive thoughts (Hystad et al., 2009).

Following from a review study conducted by Klein, Kotov and Bufferd (2011) a distinction can be made between positive and negative emotionality. Both positive and negative emotionality have been associated with coping with stress and the development of depressive feelings. For instance, individuals who score high on negative emotionality tend to respond in a negative manner towards stress. In line with this reasoning, Clark, Watson and Mineka (1994) found that neuroticism, a tendency to cope poorly with stress and to experience feelings of sadness, anxiety and anger, could be seen as a risk factor for the development of depressive thoughts.

In comparison to negative emotionality, individuals who experience positive emotionality tend to feel joyful, enthusiastic, energetic, friendly, bold, assertive, proud and confident (Clark et al., 1994). A personality trait that reflects positive emotionality is extraversion. Extraversion is the tendency to approach the environment and other people with vigor and enthusiasm. Contrary to neuroticism, extraversion is actually negatively associated with depressive thoughts (Klein et al., 2011). Therefore, extraversion could be seen as a protective factor in the development of depressive thoughts.

Adolescents deal with school pressure differently according to their personality style. Individuals who score high on positive emotionality cope differently with school pressure than individuals who score high on negative emotionality (Klinger et al., 2015). Based on the findings from previous studies, it is expected that individuals high in neuroticism will be less able to cope with stressful situations and as a result will be more likely to develop depressive thoughts when experiencing school pressure. The reverse is expected for individuals high in extraversion. Individuals high in extraversion will be able to cope with stressful situations, like school pressure, and as a result will be less likely to develop depressive thoughts.

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Sex differences

The study by Dixon and Kurpius (2008) showed that men and women differ in their perception of perceived school stress and in the level of depressive feelings. Their results showed that females reported significantly more school related stress and depressive feelings than did men. In addition, Jayanthi et al. (2015) found that adolescent girls experienced higher academic stress than boys. Research by Klinger et al. (2015) found that the level of school pressure increases more so for girls than for boys. The authors argued that these differences in experiencing school pressure could be explained by different expectations adolescents receive concerning their gender.

Besides the sex differences in school pressure and level of depression, sex differences can also be found in the level of positive and negative emotionality. Overall, girls are more likely to exhibit negative emotionality, while boys are more likely to exhibit positive emotionality (Wetter & Hankin, 2009).

Current study

The main research question of this study is: Is there an association between school pressure and depressive thoughts in adolescence and is there a moderating effect of personality traits and sex? Based on this research question the following hypotheses are constructed: 1) Experiencing school pressure predicts an increase in depressive thoughts; 2) The association between school pressure and depressive thoughts is stronger for girls; 3) The association between school pressure and depressive thoughts is stronger for adolescents with a neurotic personality style; 4) The association between school pressure and depressive thoughts is weaker for adolescents with an extrovert personality style (See figure 1).

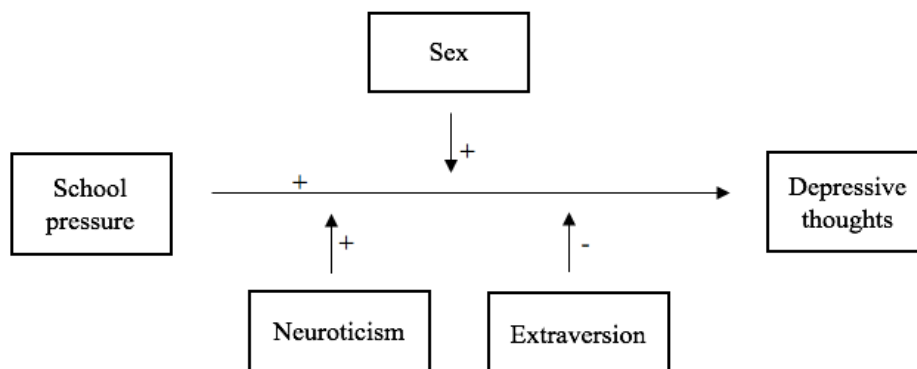


Figure 1. Research model

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Methods

Procedure and sample

The current study used data from the TRacking Adolescents' Individual Lives (TRAILS). TRAILS is a population-based prospective cohort study. The TRAILS study addresses determinants of adolescents' mental health and their social development from early adolescence into adulthood. The focus is both on personality, health, substance use and biological characteristics as well as on the environment of the adolescent (Huisman et al., 2008). Initially, the total sample ($N = 2230$) existed of adolescents aged 10 to 12-years-old living in five municipalities both in rural and urban areas in the North of the Netherlands. The first data collection wave was performed in 2001-2002 and the third collection wave was performed in 2005-2007. Participants are being followed till they are at least 24 years old. The Central Dutch Medical Ethics Committee has approved the TRAILS study. Informed consent was obtained from all participants at each assessment wave (Ormel et al., 2012).

