Explaining the Difference in Adolescent Well-Being Between the Netherlands and Poland Through Social Support and School Work Pressure

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This thesis has been written as a study assignment under the supervision of a Utrecht University teacher. Ethical permission has been granted for this thesis project by the ethics board of the Faculty of Social and Behavioural Sciences, Utrecht University, and the thesis has been assessed by two university teachers. However, the thesis has not undergone a thorough peer-review process so conclusions and findings should be read as such.

Abstract

Well-being of teenagers differs per country and it is unclear what causes this. The goal of this study was to identify differences in social support and school work pressure to explain the difference in well-being between the Netherlands and Poland. We used a representative sample of teenagers (M_{age} = 13.6) from the Netherlands and Poland (N = 9824) of the HBSC 2018 database for this cross-sectional study. Hierarchical multiple regression was used to predict life satisfaction and psychosomatic complaints from social support from family, social support from friends and school work pressure. These models predicted well-being well with social support from family being the strongest predictor for life satisfaction and school work pressure the strongest predictor for psychosomatic complaints in both countries. Life satisfaction, social support from family and social support from friends are found to be significantly higher in the Netherlands compared to Poland. The strong association between social support from family and life satisfaction and the fact that they are both higher in the Netherlands compared to Poland suggests that social support from family explains the difference in life satisfaction. Interestingly, the biggest difference was found in friend support, being much higher in the Netherlands compared to Poland.

Dutch

Het welzijn van tieners verschilt per land en het is onduidelijk wat dit veroorzaakt. Het doel van dit onderzoek was om verschillen in sociale ondersteuning en schoolwerkdruk te identificeren om het verschil in welzijn tussen Nederland en Polen te verklaren. Voor dit cross-sectionele onderzoek hebben wij een representatieve steekproef van tieners (M_{age} = 13.6) uit Nederland en Polen gebruikt (N = 9824) van de HBSC-studie uit 2018. Hiërarchische multipele regressie is gebruikt om levenstevredenheid en psychosomatische klachten te voorspellen op basis van sociale steun van familie, sociale steun van vrienden en schoolwerkdruk. Deze modellen voorspelden welzijn goed en sociale steun van familie bleek de beste voorspeller voor levenstevredenheid en schoolwerkdruk de beste voorspeller van psychosomatische klachten in beide landen. Levenstevredenheid, sociale steun van familie en sociale steun van vrienden bleken significant hoger in Nederland in vergelijking met Polen. De sterke associatie tussen sociale steun van familie en levenstevredenheid en het feit dat beiden hoger zijn in Nederland in vergelijking met Polen suggereert dat sociale steun van familie het verschil in levenstevredenheid verklaart. Merkwaardig genoeg was het grootste verschil dat in sociale steun van vrienden, wat een stuk hoger is in Nederland in vergelijking met Polen.

Introduction

Adolescents' well-being differs per country in Europe; Scandinavian countries and the Netherlands tend to score highest, while Eastern countries (including Poland) tend to score lowest (De Looze et al., 2018). Cross-national differences in well-being are not well understood (Cosma et al. 2020; Ottova et al. 2012). To improve well-being on a large scale, it is necessary to understand which factors cause such differences.

Life satisfaction and psychosomatic complaints are common measures for well-being (Inchley et al., 2016) and the quality of social relationships have shown to be important predictors, especially for life satisfaction (Bi et al., 2021; De Looze et al., 2018). The differences in social support from family and friends might explain the difference in life satisfaction between the Netherlands and Poland.

Another factor that can influence the well-being of adolescents is school work pressure (Boer et al., 2022; Kleinjan et al., 2020; Löfstedt et al., 2020). Cosma et al. (2020) demonstrate that school work pressure is related to psychosomatic complaints in many European countries, which is confirmed to be the case in the Netherlands (De Looze et al., 2020) as well as in Sweden (Högberg et al., 2020). However, these results cannot be generalized to all countries (Cosma et al., 2020: Löfstedt et al., 2020), so it is valuable to examine whether this applies to Poland too.

Theoretical Substantiation and Empirical Studies

Social support and well-being. A considerable difference in well-being is seen between adolescents from the Netherlands and Poland. To illustrate, between 2002 and 2014, 90% of 15-year-olds in the Netherlands report high life satisfaction, compared to less than 75% of 15-year-olds in Poland (De Looze et al., 2018). This study aims to clarify what causes this difference. De Looze et al. (2018) argue that the quality of social relationships are key in explaining cross-national differences in life satisfaction, more so than economic factors. The authors state that the quality of relationships are in turn related to the level of gender equality in a country. By comparing the well-being and social support from the Netherlands with Poland, the theory by De Looze et al. (2018) will be tested, see Figure 1.

Many studies demonstrate that social support is associated with life satisfaction (Bi et al., 2021; Inchley et al., 2016; Kong and You, 2013). A lack of social support can cause emotional problems and social support can buffer emotional problems that teenagers have, because it helps adolescents deal with life's challenges (Bachman and Bachman, 2006; De Looze et al., 2020; Helsen et al., 2000; Kleinjan et al., 2020). This study will examine whether social support from family or friends is more associated with well-being, see Figure 1.

Friendships become increasingly important during adolescence (Helsen et al. 2000; Laninga-Wijnen and Veenstra, 2021; Ryan, 2000) and Young (2006) argues that life satisfaction is predicted well by support from friends. Yet, De Looze et al. (2020) and Bi et al. (2021) argue family support is more important for adolescents' life satisfaction.

School work pressure and psychosomatic complaints. Since school is a big part of teenagers' lives, it also affects their well-being, as indicated by plentiful researchers (Boer et al., 2022; De Looze et al., 2020; Kleinjan et al., 2020; Löfstedt et al., 2020). A slight increase in school work pressure is seen in Europe (Cosma et al., 2020), which may be caused by increased perfectionism in younger generations (Curran and Hill, 2019). Multiple recent studies have shown that school work pressure affects psychosomatic complaints (Boer et al., 2022; Cosma et al., 2020; De Looze et al., 2020; Högberg et al., 2020; Löfstedt et al., 2020), but this does not apply to all countries (Cosma et al., 2020: Löfstedt et al., 2020).

Psychosomatic complaints refer to symptoms like headaches, stomach aches, nervousness and difficulty sleeping, which are not necessarily related to a defined diagnosis or disease (Haugland et al., 2000). Social support can affect psychosomatic complaints as well (Murberg and Bru, 2004). Life satisfaction seems to be more stable over time (Inchley et al., 2016), while the frequency of psychosomatic complaints can change more quickly (Cosma et al., 2020). To find out whether school work pressure is associated with psychosomatic complaints in Poland too, or that social support plays a bigger role, it is incorporated into Figure 1.

Cultural differences in well-being. Cross-national differences may also be caused by cultural norms and values (Ottova et al., 2012). According to Markus and Kitayama (2010), people from dissimilar cultures can have different patterns of thinking, feeling and acting. This means that the relationship between predictors and well-being outcomes may differ per country. For example, Bi et al. (2021) indicate that the association between social support from family and life satisfaction is not equally as strong in all countries. This may also be the case for the association between school work pressure and psychosomatic complaints, see Figure 1.

The Gap

It is claimed that social support from family and friends can account for the cross-national differences in life satisfaction of adolescents, so this will be tested on the Netherlands and Poland, because these countries differ in well-being (De Looze et al., 2018). It is unclear whether family support or support from friends is more important for life satisfaction, but more recent research leans towards family (Bi et al., 2021).

Research from the Netherlands and other Western European countries have shown that school work pressure is one of the predictors for psychosomatic symptoms, but it is unknown whether this is the case in other countries, like Poland, too.

Because the importance of specific aspects of life can differ per culture, the predictors for well-being and the way in which they relate can differ per country (Markus and Kitayama, 2010). That is why this study will also examine whether country moderates the relationship between social support from family and life satisfaction and between school work pressure and psychosomatic complaints, because these are probably the strongest relationships. Bi et al. (2021), Cosma et al. (2020), De Looze et al. (2020) and Ottova et al. (2012) all emphasize the need for international comparative research, because cross-national differences in adolescent well-being are not well understood. This study can do exactly that.

The Current Study

Hypotheses. The main hypothesis is that differences in social support from family, social support from friends and school work pressure will explain the differences in well-being between the Netherlands and Poland, see Figure 1. The hypotheses are:

1. Social support from family is most strongly associated with life satisfaction in both countries.
2. School work pressure is most strongly associated with psychosomatic complaints in both countries.
3. Life satisfaction is significantly higher in the Netherlands compared to Poland.
4. Social support from family is significantly higher in the Netherlands compared to Poland.
5. Social support from friends is significantly higher in the Netherlands compared to Poland.
6. Country moderates the relationship between social support from family and life satisfaction.
7. Country moderates the relationship between school work pressure and psychosomatic complaints.

Research model. The model will be tested on the data from the Netherlands as well as Poland.

