Effectiveness of the Performance Anxiety Training "Schoolstress de Baas" on Adaptive Coping for Adolescents Aged 12-16, and the Moderating Effect of Social Support

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Abstract

Previous studies targeting skills to deal with performance anxiety showed promising results for academic stress as well as for coping. Despite adaptive coping being associated with favorable outcomes, and adolescents reporting the highest amount of academic stress out of any age group, few studies have examined whether performance anxiety interventions predict the use of coping strategies in adolescents. The current study is a longitudinal quantitative study investigating both the effectiveness of a performance anxiety training on adaptive coping, as well as whether social support was a moderator. Firstly, it was hypothesized that the performance anxiety training would have a positive effect on adaptive coping. Secondly, it was hypothesized that social support would moderate the effect of the training on adaptive coping, in which higher social support would cause a stronger effect of the training on adaptive coping. A randomized controlled trial was performed with participants who were randomly allocated to intervention or wait-list control groups. The sample was made up of $N = 231$ adolescents from diverse educational levels and ethnic backgrounds. A simple regression and a multiple regression analysis have been carried out. Results showed that the intervention had (1) no significant effects on adaptive coping, and (2) social support did not moderate this effect. However, a trend significant negative effect was found for the intervention. It is important to further study this effect, since finding and removing harmful sections of the intervention can potentially prevent harm from being done. Suggestions for future research are discussed. The intervention “Schoolstress de baas” could be improved upon to help students navigate academic stress and performance anxiety more effectively.

Keywords: performance anxiety, adaptive coping, adolescents, social support, coping mechanisms, moderator, moderation, randomized controlled trial, school-based intervention

Effectiveness of the Performance Anxiety Training "Schoolstress de Baas" on Adaptive Coping for Adolescents Aged 12-16, and the Moderating Effect of Social Support

For adolescent students, test taking can become a major source of stress in their lives, especially when test scores serve as gatekeepers to future opportunities and career pathways (Duraku & Hoxha, 2018; Smyth, 1995; von der Embse et al., 2014). Adolescents in secondary education have been shown to experience school and homework to be the biggest source of their stress: 27 percent of adolescents aged 12-17 reported often or always experiencing stress related to school. For 56% of students, the desire to get good grades is the reason they experience academic stress (CBS, 2021b). School-based stress is positively associated with test anxiety or performance anxiety (Fernández-Sogorb et al., 2021; van Loon et al., 2023). Performance anxiety is defined as a strong emotional reaction rooted in fear, in which students experience fear of failure and fear of not meeting expectations (Akca, 2011), while test anxiety is a situation-specific form of performance anxiety where students fear performing poorly on academic examinations (Alam, 2013; von der Embse et al., 2017).

Performance Anxiety and Coping

Performance anxiety is an important stressful event in the lives of adolescents. For this reason, they use different coping strategies to deal with this problem. Coping strategies are plans and actions for dealing with stressful situations to lower distress that serve as buffers to the potential harmful effects of stress (Aysan et al., 2001). Being faced with overwhelming stress can lead one to develop maladaptive coping skills (Thompson et al., 2010), which can add to academic stress in the long run through excessive avoidance of the problem and neglecting its root causes. (Garnefsky & Kraaij, 2009; Penley et al., 2002).

Conversely, adaptive coping strategies more effectively minimize damage caused by performance anxiety. *Adaptive coping* is defined as helpful strategies that aid in dealing with stressful or challenging situations (Thompson et al., 2010). Some examples of adaptive coping include reflecting on and accepting the situation, thinking of ways to solve the problem, and downgrading the importance of the stressful event.

It has been suggested that adolescents who attempt to reduce stress through cognitive and behavioural coping may be capable of decreasing the negative consequences of stress responses (Aysan et al., 2001; Campas et al., 1988; Smith & Carlson, 1997). Previous studies have suggested that better psychological outcomes from stressful encounters correspond to a wider repertoire of available coping strategies and choosing the most appropriate strategies

for a specific situation (Folkman & Lazarus, 1986; Yahav & Cohen, 2008). Interventions that teach adaptive coping could therefore help reduce academic stress and performance anxiety.

Coping mechanisms are developed throughout one's life and can be modified through experience (Aldwin, 1991). Students can be taught adaptive coping strategies through interventions that give students tools to deal with the challenges that performance anxiety brings. Expanding adolescents' available coping strategies may improve the outcomes of stressful encounters (Yahav & Cohen, 2008).

