Gender, emotion regulation and internalising problems: a cross-sectional study

Rianne Smorenburg (6627250)

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Faculty of Social and Behavioural Sciences, University of Utrecht

Master Clinical Child, Family and Education Studies

First assessor: Dr. Liesbeth Paauw-Telman

Second assessor: Dr. Denise Bodden

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Abstract

Recently there has been an increase in reported anxiety and depression symptoms in Dutch youth. One possible contributing factor could be emotion regulation (ER). ER involves strategies to control ones' emotion. Both adaptive and maladaptive ER strategies exists and studies show that maladaptive ER strategies correlate with more anxiety and depressive symptoms. A cross-sectional approach was used to determine the correlation between ER and anxiety and depression, and to define the moderating effect of gender. In the current study, 105 Dutch adolescents aged 12-18 were included and answered an online survey which included the SCARED-71, CDI-2 and the ERSQ. Firstly, no correlation was found between ER and anxiety. However, gender was a predictor for anxiety, meaning that girls scored higher on the SCARED-71 than boys. Secondly, a significant negative correlation between ER and depression was established, however no moderating effect of gender was present. Further research is necessary to determine the complete mental processes which contribute to the development of anxiety and depressive symptoms.

Keywords: anxiety, depression, emotion regulation, gender, adolescents

Introduction

Recently lawmakers, media and the general public raise concern about the mental well-being of the Dutch youth since Covid-19 (Luijten et al., 2021). After the first lockdowns, more Dutch children reported severe anxiety symptoms and poor overall health. Even before Covid-19, two of the most impacting mental health issues in Dutch adolescents were anxiety and depression (Ormel et al., 2015). A recent study regarding the wellbeing of Dutch school-aged children showed that the prevalence of anxiety in Dutch children (aged 12-18) is 28,2%, with girls reporting almost three times higher on the Strengths and Difficulties Questionnaire (SDQ) than boys regarding emotional problems (Boer et al., 2022). Moreover, self-report shows that depression is prevalent in 7% of children aged 12-18 (Centraal Bureau voor Statistiek [CBS], Depressie onder jongeren, 2021).

Anxiety is typically characterised as the presence of excessive or unrealistic fear about situations or things that are out of your control (American Psychiatric Association [APA], 2013). Depression expresses itself through either a depressed mood or a diminished interest or pleasure in life. Both these disorders significantly impact adolescents' daily life and people need treatment through therapy and/or medication (APA, 2013). In order to provide the right therapy to these Dutch adolescents, it is vital to know possible treatment targets to improve efficacy (Wirtz, 2014). One possible contributor is emotion regulation (ER). ER is typically described as the strategies involved to control ones' emotion and studies show that certain ER strategies correlate with more anxiety and depressive symptoms (Schäfer et al., 2017). ER strategies include adaptive strategies such as reappraisal, problem solving, acceptance, and seeking social support (or religion) (Hoeksema, 2012). Reappraisal is when someone changes their beliefs and thoughts on a certain stressful situation in order to deal with it (Aldao et al., 2010). However,

ER strategies also include maladaptive strategies like rumination, self-blame, avoidance and denial (Hoeksema, 2012; Zlomke & Hahn, 2010). Rumination is a process in which distressed people are fixated on the notion of stress, and the causes and consequences thereof, however they withhold from active problem solving (Nolen-Hoeksema et al., 2008). All in all, these maladaptive ER strategies might contribute to the development of anxiety and depression, and if this is the case, could be a target for (preventative) interventions.

The first steps in ER development begin in young childhood and continue into adulthood (Compas et al., 2014). ER is achieved through the management of various systems, including internal (i.e. neurological and cognitive systems), behavioural (i.e. behavioural actions) and external systems (i.e. cultural values) (Zeman et al., 2006). The skills needed to manage these systems are learned throughout childhood, and are heavily dependent on the environment and development of the individual. During adolescence (12-18 years old), youngsters shift from a co-dependency of their parents when dealing with stress to independently dealing with stressors, which help form neural pathways in their brain (Young et al., 2019). During this time, adolescents also become more aware of the reactions from their peers when expressing their emotions, which influences the way they use ER strategies (Zeman et al., 2006). This change that occurs from childhood to adolescence could be the starting point for the use of more maladaptive ER strategies, however several studies have shown that certain maladaptive ER strategies, like rumination, can already be present during childhood and continue on into adulthood (Cavicchioli et al., 2023; Rood et al., 2009). Thus, adolescence is a critical period for developing ones' personal preference regarding ER strategies and this period will define if youngsters will predominantly use adaptive or maladaptive ER strategies when dealing with stress in the future.

