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HEALTH BEHAVIOUR IN  
SCHOOL-AGED CHILDREN  
LËTZEBUERG / LUXEMBOURG

# Mental health and well-being of school-aged children in Luxembourg

Report on the Luxembourg HBSC Survey 2022

**HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN:**  
WORLD HEALTH ORGANIZATION COLLABORATIVE  
CROSS-NATIONAL STUDY (HBSC)



LE GOUVERNEMENT  
DU GRAND-DUCHÉ DE LUXEMBOURG  
Ministère de l'Éducation nationale,  
de l'Enfance et de la Jeunesse



LE GOUVERNEMENT  
DU GRAND-DUCHÉ DE LUXEMBOURG  
Ministère de la Santé

Direction de la santé



FACULTY OF HUMANITIES,  
EDUCATION AND  
SOCIAL SCIENCES



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Bibliographical reference:

Catunda, Carolina; Mendes, Felipe G.; Lopes Ferreira, Joana; Residori, Caroline (2023). Mental Health and well-being of school-aged children in Luxembourg - Report on the Luxembourg HBSC Survey 2022. Esch-sur-Alzette.

© University of Luxembourg and authors; December 2023

ISBN: 978-2-87971-191-1

Printed by: reka print+, Ehlerange, Luxembourg

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# Acknowledgement

The Health Behaviour in School-aged Children (HBSC) study was initiated in 1982 and has been conducted every four years to understand and promote the health and well-being of children and adolescents. Currently, more than 50 countries participate in the international study, Luxembourg being one of them since 2006. By comparing data over many years and across countries, policy makers, teachers, pupils, parents, as well as anyone interested in the health of the growing generation can make informed decisions.

This report on the HBSC 2022 survey was only possible because many people contributed to data collection and processing. We would like to take this opportunity to thank them.

HBSC is an international survey conducted in collaboration with the World Health Organization - Regional Office for Europe. We would like to thank the international coordinator of the 2021/22 survey, Dr Joanna Inchley from the University of Glasgow. Our thanks also go to the database manager, Professor Oddrun Samdal from the University of Bergen, and to Joe Hancock from the International Coordinating Centre in Glasgow, who developed the artwork for this report.

The Luxembourg part of the HBSC study has been organised by three project partners since 2016: the University of Luxembourg, the Ministry of Health and Social Security/Health Directorate, and the Ministry of Education, Children and Youth. We would like to express our sincere thanks to our contacts in the ministries (Dr Katharina Pucher, Dr Senad Karavdic, Aurélie Ventujol, Dr Josepha Nell, Raoul Wirion) and to Professor Robert Harmsen, Dean of the Faculty of Humanities, Education and Social Sciences, for the good cooperation and support of our research.

The collection of the HBSC 2022 data was supported by Andreas Heinz, Anouk Geraets, Claire van Duin, Patrick Kiffer, Katia Ziadi, Maria Michaela Scherschel, Alexandra Link, Marieke Sauder, and Auriane Möck, from the University of Luxembourg. Dr Andreas Heinz and Dr Bechara Ziade were the Co-Principal Investigators of the HBSC study in Luxembourg in 2022. Prof Dr Helmut Willems was the Co-Principal Investigator between 2016 and 2020 and continued to support the HBSC study in Luxembourg afterwards. Tun Fischbach, Thierry Heck, Rachid Boualam, and Rachel Wollschläger from the Luxembourg Centre for Educational Testing provided considerable technical support with data collection and processing. Aurélie Ventujol from the division of data analysis (*Division du traitement de données sur la qualité de l'encadrement et de l'offre scolaire et éducative*, SCRIPT) drew the sample. Jean Philippe Décieux and Alexandra Mergener translated the questionnaires back into English. Moritz Höpner, Simone Charles, Gilles Scheifer and Vyara Noncheva contributed to the proofreading and translation process of the reports.

Finally, we would like to express our appreciation and gratitude to all the children and young people who have consented to and participated in the HBSC Luxembourg study over the years, as well as to their parents. In addition, we would like to thank all the school headmasters and teachers whose cooperation made this study possible.

**For the HBSC Luxembourg team:**

Dr Carolina Catunda and Dr Maud Moinard (Co-Principal Investigators)



# Summary

## About this report

The present report documents the mental health and well-being results of the HBSC (Health Behaviour in School-aged Children) Luxembourg 2022 survey. This report includes a total of 7 893 pupils aged 11 to 18 and provides comprehensive information about the following mental health and well-being indicators: life satisfaction, psychosomatic health complaints, self-rated health, well-being, depression, anxiety, loneliness, and self-efficacy.

## Life Satisfaction

Life satisfaction is a cognitive component of adolescents' subjective well-being. 28.7% of adolescents in Luxembourg reported a high life satisfaction. However, this prevalence decreases with age. Moreover, girls exhibited a lower life satisfaction than boys. Independently of their migration background, adolescents with lower family affluence were the ones with the lowest life satisfaction. Furthermore, adolescents living with both parents had a greater life satisfaction than adolescents living in different family structures.

## Psychosomatic Health Complaints

Psychosomatic health complaints correspond to a variety of symptoms that can significantly affect life, ranging from typical somatic symptoms, such as headache and backache, to psychological-related ones, such as sadness and anxious feelings. The most frequently experienced health complaint was irritability or bad temper, with 35.2% of adolescents having felt it at least more than once a week, closely followed by feeling nervous, experienced more than once a week by 34.9% of adolescents. Comparatively, 57.1% of pupils rarely or never felt dizzy. Overall, 48.8% of the surveyed adolescents presented multiple health complaints. This prevalence was found to be dramatically higher in girls (62.3%) than in boys (35.4%).

## Self-rated health

Self-rated health provides a holistic overview of health. Individuals' perception of their own health correlates to physical aspects, health behaviours, social support, and sociodemographic variables. 43.1% of boys rate their health as excellent, in comparison to 29.1% of girls. There is an important drop in the prevalence of excellent health for girls between the ages of 11-12 years old and the other age groups. For boys, although there is a decrease with age, only differences between the 11-12 and the 17-18 years old groups are significant.

## Well-being and depression

Well-being refers to the presence of positive affects and the absence of negative affects. Boys reported a higher well-being than girls and well-being decreases with age. Regarding depression, our data revealed that 20.8% of our participants were at risk of depression, with a higher prevalence in girls (28.0%) than in boys (13.5%). For both genders, depression prevalence appeared to increase with age.

## **Anxiety**

Feeling anxious or fearful can be a normal reaction to a threat. However, if this feeling is persistent and interferes with daily life, it may be considered an unhealthy reaction and possibly an anxiety disorder. 34.1% of the surveyed adolescents exhibited symptoms of moderate-to-high anxiety. Anxiety symptoms were more common in girls (44.7%) than in boys (23.4%). Anxiety prevalence increases with age and is higher in adolescents from low affluence families.

## **Loneliness**

Loneliness refers to a state in which a person has fewer social relationships than desired. Results showed that 18.2% of adolescents had felt lonely most of the time or always over the past year. Girls were more likely to feel lonely than boys (24.1% vs. 12.0%, respectively). Results also indicated that loneliness increased with age (11-12yo: 10.3%; 17-18yo: 23.7%), and that adolescents with lower family affluence are more likely to feel lonely than their high-status counterparts.

## **Self-Efficacy**

General self-efficacy refers to individuals' belief that they can cope with a difficult situation on their own. Girls reported lower self-efficacy than boys in all age groups, but the difference was especially widened between the ages of 13 and 16 years old. As they grow up, boys present little or no variation in their perceived self-efficacy, while girls present a significant drop at the age of 13 ( $M = 6.69$ ) and a following increase up to the age of 16 ( $M = 7.02$ ).

## **The gender gap in life satisfaction**

In Luxembourg, gender differences in life satisfaction have been found since the first HBSC survey in 2006. Since then, boys have systematically exhibited a greater life satisfaction than girls, with the largest difference being reported in 2022. A gender gap was also found in other areas of mental health and well-being, such as anxiety and loneliness. For that reason, the influence of gender in life satisfaction was further investigated. A significant effect of gender was identified when controlling for other sociodemographic factors (age, family affluence, family structure and migration). However, this effect of gender vanished when considering additional psychosocial factors (multiple health complaints, anxiety, loneliness, self-efficacy, family and friend support). This finding suggests that gender differences in life satisfaction are a reflection of gender differences in psychosocial and social support factors. Furthermore, when split by gender, results show that only age affected differently the relation between gender and life satisfaction: a drop in life satisfaction occurs later for boys, compared to girls. The influence on life satisfaction of all the other examined predictors did not vary with gender.

## **Conclusions and perspectives**

While adolescents' mental health has remained relatively stable since 2006, gender differences significantly increased meanwhile. Boys reported better mental health and well-being levels than girls in each of the examined domains, with important age differences as well. Family affluence and family composition also seem to play a role, with adolescents of higher affluence and living with both parents reporting better mental health and well-being than their peers. Accordingly, the offer of mental health programs should be diversified and enlarged.

