The Role of Friendship Quality in the Association Between Self-efficacy and Depression

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Abstract

Depression is a severe issue that needs to be addressed during the difficult developmental stage of adolescence. Depression in adolescents predicts negative outcomes including low self-efficacy and increases the risk of depression in adolescents. During this time, both the support of friends and the effect that peers have on one another increases. Hence, the quality of friendships may be an explanation for depressive symptoms. For that purpose, the following research question was investigated: What is the link between self-efficacy and depression when moderated by friendship quality? Three hypotheses were investigated: (1) low levels of self-efficacy are associated with high levels of depression (2) positive interactions/social support through friends are expected to moderate the link between self- efficacy and depression (3) higher levels of friendship quality acts as a protective factor against depression. The current study included a sample of 1304 adolescents that was collected mainly using the Depression (CES-D) questionnaire, Self-efficacy (SEQ-C) questionnaire and friendship quality (VAS scale). The hypothesis were supported by the results, low levels of self-efficacy predicted high levels of depression; positive interactions through friends predicted to moderate the link between self-efficacy and depression and higher levels of friendship quality acted as a protective factor against depression. Based on the results, individuals should be instructed on how to effectively manage and overcome depression by improving their feeling of self-worth and receiving guidance on how to do so.

Key words: self-efficacy, depression, friendship quality, relationship satisfaction, adolescence

The Role of Friendship Quality in the Association Between Self-efficacy and Depression

Depression is one of the most common, if not the most common, neuropsychiatric diseases in the world, affecting more than 264 million individuals, with the highest prevalence (16.9%) observed among adolescents (World Health Organization, 2017). Depressive disorders can last a lifetime, as seen in their increased prevalence from 1.1% among those aged 11 to 20.7% among those aged 18 (Wijga et al. 2011). Adolescence, which lasts from the ages of 10 to 19, is a difficult developmental time in terms of social and emotional adaption (Crone & Achterberg, 2022). Evaluating the underlying pathophysiology of depression in adolescents is therefore of the outmost importance, as adolescent depression predicts a variety of negative outcomes, including lower perceived social support, obesity, and more serious outcomes such as drug abuse and suicide (Clayborne et al., 2019; Venta et al., 2014). To reduce the risk of depression, it is most ideal to focus on increasing one's perceived self-efficacy, as low levels of self-efficacy have been linked to higher levels of depressive symptoms (Tak et al., 2017). Effective prevention and treatment methods for adolescent depression can not only assist patients who have been diagnosed with depression but also improve patients' coping mechanisms and self-efficacy. There are numerous strategies for combating adolescent depression, but one specific factor that has been highlighted is the quality of one's friendships.

Social research indicates that as adolescents approach puberty, they are likely to spend more time with friends. The influence of friends develops one's personality and social characteristics, and the importance of peers in one's life increases as time goes on (Brown & Bakken, 2011). According to several theories, peers are the most important influence on identity development in adolescents (Umaña-Taylor et al., 2020). Adolescents have a stronger

affiliation with their peers than with their parents, and their social networks are more stable and supportive, with a greater influence over their beliefs and actions (Ladd & Ettekal, 2013). Because social ties are so important in determining one's level of life satisfaction (Amati et al., 2018), having unsatisfactory social relationships can result not only in depression but also in a reduced sense of one's own ability to cope with everyday events as well as reduced self-efficacy (Kaufman et al., 2022). During adolescence, friendship is considered the most important source of social support (Fiori et al., 2020). As such, research indicates that maintaining healthy friendships is beneficial to the developmental phases such as enhanced social skills and a sense of self-efficacy (Berndt, 2002). For example, Fitzgerald and Aherne (2012) found that high-quality friendships help to increase self-determined drive and perceived self-competence and are related to increased self-efficacy for overcoming barriers in the long run. High-quality relationships were also found to have a positive impact on one's overall well-being (Luijten et al., 2021). In comparison, some clinical studies have discovered that depressive symptoms such as fatigue, anhedonia, and loss of interest in social activities are related to negative peer interactions (Homel et al., 2020). La Greca and Harrison (2005) observed that unfavourable friendship characteristics in adolescents deteriorated depression symptoms in particular. These findings open the door for questions about the complexity of the social mechanisms involved in the development of adolescent depression, particularly self-efficacy in social situations.