For this study data from the first and third wave was used. During the first wave 2229 participants were included ($M_{ageT1} = 11.11$, $SD = .56$), 1098 boys (49.3%) and 1131 girls (50.7%). In the third measurement wave 1818 participants were included in the study ($M_{ageT3} = 16.28$, $SD = .71$), 867 boys (47.7%) and 951 girls (52.3%).

An attrition analysis on all study variables was conducted to see whether participants who dropped out at T3 differed significantly from the participants who did not. An independent samples t test was used to compare the girls that dropped out at T3 ($N = 1131$) to the boys that dropped out at T3 ($N = 1098$). The t test was statistically significant, with girls ($M = .16$, $SD = .37$) being less likely to drop out compared to boys ($M = .21$, $SD = .41$), $t(2186) = -3.12$, $p < .001$. A second attrition analysis was conducted to see whether participants who dropped out at T3 scored significantly higher on depressive thoughts at T1. However, no significant differences were found for depressive thoughts at T1 between the responders ($M = .28$, $SD = .45$) and non-responders ($M = .21$, $SD = .41$), $t(45) = .99$, $p < .327$. However, depressive thoughts did decrease for boys between T1 ($M = .30$, $SD = .26$) and T3 ($M = .19$, $SD = .21$).

Measures

Depressive thoughts. Depressive thoughts among adolescents were assessed by the Youth Self-Report (Achenbach & Rescorla, 2001). The questionnaire consisted of 13 items, with the subjects ranging from 'I cry a lot' to 'I feel worthless and inferior'. The participants indicated how often they experienced those specific feelings, using a 3-point Likert scale varying from

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1 = not at all, 2 = a little or sometimes, 3 = obvious or often. This questionnaire had a Cronbach's α of .78 at T1 and a Cronbach's α of .84 at T3.

School pressure. The Revised Child Anxiety and Depression Scale was used to assess school pressure. In the RCADS school pressure is assessed as social phobia (Chorpita et al., 2000). Five items that reflect school related stress were selected to assess school pressure. A factor analysis was performed to examine whether all five items contributed equally well to the new scale. One factor was identified as underlying the five questionnaire items. Therefore, it was sufficient to continue with the five-item structure questionnaire. The subjects in this questionnaire range from questions about feeling nervous about making a test or exam to being worried about screwing up school work. The participant indicated how often they experienced those specific statements. Using a 4-point Likert scale varying from 1 = never, 2 = sometimes, 3 = often and 4 = always. This questionnaire with only the 5 items included had a Cronbach's α of .63.

Neuroticism. The NEO-Personality Inventory-Revised was used to assess neuroticism (Costa & McCrae, 1992). Neuroticism has been found to be a good alternative measure for negative emotionality (Klein et al., 2011). The questionnaire consisted of 8 items, including items such as 'I am emotionally fairly stable' to 'I often feel helpless and want someone else to solve my problems'. In this case the participants indicated the extent to which the statements corresponded to themselves. Using a 5-point Likert scale varying from 1 = totally disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = totally agree. This questionnaire had a Cronbach's α of .77.

Extraversion. The Neo Personality Inventory-Revised was also used to assess extraversion (Costa & McCrae, 1992). Extraversion has been found to be a good alternative measure for positive emotionality (Klein et al., 2011). The questionnaire consisted of 8 items. The items in this questionnaire included 'I often desire excitement' to 'I like to be in places where there is something to do'. The participants indicated the extent to which the statements corresponded to themselves. Using a 5-point Likert scale varying from 1 = totally disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = totally agree. The questionnaire had a Cronbach's α of .58.

Data analysis

For the statistical analyses in the current study the program SPSS Statistics 23 was used. First, the descriptive statistics were assessed for all the study variables. Moreover, the Pearson

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correlation was used to get a better understanding of the relation between school pressure, depressive thoughts, the personality traits neuroticism and extraversion and sex.