There are already early signs of the relationship between maladaptive ER strategies and internalising disorders in young childhood. In children aged 2 to 4, internalising disorders are associated with vulnerability to sadness, low attentional regulation and low impulsivity (Eisenberg et al., 2001). A longitudinal study including children aged 7-10 years old found that maladaptive ER strategies positively relate with the presence of internalising problems (Kim-Spoon et al., 2013). Moreover, a study including children aged 9-11 years old focused on the relationship between ER and internalising and externalising problem behaviour, and identified that poor emotional self-awareness, inappropriate expression of anger and sadness, and maladaptive coping with anger were predictive of higher levels of depressive and anxious symptoms (Zeman et al., 2002). As these studies show, some children already show early signs of the use of maladaptive ER strategies and internalising problems.

Then in adolescence, the evidence surrounding the relationship between ER and anxiety and depression stays consistent. A meta-analysis on ER and psychopathology in adolescents established that maladaptive ER strategies were positively related to internalising symptoms (Compas et al., 2017). This study described avoidance, suppression, and denial as the main maladaptive ER strategies responsible

for this. Another meta-analysis on 35 studies revolving adolescents aged 13-18 concluded that the use of adaptive ER strategies correlated with less symptoms of anxiety and depression, while the use of maladaptive ER strategies correlated with more symptoms of anxiety and depression (Schäfer et al., 2017). The study noted that the adaptive ER strategies which were helpful were cognitive reappraisal, problem solving, and acceptance; and the maladaptive ER strategies which were unhelpful were avoidance, suppression, and rumination. Finally, multiple studies have identified that rumination in adolescence is strongly positively correlated with depressive symptoms (Muris et al., 2004; Muris et al., 2009; Papadakis et al., 2006). Thus, adolescence is not only a critical period for defining which ER strategies individuals use, but is also a critical period for the development of internalising symptoms when using maladaptive ER strategies.

As mentioned before, the prevalence of internalising symptoms like depression and anxiety are higher in Dutch girls than in boys. This is known as the gender-gap in mental health (Campbell et al., 2021). This gender-gap states that globally, girls have worse mental health than boys. Interestingly, the mental health gender-gap is the biggest in the most gender equal countries and countries with relatively high Gross Domestic Product (GDP). In this study, the Netherlands scored second highest in the gender-gap for psychological distress, meaning that Dutch girls suffer far more greatly from psychological distress than boys in comparison to other countries. Moreover, although the gender-gap already exists in young childhood, it increases during adolescence and may be a contributor to worse mental health outcomes for adolescent and adult women (Campbell et all., 2021). A recent study showed that adolescent girls use both adaptive and maladaptive ER strategies more frequently than adolescent boys (Sanchis-Sanchis et al., 2020). This study also found an interaction effect between gender and age, meaning that younger girls utilise more adaptive ER strategies than young boys, but older adolescent girls adopt more maladaptive ER strategies than boys. This difference between girls and boys remains stable during adulthood (Tamres et al., 2002; Nolen-Hoeksema, 2012; Kwon et al., 2013). The change that occurs during older adolescence in girls regarding the increased use of maladaptive ER strategies could be an explanation for the higher prevalence of depression and anxiety in adolescent girls.