A critical component of teenagers' emotional well-being is their confidence in their ability to cope with difficult situations in life. These views have been labelled as "self- efficacy beliefs" in the scientific literature (Bassi et al., 2018). A self-efficacy belief is the belief in one's own capacity to perform the behaviours necessary to achieve a desired

goal (Bandura, 2004). People with high self-efficacy beliefs are more persistent when confronted with difficulties (Bandura, 2011). Self-efficacy in social situations refers to the belief in one's ability to make and keep friends, perform well in a peer context, and approach unfamiliar people (Graziano et al., 2009). Self-efficacy has also been linked to decreased depressive symptoms in the general population (Tak et al., 2017). According to the social cognition theory, a lack of self-efficacy can result in feelings of despair as a result of a misalignment between one's objectives and one's perceived abilities (Tak et al., 2017). The majority of adolescents believe they lack the ability to meet their goals, but they continue to place high expectations on themselves to have a feeling of fulfilment and value (Bandura et al., 1999). These expectations are frequently placed at an unreasonably high level. Because of this difference, it is possible that, adolescents are less inclined to take steps to achieve their goals, which can in turn have a negative impact on their self-efficacy, leading to behaviours such as negative self-talk (Lee & Vondracek, 2014). Moreover, negative self-talk and poor levels of self-efficacy have been observed to worsen depressive symptoms (Tak et al., 2015). The reverse is also true, as it has been suggested that poor emotional well-being may have an adverse effect on one’s self-efficacy beliefs. As Vargo (1996) highlights, depressed adolescents tend to retreat from social contacts and interactions, which often results in less positive peer connections and fewer friendships, which may in turn damage their sense of self-efficacy. Furthermore, research has shown that low levels of self-efficacy in adolescents are related to depressive symptoms in numerous countries across the globe (Bandura et al., 2003; Steca et al., 2014). This indicates that the association between decreased self-efficacy and the development of depressive symptoms can be seen as a vicious cause-and-effect cycle. Self-efficacy has a central role in the regulation of emotional states and provides people with the ability to interpret threatening expectations as manageable challenges and help them feel less stressed

in such situations (Bassi et al., 2018). Understanding and investigating the mechanisms behind this connection is essential to effectively treat depressive symptoms. Moreover, diagnosis of depression upon first presentation and enrolment in the correct therapy as soon as possible can enhance recovery and therapeutic outcomes. To date, an effective "cure" for depression has not been discovered; however, research shows that effective therapy can lead to an increase in quality of life as well as in self-efficacy and productivity in depressive patients, especially in adolescents (Takagaki et al., 2018). Furthermore, research has emphasized the importance of undergoing effective therapy early on, pointing out that adolescence is a critical stage in one's life, particularly in regard to learning to cope with challenges in life. In comparison, untreated depression in adolescents can lead to problems with their mental health and physical health, all of which have the potential to significantly impact the adolescent's life (Aarons et al., 2008).

Additionally, placing importance on one's friendships has been shown to be highly connected with increased levels of subjective well-being (Lu et al., 2021). Friendships are the means by which people connect with and form ties with others. Making new friendships not only helps with building confidence and learning coping skills but also helps reduce health problems such as depression (Van Harmelen et al., 2016). It is also crucial for the protection of mental health. Numerous studies have evaluated the association between self-efficacy and depression as well as the influence of friendship quality on this association in adolescents. Thus, this longitudinal study intends to investigate the association between self-efficacy and depression (if such an association exists) as well as the influence of friendship quality on this association among adolescents. This study will ultimately contribute to existing research and lay a baseline for future research on this topic. Moreover, the results obtained in this study will assist in addressing the seriousness of depression in

adolescents and emphasize the need for additional research on this topic.

Taking the above findings regarding the association between depression and self- efficacy into account, this research aims to evaluate the relationship (if any) between depressive symptoms and self-efficacy as well as the possible influence of friendship quality on this association in a large sample of adolescents (ages 10–19). Based on previous research, as discussed above, this study hypothesizes that (1) low levels of self-efficacy are associated with high levels of depression, (2) positive interactions with and social support from friends are moderately associated with the link between depression and self-efficacy, and (3) higher levels of friendship quality act as a protective factor against depression.