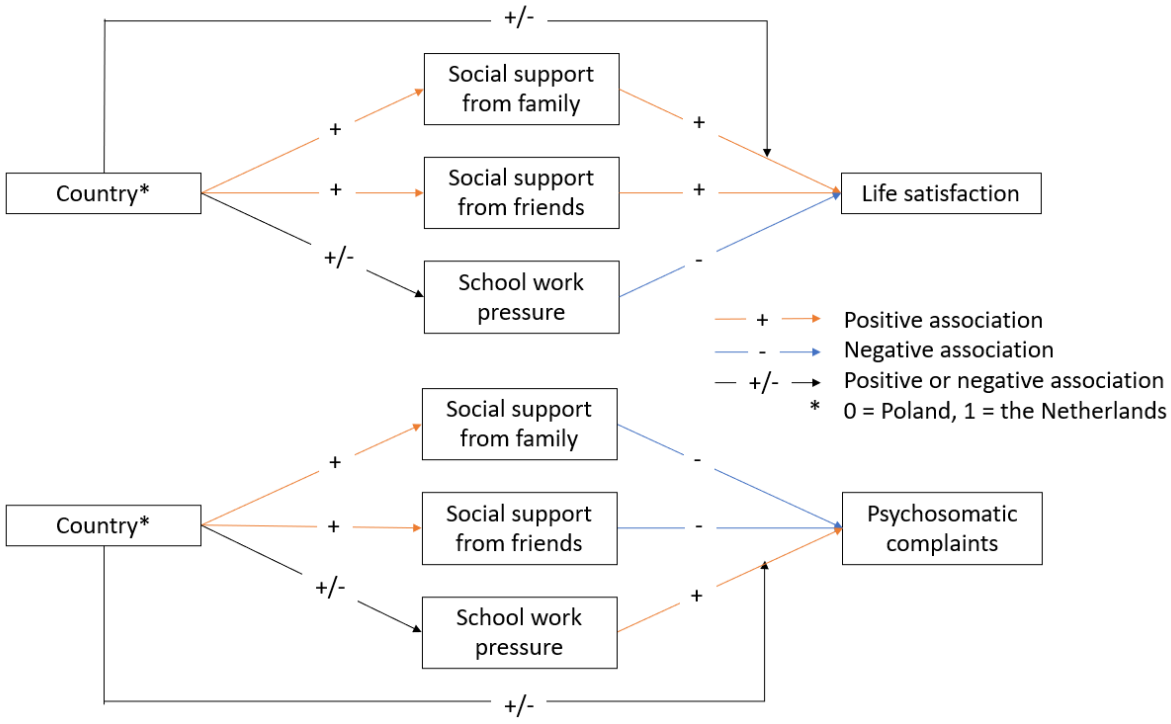

Figure 1. Conceptual model explaining the difference in well-being between the Netherlands and Poland through Social support and School work pressure

Method

Sample

The 2018 HBSC (Health and Behaviour in School-aged Children) database was used for this study, which consists out of school-based self-surveys of 11, 13 and 15 year-olds from 44 European countries and Canada (N = 240951). The present study analyses a sample of teenagers from the Netherlands (N = 4698) and a sample from Poland (N = 5224). After removing respondents with missings on the dependent variables (life satisfaction ($N_{missings}$ = 75) and psychosomatic complaints ($N_{missings}$ = 23)) the final database consists out of N = 9824 with a M_{age} = 13.6 (SD = 1.63) and 51% girls. Ninety-five percent of the Dutch sample was born in the Netherlands and 97% of the Polish sample was born in Poland. Because very low levels of data is missing on the used variables (1% or less per variable), all statistical models used the list-wise deletion approach.

Design and Procedure

The HBSC research collects data by spreading a survey in schools every four years, meaning it has a time sequential design. However, this study will only look at data collected

in one year, meaning the study is cross-sectional. Participating countries obtained ethical approval of the study procedures from their institutional ethics committee. The HBSC provides representative samples through cluster sampling, meaning usually one class per age group (11/13/15 year-olds) was randomly selected from the same school. Multiple classes participated if the classes were very small. In each country around 1500 pupils were selected from each age group. Participation was voluntary and informed consent was acquired from school administrators, parents and children according to local human subject requirements (*HBSC Study*, 2020).

The pupils filled in the questionnaire anonymously in the classroom, either with pen and paper or on a computer. The participants answer questions about their health behaviour and social contexts, including eating behaviours, physical activity, health complaints, life satisfaction, relationships with family and friends, school environment, sexual behaviour, socioeconomic environment and substance use. The data collection in the Netherlands started on October 1st 2017 and ended on December 31th 2017. The data collection in Poland started on November 27th 2017 and ended on May 18th 2018 (Inchley et al., 2020).

Measuring Instruments

Social support. The independent variables 'social support from family' (SSFA) and 'social support from friends' (SSFR) are both measured with four questions (including "They really try to help me" and "I can share my problems with them"), using a Likert scale from 1 ("totally disagree") to 7 ("totally agree"). See Appendix A for all used questions per variable.

Principal axis factoring was done to verify whether the questions measure the same single construct. SSFR and SSFA were both analysed. All correlation of all indicators of SSFR and SSFA are > .3 and the KMO tests give values of .82 and .85 respectively, meaning these requirements are met. Bartlett's tests resulted in Chi-Squares much bigger than the *df* and the Chi-Square was significant in both cases. This means that both scales were suitable for factor analysis. All questions were asked in the same direction so no values needed to be reversed.

For both SSFR and SSFA the Kaiser criterium resulted in one factor with an Eigenvalue above 1 and the scree plots show one component is much higher than the rest, indicating a one-factor solution is applicable. The Cronbach's Alpha of SSFR was .92 and the Cronbach's Alpha of SSFA was .92, both indicating very high reliability. In both cases removing a question would decrease Cronbach's Alpha, so all questions were included. A new variable was created from the SSFR questions (M = 5.1, SD = 1.6) and the SSFA questions were combined to create a new variable too (M = 5.8, SD = 1.5).

School work pressure. The independent variable 'school work pressure' is measured with one question: "How pressured do you feel by the schoolwork you have to do?" with responses ranging from 1 ("not at all") to 4 ("a lot").

Life satisfaction and psychosomatic complaints. The dependent variable 'life satisfaction' is measured by showing a picture of a ladder representing a scale from 0 ("worst possible life") to 10 ("best possible life"). The question is: "Whereon the ladder do you feel you stand at the moment?" The other dependent variable 'psychosomatic complaints' consists out of 8 questions on the frequency of symptoms (including headache, stomach-ache, feeling low, irritability, nervousness and difficulty in getting to sleep), with answers ranging from 1 ("about every day") to 5 ("rarely or never").

Principal axis factoring was also done on psychosomatic complaints to see if they could be combined into one variable. All items have more than one correlation > 0.3, except for the item 'backache' and the KMO test gives a value of 0.86. This means most requirements are met. 'Backache' is still included because this is in line with previous HBSC research (Cosma et al., 2020; De Looze et al., 2020; Hagquist et al., 2019: Högberg et al., 2020). Bartlett's test results in a Chi-Square much bigger than the *df* and the Chi-Square was significant. This means that the scale is suitable for factor analysis.

The Kaiser criterium resulted in two factors with an Eigenvalue above 1, which may imply that the questions measure two different factors instead of one, which Högberg et al. (2020) also mentioned. However, the scree plot shows that one component is much higher than the rest indicating that a one-factor solution is possible. Because the scale ranges from 1 ("about every day") to 5 ("rarely or never"), they were reverse coded to make interpretation meaningful (scale 0 to 4). The Cronbach's Alpha is 0.798, indicating high reliability. Removing a question would decrease Cronbach's Alpha (even backache), so all questions were included. A new variable using all the symptoms was created (M = 1.0, SD = 0.8). At least five out of the eight questions had to be answered to be used for the new variable.

Control variables. The control variables are age, gender and family affluence, because these affect adolescent well-being across countries (Boer et al., 2022; Cavallo et al., 2015; Cosma et al., 2020; Haugland et al., 2000). Family affluence (FAS) is a sum score ranging from 0 to 13 based on six questions asking about the presence and amount of things like cars, bathrooms and computers in the household. Answer options range between 1 ("No") to 4 ("Yes, more than two").

Data Analysis

To find out which factor is most strongly associated with the dependent variables, hierarchical multiple linear regression is required. This will be used for hypothesis 1 and 2. The next three hypotheses about significant differences will be tested using the Independent Samples *t* Test. PROCESS will be used to analyse the moderating effect of the country on the relationships between the social factors and well-being, testing hypothesis 6 and 7.

Assumptions. The statistical tests require independent random sampling, which is the case (see Sample). They also require the variables to be interval level, which is technically not the case. However, according to Wu and Leung (2017) using a scale with a least 11 points is acceptable too (which is the case for life satisfaction and FAS) as well as using mean scores of multiple items (which is the case for social support and psychosomatic complaints). Dummy variables are made of sex and school work pressure (because the latter consist out of only four answer options). Other requirements are normal distribution of the dependent variables, homogeneity and no multicollinearity. The variables do not seem to be normally distributed. However, the used sample is very big (N = 9824) and according to Field (2017) normality is not a problem when using large samples. The population variances are not equal according to Levene's test, but Field (2017) explains this test is not reliable either when using large datasets. The standardized residual plot seems to indicate the variance is not heterogeneous. No correlation (of predictors) is > .7 or < -.7 and VIF < 5, affirming that no multicollinearity is present. This means that all requirements are met and the necessary statistical tests can be carried out.