Mental health and well-being



# Mental health and well-being

Positive mental health and well-being are essential to lead fulfilling lives, to realise full potential, to participate productively in communities, and to demonstrate resilience in the face of stress and adversity (World Health Organization, 2021). Therefore, the WHO defines health not merely as the absence of disease or infirmity but also as a state of complete physical, mental and social well-being (World Health Organization, 1948). The United Nations underscores the importance of positive mental health, by including promotion of positive mental health and well-being to the 2030 agenda for sustainable development (United Nations, 2016). Adolescent's well-being is especially important because adolescence provides the foundation for physical, cognitive, emotional, social, and economic well-being in adulthood.

In 2022, 9 432 pupils from 688 classes and 152 schools attending Luxembourg schools responded to an anonymised paper-pencil questionnaire in class, during school hours. The present report includes a total of 7 893 pupils aged 11 to 18, attending Luxembourg public and private schools whose teaching is based on the national curriculum<sup>1</sup>. It aims to provide an overview of the mental health and well-being situation of adolescents in Luxembourg in the year 2022, focusing on the following variables: life satisfaction, multiple health complaints, perceived health, depression, anxiety, loneliness and self-efficacy. This is the first in a series of reports. Other reports present the HBSC data related to other areas of life (e.g., health and risk behaviours, social context). Considered altogether, the HBSC Luxembourg reports will provide the community with a comprehensive picture of adolescents' health and health behaviours in 2022 in Luxembourg.

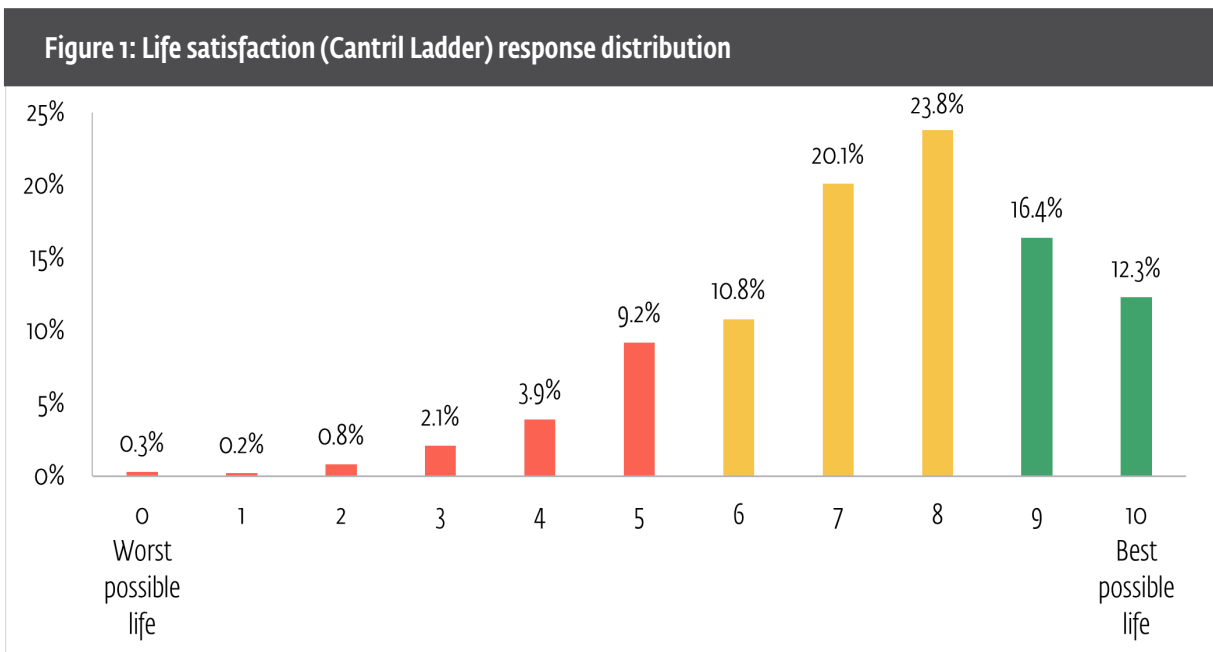
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<sup>1</sup> For more information on the population, please refer to Catunda et al. (2023).

## Life Satisfaction

Life satisfaction is a major component of adolescents' subjective well-being. Respondents were asked to indicate how satisfied they were with their lives overall, which implicitly or explicitly includes various aspects of life, such as social integration, health, and wealth. Life satisfaction is a conscious cognitive appraisal of one's life, based on their own values, expectations and previous experiences (Diener, 2012; Pavot & Diener, 1993).

Within the HBSC framework, life satisfaction is assessed with the following question: "Here is a picture of a ladder. The top rung of this ladder '10' means the best possible life for you; the bottom '0' means the worst possible life. Where are you on this ladder when you look at your current life?" (Cantril, 1965). The response categories range from 0 to 10. Figure 1 displays the distribution of the responses.



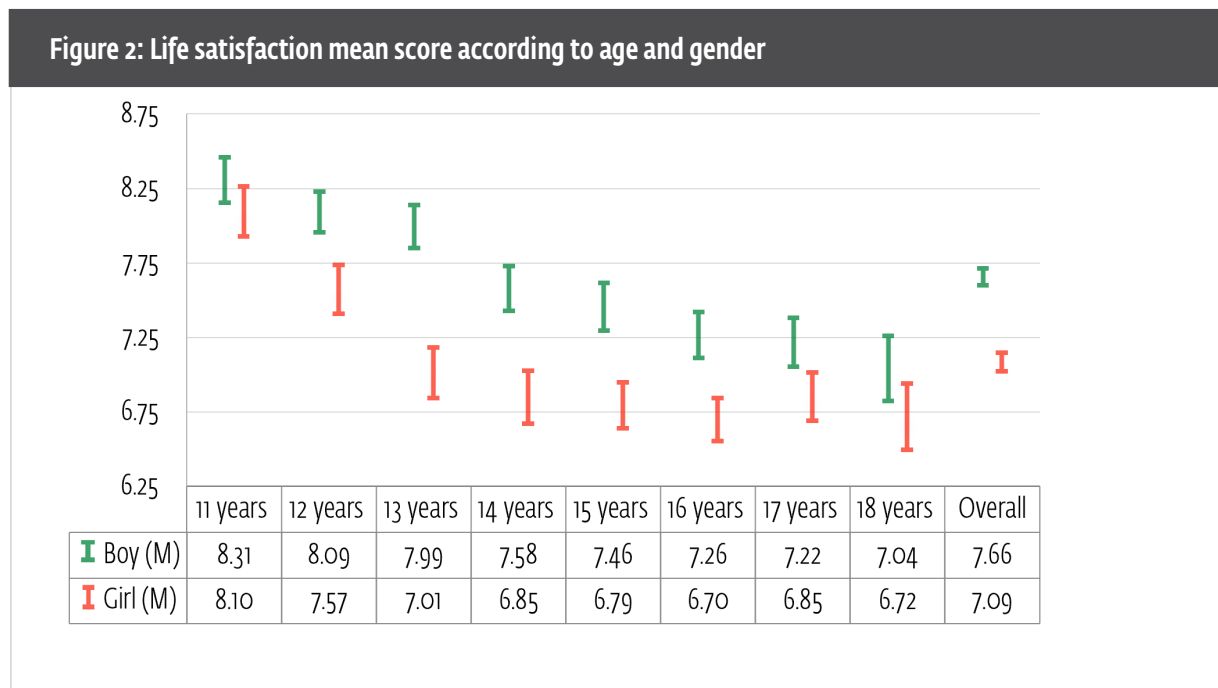
Generally, respondents tend to answer this question in a rather positive way. Subsequently, categories 9-10 are considered as reflecting a high life satisfaction; categories 6-to-8, as reflecting a medium life satisfaction; categories 0-to-5, as reflecting a low life satisfaction (Mazur et al., 2018). With a mean of 7.37 (95% CI [7.32, 7.41]), adolescents in Luxembourg are considered to have a medium life satisfaction. More specifically, 28.7% of respondents reported a high life satisfaction; 54.7%, a medium life satisfaction; and 16.5%, a low life satisfaction.

Although in 2022 the majority of respondents reported a medium or a high life satisfaction, the latter slightly decreased in comparison to the last survey. In 2018, 31.5% of the respondents evaluated their life satisfaction as high (a decrease of 2.8 percentage points), and 13.5% as low (an increase of 3.1 percentage points; Heinz et al., 2021). In another Luxembourgish study, when adolescents were asked about their life satisfaction during the pandemic in comparison to before the pandemic, 43% reported that it decreased during the pandemic (Kirsch et al., 2022). However, all HBSC Luxembourg surveys considered, life satisfaction remains stable over time: in 2006, 29.9% were



considered to have a high life satisfaction, in 2010 they were 31.7%, 28.2% in 2014, 31.5% in 2018 (Heinz, van Duin, et al., 2020) and 28.7% in 2022 (see Figure 22 in the appendix).