Methods

Participants

All of the participants were adolescents: 671 were female, with a mean age of 13.92 (SD = 0.46, Range = 12.66–16.62), and 633 were male, with a mean age of 13.96 (SD = 0.48, Range = 12.34–15.63). The study achieved statistical power based on priori power calculations on G*power software, which suggested that a sample of 80 participants would be required to detect a medium effect of 0.1, power of 0.8, $\alpha = 0.05$, and number of predictors = 3. Most participants (39.9%) attended VWO, ATHENEUM, or GYMNASIUM schools; 1.8% were in senior general secondary education (HAVO-VWO); 23.8% were in pre-vocational secondary education (VMBO-T, MAVO); and 34.5% were in upper general secondary education (HAVO).

Measures

Depression

Depression was measured with the Center for Epidemiologic Studies-Depression Scale Iowa Short Form, which is designed for use in large-scale surveys (Kolhout et al., 1993) and contains an 11-item self-report index of depressive symptoms. This is a consistent and accurate method for assessing depressive symptoms (Evers et al., 2009–2011). Adolescents were provided with 11 brief statements describing feelings or behaviours, each with four answer options ranging from 0 to 3, with 0 = rarely or none of the time, 1 = some or little of the time, 2 = occasionally or a moderate amount of the time, and 3 = most or all of the time. These statements included "I felt lonely", "I felt that people dislike me", and "My sleep was restless", among others. Using the 11 items, a total score was generated, which ranged from 0 to 33. Higher scores indicated more severe depressive symptoms, while lower scores indicated less severe symptoms. The internal consistency reliability was high, and Cronbach's alpha values of 0.80 or better were typically reported (Kolhout et al., 1993).

Self-Efficacy

The Self-efficacy Questionnaire for Children (Muris, 2001) was used to measure the self-efficacy of the participants. It consists of eight different items. Cronbach's alpha values were 0.88 for the total self-efficacy score and were between 0.85 and 0.88 for subscale scores. For each of the eight items, the adolescents were asked to specify how well they thought they could perform the task described on a 5-point Likert scale ranging from 1 = not at all to 5 = very well. The self-efficacy scores consisted of eight items, such as "How well can you become friends with other children?" A total score was calculated for the eight items,

with a total score ranging between 8 and 40, with higher scores indicating a higher level of self-efficacy.

Friendship satisfaction

The Visual Analogue Scale (VAS) was used to measure friendship satisfaction, with scores ranging from 0 to 100, with 0 = very unsatisfied and 100 = very satisfied. The scale consists of three questions, but only one was relevant for this paper: "*How satisfied are you with the relationship with your friends?"* The VAS scale is used for subjective ratings of mood, emotion, distress, or other sensations such as pain. In the case of this study, it was used to measure relationship satisfaction among friends.

Procedure

A longitudinal experiment comprising four waves of data collection was conducted among high school students in the Netherlands. Six schools consented to participate in the study after receiving information through written and oral communication. A total of 2105 students were enrolled in the study, of which 1304 students responses were used. Informational letters regarding the study were sent to the students' parents, and they were asked to contact the researchers by phone, email, or standard mail if they did not want their child to participate in the study. Additionally, informed consent was obtained from all of the adolescents who participated in the study. The participation was scheduled to take place during regular academic hours. The participants completed all instrumentation on computers while in the presence of undergraduate students who were involved in the project and who were able to assist them. This instrumentation included emotion recognition tasks, questionnaires, and round-robin evaluations (a design in which all group members evaluated all other group members). Participants received a small gift as a thank you for taking part in

the activity (e.g., a pencil). The Radboud University Nijmegen's Institutional Review Board granted approval for this study (ECG2012-2711-701).

Statistical Analyses

All analyses were performed in IBM, SPSS 28. Descriptive statistics were obtained for the overall sample. Since It was hypothesized that low levels of self-efficacy (independent variable) would be linked to increased levels of depressive symptoms (dependent variable) and that friendship quality (moderator) would moderate the link between depression and self-efficacy, the effect was assessed using Moderation analysis in Process Hayes Macro. The level of significance was set at 0.05. The original sample size after data collection from schools in wave 3 was 1333. Of these, 21 responses were considered unusable due to missing responses, as missing data is inappropriate for data analysis. As such, a total of 1312 questionnaires were used. To evaluate the quality of the data, outliers were assessed using the boxplots of self-efficacy, depression, and friendship quality. By visually inspecting the boxplots, eight extreme outliers were detected and subsequently excluded from the data analysis. As a result, the final sample size for the data analysis was compromised of 1304 participants.