Performance anxiety has a negative influence on students' mental health and decreased academic performance and has been associated with lower self-efficacy, and generalized anxiety (Alam, 2013; Raffety et al., 1997). Adaptive coping is a tool that adolescents can use to lessen the harmful impact of stress. This is why an intervention improving student' coping skills to tackle performance anxiety may be a promising method to decrease academic stress and prevent mental health problems in the long term.

Previous Intervention Studies

Interventions based on cognitive behavioral interventions have been effective in reducing anxiety and associated with increased well-being (Houston et al., 2017; Putwain & Daly, 2014; Türk & Katmer, 2019). There have been few studies that use adaptive coping as study variables to examine the effectiveness of interventions. Firstly, a study by Türk & Katmer (2019) concluded that a test anxiety program based on a cognitive-behavioural approach was effective in increasing active coping style, decreasing avoidant coping style, and decreasing test anxiety levels and irrational beliefs of adolescents. However, no control group was used in this study, which decreases its internal validity. Secondly, a study by Houston et al. (2017) examining the effect of a Resilience and Coping Intervention concluded that an intervention aimed at increasing resilience in university students was successful through teaching adaptive coping mechanisms. However, the use of coping strategies was not measured, so it is not known whether these results truly stem from learning new coping mechanisms. Thirdly, an intervention trying to improve well-being through mindfulness training succeeded in increasing adaptive coping among undergraduates (Halland et al., 2015). These studies show that cognitive-behavioral interventions as well as interventions based on mindfulness can be effective in improving well-being. However, few studies have been done on the effectiveness of a cognitive-behavioral approach based test anxiety program on students' adaptive coping skills.

Additionally, according to Ergene (2003) there is a considerable lack of research into the effectiveness of performance anxiety programmes for school-aged students. In the decade

since Ergene's analysis, only 10 studies have examined the effectiveness of performance anxiety interventions with children and adolescents (von der Embse et al., 2013).

Social Support as a Moderator

An individual's perception of support affects mental health outcomes by increasing beliefs of acceptance, self-worth and connectedness to others (Colarossi & Eccles, 2003). *Social support* is defined by Wills (1991) as "the perception or experience that one is loved and cared for by others, esteemed and valued, and part of a social network of mutual assistance and obligations".

Some subtypes of adaptive coping have been associated with social support. The coping strategy seeking social support has been regarded as one of the most adaptive approaches to cope with stress during crises (Sun et al., 2020). Furthermore, social support and self-efficacy were found to predict problem-focused coping, e.g., asking for help (Trouillet et al., 2009). Social support may therefore be a predictor of adaptive coping, in which higher social support predicts more frequent use of adaptive coping mechanisms.

The stress-buffering model proposes that specific factors, including social support, can lessen the association between stress and negative outcomes (Cohen & Wills, 1985; Lakey & Cohen, 2000). Perception of social support during times of stress may have a positive impact on health by increasing coping ability (Lee et al., 2012). There is evidence of social support playing a moderating role between several factors and reducing stress.

A study by Raffaelli et al. (2012) examining social support as a moderator found evidence that social support reduced the relation between stress and depression. Another study by Wilks & Spivey (2010) found that social support, especially from friends, moderated the relationship between academic stress and resilience in university students, where higher levels of social support diminished the negative relation between stress and resilience. There were no studies located that examined the moderating role of social support on the relation between school-based interventions and adaptive coping.

Current Study

Previous studies targeting skills to deal with performance anxiety showed promising results for academic stress as well as for coping. However, few studies use adaptive coping as an outcome variable. Few of these studies examine the effectivity of performance anxiety interventions on adolescents, even though adolescents report the highest amount of academic stress. Additionally, there is evidence that social support could be a potential moderator of the effectiveness of performance anxiety training programs. This study builds on the current

literature by examining the effectiveness of a performance anxiety training on imparting adaptive coping strategies, and the moderating role of social support.