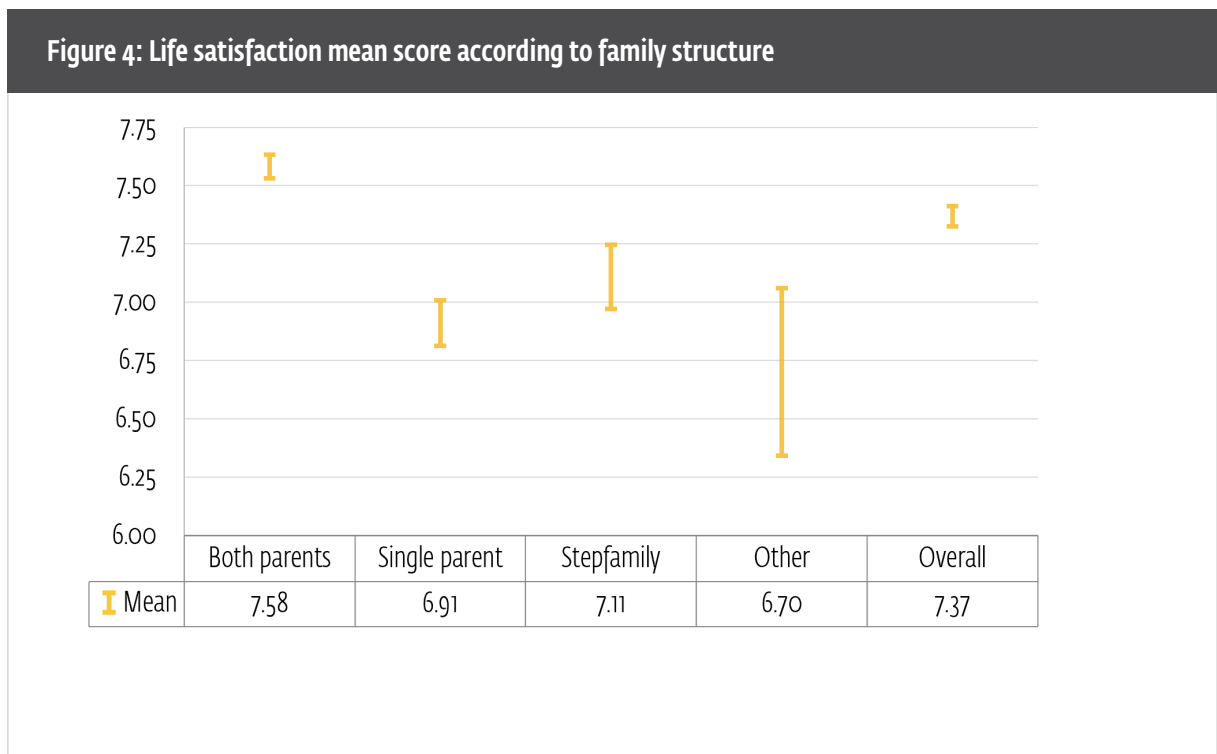
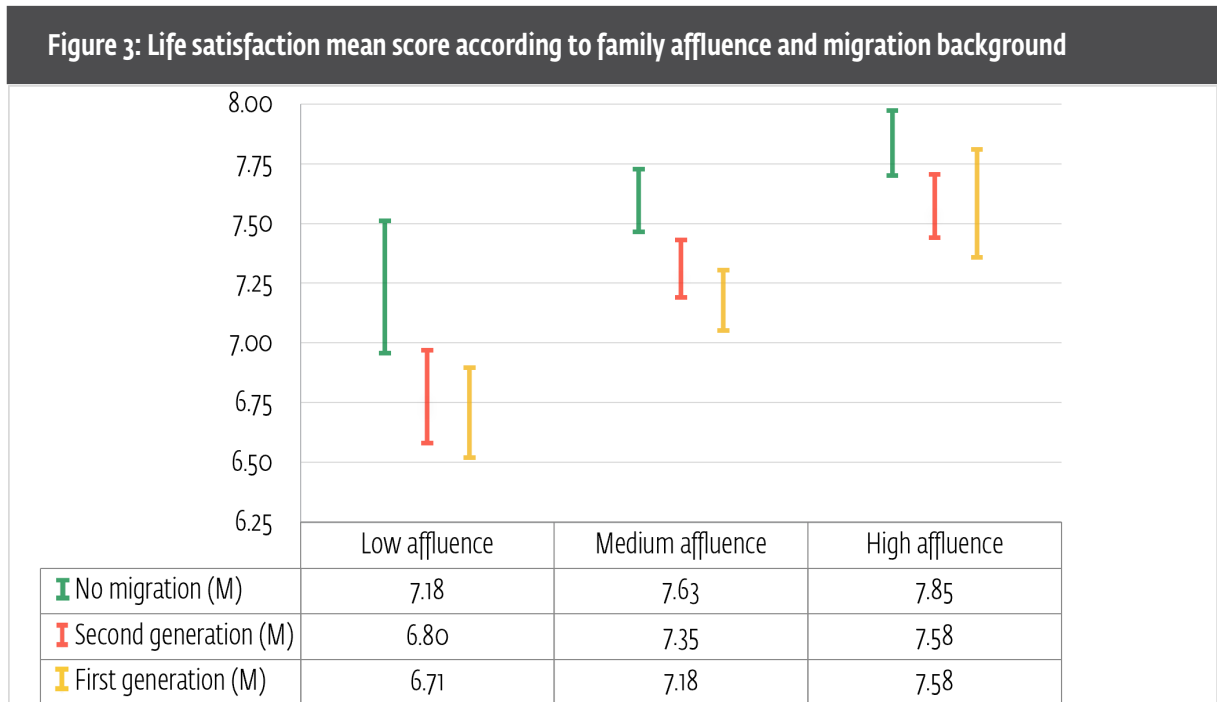
In the following figures, life satisfaction mean scores were analysed in light of the following sociodemographic characteristics: age, gender, family affluence, migration, family structure and type of school (more detailed information can be found in the appendix - Table 4). Complementary chi-square analyses, split by life satisfaction categories can be found in the appendix, Figure 22 and Table 3.



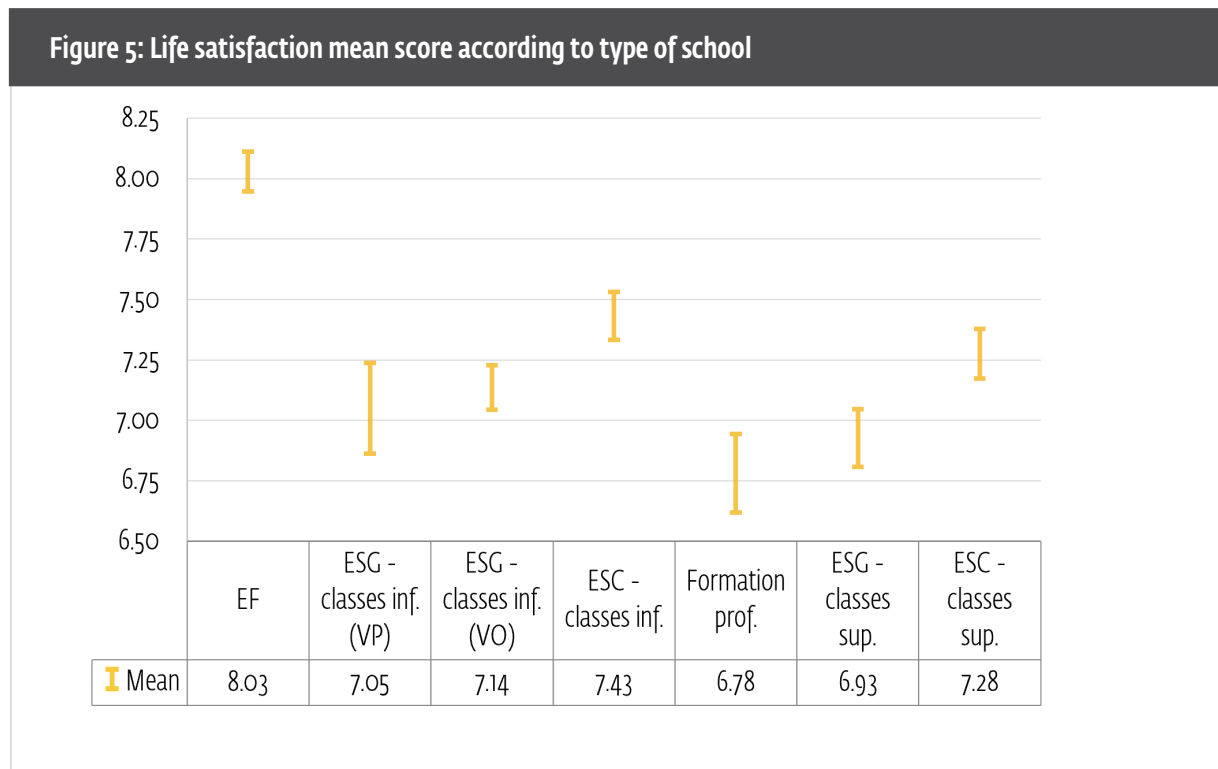
As shown in Figure 2, girls reported a lower life satisfaction than boys ( $M_{BOYS} = 7.66$ ;  $M_{GIRLS} = 7.09$ ;  $t(7344) = 13.43$ ;  $p < .001$ ). In addition, life satisfaction appeared to decrease with age. However, examining the joint influence of age and gender on life satisfaction reveals a gendered pattern. For girls, life satisfaction significantly decreases on a yearly basis between 11 and 13 years old. Girls' life satisfaction does not significantly vary after the age of 13. For boys, this significant decrease occurs a little later, after the age of 13, and lasts only one year. In a longitudinal study, Orben and colleagues (2022) observed a similar steeped decrease in early adolescence, with similar gender differences. In addition, in their trajectory model it becomes apparent that this gap between genders closes later in adolescence (Orben et al., 2022). A similar trend is observed in Luxembourg, as later in adolescence the differences narrow and for the 18 years old this difference is no longer significant.