Prior to conducting the analysis**,** relevant assumptions were evaluated according to the chosen statistical test. The scale of measurement criterion for linear regression was respected because depression was a continuous scale. Pearson’s correlation coefficient (r) was computed for each variable to check the extent of association between each independent variable and the dependent variable to confirm a linear relationship (Table 2). In addition, the assumption of linearity between the independent variables and dependent variable was checked on a scatterplot matrix, and the assumption was met because a linear relationship was identified in each independent variables and the dependent variable. In addition, the assumptions of the linearity and homoscedasticity of the residuals were also verified using

the scatterplots of the predicted values and the residuals, which showed that the data were evenly spaced around the regression line and showed constant variance for the error (see appendix A). The assumption of normality of the residuals was checked using the histogram and the residuals were normally distributed: therefore, the assumption was met (see appendix B). The assumption for multicollinearity was checked for the independent variables, and they were not highly correlated ($r < 0.7$). No influential outliers were detected using Cook's distance, and the assumption was met, as the distances were all less than one. The data were examined for normality. However, because the sample size was greater than 50, the Shapiro-Wilk test was not used, as the test requires a sample size to be between 3 and 50 (Shapiro & Wilk, 1965). As a result, data were examined for normality by visually inspecting the histograms (see appendix C).

Results

Descriptive Results

Means and standard deviations were calculated for the constructs of self-efficacy, depression, and friendship quality. These findings are summed up in Table 1.

Table 1

Descriptive Statistics: Mean & Std. Deviation of questionnaire scores

	Mean	Std. Deviation
Satisfaction	87.10	14.64
Self-efficacy	30.47	4.42
Depression	9.31	3.66

Correlation

Pearson correlation coefficients were calculated to test the relationship between the variables: self-efficacy, depression, and friendship quality (Table 2). The result showed that there is a moderate positive correlation between self-efficacy and friendship quality, r (1302) = .39, $p < .001$. Furthermore, there is a significant negative relationship between friendship quality and depression, r (1302) = -.28, $p < .001$. This indicates a small effect size. As friendship quality increases, depression decreases. Finally, there is a significant negative relationship between depression and self-efficacy, r (1302) = -.32, $p < .001$. As self-efficacy increases, depression decreases. This indicates a small effect size according to Cohen (1988). **Table 2**

Bivariate Correlation between self-efficacy, depression and friendship quality

	Satisfaction	Self-efficacy	Depression
Satisfaction	--		
Self-efficacy	.39***	--	
Depression	-.28***	-.32***	--

Note *p < .05, **p < .01, ***p < .001

Moderation

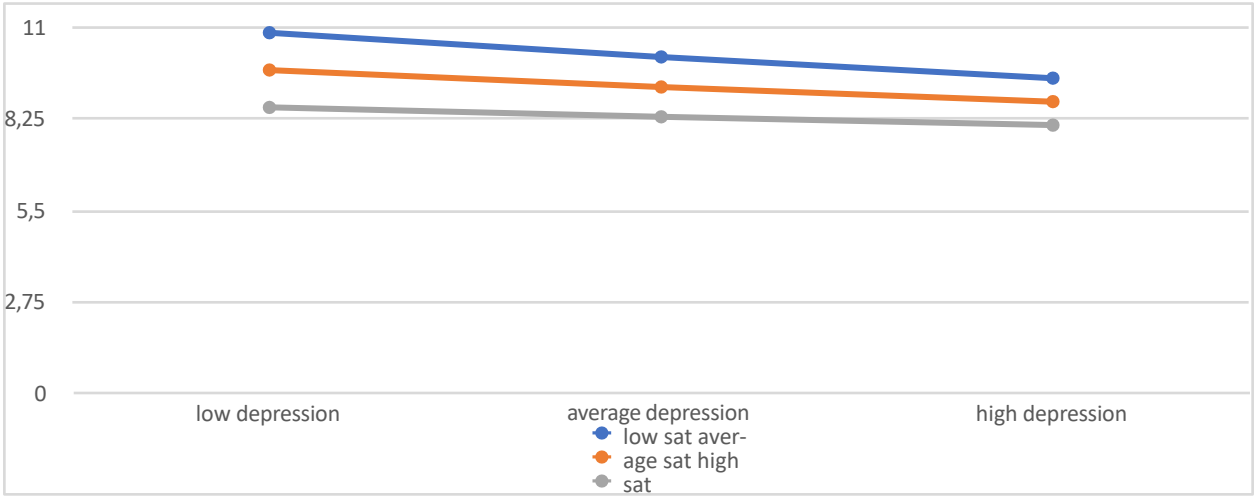
To test whether friendship quality moderates the relationship between self-efficacy and depression, hierarchical multiple regression analyses were conducted. The results showed that the model was significant $F(3.1300) = 68.30$, $p < .001$, $R^2 = .133$, which accounted for a significant proportion of the variance in depression. A significant relationship was found between self-efficacy and depression, (b = -0.50, t = -5.31, p < .001, 95% CI [-0.69, -0.32]).