Subsequently, a hierarchical multiple linear regression analysis was performed to assess the association between school pressure at T1 and depressive thoughts at T3, controlled for depressive thoughts at T1 and the control variable age. At last, it was examined whether the personality traits neuroticism (T3) and extraversion (T3) and the variable sex occurred as possible moderators in the association between school pressure (T1) and depressive thoughts (T3). To test this hypothesis, three separate multiple linear regression analyses were performed including the three created interaction terms for each moderator. Before interpreting the results of the multiple linear regression analysis, a number of assumptions were tested. First, stem-and-leaf plots and boxplots indicated that almost each variable in the regression was normally distributed, except for depressive thoughts at T1 and T3. Second, an inspection of the normal probability plot and the scatterplot indicated that the assumptions of normality, linearity and homoscedasticity of residuals were met. Third, Mahalanobis distance did exceed the critical χ^2 for $df = 9$ (at $\alpha = .001$) of 27.88 for some cases in the data file. However, the corresponding Cook's values were much lower than 1, which entails that these items have little influence on the results of the multiple linear regression analysis. Therefore, these outliers were ignored indicating that the multivariate outliers were not of a concern. Finally, relatively high tolerance for all the predictors in the final regression model indicated that there was no sign of multicollinearity. An alpha level of .05 was used for all the statistical tests.

Results

Descriptive statistics

Table 1 presents the descriptive statistics including means, standard deviations and percentages of the main study variables at both waves. A paired samples t test was used to compare depressive thoughts at T1 ($M = .33$, $SD = .27$) and depressive thoughts at T3 ($M = .29$, $SD = .29$). On average, participants scored significantly lower on depressive thoughts at T3 compared to T1, $t(1647) = 4.82$, $p < .001$.

Table 1

Descriptive statistics of the main study variables (N = 2229)

M (SD)

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	Wave 1	Wave 3
Age	11.11 (.56)	16.28 (.71)
School pressure	.85 (.47)	
Neuroticism		19.36 (4.14)
Extraversion		27.80 (4.19)
Depressive thoughts	.33 (.27)	.29 (.29)

Pearson correlations

To assess the size and direction of the linear relationship between the main study variables, bivariate Pearson's correlation coefficients were calculated. Table 2 shows that there was a positive bivariate correlation between school pressure at T1 and depressive thoughts at T3, $r = .29, p < .01$. Furthermore, Table 2 shows that neuroticism is positively correlated with both school pressure and depressive thoughts at T1 and T3. In addition, it is shown that extraversion is negatively correlated with neuroticism, $r = -.19, p < .01$. Lastly, sex is negatively correlated to all the main variables except extraversion. Boys scored higher on extraversion compared to girls.

Table 2

Pearson correlations among main study variables (N = 2229)

	1	2	3	4	5	6
1 School pressure T1						
2 Depressive thoughts T1	.48**					
3 Depressive thoughts T3	.29**	.37**				
4 Neuroticism T3	.23**	.26**	.55**			
5 Extraversion T3	-.02	-.06*	-.15**	-.19**		
6 Sex	-.11**	-.11**	-.32**	-.22**	.18**	

Note. * $p < .05$, ** $p < .01$

Hierarchical multiple regression analysis

To test the main hypothesis, that school pressure at T1 predicts depressive thoughts at T3, a hierarchical multiple regression analysis (MRA) was employed. First, depressive thoughts and age were added as confounding and control variables at T1. Second, the variables school pressure, neuroticism, extraversion and sex were included as main effects. Third, the

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interaction terms of neuroticism, extraversion and sex were added as moderators in the relationship between school pressure and depressive thoughts. To test these interactions, centered variables were used. The results of these analyses are presented in Table 3.

In step 1 of the hierarchical MRA age and depressive thoughts at T1 accounted for a significant 14% of the variance in depressive thoughts at T3, $R^2 = .14$, $F(2,1641) = 133.09$, $p < .001$. As can be seen in Table 3 depressive thoughts at T1 was a significant predictor for depressive thoughts at T3 ($B = .403$, $SE = .025$, $p < .001$).

In step 2 school pressure, neuroticism, extraversion and sex were added to the regression equation and accounted for an additional 26,2% of the variance in depressive thoughts at T3, $\Delta R^2 = .26$, $\Delta F(4,1637) = 179.18$, $p < .001$. A significant effect was found for school pressure ($B = .045$, $SE = .014$, $p < .001$), indicating that experiencing school pressure at T1 predicted an increase in depressive thoughts at T3. In addition, neuroticism ($B = .031$, $SE = .001$, $p < .001$) and sex ($B = -.106$, $SE = .012$, $p < .001$) predicted an increase in depressive thoughts at T3, indicating that boys scored significantly lower on depressive thoughts. Extraversion ($B = -.001$, $SE = 001$, $p = .284$) was not a significant predictor of depressive thoughts.