All in all, internationally, many studies have proven that ER strategies play a role in the presence of anxiety and depression. Specifically, adolescence is a critical period for establishing ER strategies and developing anxiety and depression, with gender interacting this relationship. Interestingly though, this has not been extensively studied in a Dutch population, including the possible moderating effect of gender on this relationship. Therefore, this study aims to assess the relationship between ER and anxiety and depression in Dutch youth and to determine whether gender has an effect on this. This leads to the following research question: Does gender moderate the relationship between emotion regulation strategies and the occurrence of anxiety and depression in Dutch adolescents aged 12-18? Firstly, it is hypothesized that using maladaptive ER strategies will correlate with a higher presence of anxiety in Dutch youth, and that gender will moderate this relationship. Secondly, it is hypothesized that using

maladaptive ER strategies will correlate with a higher presence of depression, and that gender will moderate this relationship. This means that the relationship will be stronger for girls than boys in both analyses.

Methods

Participants

This cross-sectional study assessed children's emotion regulation (ER) skills and its relationship with depression and/or anxiety. In order to be eligible to participate, children had to be over the age of 8 years old and under the age of 18. If a family had multiple children, only one was eligible to answer the questionnaires. Exclusion criteria were children and adolescents with a current anxiety or depression disorder diagnosis and/or who currently receive mental healthcare.

The sample included 105 participants aged 12-18. The minimum age was established because the survey intended for children aged 8-11 did not include the ERSQ. Mean age of the participants is 15.36 years (SD=2.01). Of this sample, 71% is female, 29% is male. 77% had a Dutch ethnical background, 13% had a Turkish/Dutch ethnical background, 6% had a Moroccan/Dutch ethnical background, and 3% identified as other ethnicities. 41% of participants are in some form of practical education (Beroepsonderwijs/MAVO/MBO), and 52% are in theoretical education (havo, VWO, HBO, WO).

Measures

Anxiety. The Dutch version of the SCARED-71 (Bodden et al., 2009) was used to determine the level of anxiety. This survey consists of 71 items and participants receive questions on the prevalence of anxiety symptoms. The SCARED-71 has 9 scales: panic disorder, generalised anxiety disorder, social phobia, separation anxiety disorder, obsessive compulsive disorder, post-traumatic stress disorder, specific phobia of animals, specific phobia of blood or injury, and specific phobia of your situation/surrounding (i.e. afraid of heights or thunderstorms). For this study, the total score on the SCARED-71 was used. Participants have three options to choose from when answering the questionnaire: 0="bijna nooit", 1="soms" and 2="vaak" (almost never – sometimes – often). An example of an item is: "Ik heb gedachten waar ik bang van word" ("I have thoughts that scare me"). The Cronbach's alpha of the questionnaire in the current study is 0.933.

Depression. For depression the Dutch version of the CDI-2 (Bodden et al., 2016) was used . This survey consists of 28 items and participants receive questions on the prevalence of depressive symptoms which they experienced over the last two weeks. The CDI-2 has six scales: Negative mood/physical symptoms, negative self-esteem, emotional problems, ineffectiveness, interpersonal problems, and functional problems. For this study, the total score on the CDI-2 was used. Each item offers three options on how often someone has experienced this symptom. An example of an item is: Ik

heb elke dag/veel dagen/soms zin om te huilen. ("I want to cry everyday/most days/sometimes"). The Cronbach's alpha of the questionnaire in the current study is 0.790.

Emotion regulation (ER). For ER the outcomes of the Dutch version of Emotion Regulation Skills Questionnaire – Junior (ERSQ; Vervoort et al., n.d.) was used. This survey has 10 scales and consists of 28 items and participants have to answer questions on how they dealt with their emotions during the past week. For this study, the total score of the ERSQ was used. The ERSQ uses a 5-point Likert scale; answer options range from 0="helemaal niet" to 4="(bijna) altijd" (0=almost never to 4=almost always). An example of an item is: "In de week die voorbij is begreep ik waar mijn gevoelens vandaan kwamen" ("In the week that's passed I understood where my emotions came from"). The Cronbach's alpha of the questionnaire in this current study is 0.950.