Migration and family affluence are correlated (Catunda et al., 2023) and are thus analysed together and the results are shown in Figure 4. Independently of the migration background, respondents with lower family affluence are the ones with the lowest life satisfaction ( $M = 6.83$ ; 95% CI [6.71, 6.94]). In comparison, respondents with a higher family affluence have a greater life satisfaction ( $M = 7.69$ ; 95% CI [7.61, 7.77]). That was already the case in 2018, as the international HBSC report showed that adolescents from affluent families had a better life satisfaction than

adolescents from families with low affluence (Inchley et al., 2020), perhaps related to perceived family support and family composition (Zaborskis et al., 2022).



In addition to age, gender and family affluence, family structure has been found to be an important factor in relation to life satisfaction in many countries (Zaborskis et al., 2022). As shown in Figure 4, respondents who live with both parents have a significantly better life satisfaction ( $M = 7.58$ ; 95% CI [7.53, 7.63]) when compared to those in other family constellations (e.g.,  $M_{\text{SINGLE PARENT}} = 6.91$ ; 95% CI [6.81, 7.01]).

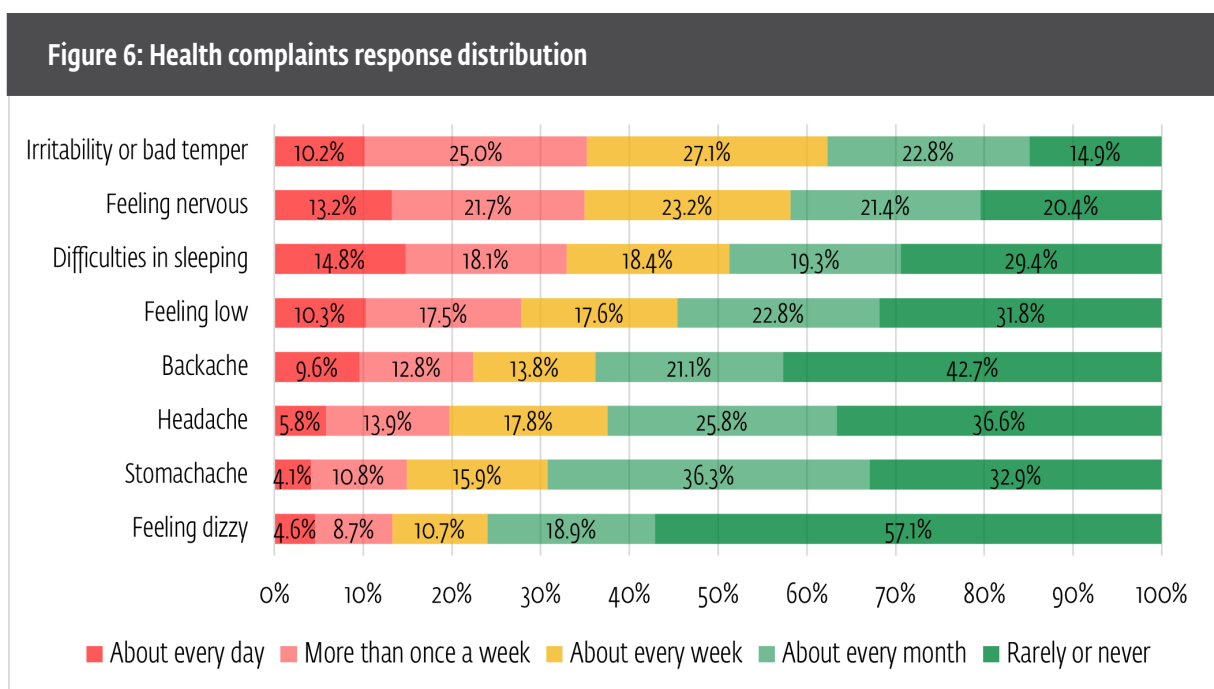


Regarding type of school, the differences highlighted in Figure 5 need to be interpreted taking into consideration other sociodemographic variables. For instance, adolescents attending *Enseignement Fondamental* (EF;  $M = 8.03$ ; 95% CI [7.95, 8.11]) have a higher life satisfaction than those attending other types of school (e.g.,  $M_{\text{ESG-CLASSES SUP.}} = 6.93$ ; 95% CI [6.81, 7.05]). However, they are also the youngest ones (Catunda et al., 2023), so those differences may be merely due to age. Similarly, there is a higher percentage of adolescents from high affluence families in *Enseignement Secondaire Classique* (ESC), in comparison to the other types of school (Catunda et al., 2023).

## Psychosomatic health complaints

Psychosomatic health complaints correspond to a variety of symptoms that can significantly affect life, ranging from typical somatic symptoms such as headache and backache, to psychological-related ones such as sadness and anxious feelings. The frequency and potential co-occurrence of health complaints are considered good indicators of health and well-being (Eriksen & Ursin, 2004; Svedberg et al., 2013).

In the HBSC study, respondents indicated how often they had suffered from the following eight health problems during the past six months: headache, backache, stomachache, feeling low, irritability, nervousness, difficulty in getting to sleep, and dizziness. Answer categories ranged from "about every day" to "rarely or never". The response distribution can be seen on Figure 6.

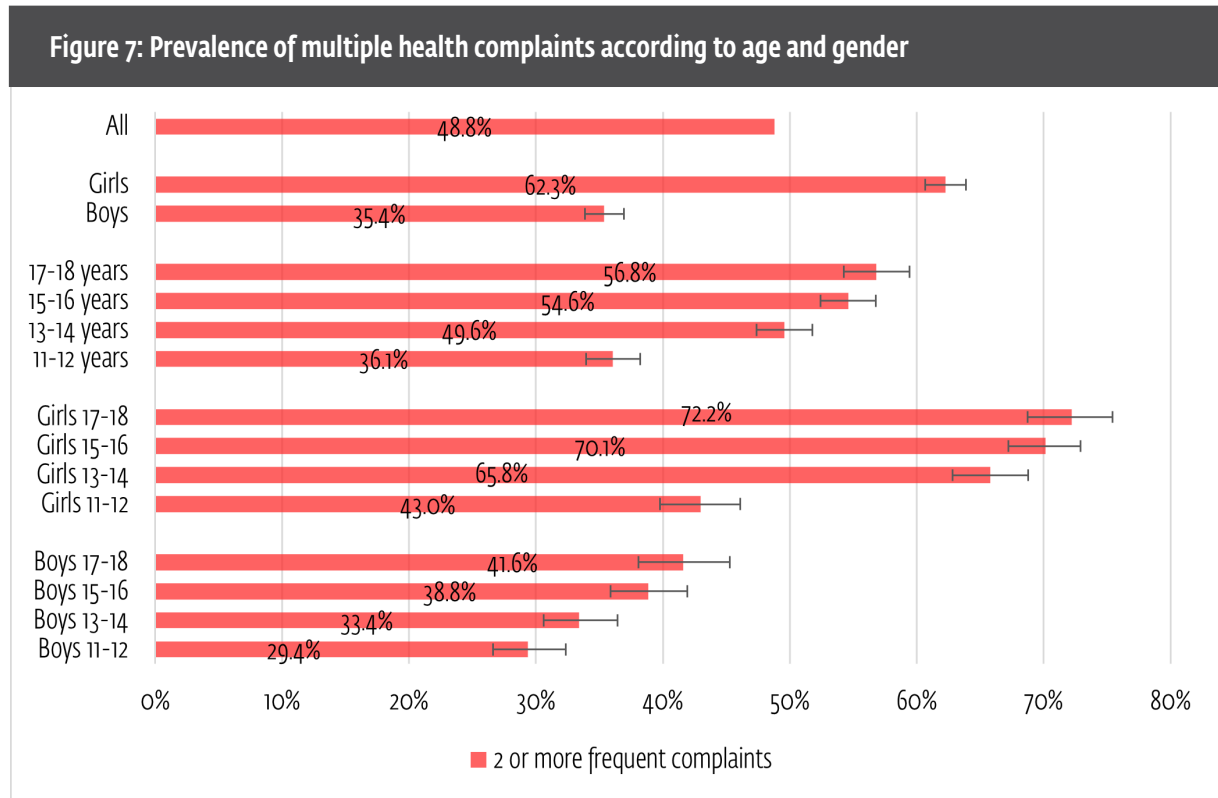


The most frequently experienced health complaint is irritability or bad temper, with 35.2% of respondents who felt it at least more than once a week, closely followed by feeling nervous, experienced more than once a week by 34.9% of respondents. On the other side, 57.1% of respondents rarely or never felt dizzy.

The eight symptoms are then summarised as multiple psychosomatic complaints. These are defined as the presence of at least two complaints that occur several times a week or daily. Prevalence of multiple health complaints is presented in Figure 7.