In step 3 neuroticism, extraversion and sex were added as moderators. Extraversion and sex were not significant moderators in the relationship between school pressure and depressive thoughts ($B = .002$, $SD = 003$, $p = .482$; $B = .013$, $SD = 0.25$, $p = .598$). However, neuroticism on its own accounted for an additional 1,2% with $\Delta R^2 = .012$, $\Delta F(1,1636) = 33.95$, $p < .001$. Thus having a more neurotic personality increases the risk for developing depressive thoughts at T3 when experiencing school pressure at T1 ($B = .015$, $SD = 003$, $p < .001$).

Table 3

Hierarchical multiple regression analysis predicting depressive thoughts at T3 (N = 2229)

Variable	B	SE (B)	β	Sig. (p)
Step 1				
Age	.019	.012	.036	.119
Depressive thoughts T1	.403	.025	.374	.000
Step 2				
School pressure	.044	.014	.070	.002
Neuroticism	.031	.001	.444	.000

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Extraversion	-.001	.001	-.021	.294
Sex	-.106	.012	-.182	.000
Step 3				
SP x neuroticism	.015	.003	.112	.000
SP x extraversion	-.001	.003	-.010	.612
SP x sex	-.021	.025	-.022	.396

Note. SP school pressure. The interaction terms were calculated separately; univariate interaction analyses.

Discussion

The aim of the current study was to gain insight in the relationship between school pressure and depressive thoughts and the interacting effect of sex and personality traits within this relationship in early and middle adolescence. The results confirm the main hypothesis, namely that school pressure predicts depressive thoughts later in life. In addition, neuroticism and sex seemed to predict depressive thoughts as well. Finally, neuroticism was a significant moderator in the relationship between school pressure and depressive thoughts. This finding suggests that having a more neurotic personality style increases the risk for developing depressive thoughts when experiencing school pressure. No effects were found for the moderators extraversion and sex.

Discussion of results

The finding that school pressure predicts an increase in depressive thoughts later in life is consistent with previous literature. Jayanthi et al. (2015) and Chen et al. (1995) found that academic stress was significantly positively associated with depressive thoughts. Eremsoy and colleagues (2005) reasoned that this could be a result of stressful life situations leading to the development of maladaptive cognitions and ultimately to the development of depressive thoughts. School pressure contributes to school related stress, which leads to maladaptive cognitions among adolescents and in turn leads to the development of depressive thoughts later on. Furthermore, as Jayanthi et al. (2015) indicated, the expectations of parents and teachers are a reason for adolescents to develop school related stress. Contrary to previous cross-sectional studies, the added value of the current study is that the results show that there is a relationship between experiencing school pressure at the age of around 11 and developing depressive thoughts around five years later.

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Moreover, the results indicated that neuroticism is a significant moderator in the relationship between school pressure and depressive thoughts. This finding is also consistent with previous literature. Coping poorly with stress is indicative for adolescents who score high on neuroticism (Clark et al., 1994; Klein et al., 2011). Therefore, showing poor coping strategies toward school pressure could increase the risk for developing depressive thoughts. As indicated by the results, having a more neurotic personality style increases the risk for developing depressive thoughts when experiencing school pressure. Neuroticism could therefore be seen as a risk factor and should be targeted in future intervention programs. Interventions should especially target those adolescents who have a more neurotic personality style and support them in adapting appropriate coping skills to deal with school pressure (Castellanos & Conrod, 2006).