Results

Descriptive Statistics and Correlations

Of the Dutch sample (M_{age}=13.5 years old, SD = 1.6) 51% were girls and the average family affluence was 9.0 (SD = 1.8) on a scale from 0 to 13. Of the Polish sample (M_{age}= 13.6 years old, SD = 1.7) 51% were girls and the average family affluence was 7.8 (SD = 2.3). Table 1 shows the means and standard deviations of the dependent and independent variables with the Netherlands scoring higher in everything except school work pressure and psychosomatic complaints. Table 2 shows the correlations between the variables. Pearson was used for the numerical variables and Spearman was used for the categorical variables (gender and school work pressure). A significance level of $p < .01$ is chosen instead of $p < .05$, because associations and interactions become significant more easily in large datasets like this one. All predictors are significantly correlated to the dependent variables. The correlations of most variables have a small effect size ($r > .1$) and some (family support with life satisfaction,

psychosomatic complaints and friends' support; psychosomatic complaints with school pressure and life satisfaction) have a medium effect size ($r > .3$).

Table 1

Means, Range and Standard Deviations of Variables per Country

Country	Family support	Friend support	School work pressure	Psychoso-matic com-plaints	Life satisfaction
The Netherlands	*M* = 6.1 [1, 7] *SD* = 1.3	*M* = 5.8 [1, 7] *SD* = 1.3	*M* = 2.2 [1, 4] *SD* = 0.9	*M* = 0.9 [0, 4] *SD* = 0.8	*M* = 7.8 [0, 10] *SD* = 1.6
Poland	*M* = 5.5 [1, 7] *SD* = 1.5	*M* = 4.5 [1, 7] *SD* = 1.6	*M* = 2.4 [1, 4] *SD* = 0.9	*M* = 1.1 [0, 4] *SD* = 0.8	*M* = 7.5 [0, 10] *SD* = 1.9

Table 2

Correlations of all Variables

Variables	1.	2.	3.	4.	5.	6.	7.	8.
1. Life satisfaction	1.00							
2. Psychosom. complaints	-.47**	1.00						
3. Age	-.23**	.19**	1.00					
4. Sex[a]	-.13**	.20**	.01	1.00				
5. Family affluence	.12**	-.04**	.03	-.02	1.00			
6. Family support	.44**	-.34**	-.20**	-.03	.13**	1.00		
7. Friends' support	.27**	-.21**	-.05**	.16**	.16**	.41**	1.00	
8. School pressure[b]	-.27**	.38**	.20**	.16**	.00	-.17**	-.12**	1.00

**. Correlation is significant at the 0.01 level (2-tailed).

[a] 1 = male, 2 = female

[b] 1 = Not at all, 2 = A little, 3 = Some, 4 = A lot

Model and Main Predictors for Life Satisfaction and Psychosomatic Complaints

A hierarchical multiple linear regression was run to predict life satisfaction in the Netherlands. Model 1 included the covariates (age, gender and family affluence) and model 2 added social support from family, social support from friends and school work pressure as predictors. These variables statistically significantly predicted life satisfaction, $F(8, 4501) = 209.76$, $p < .001$, $R^2 = .27$. All six variables added statistically significantly to the prediction, $p < .001$. The model explains 27% of the variance in life satisfaction (of which 10% is explained by the covariates). Social support from family is, as predicted by hypothesis 1, most strongly associated with life satisfaction in the Netherlands ($\beta = 0.28$).

A second hierarchical multiple regression was run to predict life satisfaction from age, gender, family affluence (model 1), social support from family, social support from friends and school work pressure (model 2) in Poland. These variables statistically significantly predicted life satisfaction, $F(8, 4940) = 228.45$, $p < .001$, $R^2 = .27$. All six variables added statistically significantly to the prediction, $p < .001$. The model explains 27% of the variance in life satisfaction (of which 7% is explained by the covariates). Social support from family is, as predicted by hypothesis 1, most strongly associated with life satisfaction in Poland too ($\beta = 0.35$).

A third hierarchical multiple regression was run to predict psychosomatic complaints from age, gender, family affluence (model 1), social support from family, social support from friends and school work pressure (model 2) in the Netherlands. These variables statistically significantly predicted psychosomatic complaints, $F(8, 4498) = 168.24$, $p < .001$, $R^2 = .23$. All variables added statistically significantly to the prediction, $p < .001$, except for family affluence, $p = .028$. The model explains 23% of the variance in psychosomatic complaints (of which 7% is explained by the covariates). School work pressure is, as predicted by hypothesis 2, most strongly associated with psychosomatic complaints in the Netherlands ($\beta = 0.31$).

The last hierarchical multiple regression was run to predict psychosomatic complaints from age, gender, family affluence (model 1), social support from family, social support from friends and school work pressure (model 2) in Poland. These variables statistically significantly predicted psychosomatic complaints, $F(8, 4897) = 108.17$, $p < .001$, $R^2 = .27$. All variables added statistically significantly to the prediction, $p < .001$. The model explains 27% of the variance in psychosomatic complaints (of which 9% is explained by the covariates). School work pressure is, as predicted by hypothesis 2, most strongly associated with psychosomatic complaints in Poland too ($\beta = 0.31$).

All models that included both covariates and predictors except the one predicting psychosomatic complaints in the Netherlands have an R^2 above 0.26, which means these models have large effect sizes and are adequate at predicting the dependent variable. The latter model has a medium effect size. Hypothesis 1 (social support from family is most strongly associated with life satisfaction in both countries) and hypothesis 2 (school work pressure is most strongly associated with psychosomatic complaints in both countries) were confirmed. Tables for all the regression models including all variables are in Appendix B.

Differences Between the Netherlands and Poland

There was a significant difference in life satisfaction between the Netherlands and Poland ($t_{9589} = 7.91$, $p < .001$). The average life satisfaction of Dutch teenagers is 0.28 higher than the average life satisfaction of Polish teenagers (on a scale from 0 to 10), affirming hypothesis 3.

There was a significant difference in social support from family between the Netherlands and Poland ($t_{9589} = 21.24$, $p < .001$). The average social support from family Dutch teenagers perceived is 0.61 higher than the average social support from family perceived by Polish teenagers (on a scale from 1 to 7), affirming hypothesis 4.

There was a significant difference in social support from friends between the Netherlands and Poland ($t_{9589} = 43.90$, $p < .001$). The average social support from friends Dutch teenagers perceived is 1.33 higher than the average social support from friends perceived by Polish teenagers (on a scale from 1 to 7), affirming hypothesis 5.

The hypotheses that life satisfaction and social support from family and friends is higher in the Netherlands than in Poland were confirmed, but only support from friends had a large effect size (Cohen's $d = 0.89$). The effect size of support from family was small/medium ($d = 0.43$) and the effect size of life satisfaction was very small ($d = 0.16$), see Table 3. Figure 2 demonstrates the clear contrast between teenagers from Poland and the Netherlands in the distribution of the degree in which they agree or disagree with feeling supported by their friends. A table describing all statistical information of the *t*-tests is in Appendix B.

Table 3

Significant Differences and Effect Sizes Between Countries

	Family support	**Friend support**	**School work pressure**	**Psychosom. symptoms**	**Life satisfaction**
Effect size (Cohen's *d*)	0.43*** small/medium effect	0.89*** large effect	-0.25*** small effect	-0.28*** small effect	0.16*** < small effect

***. Difference is significant at the 0.001 level (2-tailed).

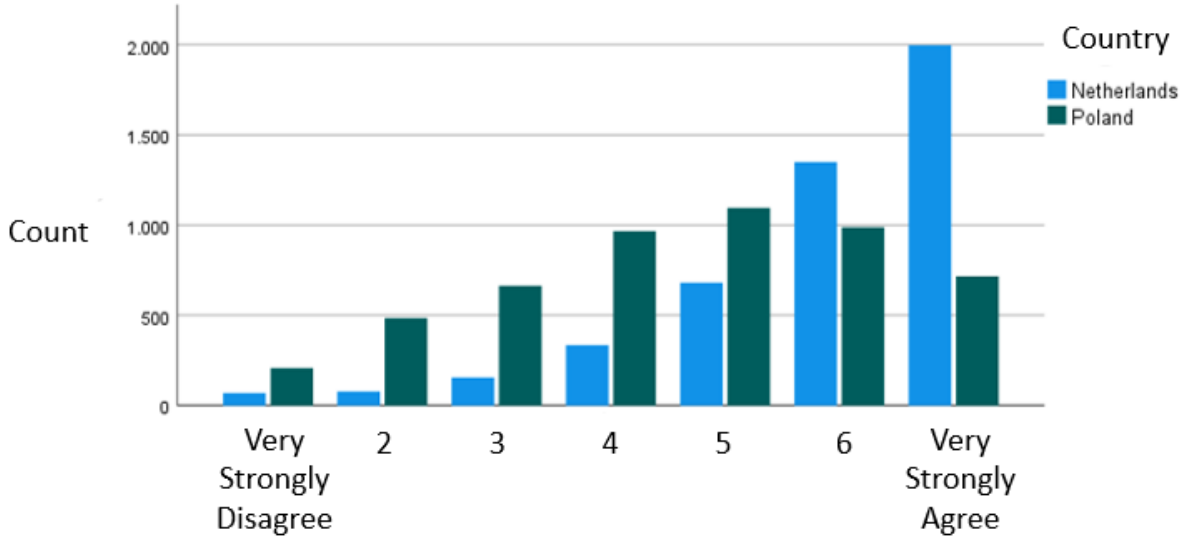

Figure 2. Distribution in degree of feeling supported by friends per country

Moderation by Country

Moderation analyses were done to check whether the relationship between social support from family and life satisfaction and the relationship between school work pressure and psychosomatic complaints are the same or different in the Netherlands and Poland. The standardized coefficients of social support from family on life satisfaction (β = 0.28 in the Netherlands compared to β = 0.35 in Poland) already point to a difference in strength of this relationship.