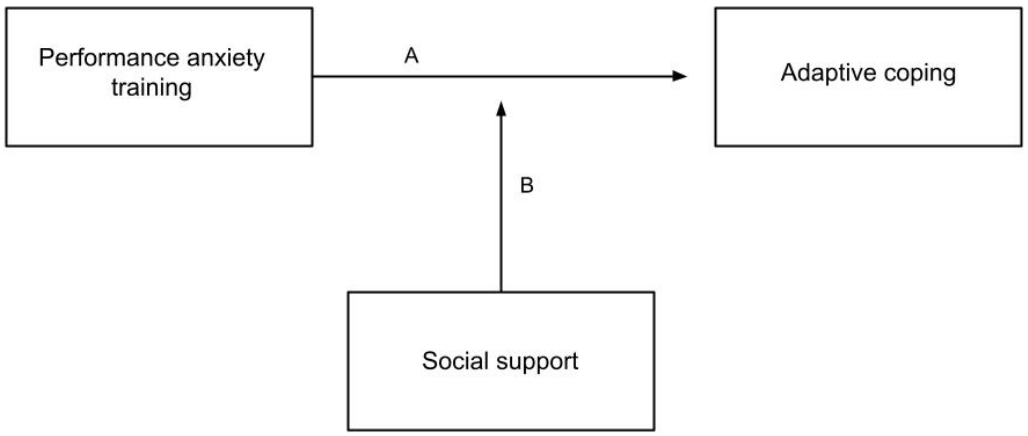
The targeted school-based performance anxiety program “Schoolstress de baas” is a preventive intervention for adolescents to reduce performance anxiety.

This study aimed to investigate whether the performance anxiety training was effective in teaching adaptive coping skills and whether this change was moderated by perceived social support. This was done by answering the question: ‘Does following the performance anxiety training “Schoolstress de baas” predict adaptive coping in teenagers aged 12-16, and is this moderated by social support?’ Firstly, it has been hypothesized that the performance anxiety training has a positive effect on adaptive coping (Path A in figure 1). Due to the training being based on principles from cognitive behavioral therapy (CBT) (van Loon et al., 2019), it was hypothesized that the training had a positive effect on adaptive coping strategies.

Secondly, it was also hypothesized that social support has a positive moderating effect on the relation between the performance anxiety training and adaptive coping, where adolescents with higher social support report more frequent use of adaptive coping mechanisms after the performance anxiety training than adolescents with lower social support (Path B in figure 1). This is because social support has been found to be positively associated with adaptive coping and negatively associated with stress.

Figure 1

Conceptual Model



Method

Procedure

The data was obtained through existing research (van Loon et al., 2019). This concerns a longitudinal, randomized controlled trial among school-age adolescents in the Netherlands, in which all students in nine secondary schools participated in the Stress Less project. This

parent project consisted of two phases: in the first phase, all students in the class attended three sessions of psychoeducation about stress. In the second phase, students could sign up for one of the follow-up training courses aimed at either 1) reducing performance anxiety or 2) improving social skills. The current study focuses only on the effectiveness of the performance anxiety training "Schoolstress de baas".

The participants and their parents were informed of the purpose of the study ahead of time and gave their informed consent. Additionally, all personal data has been anonymized. Approval from the respective schools was obtained prior to completing the survey. Additionally, the Ethical Committee Psychology of Leiden University approved the design of the study (number CEP19-1210/577).

The study followed an experimental design. Students from both groups filled in questionnaires to assess the effectiveness of the performance anxiety training at two points: preintervention (T1) and postintervention (T2). The questionnaires were answered digitally, which lasted approximately 45 minutes per session. The waitlist control group followed the training after the postintervention measurement (T2), roughly eight weeks later than the experimental group.

Participants

Participants consisted of *N* = 231 secondary school students drawn from nine secondary schools in the Netherlands. The population for this study was self-selected. There were 120 girls (52%) and 111 boys (48%). Participants were between the ages of 12-16 (*M* = 13.6, *SD* = .86). From the total sample, 18 (7.8%) participants did not complete the questionnaires, with missing values for adaptive coping (*N* = 15), social support (*N* = 1) or both (*N* = 2). Of these 18 students, 15 participants were lost to follow-up (i.e., dropped out of the study at T2). See table 1 for demographic data.

Table 1

Demographics at Baseline (T1)