Procedure

The procedure of this study was part of a larger study. Participants were gathered by university students through convenience sampling by contacting family members, friends or online through social media. When the children and their respective parent were interested in joining the study, they were given an information letter about the study. After receiving the information, children and their respective parents could decide whether or not they want to participate. If they wanted to participate, they would receive the link to the online survey. There are three separate surveys, one for children aged 8-11, one for children aged 12-18 and one for their parent. Children aged 8-11 answered 8 questionnaires, children aged 12-18 answered 15 questionnaires and parents answered 14 questionnaires. Each survey took approximately 30 to 35 minutes to complete. Consent was signed at the start of the survey and was obliged in order to move to the actual questionnaire. In order to ensure anonymity of the participants, each participant was given a personal code. By doing this, after completion of the survey, personal data shared through the consent form was deleted from the data and replaced with the code. The outline of the general study was presented to the faculty's ethical review board (FERB) and was approved (code: 23-0512).

Plan of analysis

Outcomes of the questionnaires were analysed in IBM SPSS Statistics (Version 27). First of all, descriptive statistics were used to define mean age, male/female ratio, ratio of ethnicities and education level. In order to correctly interpret the scores of the CDI-2, items 2, 6, 7, 9, 10, 12, 14, 15, 17, 20, 23, 24, 26, and 27 of the CDI-2 had to be recoded. Then, total scores of the CDI-2, SCARED-71 and ERSQ were calculated by adding the scores of the individual items. Mean scores of these questionnaires were then identified.

In order to test the first hypothesis, the moderation of gender on the relationship between ER (ERSQ) and anxiety (SCARED-71) was analysed by using PROCESS (Hayes, 2018). For the second

hypothesis, moderation of gender on the relationship between ER (ERSQ) and depression (CDI-2) was also analysed by using PROCESS (Hayes, 2018). The significance level was established at α=0.5.

Several assumptions were checked by using regression analysis and defining homogeneity of variance, homogeneity of regression, homoscedasticity and checking for outliers. One outlier was defined and therefore the final analysis was run twice, once with the outlier included and once without. No significant differences were noticed, thus the outlier was included in the final results. There was no missing data.

Results

This study conducted two correlation analyses moderating for gender, the first analysis is between emotion regulation (ERSQ) and anxiety (SCARED-71), and the second one between emotion regulation (ERSQ) and depression (CDI-2). As seen in table 1, the maximum SCARED-71 score is 142, but the maximum score on the SCARED-71 in this sample was 116.00. The cut-off score determining the difference between low and high anxiety in a nonclinical youth is 30.00 (Bodden et al., 2009). In this sample the mean score on the SCARED-71 is 34.01, which is three points above the cut-off score. For girls, the cut-off score is 31.00, in this study the girls scored on average 37.59. For boys, the cut-off score is 27.00, in this study the boys scored 25.45.

Secondly, while the maximum possible score on the CDI-2 is 56.00, the maximum score on the CDI-2 in this sample was 36.00, as shown in table 1. The cut-off score for children is 14.00, meaning children who score above 14.00 have a higher risk of getting a depressive disorder. As seen in table 1, the mean score of the CDI-2 in this sample was 10.32, meaning that this sample does not have a higher risk of getting a depressive disorder. In this study the girls scored on average 10.86 while the boys scored 9.03. Finally, only 22 participants scored above 14.00, of these 81.82% were girls.

Thirdly, while the maximum possible score of the ERSQ is 140.00, in this population the highest score someone had was 131.00, as shown in table 1. The ERSQ measures adaptive ER skills, meaning that a higher score correlates with higher adaptive ER skills (den Aantrekker, 2020). There is no set cut-off score available for the ERSQ. The mean score of this sample is 89.62 out of the possible 140.00, which correlates with the top 35.99% of the maximum score, which may be an indication that this sample has average to above average ER skills. The mean score of the girls on the ERSQ was 91.36, while the mean score of the boys was 85.48. Thus, girls scored higher on all the questionnaires compared to boys.