This indicates that as self-efficacy increases, depression decreases. Additionally, friendship quality was found to have a significant effect on depression (b = -0.14, t = -4.60, p < .001, 95% CI [-0.20, -0.08]). An interaction term between friendship quality and self-efficacy was added to the regression model. The output showed that there is a significant interaction between the two variables (b = 0.003, t = 3.22, p = .001, 95% CI [0.001, 0.01]). When friendship quality is construed as the moderator of self-efficacy's effect on depression, the coefficient of the interaction estimates how much the difference in depression between two cases that differ by one unit of self-efficacy changes as friendship quality changes by one unit. The linear regression equation of the model is depression = 27.66 - 0.50 (SE) - 0.14 x (FQ) + 0.003 (SExFQ).

An examination of the interaction plot showed a decreasing moderating effect; as friendship satisfaction increased, depressive symptoms decreased. In other words, individuals with high levels of friendship satisfaction had low depression (Figure 1).

Figure 1

Interaction plot of self-efficacy, depression and friendship quality



Discussion

This study sought to evaluate the possible association between self-efficacy and depressive symptoms in adolescents as well as the moderating role of friendship quality on this association.The key finding of this study was a negative correlation between self-efficacy and depression, with high levels of depression being associated with low levels of self- efficacy. This is enough evidence to reject the first null-hypothesis. This negative association between depressive symptoms and self-efficacy has also been observed in previous studies, where symptoms of depression were able to predict the amount of self-efficacy at one point in time (Tak et al., 2017). Moreover, Steca et al. (2014) observed that higher self-efficacy beliefs in children predicted a smaller elevation in levels of depressive symptoms than in children with lower self-efficacy beliefs. Another key finding of the present study was the enhancing effect of the moderating variable friendship quality on the relationship between self-efficacy and depression. Specifically, higher friendship quality was found to further decrease depressive symptoms. Thus, there is enough evidence to reject the second null- hypothesis. This positive effect of friendship quality on the aforementioned association between self-efficacy and depression in adolescents is in line with previous research, which found that adolescents who reported having close friends who used drugs and alcohol repeatedly reported more symptoms of depression at each identified age. On the other hand, adolescents who reported having friends who participated in positive activities reported having less depressive symptoms (Homel et al., 2020). Moreover, Berndt (2002) found that friendships with negative characteristics increased the frequency of disagreeable and disruptive behaviours in children, whereas friendships with positive characteristics enhanced children’s success among their peers. Notably, previous research found that respondents who

were extremely satisfied with their close relationships were happy with their lives regardless of friendship quality, however when respondents were displeased with their close relationships, they were only happy with their lives if they had good friends (Kaufman et al., 2022), thus highlighting the importance of intimate relationships in relation to friendship quality. Finally, the present study found that a higher friendship quality acts as a protective factor against depression, as a higher friendship quality was found to have a decreasing effect on depression. These findings are in line with the aforementioned research by Kaufman et al. (2022) stating that when people are unhappy with their intimate relationships, they are only happy with their lives if they have good friends. Additionally, research by Luijten et al. (2021) found that higher-quality friendships result in higher overall well-being.

Two methodological limitations of the present study should be acknowledged. The first is that self-reported metrics with only one question were used to evaluate friendship quality, however the addition of clinical interviews or observations could have provided a more complete picture (Kovacs, 2001). Furthermore, because friendships involve two people, experiences can vary. When determining the quality of a friendship, it is important to take into account the views of both sides. The second limitation of this study is that it included a slightly smaller proportion of adolescents pursuing lower educational tracks, with 39.9% pursuing the highest educational track and 23.8% pursuing the lowest educational track. Therefore, caution should be taken when generalizing the results to the entire dutch adolescent population because this may not be representative of the actual effect size of self- efficacy on depression.