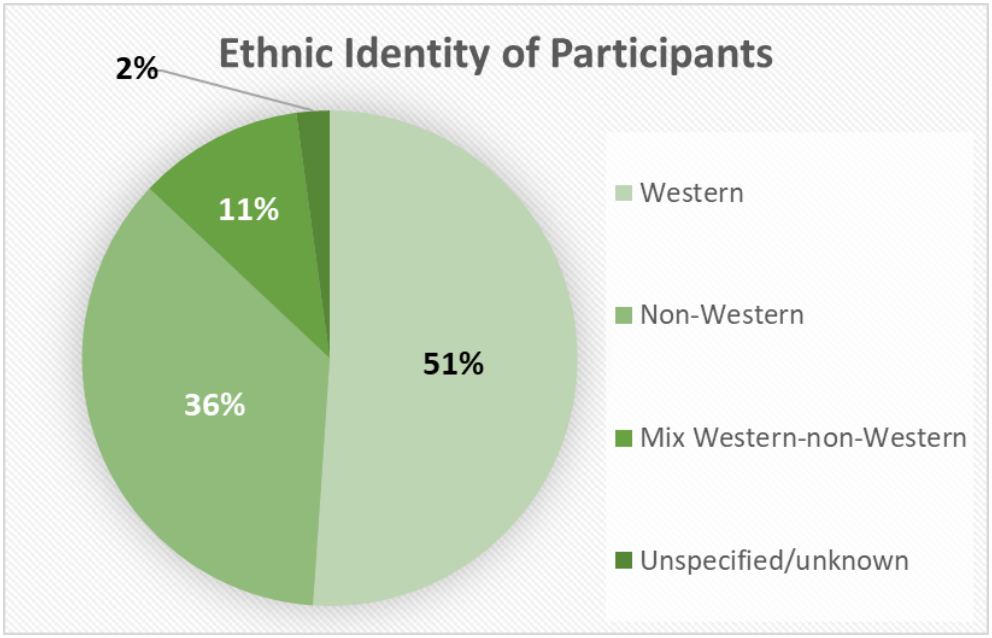
Variables	**Control group (*N*=116)**	**Experimental group (*N*=115)**
	***M* (*SD*)**	***M* (*SD*)**
Age	13.6 (.948)	13.6 (.776)

	***N* (%)**	***N* (%)**
Female	55 (47.4)	65 (56.5)
Educational level		
Praktijk	3 (2.6)	3 (2.6)
VMBO (B/K/G)	48 (41.4)	46 (40.0)
VMBO-t	8 (6.9)	13 (11.3)
VMBO-t/HAVO	16 (13.8)	14 (12.2)
HAVO	13 (11.2)	16 (13.9)
HAVO/VWO	6 (5.2)	7 (6.1)
VWO/Gymnasium	22 (19.0)	16 (13.9)
School year		
First year	22 (19.0)	14 (12.2)
Second year	69 (59.5)	75 (65.2)
Third year	12 (10.3)	17 (14.8)
Fourth year	12 (10.3)	9 (7.8)
Fifth year	1 (0.9)	0 (0.0)
Ethnic identity		
Western	62 (53.4)	56 (48.7)
non-Western	42 (36.2)	42 (36.5)
Mixed Western-non-Western	11 (9.5)	13 (11.3)
Unspecified/unknown	1 (0.9)	4 (3.5)

Since it is important that different groups are represented in study samples, especially socially disadvantaged groups like those with a lower socioeconomic status (Bonevski, 2014), the training was evaluated in a diverse sample of adolescents with different cultural backgrounds. They were categorized into four groups: Western, non-Western, mixed Western-non-Western, and unspecified/unknown. See figure 2 for the ethnic identity of participants in the total sample.

Figure 2

Ethnic Identity of Participants in the Total Sample



Measures

Adaptive Coping

Within the current study, adaptive coping is defined as helpful strategies that aid in dealing with stressful or challenging situations (Thompson et al., 2010). Adaptive coping was assessed with the Cognitive Emotion Regulation Questionnaire short version (CERQ-short). Items were rated on a 5-point Likert scale.

There were nine subscales in total with two items each, with each subscale corresponding to either maladaptive or adaptive coping. For this study only the items measuring adaptive coping were used, which were: acceptance, positive refocusing, refocus on planning, positive reappraisal, and putting into perspective.

Research in adolescents and adults showed that the CERQ-short has adequate reliability, and adequate factorial and construct validity (Garnefski & Kraaij, 2006; Santos et al., 2021). Cronbach's alpha for the five subscales ranged between .68 and .81 (Garnefski and Kraaij, 2006), indicating a sufficient level of internal consistency. In this study, Cronbach's alpha for the total CERQ-short excluding questions about maladaptive coping was .83, confirming a sufficient reliability.

Adaptive coping was measured on a continuous scale, with the score on the questionnaire indicating the frequency of adaptive coping mechanisms used by the participant. In the current study, a difference score was used for adaptive coping. This difference score was calculated by taking the total score of the questions at T2 and subtracting

them from the total score at T1. The resulting variable showed whether there was a positive or negative development in the use of adaptive coping mechanisms between T1 and T2. A difference score higher than 0 indicated that the student used adaptive coping mechanisms more often at T2, while a difference score lower than 0 meant the student used adaptive coping mechanisms less often at T2.