Country interacted significantly with social support from family on life satisfaction (p <.001), but not with school work pressure on psychosomatic complaints (p = .735). See Appendix B for Tables. The moderation showed life satisfaction was more strongly associated with support from family in Poland compared to the Netherlands; Polish teenagers who perceived low family support had a lower life satisfaction than Dutch teenagers; and Polish teenagers who perceived high family support had higher life satisfaction than Dutch

teenagers, see Figure 3. This affirms hypothesis 6. School work pressure is related to psychosomatic complaints in the same way in both countries, rejecting hypothesis 7.

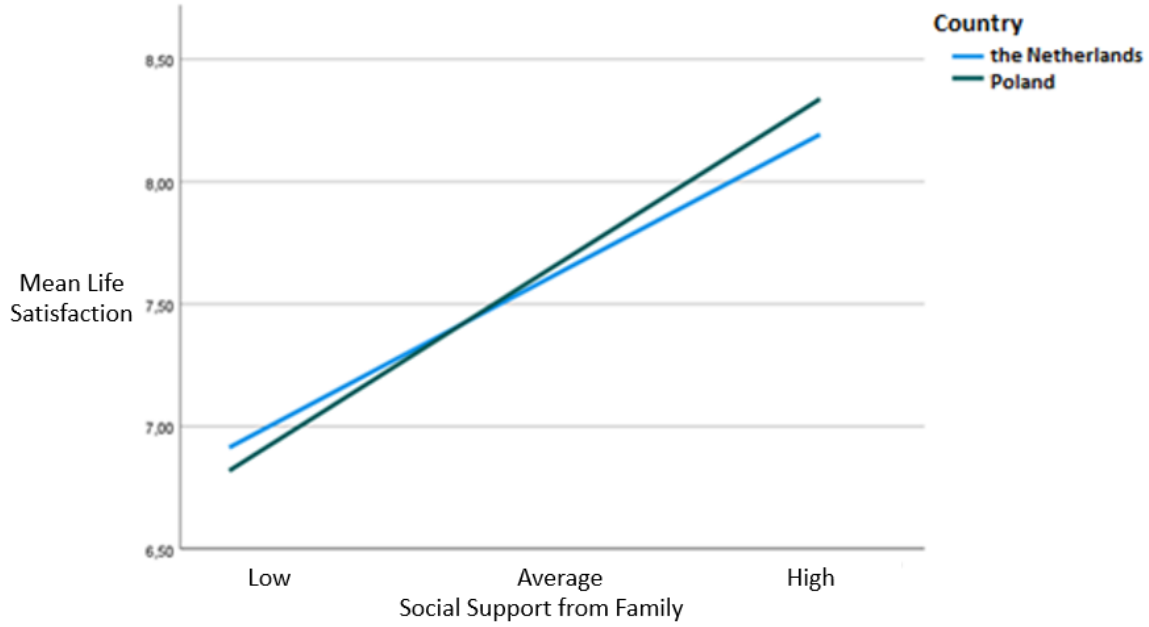

Figure 3. Interaction effect of Country on the relationship between Social support from family and Life satisfaction

Discussion

Summary

The well-being of Polish adolescents differs from Dutch adolescents and this is not well understood. The aim of this study was to clarify this difference using a theory by De Looze et al. (2018) which proposed that cross-national differences in life satisfaction are related to differences in social support. Cosma et al. (2020) indicated school work pressure is relevant for well-being as well. Together, this led to the question: Do differences in social support and school work pressure explain the difference in well-being between the Netherlands and Poland? The results showed that social support from family was most strongly associated with life satisfaction in both countries and that these factors were significantly higher in the Netherland compared to Poland. This suggests that social support from family explains why life satisfaction is higher in the Netherlands compared to Poland. School work pressure was most strongly associated with psychosomatic complaints in both countries. Both factors were higher in Poland, explaining this difference as well. Remarkably, the largest difference was found in social support from friends, being much higher in the Netherlands.

Discussion

Now all hypotheses are discussed. In line with the first hypothesis, the findings show that social support from family is indeed more strongly associated with life satisfaction in both countries than social support from friends or school work pressure. This confirms previous research by Bi et al. (2021), De Looze et al. (2020) and Kleinjan et al. (2020). This implies that for adolescents under 16 years old, family is still more important for well-being than friends. Chopik (2017) indicates friendships becomes more important later in life.

The second hypothesis that school work pressure is most strongly associated with psychosomatic complaints in both countries is confirmed by the data. This is in line with previous research from the Netherlands (De Looze et al., 2020) and Sweden (Högberg et al., 2020), indicating a similar mechanism takes place in Poland.

Life satisfaction, social support from family and social support from friends is significantly higher in the Netherlands compared to Poland, which confirms hypothesis 3, 4 and 5. This is in line with the theory by De Looze et al. (2018) which argues that differences in social support are related to differences in life satisfaction across countries. However, life satisfaction has a very small effect size and interestingly social support from friends differed most between the countries and had the largest effect size. This means that the difference in friendship has practical significance, while the other differences do not.

In line with the sixth hypothesis ‘country moderates the relationship between social support from family and life satisfaction’, the data shows that a slightly stronger relationship between the two is present in Poland. This confirms the theory that cultures can create different patterns of thinking and feeling (Markus and Kitayama, 2010) and the study by Bi et al. (2021) indicating the relationship between social support from family and life satisfaction differs per country. This means that we cannot assume that predictors of well-being function the same in all countries, but require closer examination. Maybe social support from family was more important in Polish adolescents, because their social support from friends was much lower than in the Netherlands. Lacking good friendships can increase the dependency on family (Buijs et al., 2022).

The last hypothesis that country moderates the relationship between school work pressure and psychosomatic complaints was not confirmed by the data. Although this outcome was not predicted, the theory that cultures can create varying patterns of thinking and feeling is still valid because it is a possibility, not a rule (Markus and Kitayama, 2010). Because school work pressure is higher in Poland than in the Netherlands, it can explain why

psychosomatic complaints are higher too. This may imply that this mechanism is present in more countries than only northern and western Europe.

Social support from family is most strongly associated with life satisfaction and it is higher in the Netherlands compared to Poland, suggesting that social support from family explains why life satisfaction is higher in the Netherlands. This answers the main research question.

Strengths and Limitations

The findings should be interpreted in the light of the following strengths and limitations. Because this is a cross-sectional study, causal relationships cannot be inferred, only associations. Future research should use longitudinal data to find causal relationships. Also, the measurement of the variables could be improved to gain more robust results. The questionnaire should include reverse coded questions and life satisfaction and school work pressure should be measured with more than one question, which is now compromising the robustness of the data. Many researchers (Cosma et al., 2020; Hagquist et al., 2019; Högberg et al., 2020; Löfstedt et al., 2020) modify the variable psychosomatic complaints differently before analysis, demonstrating this variable is not easy to use. To make the research more comparable this variable should be improved so it can remain the same before analysis.

Additionally, to understand well-being better, future research should incorporate more variables. This study focussed on social support and school work pressure, but there are many other predictors for well-being, including bullying and the quality of communication with parents or teachers (De Looze et al., 2020; Inchley et al., 2016). Abdullahi et al. (2020) argue that personality is also an important predictor for well-being. Adolescent well-being is a complex phenomenon which relies on more variables than are possible to be discussed in one thesis. Also, more country comparisons could illuminate more diverse patterns of well-being, as indicated by Bi et al. (2021).

The strength of this study lies in the size of the used sample and the research question. By using a large dataset it is possible to find small differences between populations. To the best of my knowledge this is the first study comparing the well-being of teenagers from the Netherlands and Poland, filling a gap of knowledge that is often overlooked. Comparing countries (through moderation analysis) provides interesting new insights and nuances the understanding of well-being on a national or global scale.

Conclusion and Implications

This study demonstrated that social support from family is important for adolescent life satisfaction and that school work pressure relates to psychosomatic complaints in

teenagers. Social support (especially from friends) and life satisfaction are higher and school work pressure and psychosomatic complaints are lower in the Netherlands compared to Poland. Also, support from family is related slightly more strongly to life satisfaction in Poland compared to the Netherlands. Policies to improve well-being should be targeted at improving the quality of social relationships and decreasing school work pressure.

Experiencing psychosomatic complaints as a result of school work pressure is a phenomenon that is present in many European countries, but reasons for the differences between countries remain unclear (Cosma et al. 2020). Curran and Hill (2019) have suggested that perfectionism has increased in the last decades in Western societies because neoliberal meritocracies highly value individualism and success. This may be reason why adolescents' well-being is negatively affected by school work, because they believe they have to excel at everything.