A definite strength of this study is its large sample size. A priori calculation suggested that a sample of 82 participants would be required to detect a medium effect, and the study

achieved a sample size of 1304, which helped it to reach statistical power. Another strength is the lack of a significant gender bias in the sample. This equal gender balance allowed for an identification of sex-based differences and responses during the data analysis.

Reflecting on this study, a recommendation for future research would be the use of different types of assessments, such as the use of clinical interviews rather than self-reporting to evaluate specific variables. Additional insights could also be collected from unstructured interviews with open-end questions, as this would allow the participants to provide in-depth information. It may be appropriate to exclude or replace the measure of friendship quality in future studies. Alternatively, a more appropriate measure for friendship satisfaction could be used that may reduce the variation and responses, as only one item was used in the current study. For example, The Friendship Quality Questionnaire (FQQ), which is a 40-item self-report measure of the quality of a child's best friendship, is one alternative measurement tool that can be utilized. The FQQ is composed of six different subscales that measures other concepts such as conflict resolution “we make up easily when we have a fight” or help and guidance “we share things with each other” (Parker & Asher, 1993). Both the test–retest reliability as well as the internal consistency of the six subscales are strong (Parker & Asher, 1993). Another observation was that an educational balance is needed to better relate the findings to the general dutch adolescent population, including adolescents from lower educational tracks. Future studies should ensure an equal balance in the proportions of level of education in adolescents and analyse the data to identify differences and responses.

Furthermore, according to Bandura et al. (1999), self-efficacy is a risk factor that can be used to predict the onset of depression. Additional studies are therefore needed to evaluate if this statement holds true for other forms of psychopathology, such as anxiety disorders. By

identifying these red flags at an early stage, more effective therapy outcomes could be achieved. Finally, future research on the association between self-efficacy and depression that considers to other factors, such as genetics, environment, or negative life experiences, could provide more information with regard to the mechanisms behind this association and the development of depressive symptoms. Future research should aim to overcome the limitations available in the present study, in order to contribute to the literature.

The findings provide evidence in support of all three hypotheses: First, that there was a negative correlation between self-efficacy and depression; second, that the moderating variable friendship quality had an enhancing effect on the relationship between self-efficacy and depression; and third, that higher levels of friendship quality served as a protective factor against depression.

When it comes to the prevention and treatment of depression in adolescents, self- efficacy and social support are particularly crucial factors to consider. Regardless of age or gender, individual should be instructed on how to effectively manage and overcome depression by improving their sense of self-worth and receiving guidance on how to do so. It is vital that medical professionals collaborate with adolescents during the course of therapy in order to strengthen the adolescents' degree of social support for the individuals in question.