Social Support

The current study defines social support as "the perception or experience that one is loved and cared for by others, esteemed and valued, and part of a social network of mutual assistance and obligations" (Wills, 1991). Social support was assessed with the SSL-I (Sociale Steun Lijst - Interventies) questionnaire. This contains 12 items in total, each rated on a Likert-type scale from 0-4. The items measured *general support, support with problems,* and *esteem*. This measure has shown sufficient validity when tested on seniors (M = 60 years), with a Cronbach's alpha of .87 in the total measure (van Eijk et al., 1995). Internal consistency with adolescents between 11-18 years was .78 (Hoefnagels et al., 2007). In this study, Cronbach's alpha for the total SSL-I was .93, confirming internal consistency. The reliability was deemed satisfactory.

Social support was measured on a continuous scale, with the score on the questionnaire indicating the amount of perceived social support. The variable social support refers to the sum score of all questions on the SSL-I, in which higher scores indicate a higher amount of social support.

Plan of Analysis

The first research question was evaluative while the second was explanatory. To investigate (1) whether the performance anxiety training had an effect on adaptive coping in the participants and (2) whether social support moderated the relation between the performance anxiety training and adaptive coping, a simple linear regression and a multiple linear regression were used. The reason for the selection of this analysis method is that the alternative, ANCOVA, can be biased when the covariate is not independent of the treatment variable (Field, 2017). Additionally, the purpose of the second research question was to examine whether there was an interaction effect between the group and social support (see figure 1). However, an ANCOVA assumes that there is no interaction effect to begin with, which was not certain before performing the analysis (Field, 2017). For the sake of consistency, regression analyses were used to answer both research questions.

The independent variable was adaptive coping, the dependent variable was the group, and the moderator was social support. While both the dependent variable and the moderator

were measured through test scores on an interval level, the independent variable was measured on an ordinal level through a dummy variable, consisting of two categories: control group and experimental group. All analyses used an alpha of .05 and a confidence interval of 95%. Missing values were not used in the analyses. The analyses were done in SPSS version 28.

Primary Analyses

Before the analysis took place, there was a check for missing data. Furthermore, outliers were assessed by boxplots. Additionally, posthoc analyses were carried out to examine any significant differences between the experimental and control groups and between dropouts and participants on the demographical data and the study variables. Independent t-tests were carried out on the study variables and age, while Pearson's Chi-square tests were performed on the variables gender, educational level, school year, and ethnic identity.

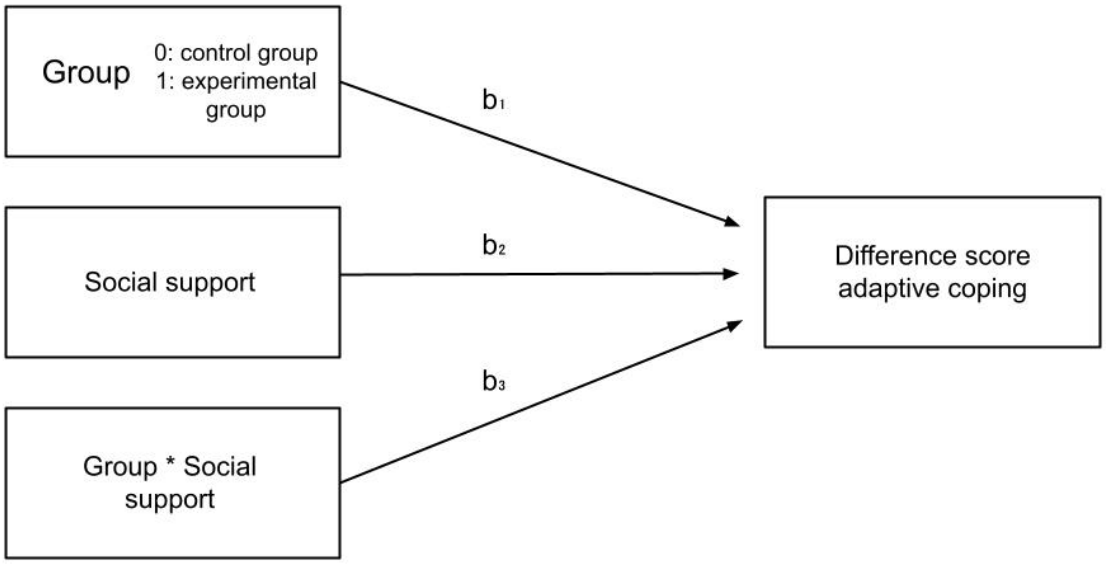
Effectiveness of Training. First, a simple linear regression was used to test the first hypothesis. The outcome variable adaptive coping was operationalized by means of a difference score, which was used in all subsequent analyses. The variable group was the predictor variable and has been recorded as either control group or experimental group.