As life satisfaction, multiple health complaints follow a different pattern depending on gender. For girls, the most important increase appears between the ages of 11-12 and 13-14, as for the boys the increase appears slowly. In

addition, the difference between the 11 and 18 years old girls is far larger than the one observed between the 11 and 18 years old boys.



In 2022, multiple health complaints affected 48.8% of respondents, against 40.1% in 2018 (Heinz et al., 2021). Between 2010 and 2014, another important increase can be observed, from 33.0% in 2010 to 40.6% in 2014 (Heinz, van Duin, et al., 2020). For girls, the increase between 2018 and 2022 (from 49.1% to 62.3%) is more steeper than for boys (from 31.0% to 35.4%; Heinz et al., 2021). An increase in the prevalence of adolescents with multiple health complaints is observed in all age groups, for both boys and girls, with the 13-14 years old girls presenting the steeper increase, from 47.6% to 65.8% (Heinz et al., 2021).

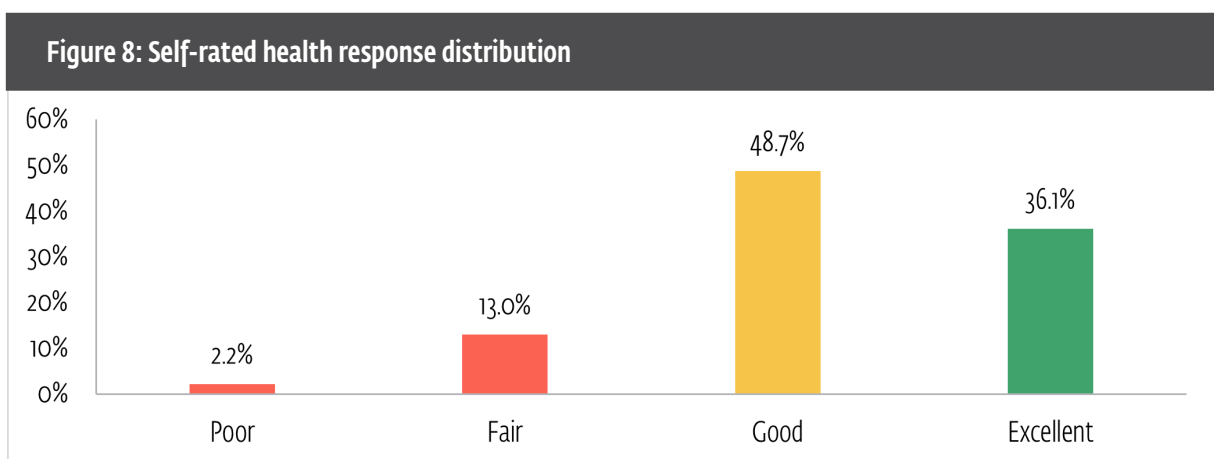
Such an increase in multiple psychosomatic complaints is not a Luxembourgish phenomenon. HBSC reports from Italy, Portugal, Finland and the Netherlands also show an increase in the frequency of health complaints from 2018 to 2022 (Boer et al., 2022; Gaspar et al., 2022; Gruppo HBSC-Italia 2022, 2023). From 2002 to 2018, there was an increase in multiple psychosomatic complaints in 26 out of the 36 HBSC countries, including all neighbouring countries of Luxembourg (Cosma et al., 2020). From 2002 to 2018, an increase in school stress was also documented, which may partly explain the increase in psychosomatic complaints, with a stronger relation among girls and older students (Cosma et al., 2020) and in countries with higher GDP per capita (Högberg, 2021).

Health complaints by migration, family affluence, family structure and type of school can be seen in the appendix (mean scores can be found in Table 6 and prevalence can be found in Figure 23 and in Table 5). Here again, the observed differences mirror those found for life satisfaction.

## Self-rated health

Self-assessment of health, as measured with a unique general item (e.g., "How would you describe your state of health?") provides a holistic overview of health. Individuals' perception of their own health correlates to physical aspects (e.g. diseases, disabilities, excess weight), health behaviours (smoking and physical activity), social support, and sociodemographic variables such as age, gender, income (Vingilis et al., 2002). Moreover, perceived health influences decisions to engage in health protective behaviours (Ferrer & Klein, 2015). It also predicts future health complaints in young adulthood (Hetlevik et al., 2020) and mortality in the general population, even when existing diseases are taken into account in the evaluation (DeSalvo et al., 2006; Idler & Benyamini, 1997).

In the HBSC 2022 Luxembourg Survey, self-assessment of health was measured with the following item: "Would you say your health is...", with 4 answer categories, ranging from "excellent" to "poor." Response distribution can be seen on Figure 8.

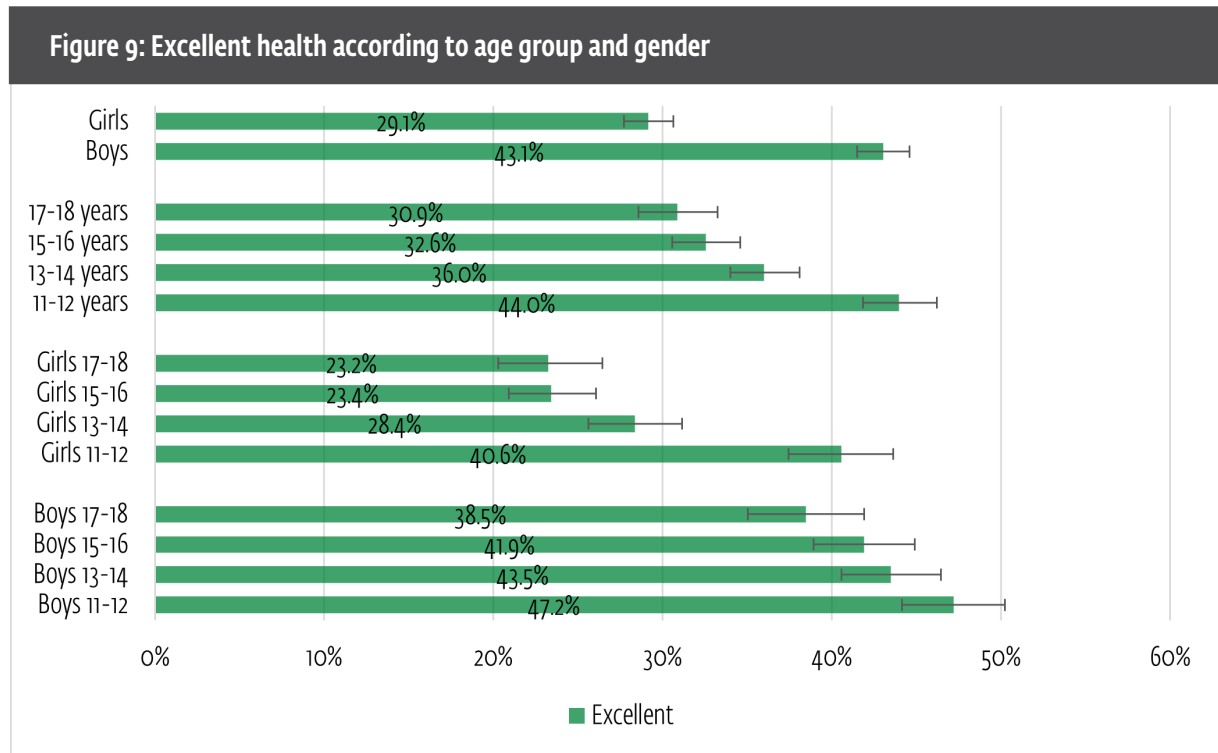


Most respondents (84.8%) rate their health as either excellent or good, a slight decrease in comparison to the 2018 survey, when they were 86.8% (Figure 8; Heinz et al., 2021). Taking into consideration trends since 2006, prevalence of those reporting an excellent health remains rather stable for both boys and girls (Heinz, van Duin, et al., 2020).

Consistently with previous HBSC Studies (Inchley et al., 2020), boys, younger adolescents, and respondents from high affluence family rated their health as excellent more frequently than girls, older adolescents, and respondents from low affluence. Boys were 43.1% (95% CI [41.5, 44.6]) to rate their health as excellent, in comparison to 29.1% (CI 95% [27.7, 30.6]) of girls (Figure 9). In comparison to HBSC 2018, this represents an increase in the prevalence for boys (that were 41.3% in 2018) and a decrease for girls (that were 33.0% in 2018). However, from a long term perspective, self-rated health turned out to be rather stable (Heinz, van Duin, et al., 2020).

For girls, there is an important drop in the prevalence of those who report an excellent health between the ages of 11-12 years old and the other age groups. For boys, although there is a decrease with age, only differences between the 11-12 and the 17-18 years old groups are significant (Figure 9). These results follow the pattern highlighted in 2018

HBSC International Report (Inchley et al., 2020) and are likely to be related to physical, psychological and social changes experienced with puberty (Krieger et al., 2015).