Table 1

Descriptives statistics of the questionnaires

	N	Minimum	Maximum	Mean	Std. Deviation
SCARED-71	105	0.00	116.00	34.01	22.81
CDI-2	105	0.00	36.00	10.32	8.28
ERSQ	105	29.00	131.00	89.62	20.83

Emotion regulation and anxiety

The first moderation analysis between emotion regulation (ER) and anxiety was conducted by using the ERSQ and SCARED-71. As seen in table 2, the model is significant (F=6.00, p=<.001) and explained about 15.12% of the variance. Results show that the ERSQ is not a predictor for the outcomes on the SCARED-71 (-0.08, p=.690), meaning that in this study ER was not a predictor for anxiety symptoms. However, gender is a predictor for the outcomes on the SCARED-71 (41.74, p=.039). As mentioned before, girls scored significantly higher than boys on the SCARED-71. Girls scored 37.59, which is above the cut-off (31.00), while boys scored 25.45, which is below the cut-off (27.00), meaning that girls have a higher risk of getting anxiety disorders while boys do not. All in all, this study found a significant relationship between gender and anxiety symptoms. Finally, gender is not significantly moderating the relationship between ER and anxiety (F=2.05, p=.155).

Table 1

Moderation analysis between ERSQ and SCARED-71

	R	R-squared	F	p
Model summary	0.39	0.15	6.00	*<.001**

Variable	Coeff	t	F	p
ERSQ	-0.08	-0.40	.	*.690*
Gender	41.74	2.09	.	*.039**
ERSQ*Gender	.	.	2.05	*.155*

Emotion regulation and depression

The second analysis assessed the correlation between emotion regulation (ER) and depression, and was conducted between the ERSQ and CDI-2. As shown in table 2, the total model is significant (F=14.62, p=<.001) and explains about 30.29% of the variance. This study found a significant correlation between ERSQ and CDI-2; ERSQ is a predictor for CDI-2 (-0.14, p=.024), meaning that a lower score on ERSQ correlates with a higher score on the CDI-2. Thus, low ER skills correlate with higher depression symptoms. However, gender is not significantly moderating the correlation between ERSQ and CDI-2 (p=.179).

Table 3

Moderation analysis between ERSQ and CDI-2

	R	R-squared	F	p
Model summary	0.55	0.30	14.62	*<.001**

Variable	Coeff	t	F	p
ERSQ	-0.14	-2.30	.	*.024**
Gender	11.71	1.78	.	*.077*
ERSQ*Gender	.	.	1.83	*.179*

Discussion

Since COVID-19, public discourse in the Netherlands has been increasingly focused on the higher prevalence of anxiety and depression in Dutch youth (Luijten, 2021), which is underscored by recent research (Boer et al., 2022). However, Dutch research does not yet primarily focus on possible internal factors which contribute to this increase. Therefore this study focused on the relationship between emotion regulation (ER) and internalising problems in Dutch youth aged 12-18, and whether gender had a moderating effect on this. The first aim of this study was to define if there was a correlation between ER and anxiety, and to explore the moderation role of gender. The second aim of the study was to define if there was a correlation between ER and depression, and to assess if gender moderates this correlation.

This study found no significant correlation between ER and anxiety, including no moderation effect of gender in this correlation. One explanation for the lack of evidence supporting the correlation between ER and anxiety could be because of an external factor, stress. A study amongst university students found that when students are under stressful conditions, the use of maladaptive ER strategies increases and the use of adaptive ER strategies decreases (Miklósi et al., 2014). This increased use of maladaptive ER was then correlated with an increase in anxiety. Hence, the correlation was between stress and anxiety, while ER was acting as a mediator. In the current study, a nonclinical population was included, and stress was not incorporated in the current sample of adolescents without clinical diagnoses or issues. This could explain why no significant correlation was found between ER and anxiety in the current study. However, this study did find that gender was a significant predictor for anxiety. This is in line with previous research, which found that anxiety is up to three times more prevalent in adolescent girls than boys (Boer et al., 2022).