The assumptions that belong to the simple linear regression (Field, 2017; Morling et al., 2018) were: (1) a linear relationship between the independent and dependent variable, (2) a statistically valid sample with no hidden relationships among observations, (3) homoscedasticity, and (4) normally distributed data. Parametric tests were used for this hypothesis.

Interaction Effect of Social Support. Secondly, a multiple regression model with an interaction term was used to test the second hypothesis. The moderating role of social support was tested by adding the independent variable *social support*. The interaction: group*social support was added to the model. See figure 3 for the conceptual model used after the variables were operationalized.

Figure 3

Conceptual Model for the Operationalized Variables



The multiple regression required some assumptions to be met. The assumptions for a multiple linear regression (Field, 2017; Morling et al., 2018) were as follows: (1) a linear relationship between the independent and dependent variable, (2) an absence of multicollinearity, (3) each observation in the dataset was independent, (4) homoscedasticity, and (5) normally distributed residuals. Parametric tests were likewise used for testing this hypothesis.

Results

Descriptive Statistics

In table 2, the descriptive statistics for the study variables per condition are summarized. Due to the sudden lockdowns during the COVID-19 pandemic, not all students in the experimental group had completed the training. Of the 115 students allocated to the experimental group, 54 (46.9%) completed half or more of the training sessions (4-7 sessions), 24 (20.9%) completed less than half the training (1-3 sessions), and 37 (32.2%) chose not to complete any of the training (see table 3).

Table 2

Descriptive Statistics for Study Variables

Variables	Control group (*N* = 115)			Experimental group (*N* = 116)		
	Pretest (T1)	Posttest (T2)	Difference score[a]	Pretest (T1)	Posttest (T2)	Difference score[a]
	M (SD)	*M* (SD)	*M* (*SD*)	*M* (SD)	*M* (SD)	*M* (SD)
Adaptive coping	46.84 (11.22)	48.28 (13.17)	1.75 (11.33)	45.50 (12.74)	44.87 (13.27)	-1.04 (11.91)
Social support	33.42 (8.74)	-	-	32.74 (8.10)	-	-

[a] *Difference score was calculated using the equation: total score adaptive coping T2 – total score adaptive coping T1.*

Table 3

Number of Sessions Completed by Experimental Group

Number of sessions	Participants (%)	Cumulative percentage
0	37 (32.2)	32.2
1	10 (8.7)	40.9
2	5 (4.3)	45.2
3	9 (7.8)	53
4	8 (7)	60
5	13 (11.3)	71.3
6	13 (11.3)	82.6
7	20 (17.4)	100

Sensitivity Analyses

Differences at T1 between Control and Experimental Group

There were no significant differences at T1 between the experimental and control group. This counts for demographic data, including age (t (229) = .124, p = .902), gender ($\chi 2$ = 1.919, p = .166), educational level ($\chi 2$ = 2.697, p = .846), school year ($\chi 2$ = 4.314, p = .365), and ethnic identity ($\chi 2$ = 2.401, p = .493). The study variables likewise showed no difference: this includes the variables adaptive coping total score T1 (t (229) = .844, p = .4)

and social support (t (226) = .603, p = .547). Thus, it can be said that the randomization was successful.

Differences at T1 between Participants and Dropouts

There were no significant differences at T1 between participants and dropouts regarding demographics. This counts for age (t (229) = .096, p = .924), gender ($\chi 2$ = .176, p = .675), educational level ($\chi 2$ = .9.859, p = .131), school year ($\chi 2$ = 2.294, p = .682), and ethnic identity ($\chi 2$ = 1.992, p = .574). There is also no difference between participants and dropouts at T1 for the study variables adaptive coping total score T1 (t (229) = -.02, p = .984) and social support (t (226) = -.705, p = .481). Dropouts were further excluded from the primary analysis.

Assumptions and Outliers

All assumptions of both the simple and multiple linear regression had been met, apart from the assumption of an absence of outliers and the assumption of a normal distribution. However, according to the central limit theorem, samples larger than N > 30 tend to be normally distributed regardless of the shape of the data (Ghasemi & Zahediasl, 2012). The assumption of normality has therefore been met. Furthermore, two extreme outliers were found on the dependent variable. Extreme outliers were more than three standard deviations away from the mean. The outlier data points were removed from the dataset. This did not significantly affect the results. No outliers were found for the variable social support.