It is confirmed there are differences in social support in the Netherlands and Poland, but why? According to De Looze et al. (2018) this is related to the level of gender equality in a country. The Gender Inequality Index (ranging from 0 to 1 with higher numbers indicating more inequality) created by the United Nations Development Programme shows the Netherlands scored 0.027, while Poland scored 0.121 in 2018 (United Nations Development Programme, n.d.). De Looze et al. (2018) suggest that gender equality fosters better relationships, because characteristics that are deemed feminine, like care and emotional support, become more valued. They argue that gender equality benefits girls and boys equally. This means that if we want to improve well-being on a large scale, it is needed to fight for gender equality which will improve support from friends and family.

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Appendices

Appendix A: All used survey questions

Variable	Question(s) / statement(s)	Answer options
Age	When is your birthday?	dd—mm—yyyy (calculated into ages ranging from 10.6 to 16.4)
Sex	Are you a girl or a boy?	1 = Boy 2 = Girl
Family affluence	1. Does your family own a car, van or truck?	1 = No 2 = Yes, one 3 = Yes, two or more
	2. Do you have your own bedroom for yourself?	1 = No 2 = Yes
	3. How many computers do your family own (including laptops and tablets, not including game consoles and smartphones)?	1 = None 2 = One 3 = Two 4 = More than two
	4. How many bathrooms (room with a bath/shower or both) are in your home?	1 = None 2 = One 3 = Two 4 = More than two
	5. Does your family have a dishwasher at home?	1 = No 2 = Yes
	6. How many times did you and your family travel out of [insert country here] for a holiday/vacation last year?	1 = Not at all 2 = Once 3 = Twice 4 = More than twice
Life satisfaction	Here is a picture of a ladder. The top of the ladder "10" is the best possible life for you and the bottom "0" is the worst possible life for you. In general, where on the ladder do you feel you stand at the moment? Tick the box next to the number that best describes where you stand.	10 Best possible life 9 8 7 6 5 4 3 2 1 0 Worst possible life
Psychosomatic complaints	1. Headache 2. Stomachache 3. Backache 4. Feeling low 5. Irritability or bad temper 6. Feeling nervous 7. Difficulties in getting to sleep 8. Feeling dizzy	1 = About every day 2 = More than once a week 3 = About every week 4 = About every month 5 = Rarely or never
Social support from family	1. My family really tries to help me 2. I get the emotional help and support I need from my family 3. I can talk about my problems with my family	1 = Very strongly disagree 2 3 4 5 6

	4. My family is willing to help me make decisions	7 = Very strongly agree
Social support from friends	1. My friends really try to help me 2. I can count on my friends when things go wrong 3. I have friends with whom I can share my joys and sorrows 4. I can talk about my problems with my friends	1 = Very strongly disagree 2 3 4 5 6 7 = Very strongly agree
School work pressure	How pressured do you feel by the schoolwork you have to do?	1 = Not at all 2 = A little 3 = Some 4 = A lot

Appendix B: Tables

Table 1

T-*Tests for Independent Samples (Poland is 0, Netherlands is 1)*

Variable	*F*	*t*	*df*	*p*	$M_{difference}$
Life satisfaction	268.77	7.91	9589	<.001	0.28
Psychosomatic complaints	25.58	-13.65	9589	<.001	-0.22
Support from family	371.53	21.24	9589	<.001	0.61
Support from friends	393.95	43.90	9589	<.001	1.33
School work pressure	69.89	-12.16	9589	<.001	-0.22

Table 2

Multiple linear regression predicting Life satisfaction on Dutch dataset

Variable	*B*	*SE B*	β	*t*	*p*
Age	-0.15	0.01	-0.16	-11.83	<.001
Sex[a]	-0.43	0.04	-0.14	-10.35	<.001
Family affluence	0.07	0.01	0.08	6.46	<.001
Support from family	0.34	0.02	0.28	19.70	<.001
Support from friends	0.15	0.02	0.13	8.87	<.001
A little school work pressure	-0.35	0.05	-0.11	-6.61	<.001
Some school work pressure	-0.71	0.07	-0.18	-10.93	<.001
A lot of school work pressure	-1.12	0.08	-0.21	-13.62	<.001

[a] 0 = male, 1 = female

Table 3

Multiple linear regression predicting Life satisfaction on Polish dataset

Variable	*B*	*SE B*	β	*t*	*p*
Age	-0.11	0.02	-0.10	-7.60	<.001
Sex[a]	-0.29	0.05	-0.08	-6.00	<.001
Family affluence	0.06	0.01	0.07	5.82	<.001
Support from family	0.44	0.02	0.35	25.93	<.001
Support from friends	0.15	0.02	0.13	10.03	<.001
A little school work pressure	-0.22	0.08	-0.06	-2.94	<.001
Some school work pressure	-0.61	0.08	-0.14	-7.42	<.001
A lot of school work pressure	-0.97	0.09	-0.18	-10.53	<.001

[a] 0 = male, 1 = female

Table 4

Multiple linear regression predicting Psychosomatic complaints on Dutch dataset

Variable	*B*	*SE B*	β	*t*	*p*
Age	0.03	0.01	0.06	4.11	<.001
Sex[a]	0.24	0.02	0.15	11.13	<.001
Family affluence	-0.01	0.01	-0.03	-2.20	.028
Support from family	-0.13	0.01	-0.21	-14.49	<.001
Support from friends	-0.03	0.01	-0.05	-3.69	<.001
A little school work pressure	0.16	0.03	0.10	5.89	<.001
Some school work pressure	0.51	0.03	0.26	15.30	<.001
A lot of school work pressure	0.82	0.04	0.31	19.42	<.001

[a] 0 = male, 1 = female

Table 5

Multiple linear regression predicting Psychosomatic complaints on Polish dataset

Variable	*B*	*SE B*	β	*t*	*p*
Age	0.04	0.01	0.08	5.95	<.001
Sex[a]	0.263	0.02	0.16	12.87	<.001
Family affluence	0.01	0.00	0.04	3.17	.002
Support from family	-0.123	0.01	-0.23	-17.11	<.001
Support from friends	-0.05	0.01	-0.10	-7.63	<.001
A little school work pressure	0.04	0.03	0.03	1.35	0.176
Some school work pressure	0.35	0.04	0.19	10.12	<.001
A lot of school work pressure	0.71	0.04	0.31	18.21	<.001

[a] 0 = male, 1 = female

Table 6

Family support, Country and its Interaction predicting Life satisfaction

	B	*SE*	*t*	*p*
Family support	0.48	0.02	26.24	<.001
Country	0.04	0.03	1.10	.273
Family support X Country	0.09	0.02	3.86	<.001

Table 7

Simple slopes of Country on the Relationship between Family support and Life satisfaction

	B	***SE***	***t***	***p***
The Netherlands	0.48	0.02	26.24	<.001
Poland	0.57	0.01	39.43	<.001

Table 8

School work Pressure, Country and its Interaction predicting Psychosomatic Complaints

	B	***SE***	***t***	***p***
School pressure	0.34	0.01	27.15	.000
Country	0.15	0.02	9.82	.000
School pressure X Country	-0.01	0.02	-0.34	.735

Appendix C: Form for research activities

Registration Form: Research Activities for TED-students (in total 60 hrs)

.....Merel Spanier.....(Name)

..... 1386883.....(Student number)

Research Activities	**Total number of Hours**	**Signature YS staff**
Finding workgroup supervisors for 'Leeronderzoek'	4 hours	
Preparation of workgroups for 'Leeronderzoek'	22 hours	
Being contact person between course coordinator of 'Leeronderzoek' and all workgroup supervisors	22 hours	
Being workgroup supervisor for first year students in research and statistics course 'Leeronderzoek' (3 Wednesdays, 2 groups per day, 2 hours per group)	12 hours	
Total	**60 hours**	

Appendix D: SPSS-syntax

```
* Encoding: UTF-8.

*DATA CLEANING*

 *first I  created a dataset with only the variables I needed, with only data from the Netherlands and Poland*


DATASET ACTIVATE DataSet1.

DATASET COPY  Missinglifesat.

DATASET ACTIVATE  Missinglifesat.

FILTER OFF.

USE ALL.

SELECT IF (MISSING(lifesat)).

EXECUTE.

DATASET ACTIVATE  DataSet1.

*copied data with missings on life satisfaction to a separate data set (75 cases)*


DATASET ACTIVATE DataSet2.

FILTER OFF.

USE ALL.

SELECT IF ( ~ MISSING(lifesat)).

EXECUTE.

*deleted Missings(lifesat) from dataset *


DATASET ACTIVATE DataSet2.

DATASET COPY Missingpsychosom.

DATASET ACTIVATE Missingpsychosom.

FILTER OFF.

USE ALL.

SELECT IF (MISSING(headache) & (MISSING(stomachache) & MISSING(bachache) & MISSING(feellow) & MISSING(irritable) & MISSING(nervous) & MISSING(sleepdificulty) & MISSING(dizzy) ).

EXECUTE.

DATASET ACTIVATE DataSet2.
```

```
*copied data with missings on ALL psychosomatic symptoms to a separate data set (23 cases)*


FILTER OFF.

USE ALL.

SELECT IF ( ~ (MISSING(headache) & MISSING(stomachache) & MISSING(backache) &
MISSING(feellow) &

   MISSING(irritable) &MISSING(nervous) &MISSING(sleepdificulty) & MISSING(dizzy))).

EXECUTE.

*deleted Missings(psychosom) from dataset*


DATASET COPY  unreliablelowdata.

DATASET ACTIVATE  unreliablelowdata.

FILTER OFF.

USE ALL.

SELECT IF (lifesat = 0 & MeanFriendSupport = 1 & MeanFamSupport = 1 & MeanPsychosom = 4 &

   schoolpressure = 1).

EXECUTE.

DATASET ACTIVATE  DataSet1.

*check whether there are individuals who answered the lowest on all used variables for reliability ->
1 case, not removed*


DATASET COPY  psychosom4.

DATASET ACTIVATE  psychosom4.

FILTER OFF.

USE ALL.

SELECT IF (MeanPsychosom = 4).

EXECUTE.

DATASET ACTIVATE  DataSet1.

*check how many individuals answered 4 on all Qs about psychosomatic complaints and whether
their other answers are reliable -> 19 cases, other answers reasonably reliable, not removed*


DATASET ACTIVATE DataSet1.
```

```
DATASET COPY  lifesat0.

DATASET ACTIVATE  lifesat0.

FILTER OFF.

USE ALL.

SELECT IF (lifesat = 0).

EXECUTE.

DATASET ACTIVATE  DataSet1.
```