The results from the current study did not confirm the hypothesis that extraversion could be seen as a moderator in the relationship between school pressure and depressive thoughts. Previous findings suggest that the association between positive emotionality and depressive feelings is inconsistent (Klein, Kotov & Bufferd, 2011). This could be due to numerous factors. Perhaps positive emotionality, such as extraversion, does not have a protective effect on the relationship between school pressure and depressive thoughts. Kotov, Gamez, Schmidt and Watson (2010) conducted a meta-analysis, which revealed that the association between positive emotionality and depressive symptoms is inconsistent. According to this research the concept of positive emotionality can be divided into different components. There are two components to positive emotionality: the positive element and the energy/sociability element. The positive element is strongly related to having healthier coping skills and having less stress hormones (Eid, Riemann, Angleitner & Borkenau, 2003; Gamez et al., 2010). It is possible that only the positive affectivity element but not the sociability/extraversion element of positive emotionality is related to depression. Therefore, it could be that there was no significant interacting effect for extraversion, as extraversion assesses a different element of positive emotionality in comparison to the positive element, which is significantly related to depressive feelings and coping with stress. If the positive affect element of positive emotionality has a stronger link to depressive thoughts is something that should be further examined in future research. Another explanation for why extraversion did not operate as a buffer for developing depressive thoughts as a result of school pressure, could be due to the sample. The scores on depressive thoughts were relatively low in the current sample. Perhaps if a clinical sample was selected with higher scores on depressive thoughts, results could have been different.

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The current study did not find sex differences in the relationship between school pressure and depressive thoughts. However, the current findings did show that boys showed a greater decrease in depressive thoughts over time compared to girls. Findings from the attrition analysis indicated that boys dropped out significantly more often than girls. Though, no significant difference was found in depressive thoughts between responders ($M = .28$, $SD = .45$) and non-responders ($M = .21$, $SD = .41$), $t(45) = .99$, $p < .327$.

Limitations and strengths

The results of this study should be interpreted in relation to some limitations. First, the Cronbach's alpha of the excitement seeking scale was not very high with an alpha of .58. This entails that the reliability of the scale was quite low, which eventually makes it difficult to analyse the results. Low internal consistency between items can prevent significant results from being found. Second, the scores for girls and boys on depressive thoughts on both waves were relatively low. Therefore, the distribution of depressive thoughts was positively skewed which could be the reason that not all hypothesized effects were significant. When a clinical sample would have been used including participants with depressive symptoms, results could have been different. This is something that should be taken into account when interpreting the results. Besides its limitations, this study also has its strengths. First, the results of the current study are based on longitudinal data. Using longitudinal data enables to interpret the direction of the effect between variables. Second, the study used data from a big sample, which increases the external validity and increases generalizability. Lastly, this study focused on a period during adolescence, namely early adolescence, which has been understudied as recent research has focused mainly on late adolescence (Dixon & Kurpius, 2008; Jayanthi et al., 2015; MacGeorge et al., 2015).

Conclusion and implications

The current study highlights the importance of the role of personality traits in relation to the association between school pressure and depressive thoughts. These findings have implications for future interventions. Personality targeted interventions could be used to specifically target those people who experience school pressure and who have a neurotic personality style (Castellanos & Conrod, 2006). As the current results have shown neuroticism could be seen as a risk factor, because particularly adolescents with a neurotic personality style are at risk for developing depressive thoughts when experiencing school pressure. Interventions should therefore be aimed toward this specific target population.

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Furthermore, parents and teachers should be aware of the pressure they put on adolescents and they should adjust their expectations to reduce school pressure among students (Jayanthi et al., 2015). School pressure is a phenomenon that has increased tremendously over the last few years (Stevens et al., 2017). This emphasizes the importance for future research to continue studying protective and risk factors for the development of depressive thoughts as a result of experiencing school pressure. Future research could focus on personality traits that might function as a potential buffer, but more importantly they could focus on personality traits that function as potential risk factors.

Overall, this study shows that experiencing school pressure predicts the development of depressive thoughts and that certain personality traits play a vital role in coping with stress. It is essential that future interventions targeting depressive thoughts in adolescence promote the development of effective coping skills to deal with school pressure.