Primary Analyses

Effectiveness of Training

The first regression model showed a weak negative linear relation between the performance anxiety training and adaptive coping. For the results of the simple regression, see table 4. Results showed that the performance anxiety training did not significantly predict adaptive coping, R^2 = .01, F(1, 210) = 3.058, p = .082. This indicates that there was no significant relationship between the training and adaptive coping.

Table 4

Summary of Regression Model predicting Effectiveness of Training on Adaptive Coping

Variable	*B*	*SE*	*β*	*p*	95% CI	
					LL	*UL*
Group[a]	-2.791	1.596	-.120	.082	-5.937	.355

Note. B = unstandardized coefficient, *SE* = Standard Error, *β* = standardized regression coefficients.

[a] *0= control group, 1 = experimental group.*

Interaction Effect of Social Support

The second regression model showed a weak positive linear relation between the interaction effect and adaptive coping. The regression model itself was not significant, R^2 = .02, $F(3, 207) = 1.655$, $p = .178$. For the results of the multiple regression analysis, see table 5. Both the main effects of group and social support were not significant, which shows that they were not significant predictors for the difference in adaptive coping before and after the training was followed. The interaction effect of group*social support was not significant either, which shows that social support did not moderate the relation between the training and adaptive coping. This indicates that adolescents with higher social support did not differ significantly from adolescents with lower social support on the difference in adaptive coping after the performance anxiety training was followed.

This analysis was done twice: once with centralized variables and once without. Since this did not change the outcomes significantly or decrease multicollinearity, the analysis without centralized variables was used in this study (Hayes, 2013).

Table 5

Summary of Regression Model Predicting Moderating Effect of Social Support on Adaptive Coping

Variable	*B*	*SE*	*β*	*p*	95% CI	
					LL	*UL*
Group[a]	-7.922	6.514	-.339	.225	-20.764	4.92
Social Support	.032	.129	.023	.802	-.222	-.287
Group * Social Support	.157	.191	.232	.414	-.220	.534

Note. B = unstandardized coefficient, *SE* = Standard Error, *β* = standardized regression coefficients.

[a] *0= control group, 1 = experimental group.*

Discussion

Previous studies targeting skills to deal with performance anxiety showed promising results for academic stress as well as for coping. Few of these studies examine the effectivity of performance anxiety interventions on adolescents, even though adolescents report the highest amount of academic stress. For this reason, the central question was: 'Does following the performance anxiety training "Schoolstress de baas" predict adaptive coping in teenagers aged 12-16, and is this moderated by social support?'. Two hypotheses were formulated to (1) determine whether the performance anxiety training had an effect on adaptive coping in the intervention group, and (2) determine whether social support moderated this effect.

Effectiveness of Training

Results from this study indicated that the training was not effective in improving coping skills. The results were trend significant, meaning close to significant. The results of this study contradicts with earlier research, stating that adolescents who attempted to reduce stress through adaptive coping may be capable of decreasing the negative consequences of stress responses (Aysan et al., 2001; Campas et al., 1988; Smith, 1997). A wider array of coping strategies was said to correspond with better psychological outcomes from stressful encounters (Folkman & Lazarus, 1986; Yahav & Cohen, 2008). For this reason, it was hypothesized that the training would positively affect adaptive coping. However, this is not the case. There are a few possible explanations for this.

One possible explanation for why effectiveness of the training on adaptive coping was in a negative direction is that there may have been a negative psychological impact on students upon being allocated to the intervention group. Changes in the perceptions teachers, peers or parents have of students assigned to the intervention group could have led to different interactions with students as a result of stigma surrounding mental health (Durlak & Wells, 1998).

A possible explanation for the non-significance of the results is the fact that less than 50% of the participants have attended 4 sessions out of 7 (see table 2) due to sudden COVID-19 lockdowns at the time of data-collection (van Loon et al., 2023). This could have left too little session time for the training to take effect for the majority of the participants in the intervention group (Weiland & Morris, 2022).

Moderating role of Social Support on Effect of Training

Social support did not significantly moderate the relation between the performance anxiety training and adaptive coping. Results from this study suggest that social support may have no influence on adaptive coping or performance anxiety.

The results of this study were not in line with the literature. The stress-buffering model by Cohen & Willis (1985) states that among other factors, social support can lessen the association between stress and negative outcomes. It was for this reason that it was hypothesized that social support would moderate the effect of the training on adaptive coping. However, the current study showed this was not the case. There are a few possible explanations for the results of this study.