Self-rated health

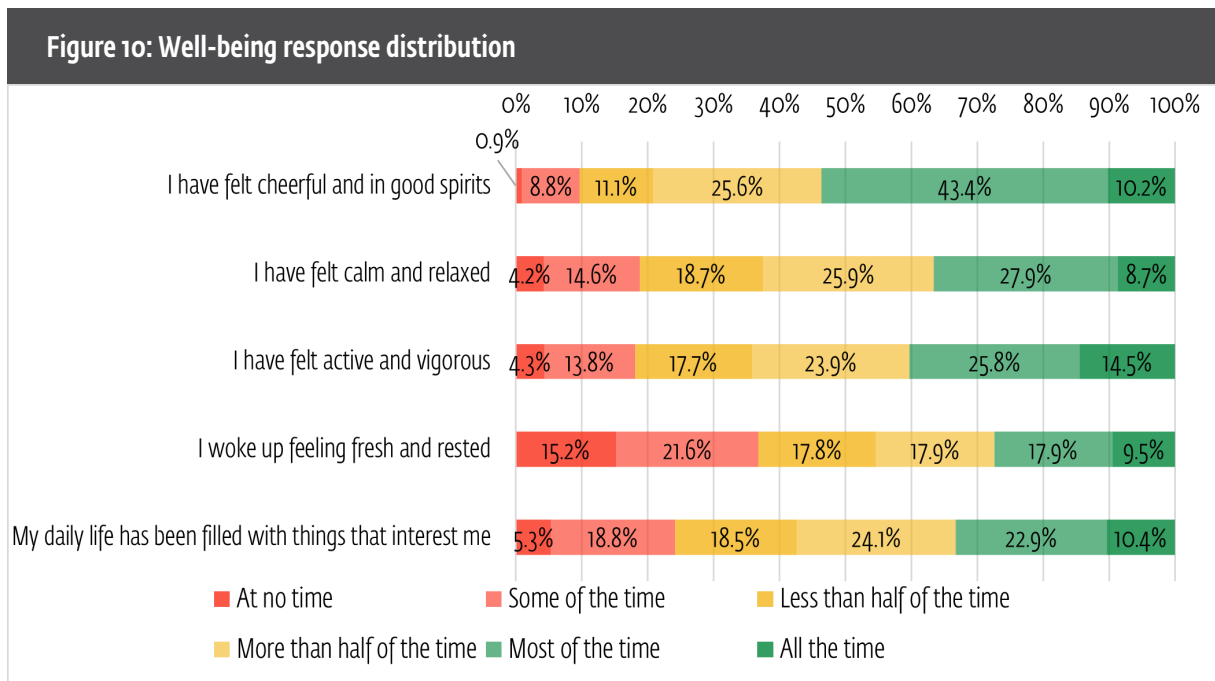
Respondents from a more affluent family and those living with both parents are more likely to report an excellent health in comparison to the other groups (Figure 24 and Table 7 in the appendix). Differences pertaining to migration and type of school are likely due to other sociodemographic factors, such as family affluence and age.

# Well-being and depression

## Well-being

Well-being refers not only to the cognitive evaluation of one’s life in general (life satisfaction), but also to the presence of positive affects and the absence of negative affects (Diener, 1984). The WHO-5 Well-Being Index (World Health Organization, 1998) is a 5-item scale assessing positive mood (feeling cheerful and in good spirits, feeling calm and relaxed), vitality (feeling active and vigorous, waking up fresh and rested), and general interests (daily life being filled with interesting things). As such, this scale complements life satisfaction as a measure of well-being.

Respondents answer to the 5 statements on a 6-point rating scale ranging from “at no time” (scored as 0) to “all the time” (scored as 5). Figure 10 displays the distribution of the responses. A majority of respondents (53.6%) reported to have felt cheerful and in good spirits most of the time or all the time; in contrast, only 27.4% reported to have woken up feeling fresh and rested most of the time or all the time.

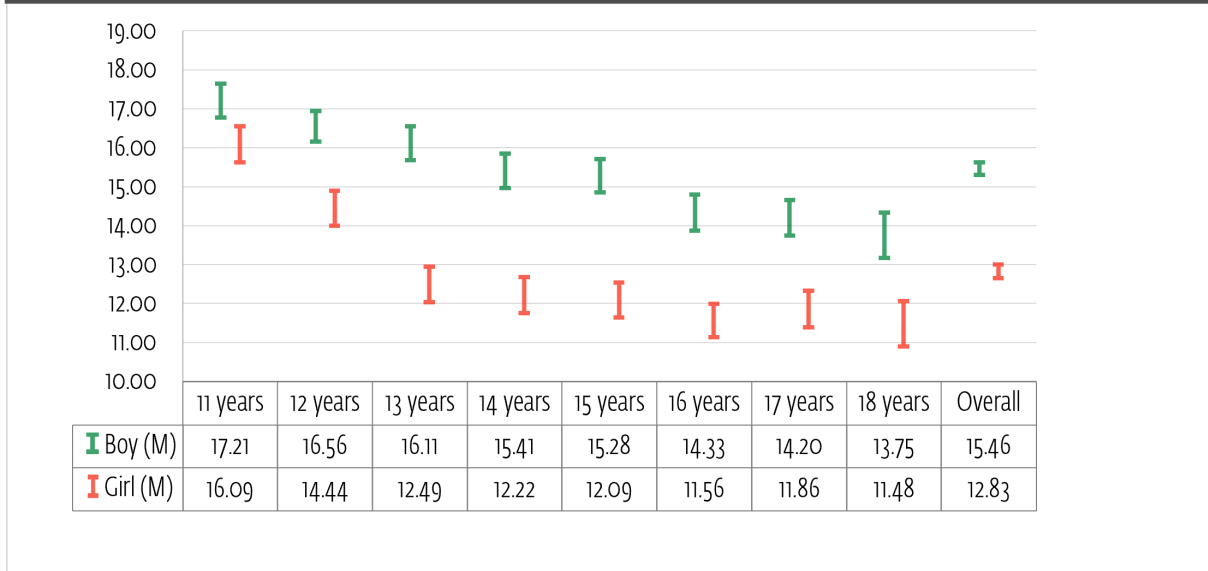


By summing the scores related to each single item, a general score of well-being ranging from 0 to 25 is calculated. The higher the score, the greater the well-being. On average, participants reported an overall score of 14.14. Boys expressed higher levels well-being than girls ( $M_{BOYS} = 15.46$ ;  $M_{GIRLS} = 12.83$ ;  $t(7403) = 21.93$ ;  $p < .001$ ).

Significant age and gender differences can be seen on Figure 11. Across all age groups, boys reported a higher well-being than girls. Moreover, adolescents’ well-being diminishes as they grow old for both girls and boys. However, while we observed an important drop between the ages of 11 to 13 years old for girls, well-being appeared to decrease more linearly throughout the years for boys.



Figure 11: Well-being mean score according to age and gender

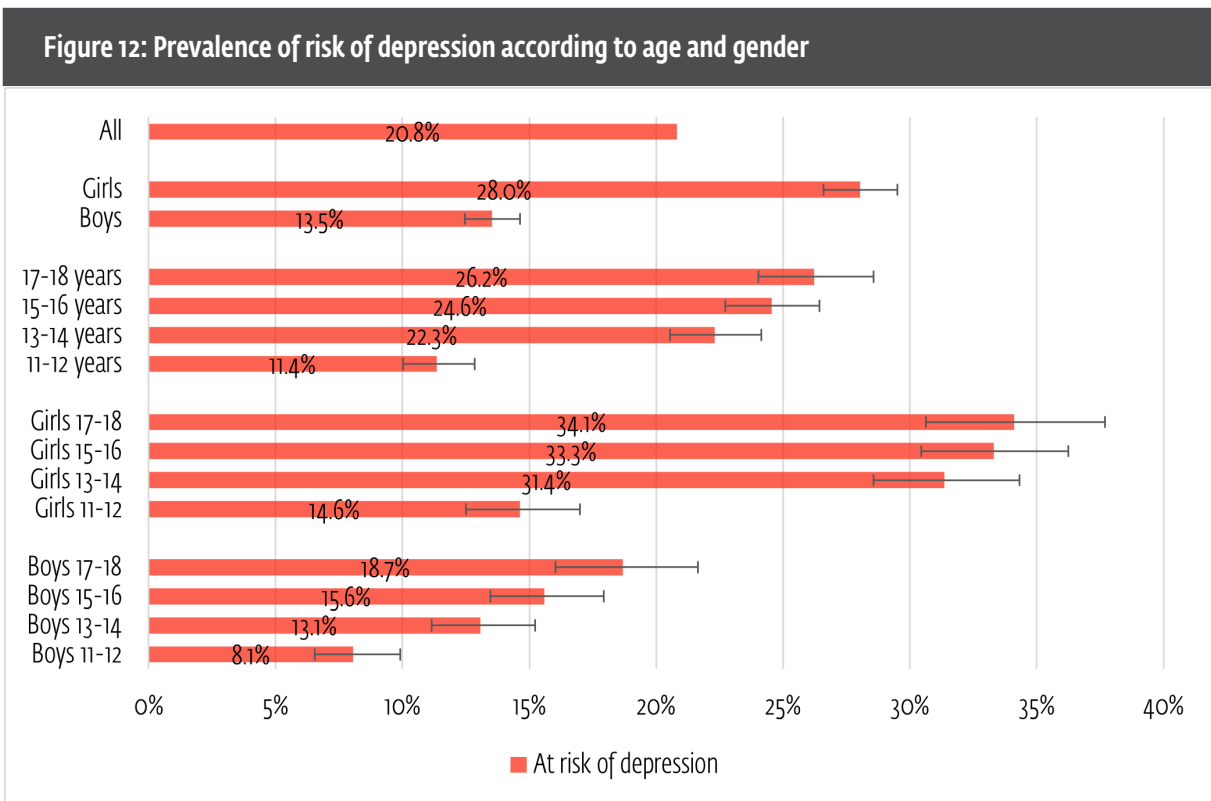


Results related to migration, family affluence, family structure and type of school mirror those related to life satisfaction. The corresponding tables and figures can be found in the appendix (Figure 25, Table 8 and Table 9).