Reference list

- Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for the ASEBA school-age forms and profiles: an integrated system of multi-informant assessment*. Burlington, VT: Research Centre for Children, Youth, and Families.
- Castellanos, N., & Conrod, P. (2006). Brief interventions targeting personality risk factors for adolescent substance misuse reduce depression, panic and risk-taking behaviours. *Journal of Mental Health, 15*(6), 645-658.
- Chen, X., Rubin, K. H., & Li, B. S. (1995). Depressed mood in Chinese children: relations with school performance and family environment. *Journal of Consulting and Clinical Psychology, 63*(6), 938-947.
- Chorpita, B. F., Yim, L., Moffitt, C., Umemoto, L. A., & Fancis, S. E. (2000). Assessment of symptoms of DSM-IV anxiety and depression in children: a revised child anxiety and depression scale. *Behavioural Research and Therapy, 28*(8), 835-855.
- Clark, L. A., Watson, D., & Mineka, S. (1994). Temperament, personality, and the mood and anxiety disorders. *Journal of Abnormal Psychology, 103*(1), 103-116.
- Costa, P. T., & McCrae, R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five Factor Model (NEO-FFI): professional manual*. Odessa, FL: Psychological Assessment Resources Inc.
- Crone, E. A., & Dahl, R. E. (2012). Understanding adolescence as a period of social-affective engagement and goal flexibility. *Nature Reviews Neuroscience, 13*(9), 636-650.
- Dixon, S. K., & Kurpius, S. E. R. (2008). Depression and college stress among university undergraduates: do mattering and self-esteem make a difference? *Journal of College Student Development, 49*(5), 412-424.
- Eid, M., Riemann, R., Angleitner, A., & Borkenau, P. (2003). Sociability and positive emotionality: genetic and environmental contributions to the covariation between different facets of extraversion. *Journal of Personality, 71*(3), 319-346.
- Eremsoy, C. E., Çelimli, S., & Gençöz, T. (2005). Students under academic stress in a Turkish University: variables associated with symptoms of depression and anxiety. *Current Psychology, 24*(2), 123-133.
- Horowitz, J. L., & Garber, J. (2006). The prevention of depressive symptoms in children and adolescents: a meta-analytic review. *Journal of Consulting and Clinical Psychology, 74*(3), 401-415.

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- Huisman, M., Oldehinkel, A. J., de Winter, A., Minderaa, R. B., de Bildt, A., Huizink, A. C., ... & Ormel, J. (2008). Cohort profile: The Dutch 'TRacking Adolescents' Individual Lives' survey': TRAILS. *International Journal of Epidemiology*, 37(6), 1227-1235.
- Hystad, S. W., Eid, J., Laberg, J. C., Johnsen, B. H., & Bartone, P. T. (2009). Academic stress and health: exploring the moderating role of personality hardiness. *Scandinavian Journal of Educational Research*, 53(5), 421-429.
- Jayanthi, P., Thirunavukarasu, M., & Rajkumar, R. (2015). Academic stress and depression among adolescents: a cross-sectional study. *Indian Pediatrics*, 52(3), 217-219.
- Klinger, D. A., Freeman, J. G., Bilz, L., Liiv, K., Ramelow, D., Sebok, S. S., ... Rasmussen, M. (2015). Cross-national trends in perceived school pressure by gender and age from 1994 to 2010. *The European Journal of Public Health*, 25(2), 51-56.
- Klein, D. N., Kotov, R., & Bufferds, S. J. (2011). Personality and depression: explanatory models and review of the evidence. *Annual Review of Clinical Psychology*, 7, 269-295
- Kotov, R., Gamez, W., Schmidt, F., & Watson, D. (2010). Linking 'big' personality traits to anxiety, depressive, and substance use disorders: a meta-analysis. *Psychological Bulletin*, 136(5), 768-821.
- MacGeorge, E. L., Samter, W., & Gilihan, S. J. (2005). Academic stress, supportive communication, and health. *Communication Education*, 54(4), 365-372.
- Murberg, T. A., & Bru, E. (2004). School-related stress and psychosomatic symptoms among Norwegian adolescents. *School Psychology International*, 25(3), 317-332.
- Ormel, J., Oldehinkel, A.J., Sijtsema, J., van Oort, F., Raven, D., Veenstra, R., ... & Verhulst, F. C. (2012). The Tracking Adolescents' Individual Lives Survey (TRAILS): design, current status, and selected findings. *Journal of the American Academy of Child & Adolescent Psychiatry*, 51(10), 1020-1036.
- Sawyer, S. M., Afifi, R. A., Bearinger, L. H., Blakemore, S. J., Dick, B., Ezech, A. C., & Patton, G. C. (2012). Adolescence: a foundation for future health. *The Lancet*, 379(9826), 1630-1640.
- Stevens, G., van Dorsselaer, S., Boer, M., de Roos, S., Duinhof, E., ter Bogt, T., ... de Looze, M. (2018). *HBSC 2017. Gezondheid en welzijn van jongeren in Nederland*. Utrecht: Universiteit Utrecht.
- Wetter, E. K., & Hankin, B. L. (2009). Mediation pathways through which positive and negative emotionality contribute to anhedonic symptoms of depression: a prospective study of adolescents. *Journal of Abnormal Child Psychology*, 37(4), 507-520.