how many individuals rated their life satisfaction 0 and are their other answers reliable? -> 41 cases, other answers are reasonably reliable, not removed

because slightly unreliable (extreme) data only occurred in very low quantities, they are unlikely to have a large effect on the results, so they were kept in the database

CREATING VARIABLES

```
   DATASET ACTIVATE DataSet1.

FACTOR

  /VARIABLES friendhelp friendcounton friendshare friendtalk

  /MISSING LISTWISE

  /ANALYSIS friendhelp friendcounton friendshare friendtalk

  /PRINT UNIVARIATE INITIAL CORRELATION SIG DET KMO EXTRACTION ROTATION

  /FORMAT SORT BLANK(.10)

  /PLOT EIGEN

  /CRITERIA MINEIGEN(1) ITERATE(25)

  /EXTRACTION PAF

  /CRITERIA ITERATE(25)

  /ROTATION VARIMAX

  /METHOD=CORRELATION.
```

PAF analysis for friend support -> 1 factor

```
FACTOR

  /VARIABLES famhelp famsup famtalk famdec

  /MISSING LISTWISE
```

```
  /ANALYSIS famhelp famsup famtalk famdec
  /PRINT UNIVARIATE INITIAL CORRELATION SIG DET KMO EXTRACTION ROTATION
  /FORMAT SORT BLANK(.10)
  /PLOT EIGEN
  /CRITERIA MINEIGEN(1) ITERATE(25)
  /EXTRACTION PAF
  /CRITERIA ITERATE(25)
  /ROTATION VARIMAX
  /METHOD=CORRELATION.
*PAF analysis for fam support -> 1 factor*

RELIABILITY
  /VARIABLES=friendhelp friendcounton friendshare friendtalk
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR
  /SUMMARY=TOTAL.
*Reliability check for friend support -> Cronbachs alpha=0.918*

RELIABILITY
  /VARIABLES=famhelp famsup famtalk famdec
  /SCALE('ALL VARIABLES') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE CORR
  /SUMMARY=TOTAL.
*Reliability check for fam support -> Cronbachs alpha=0.922*

DATASET ACTIVATE DataSet1.
COMPUTE MeanFriendSupport=MEAN.2(friendhelp,friendcounton,friendshare,friendtalk).
EXECUTE.
*New variable created out of q's about friend support, included only if at least 2/4 q's are answered*
```

```
COMPUTE MeanParentSupport=MEAN.2(famhelp,famsup,famtalk,famdec).
EXECUTE.
*New variable created out of q's about family support, included only if at least 2/4 q's are answered*

FACTOR
  /VARIABLES headache stomachache backache feellow irritable nervous sleepdificulty dizzy
  /MISSING LISTWISE
  /ANALYSIS headache stomachache backache feellow irritable nervous sleepdificulty dizzy
  /PRINT UNIVARIATE INITIAL CORRELATION SIG DET KMO EXTRACTION ROTATION
  /FORMAT SORT BLANK(.10)
  /PLOT EIGEN
  /CRITERIA MINEIGEN(1) ITERATE(25)
  /EXTRACTION PAF
  /CRITERIA ITERATE(25)
  /ROTATION VARIMAX
  /METHOD=CORRELATION.
*PAF analysis on psychosomatic symptoms -> all items have correlations >0.3, except bachache.
screeplot shows 1 factor*

RECODE headache stomachache backache feellow irritable sleepdificulty dizzy (1=4) (2=3) (3=2) (4=1)
    (5=0) INTO headache.r stomachache.r backache.r feellow.r irritable.r sleepdifficulty.r dizzy.r.
VARIABLE LABELS  headache.r 'reversed headache' /stomachache.r 'reversed stomachache'
    /backache.r 'reversed backache' /feellow.r 'reversed feellow' /irritable.r 'reversed irritable'
    /sleepdifficulty.r 'reversed sleepdifficulty' /dizzy.r 'reversed dizzy'.
EXECUTE.
*reverse coding psychosomatic complaints to make the meaningful (0=rarely/never, 4=everyday)*

FREQUENCIES VARIABLES=headache stomachache backache feellow irritable nervous sleepdificulty
dizzy
    headache.r stomachache.r backache.r feellow.r irritable.r sleepdifficulty.r dizzy.r
  /BARCHART FREQ
```

```
  /ORDER=ANALYSIS.
```

checking frequencies to check if reverse coding was succesfull and complete -> nervous is missing

```
RECODE nervous (1=4) (2=3) (3=2) (4=1) (5=0) INTO nervous.r.
VARIABLE LABELS  nervous.r 'reversed nervous'.
EXECUTE.
```

nervous recoded

```
FREQUENCIES VARIABLES=nervous nervous.r
  /ORDER=ANALYSIS.
```

checking if recoding was succesful -> yes

```
RELIABILITY
  /VARIABLES=headache.r stomachache.r backache.r feellow.r irritable.r sleepdifficulty.r dizzy.r
    nervous.r
  /SCALE('Psychosom') ALL
  /MODEL=ALPHA
  /STATISTICS=DESCRIPTIVE SCALE
  /SUMMARY=TOTAL.
```

reliability check for psychosomatic -> Cronbach's alpha=0.798

```
COMPUTE MeanPsychosom=MEAN.5(headache.r,stomachache.r,backache.r,feellow.r,irritable.r,
    sleepdifficulty.r,dizzy.r,nervous.r).
EXECUTE.
```

New variable created to combine psychosomatic complaints. only included if at least 5/8 q's are answered