### Depression

The prevalence of depression has globally increased over time (Moreno-Agostino et al., 2021). In adolescents, different studies conducted in the USA have shown that the 1-year prevalence of depression increased over the years (Coley et al., 2019; Daly, 2022; Keyes et al., 2019; Mojtabai et al., 2016). Similarly, in Germany, trends revealed a near doubling of prevalence among adolescents from 2009 to 2017 (Steffen et al., 2020). There is evidence that the COVID-19 pandemic accelerated this increase in mental health problems. Systematic reviews showed that COVID-19 influenced adolescents' mental health and is particularly associated with depression and that older adolescents and girls, were more likely to experience negative mental health outcomes (Nearchou et al., 2020; Samji et al., 2022). A meta-analysis of the global prevalence of clinically elevated child and adolescent depression symptoms during COVID-19 revealed pooled prevalence estimates of 20.5%, twice the pre-epidemic projections (Racine et al., 2021).

Over the past two decades, the WHO-5 Well-Being Index has been used as a screening instrument for depression, indicating a need for further testing using standardised clinical assessments (Allgaier et al., 2012; Blom et al., 2012). Adolescents classified as "at risk of depression" are those exhibiting a score  $\leq 9$ , as recommended by Allgaier et al. (2012).



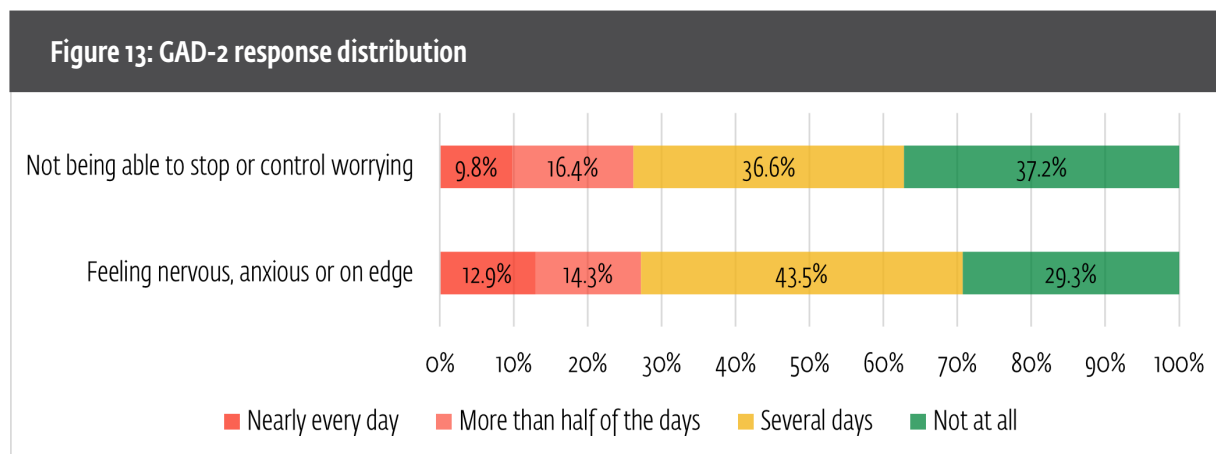
Prevalence of surveyed adolescents at risk of depression by age and gender can be found on Figure 12 (complementary figures with other sociodemographic variables can be found in the appendix, Figure 25 and Table 8). Prevalence for adolescents at risk of depression is twice as high for girls in comparison to boys (Boys: 13.5%; 95% CI [12.5, 14.6]; Girls: 28.0%; 95% CI [26.6, 29.5]). In addition, there is a significant increase in prevalence between the ages of 11-12 and 13 and more for both boys and girls. Differences in gender and age, with girls and older adolescents being more likely to report depression than boys and younger adolescents, are well established in the literature (Bor et al., 2014; Keyes et al., 2019; Moreno-Agostino et al., 2021; Wesselhoeft et al., 2013).

# Anxiety

Anxiety

Feeling anxious or fearful can be a normal reaction to a threat. However, if this feeling is persistent and interferes with daily life, it may be considered an unhealthy reaction and possibly an anxiety disorder. The current Diagnostic and Statistical Manual of Mental Disorders (DSM-5-TR) lists a variety of anxiety disorders, including generalised anxiety disorder and phobias (e.g., of spiders or confined spaces). Whereas these disorders share common characteristics (excessive anxiety, fear, and associated behavioural problems), they differ from each other in the type of objects and situations that trigger such anxiety or fear. Generalised anxiety disorder is characterised by excessive, persistent and difficult-to-control anxiety in a variety of domains, including academic performance (American Psychiatric Association, 2013). Anxiety disorders in adolescence increase the likelihood of an anxiety disorder in adulthood (Essau et al., 2018).

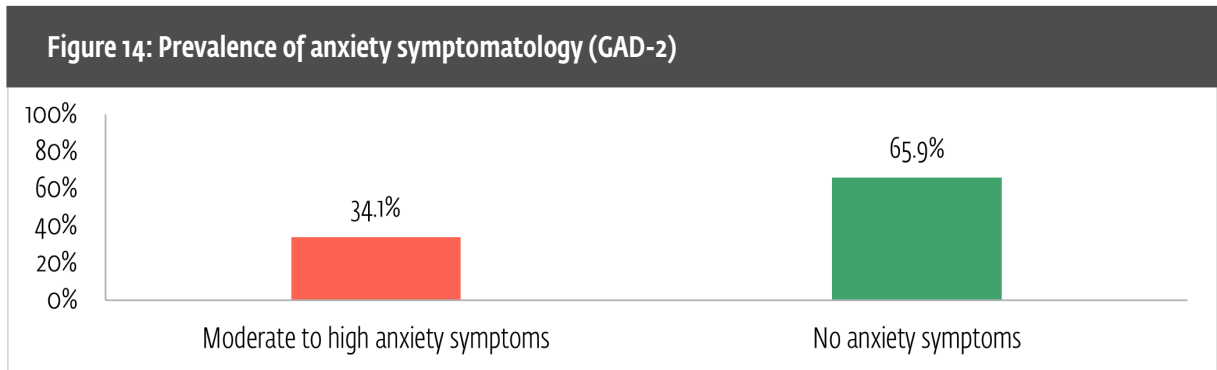
To measure anxiety disorders, the Generalised Anxiety Disorder Scale was used in its 2-item form (Kroenke et al., 2007). These items assess how often the respondents felt disturbed by nervousness, anxiety or tension, as well as the inability to suppress or control worries in the past two weeks. The answers range from "not at all" (coded 0) to "almost every day" (coded 3). Figure 13 presents the response distribution for the GAD-2.



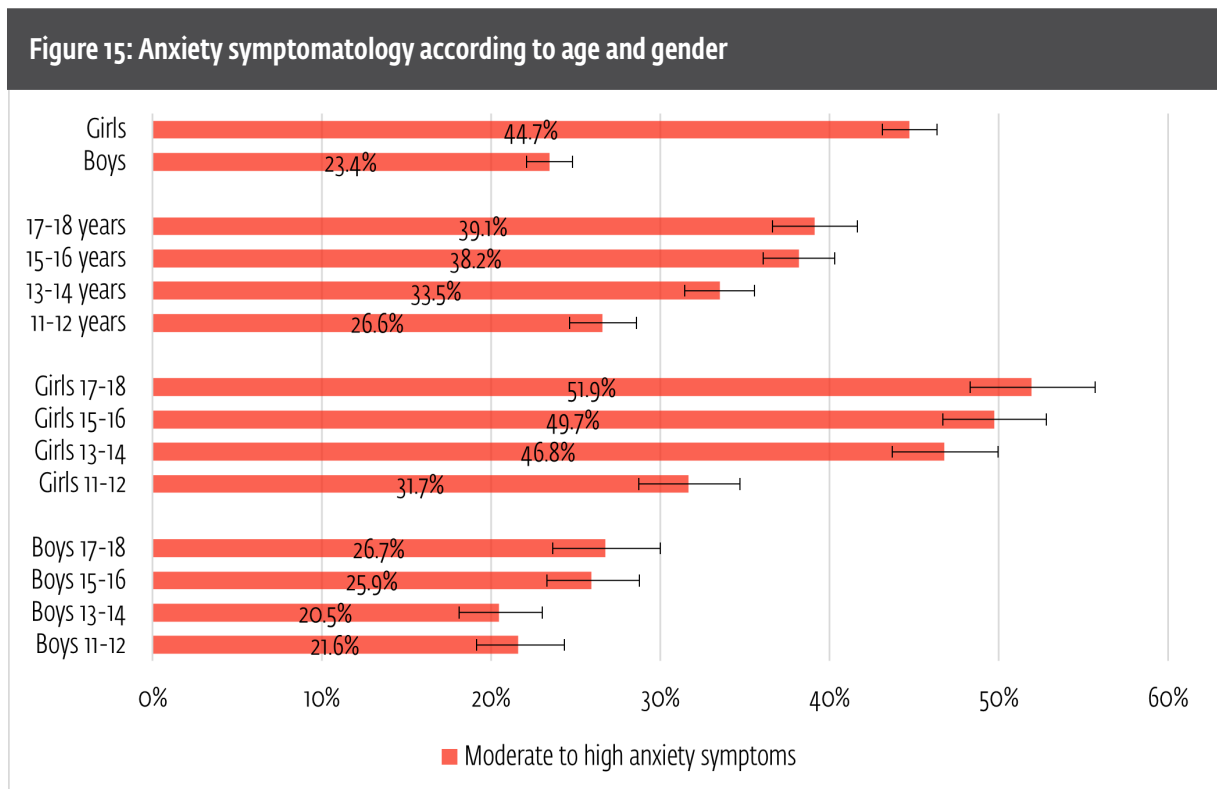
The analysis revealed that 29.3% of our participants did not at all feel nervous, anxious or on the edge in the previous two weeks. Moreover, 37.2% of the respondents reported no inability to stop or control their worries in the previous two weeks.