One possible explanation is that the perceived social support is not as important in moderating the effectiveness of the training as more concrete forms of social support. Social support is a multidimensional construct, with indicators like size of the social network, frequency of contact with members in the social network, instrumental support, emotional support, quality of social support, and reciprocal helping of others (Calvete & Connor-Smith, 2006). The SSL-I questionnaire only measured perceived social support, which might not paint the whole picture. Social support might still play a role in the effectivity of performance anxiety trainings.

Another possible explanation is that social support makes no difference for the effect of an academic, school-based intervention. The literature addresses the effect of social support on wellbeing and general stress (Lakey & Cohen, 2000) but not performance anxiety. Performance anxiety, and to a lesser extent academic stress, might be unrelated to the amount

of perceived social support. It could very well be the case that the concepts of the performance anxiety training and social support have no effect on each other.

Strengths and Limitations

The current study has some limitations. Firstly, the training itself might not have placed enough emphasis on teaching adaptive coping mechanisms to make a difference in the amount of adaptive coping the students used in relation to performance anxiety. Previous literature reporting significant improvements in adaptive coping have evaluated interventions that were primarily focused on teaching coping skills (Halland et al., 2015; Houston et al., 2017; Türk & Katmer 2019). However, "Schoolstress de baas" was focused on improving cognitive coping strategies (e.g., negative thought restructuring and managing emotions), as well as dealing with pressure and teaching relaxation techniques in its sessions (van Loon et al., 2019). Secondly, the questionnaires might have been too specific or too vague in their wording for the target audience of adolescents (van Loon et al., 2023). In the SSL-I questionnaire, questions like: "Does it ever happen that someone offers help to you in special cases like illness and moving away?" might be too specific to adult experiences while not applicable to adolescents. In the CERQ, questions like: "I think about something fun instead of thinking about what happened to me" might be too vague to accurately measure coping mechanisms for performance anxiety. Students might not answer this question thinking of their performance anxiety, but think of an unrelated negative event in their life instead. The data may have become less accurate due to the wording of some questions.

Although this study presents several limitations, it possesses several strengths as well. Firstly, a difference score was used to measure adaptive coping longitudinally. As a result, adaptive coping at baseline was taken into account when analyzing the difference that would have taken place after the training. Secondly, the current study utilizes a diverse and nationally representative sample. The sample was comparable to the population of Dutch adolescents between 12-16 years regarding minority background (CBS, 2021a). Thus, the sample was likely representative of the different ethnic identities within the general population of Dutch adolescents.

Future Research

This study found that the training had a trend significant weak negative effect on adaptive coping. Since the analysis showed trend significant results, it is possible that a future study with a larger sample could potentially find a significant relation (Field, 2017). Another suggestion to increase the chance of finding a significant result is to change the content of the intervention to include more emphasis on teaching coping strategies to adolescents. In the

current intervention, teaching adaptive coping strategies only encompassed 1 out of 7 sessions. Changing the program to include more lesson time on psychoeducation and practicing adaptive coping strategies could improve significance in a future study. A suggestion for further research would be to perform the study again with students participating in more sessions. The disruption of daily school life during the sudden COVID-19 lockdowns coincided with a low number of participants following the training sessions in this study. Performing the intervention and subsequent research again would confirm whether extraordinary circumstances have caused the results to become statistically insignificant. A final suggestion would be to measure a different aspect of social support, such as emotional support or the amount of contact with the social network. A different questionnaire could be used for this, such as the Multidimensional Scale of Perceived Social Support (Calvete & Connor-Smith, 2006).

Conclusion

Adaptive coping can potentially help adolescents lessen the effects of academic stress and performance anxiety. In order to teach students better coping strategies, school-based interventions can be used. This evaluative study contributes to scientific literature by examining the effect of a performance anxiety training on adaptive coping in adolescents. The performance anxiety training has been found to have a negative trend significant effect on adaptive coping. No significant moderating effect of social support on the effectiveness of the training on adaptive coping was found. This could imply that perceived social support might not affect performance anxiety interventions in any way or that a different aspect of social support may play a significant role. Despite this, future research is still recommended since this study has found a potential harmful effect of the training on adaptive coping. It is important to further study this phenomenon, since finding and removing harmful sections of the intervention can potentially prevent harm from being done. Further suggestions include tweaking the intervention to include more adaptive coping lessons and to redo the intervention with more sessions. The intervention “Schoolstress de baas” could be improved upon to help students navigate academic stress and performance anxiety more effectively.

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