ASSUMPTIONS

```
    DATASET ACTIVATE DataSet1.
* Chart Builder.
```

```
GGRAPH
  /GRAPHDATASET NAME="graphdataset" VARIABLES=schoolpressure
    MEAN(MeanPsychosom)[name="MEAN_MeanPsychosom"] MISSING=LISTWISE
REPORTMISSING=NO
  /GRAPHSPEC SOURCE=INLINE
  /FITLINE TOTAL=NO.
BEGIN GPL
  SOURCE: s=userSource(id("graphdataset"))
  DATA: schoolpressure=col(source(s), name("schoolpressure"), unit.category())
  DATA: MEAN_MeanPsychosom=col(source(s), name("MEAN_MeanPsychosom"))
  GUIDE: axis(dim(1), label("Pressured by schoolwork"))
  GUIDE: axis(dim(2), label("Mean Mean reversed headache stomachache backache feellow irritable
",
    "sleepdiff dizzy nervous"))
  GUIDE: text.title(label("Summary Point Plot Mean of Mean reversed headache stomachache ",
    "backache feellow irritable sleepdiff dizzy nervous by Pressured by schoolwork"))
  SCALE: cat(dim(1), include("1", "2", "3", "4"))
  SCALE: linear(dim(2), include(0))
  ELEMENT: point(position(schoolpressure*MEAN_MeanPsychosom))
END GPL.
*plot school work pressure and psychosomatic complaints for linearity*


* Chart Builder.
GGRAPH
  /GRAPHDATASET NAME="graphdataset" VARIABLES=MeanFriendSupport
    MEAN(MeanPsychosom)[name="MEAN_MeanPsychosom"] MISSING=LISTWISE
REPORTMISSING=NO
  /GRAPHSPEC SOURCE=INLINE
  /FITLINE TOTAL=NO.
BEGIN GPL
  SOURCE: s=userSource(id("graphdataset"))
  DATA: MeanFriendSupport=col(source(s), name("MeanFriendSupport"))
```

```
  DATA: MEAN_MeanPsychosom=col(source(s), name("MEAN_MeanPsychosom"))
  GUIDE: axis(dim(1), label("Mean friendhelp friendcounton friendshare friendtalk"))
  GUIDE: axis(dim(2), label("Mean Mean reversed headache stomachache backache feellow irritable
",
    "sleepdiff dizzy nervous"))
  GUIDE: text.title(label("Summary Point Plot Mean of Mean reversed headache stomachache ",
    "backache feellow irritable sleepdiff dizzy nervous by Mean friendhelp friendcounton ",
    "friendshare friendtalk"))
  ELEMENT: point(position(MeanFriendSupport*MEAN_MeanPsychosom))
END GPL.
*plot friendsupport and psychosom for linearity*


* Chart Builder.
GGRAPH
  /GRAPHDATASET NAME="graphdataset" VARIABLES=MeanFamSupport
    MEAN(MeanPsychosom)[name="MEAN_MeanPsychosom"] MISSING=LISTWISE
REPORTMISSING=NO
  /GRAPHSPEC SOURCE=INLINE
  /FITLINE TOTAL=NO.
BEGIN GPL
  SOURCE: s=userSource(id("graphdataset"))
  DATA: MeanFamSupport=col(source(s), name("MeanFamSupport"))
  DATA: MEAN_MeanPsychosom=col(source(s), name("MEAN_MeanPsychosom"))
  GUIDE: axis(dim(1), label("Mean famhelp famsup famtalk famdec"))
  GUIDE: axis(dim(2), label("Mean Mean reversed headache stomachache backache feellow irritable
",
    "sleepdiff dizzy nervous"))
  GUIDE: text.title(label("Summary Point Plot Mean of Mean reversed headache stomachache ",
    "backache feellow irritable sleepdiff dizzy nervous by Mean famhelp famsup famtalk famdec"))
  ELEMENT: point(position(MeanFamSupport*MEAN_MeanPsychosom))
END GPL.
*plot famsupport and psychosom for linearity*
```

```
* Chart Builder.
GGRAPH
  /GRAPHDATASET NAME="graphdataset" VARIABLES=MeanFamSupport
MEAN(lifesat)[name="MEAN_lifesat"]
    MISSING=LISTWISE REPORTMISSING=NO
  /GRAPHSPEC SOURCE=INLINE
  /FITLINE TOTAL=NO.
BEGIN GPL
  SOURCE: s=userSource(id("graphdataset"))
  DATA: MeanFamSupport=col(source(s), name("MeanFamSupport"))
  DATA: MEAN_lifesat=col(source(s), name("MEAN_lifesat"))
  GUIDE: axis(dim(1), label("Mean famhelp famsup famtalk famdec"))
  GUIDE: axis(dim(2), label("Mean Life satisfaction"))
  GUIDE: text.title(label("Summary Point Plot Mean of Life satisfaction by Mean famhelp famsup ",
    "famtalk famdec"))
  ELEMENT: point(position(MeanFamSupport*MEAN_lifesat))
END GPL.
*plot famsupport and lifesat for linearity*

* Chart Builder.
GGRAPH
  /GRAPHDATASET NAME="graphdataset" VARIABLES=MeanFriendSupport
MEAN(lifesat)[name="MEAN_lifesat"]
    MISSING=LISTWISE REPORTMISSING=NO
  /GRAPHSPEC SOURCE=INLINE
  /FITLINE TOTAL=NO.
BEGIN GPL
  SOURCE: s=userSource(id("graphdataset"))
  DATA: MeanFriendSupport=col(source(s), name("MeanFriendSupport"))
  DATA: MEAN_lifesat=col(source(s), name("MEAN_lifesat"))
  GUIDE: axis(dim(1), label("Mean friendhelp friendcounton friendshare friendtalk"))
```

```
  GUIDE: axis(dim(2), label("Mean Life satisfaction"))
  GUIDE: text.title(label("Summary Point Plot Mean of Life satisfaction by Mean friendhelp ",
    "friendcounton friendshare friendtalk"))
  ELEMENT: point(position(MeanFriendSupport*MEAN_lifesat))
END GPL.
*plot friendsupport and lifesat for linearity*


* Chart Builder.
GGRAPH
  /GRAPHDATASET NAME="graphdataset" VARIABLES=schoolpressure
MEAN(lifesat)[name="MEAN_lifesat"]
    MISSING=LISTWISE REPORTMISSING=NO
  /GRAPHSPEC SOURCE=INLINE
  /FITLINE TOTAL=NO.
BEGIN GPL
  SOURCE: s=userSource(id("graphdataset"))
  DATA: schoolpressure=col(source(s), name("schoolpressure"), unit.category())
  DATA: MEAN_lifesat=col(source(s), name("MEAN_lifesat"))
  GUIDE: axis(dim(1), label("Pressured by schoolwork"))
  GUIDE: axis(dim(2), label("Mean Life satisfaction"))
  GUIDE: text.title(label("Summary Point Plot Mean of Life satisfaction by Pressured by ",
    "schoolwork"))
  SCALE: cat(dim(1), include("1", "2", "3", "4"))
  SCALE: linear(dim(2), include(0))
  ELEMENT: point(position(schoolpressure*MEAN_lifesat))
END GPL.
*plot school work pressure and lifesat for linearity*
 *none of the plots seem to indicate the relationships are non-linear, so the assumptions is met*


DATASET ACTIVATE DataSet1.
FREQUENCIES VARIABLES=lifesat MeanFriendSupport MeanFamSupport MeanPsychosom
schoolpressure
```

```
  /STATISTICS=SKEWNESS SESKEW KURTOSIS SEKURT
  /HISTOGRAM NORMAL
  /ORDER=ANALYSIS.
```

checking skewness, kurtosis and histograms for normal distribution -> skewness and kurtosis: only lifesat and familysupport not normal. histograms: none look very normal

```
DATASET ACTIVATE DataSet1.
PPLOT
  /VARIABLES=lifesat schoolpressure MeanFriendSupport MeanFamSupport MeanPsychosom
  /NOLOG
  /NOSTANDARDIZE
  /TYPE=P-P
  /FRACTION=BLOM
  /TIES=MEAN
  /DIST=NORMAL.
```

p-plots to check normal distribution -> none are normally distributed

```
ONEWAY lifesat schoolpressure MeanFriendSupport MeanFamSupport MeanPsychosom BY
countryno
  /ES=OVERALL
  /STATISTICS DESCRIPTIVES HOMOGENEITY
  /MISSING ANALYSIS
  /CRITERIA=CILEVEL(0.95).
```

Levene's test to check for homogeneity of variances -> nul hypothesis is rejected in every case -> population variances are not equal

However, according to Field (2017) tests of skew and kurtosis and Levene's test are not reliable in large samples, so these assumptions are disregarded

```
DATASET ACTIVATE DataSet1.
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA COLLIN TOL
```

```
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT lifesat
  /METHOD=ENTER MeanFriendSupport MeanFamSupport schoolpressure.
*check VIF for multicollinearity -> all below 5 -> no multicollinearity*


*DESCRIPTIVE STATISTICS*


DATASET ACTIVATE DataSet1.
FREQUENCIES VARIABLES=region age sex IRFAS MFamSup MFrieSup schlpres MPsychos lifesat
  /STATISTICS=STDDEV RANGE MEAN
  /ORDER=ANALYSIS.
OUTPUT MODIFY
  /SELECT TABLES
  /IF COMMANDS=["Frequencies(LAST)"] SUBTYPES="Frequencies"
  /TABLECELLS SELECT=[VALIDPERCENT CUMULATIVEPERCENT] APPLYTO=COLUMN HIDE=YES
  /TABLECELLS SELECT=[TOTAL] SELECTCONDITION=PARENT(VALID MISSING) APPLYTO=ROW
HIDE=YES
  /TABLECELLS SELECT=[VALID] APPLYTO=ROWHEADER UNGROUP=YES
  /TABLECELLS SELECT=[PERCENT] SELECTDIMENSION=COLUMNS FORMAT="PCT" APPLYTO=COLUMN
  /TABLECELLS SELECT=[COUNT] APPLYTO=COLUMNHEADER REPLACE="N"
  /TABLECELLS SELECT=[PERCENT] APPLYTO=COLUMNHEADER REPLACE="%".
*descriptive statistics (M, SD, frequencies) for both countries together*


T-TEST GROUPS=region('NL' 'PL')
  /MISSING=LISTWISE
  /VARIABLES=age sex IRFAS MFamSup MFrieSup schlpres MPsychos lifesat
  /ES DISPLAY(TRUE)
  /CRITERIA=CI(.95).
*descriptive statistics (M, SD) for countries separately*
```

```
*ANALYSIS*

DATASET ACTIVATE DataSet2.
CORRELATIONS
  /VARIABLES=age sex lifesat IRFAS MFrieSup MFamSup MPsychos schlpres
  /PRINT=TWOTAIL NOSIG FULL
  /MISSING=LISTWISE.
*pearson correlations*

NONPAR CORR
  /VARIABLES=age sex lifesat IRFAS MFrieSup MFamSup MPsychos schlpres
  /PRINT=SPEARMAN TWOTAIL NOSIG FULL
  /MISSING=LISTWISE.
*spearman correlations*

DATASET ACTIVATE DataSet1.
SPSSINC CREATE DUMMIES VARIABLE=schoolpressure
ROOTNAME1=Schoolpressure
/OPTIONS ORDER=A USEVALUELABELS=YES USEML=YES OMITFIRST=NO.
*dummy variables made from school work pressure for linear regression*

SPSSINC CREATE DUMMIES VARIABLE=sex
ROOTNAME1=Gender
/OPTIONS ORDER=A USEVALUELABELS=YES USEML=YES OMITFIRST=NO.
*dummy variable made from gender*

REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) R ANOVA CHANGE
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
```

```
  /DEPENDENT lifesat

  /METHOD=ENTER age Gender_2 IRFAS

  /METHOD=ENTER MeanFamSupport MeanFriendSupport Schoolpressure_2 Schoolpressure_3
Schoolpressure_4.

* hierarchical multiple linear regression for life satisfaction in the Netherlands*


DATASET ACTIVATE DataSet3.

REGRESSION

  /MISSING LISTWISE

  /STATISTICS COEFF OUTS CI(95) R ANOVA

  /CRITERIA=PIN(.05) POUT(.10)

  /NOORIGIN

  /DEPENDENT lifesat

  /METHOD=ENTER Gender_2 age IRFAS

  /METHOD=ENTER MeanFamSupport MeanFriendSupport Schoolpressure_2 Schoolpressure_3
Schoolpressure_4.

*hierarchical multiple linear regression for life satisfaction in Poland*


DATASET ACTIVATE DataSet4.

REGRESSION

  /MISSING LISTWISE

  /STATISTICS COEFF OUTS CI(95) R ANOVA CHANGE

  /CRITERIA=PIN(.05) POUT(.10)

  /NOORIGIN

  /DEPENDENT MeanPsychosom

  /METHOD=ENTER age Gender_2 IRFAS

  /METHOD=ENTER MeanFamSupport MeanFriendSupport Schoolpressure_2 Schoolpressure_3
Schoolpressure_4.

*hierarchical multiple linear regression for psychosomatic complaints in the Netherlands*


DATASET ACTIVATE DataSet3.

REGRESSION
```

```
  /MISSING LISTWISE

  /STATISTICS COEFF OUTS CI(95) R ANOVA

  /CRITERIA=PIN(.05) POUT(.10)

  /NOORIGIN

  /DEPENDENT MeanPsychosom

  /METHOD=ENTER Gender_2 age IRFAS

  /METHOD=ENTER MeanFamSupport MeanFriendSupport Schoolpressure_2 Schoolpressure_3
Schoolpressure_4.
```