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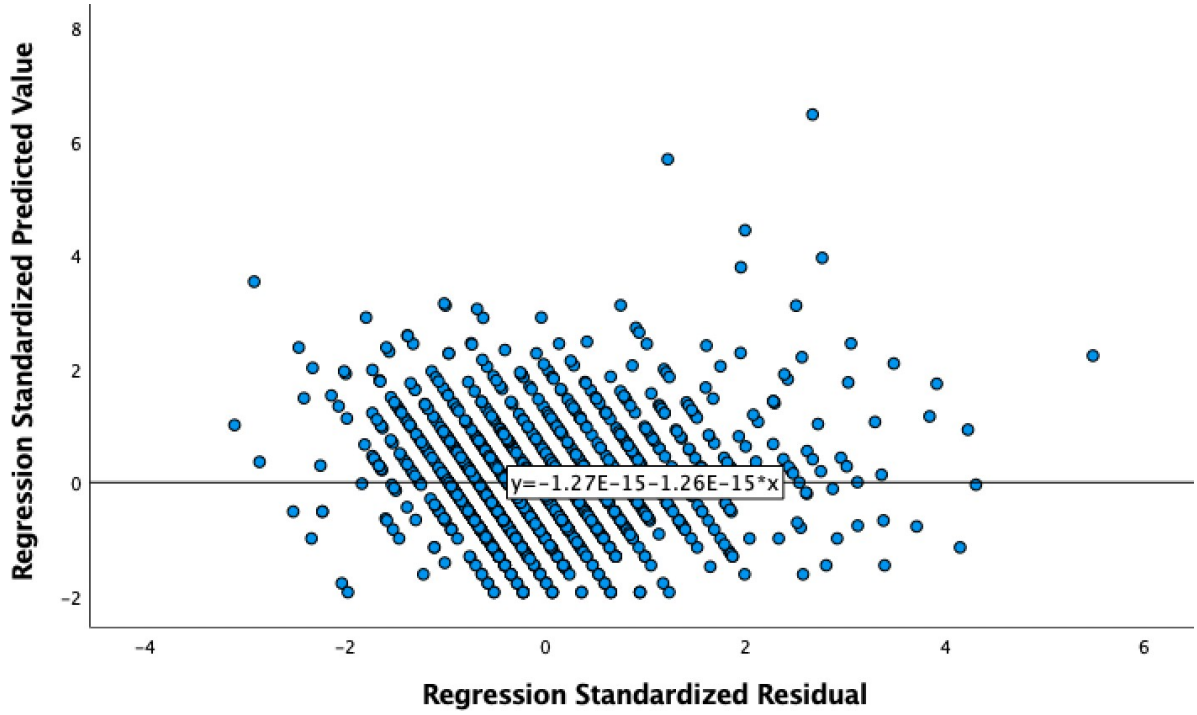
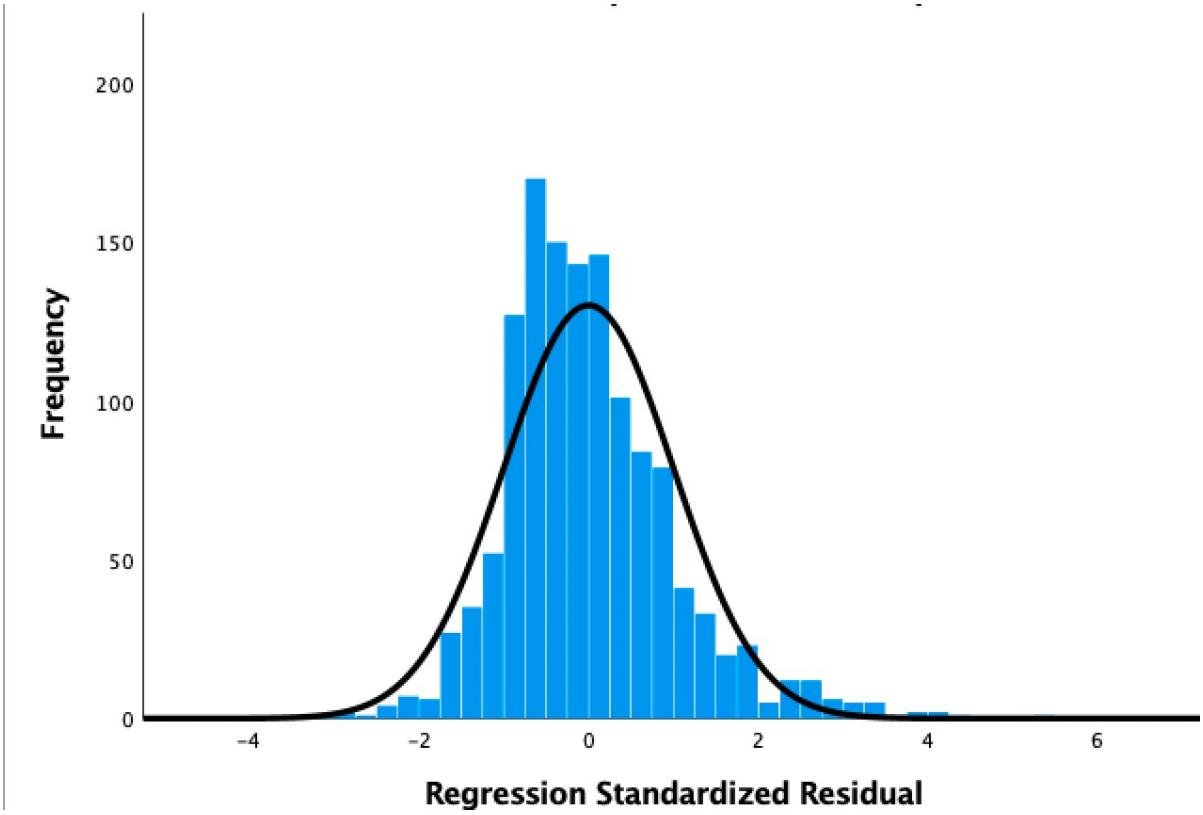
Appendix A

Scatterplot for linearity and homoscedasticity of the residuals



Appendix B

Histogram for normality of the residuals



Appendix C

Histogram for normality of the dependent variable depression