Another explanation for the current lack of evidence of the relationship between ER and anxiety could be due to the choice of questionnaires. Many studies regarding ER have used the Cognitive Emotion Regulation Questionnaire (CERQ) or the FEEL-KJ, while this study utilised the ERSQ. The CERQ consists of two scales; adaptive and maladaptive strategies and the FEEL-KJ consists of three scales: adaptive strategies, maladaptive strategies and external strategies. However the ERSQ consists of 10 scales, ranging from "emotional understanding" to "emotional bodily sensations". It is possible that high scores on the scales "emotional awareness" and "emotional bodily sensations" do not represent adaptive ER strategies, but actually represent maladaptive ER strategies. Both these scales could imply the use of rumination, because the statements focus on noticing your emotions cognitively and physically. Some examples of statements are: "I noticed my feelings", "I was attentive of my feelings", and "I felt my feelings in my body". If people focus excessively on their emotions without undertaking action, it is actually rumination (Nolen-Hoeksema et al., 2008). In this study, the average scores on these scales were 9.48 out of 15.00 for "emotional awareness" and 9.30 out of 15.00 for "emotional bodily

sensations", which are relatively high scores. This could mean that a high total score on the ERSQ is not representative of high use of adaptive skills but rather is more complicated to interpret and therefore a high score on the ERSQ does not correlate with a low score on the SCARED-71.

For the second objective, this study found a significant negative correlation between ER and depression, but no moderation effect for gender. This means that more adaptive ER skills are correlated with less symptoms of depression and vice versa. As mentioned in the introduction, this is in line with multiple previous research that found that maladaptive ER is correlated with depression (Compas et al., 2017; Schäfer et al., 2017; Muris et al., 2009; Papadakis et al., 2006). One correlational study on adolescents aged 12 to 16 found that specifically certain adaptive and maladaptive ER strategies were correlated with depression. The combination of low use of the adaptive cognitive reappraisal and high use of the maladaptive ER strategy expressive suppression correlated with higher levels of depressive symptoms (Betts et al., 2009). However, contrary to this study, a Dutch study on adolescents aged 12 to 17 found that certain maladaptive ER strategies, like rumination, were more significantly correlated with anxiety rather than depression (Muris et al., 2004). This study did however find no significant interaction effect of gender, which is in line with the current study.

One of the strengths of this thesis was that it included a relatively large sample from multiple cities and included several different cultures and ethnicities in the Netherlands, which help ensure generalizability of the data. One limitation within our sample however is that the sample included twice as many girls as boys, which is not representative of the Dutch population. Moreover, this thesis used self-report by the participants, and only used one questionnaire for each construct, risking the chance of bias because respondents could give socially desirable answers. However, it could also ensure greater validity because people tend to put more effort and time into answering questions when they are revolving themselves (Paulhus & Valzire, 2007).

The current study shows that ER could play a part in adolescents dealing with depression. There are currently two evidence based preventive interventions for depression in adolescents, which are VRIENDEN (Taal et al., 2018) and Happyles (Meijer, 2020). These interventions only partly focus on ER strategies. A recommendation could be to expand the focus on adaptive ER strategies within these interventions or create a new intervention. These kind of interventions should target Dutch secondary schools, since these children are in their critical period for development of ER strategies and development of depression. Recommendations for future research include to incorporate more factors, like stress, into this model and to discover if this helps understand the relationship between ER and anxiety. Moreover, future research could include other questionnaires, like the CERQ (Garnefski et al., 2001) or FEEL-KJ (Sanchis-Sanchis et al., 2020) to more specifically determine the role of adaptive and maladaptive ER strategies in the relationship between ER and depression and anxiety. Since several studies have pointed out maladaptive ER strategies like avoidance, suppression, and rumination are

correlated with higher anxiety and depression (Schäfer et al., 2017), these could be additionally studied in a qualitative study to understand how they play a role in this process.

To conclude, the prevalence of anxiety and depression in Dutch youth has been rising since COVID-19, especially in girls (Boer et al., 2022; CBS, Depressie onder jongeren, 2021). During adolescence ER strategies develop substantially. At the same time, adolescence is a risk factor for the onset of anxiety and depression (Young, 2019). Previous literature has established the relationship between ER and anxiety and depression. In line with this, the current study investigated the relationship between ER and anxiety and depression in Dutch youth, and assessed the moderating effect of gender. First of all, this study found that ER and depression are correlated. Yet, gender does not moderate this relationship. Secondly, there was no significant correlation found between ER and anxiety, and gender did not moderate this relationship significantly. Interestingly, gender was found to be a predictor for anxiety. Future research is necessary to further understand the multiple factors that act together during adolescence in the development of anxiety and depression.

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