* hierarchical multiple linear regression for psychosomatic complaint in Poland*

```
T-TEST GROUPS=region('NL' 'PL')

  /MISSING=LISTWISE

  /VARIABLES=MFamSup MFrieSup schlpres MPsychos lifesat

  /ES DISPLAY(TRUE)

  /CRITERIA=CI(.95).
```

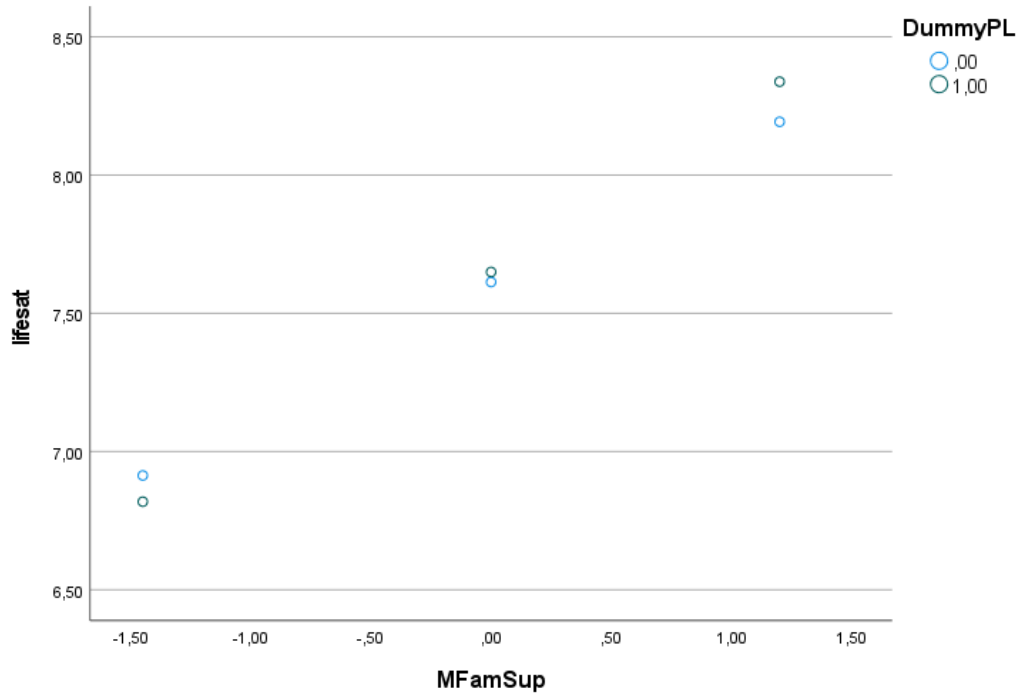
t-test with effect sizes for family support, friend support, school work pressure, life satisfaction and psychosom complaints -> all sig.

see Appendix E for output of moderation analysis (not possible to paste PROCESS into Syntax)

Appendix E: Output moderation analysis

```
Run MATRIX procedure:

*************** PROCESS Procedure for SPSS Version 4.2 beta
***************

          Written by Andrew F. Hayes, Ph.D.
www.afhayes.com
    Documentation available in Hayes (2022).
www.guilford.com/p/hayes3

**************************************************************
************
Model  : 1
    Y  : lifesat
    X  : MFamSup
    W  : DummyPL

Sample
Size:  9755

**************************************************************
************
OUTCOME VARIABLE:
 lifesat

Model Summary
          R       R-sq        MSE          F        df1
df2          p
      ,4386      ,1923     2,5466   774,0240     3,0000
9751,0000      ,0000

Model
              coeff         se          t          p
LLCI       ULCI
constant     7,6133      ,0241   315,4473      ,0000
7,5660     7,6606
MFamSup       ,4833      ,0184    26,2371      ,0000
,4472      ,5195
DummyPL       ,0364      ,0332     1,0972      ,2726     -
,0286      ,1014
Int_1         ,0906      ,0235     3,8578      ,0001
,0446      ,1366

Product terms key:
 Int_1    :        MFamSup  x        DummyPL

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      ,0012    14,8827     1,0000  9751,0000      ,0001
```

```
----------
    Focal predict: MFamSup  (X)
          Mod var: DummyPL  (W)

Conditional effects of the focal predictor at values of the
moderator(s):

    DummyPL     Effect         se          t          p
LLCI       ULCI
      ,0000      ,4833      ,0184    26,2371      ,0000
,4472      ,5195
     1,0000      ,5739      ,0146    39,4277      ,0000
,5454      ,6025

Data for visualizing the conditional effect of the focal
predictor:
Paste text below into a SPSS syntax window and execute to
produce plot.

DATA LIST FREE/
   MFamSup    DummyPL    lifesat    .
BEGIN DATA.
    -1,4478      ,0000     6,9136
      ,0000      ,0000     7,6133
     1,1992      ,0000     8,1930
    -1,4478     1,0000     6,8188
      ,0000     1,0000     7,6497
     1,1992     1,0000     8,3380
END DATA.
GRAPH/SCATTERPLOT=
 MFamSup  WITH     lifesat  BY       DummyPL  .

************************ ANALYSIS NOTES AND ERRORS
************************

Level of confidence for all confidence intervals in output:
  95,0000

NOTE: The following variables were mean centered prior to
analysis:
          MFamSup

------ END MATRIX -----
```




```
Run MATRIX procedure:

*************** PROCESS Procedure for SPSS Version 4.2 beta
***************

          Written by Andrew F. Hayes, Ph.D.
www.afhayes.com
    Documentation available in Hayes (2022).
www.guilford.com/p/hayes3

**************************************************************************
************
Model  : 1
    Y  : MPsychos
    X  : schlpres
    W  : DummyPL

Sample
Size:  9680

**************************************************************************
************
OUTCOME VARIABLE:
 MPsychos

Model Summary
          R       R-sq        MSE          F        df1
df2          p
```

```
      ,3964      ,1572      ,5411   601,4487     3,0000
9676,0000      ,0000

Model
              coeff         se          t          p
LLCI       ULCI
constant      ,9500      ,0110    86,6844      ,0000
,9285      ,9714
schlpres      ,3429      ,0126    27,1489      ,0000
,3182      ,3677
DummyPL       ,1482      ,0151     9,8190      ,0000
,1186      ,1777
Int_1          -,0058      ,0171     -,3382      ,7353     -
,0394      ,0278

Product terms key:
 Int_1    :        schlpres x        DummyPL

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W      ,0000      ,1143     1,0000  9676,0000      ,7353
----------
    Focal predict: schlpres (X)
          Mod var: DummyPL  (W)

Data for visualizing the conditional effect of the focal
predictor:
Paste text below into a SPSS syntax window and execute to
produce plot.

DATA LIST FREE/
   schlpres   DummyPL    MPsychos   .
BEGIN DATA.
     -,8825      ,0000      ,6473
      ,0000      ,0000      ,9500
      ,8825      ,0000     1,2526
     -,8825     1,0000      ,8006
      ,0000     1,0000     1,0981
      ,8825     1,0000     1,3956
END DATA.
GRAPH/SCATTERPLOT=
 schlpres WITH     MPsychos BY       DummyPL  .

************************ ANALYSIS NOTES AND ERRORS
************************

Level of confidence for all confidence intervals in output:
  95,0000

NOTE: The following variables were mean centered prior to
analysis:
```

```
           schlpres

------ END MATRIX -----
```