For further evaluation, an anxiety general score is created by adding the code values related to both GAD-2 items. This score ranges from 0 to 6. A cut-off value of 3 has been established as the threshold value for moderate to high anxiety symptoms (Kroenke et al., 2007; Plummer et al., 2016). Our data indicate that 34.1% of the surveyed adolescents exhibited symptoms of moderate to high anxiety (Figure 14). According to a 2015 meta-analysis, anxiety disorders were the most common mental disorders in children and adolescents worldwide, with an estimated prevalence rate of 6.5% in children and adolescents (Polanczyk et al., 2015). More recently, a time trends study using the GAD-2 have observed 44% of youth meeting anxiety-screening criteria in 2018 (Parodi et al., 2022). The Global Burden of Disease Study estimates that the prevalence of anxiety disorders increased by 25.6% in the wake of the

COVID-19 pandemic (Santomauro et al., 2021), although this increase was calculated for the population as a whole and not separately for children and adolescents.



Consistently with the literature, in Figure 15 it is possible to observe that anxiety symptoms are more common in girls than boys (Boys: 23.4%; 95% CI [22.1-24.8]; Girls: 44.7%; 95% CI [43.1-46.3]), prevalence increases with age (11-12 years old: 26.6%; 95% CI [24.6-28.6]; 17-18 years old: 39.1%; 95% CI [36.6-41.6]) and is higher in adolescents from families with low wealth (see appendix Figure 26 and Table 10; Biswas et al., 2020; World Health Organization, 2017). While no difference was found in relation to migration background, we observed differences related to type of school. The latter, however, are likely due to age. Finally, adolescents living with both parents experienced less anxiety symptoms than those living in other family constellations (see appendix Figure 26 and Table 10).

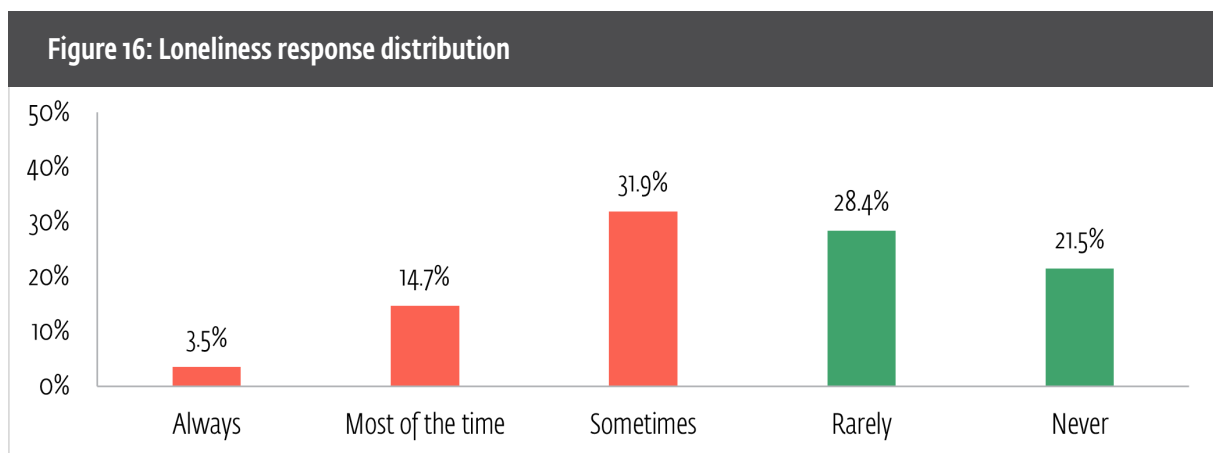


## Loneliness

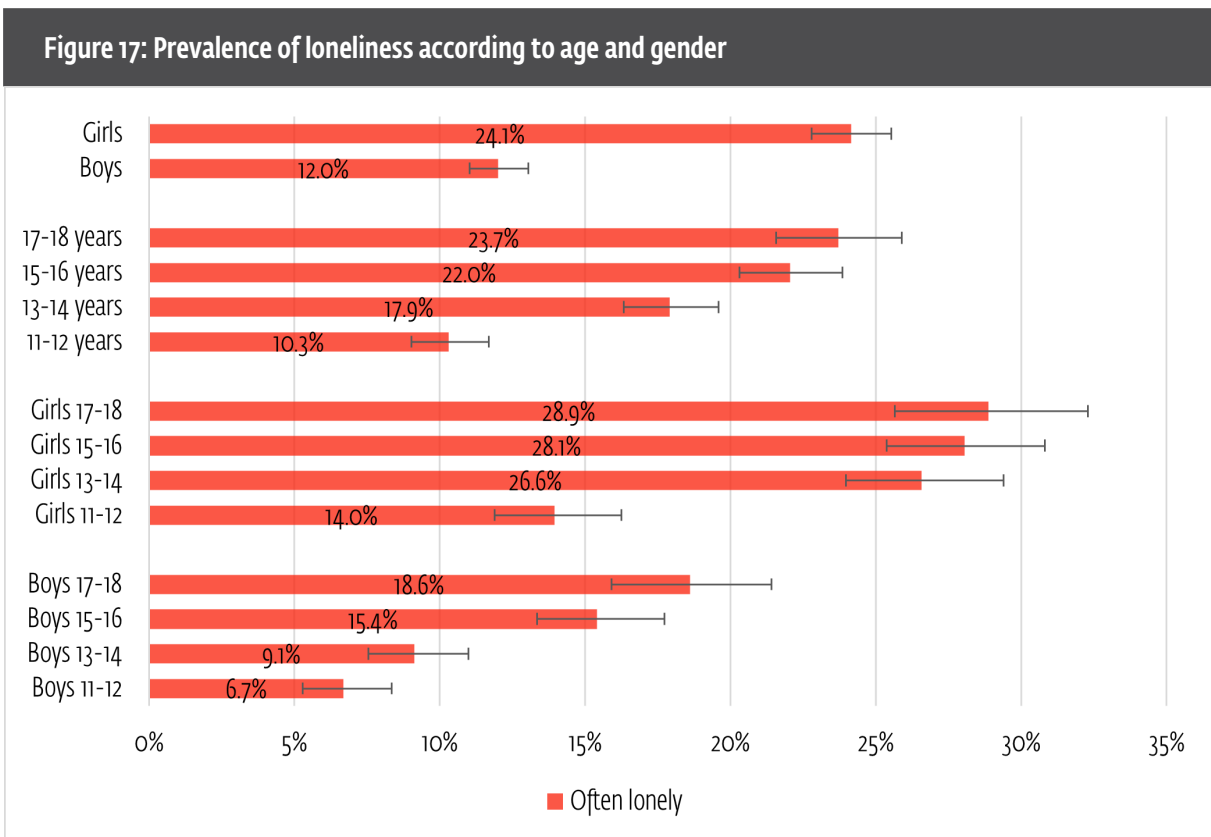
Loneliness refers to a negative emotional response from a person who has fewer social relationships than he or she would like. Loneliness is associated with health complaints (especially nervousness, sleeping disorders, and sadness; see Lyyra et al., 2018), poorer subjective health and fatigue (Eccles et al., 2020), anxiety, depression and lower self-esteem (Lyyra et al., 2021), and poorer academic performance (Qualter et al., 2021).

The COVID-19 pandemic may have increased feelings of loneliness, as quarantine has been associated with negative psychological effects (Brooks et al., 2020). A systematic review found significant increases in loneliness compared to pre-pandemic levels and revealed that higher levels of loneliness were associated with poorer well-being and more depression and anxiety symptoms (Farrell et al., 2023).

In the HBSC study, pupils were asked how often they had felt lonely in the last 12 months. The answer options ranged from "never" (1) to "always" (5). The response distribution can be seen on Figure 16. The response options "most of the time" and "always" indicate feelings associated with negative health outcomes. Therefore, in order to capture the latter aspects, pupils who perceived to be lonely for most of the time or always are considered as often lonely and are analysed together.



Feelings of loneliness are common among adolescents, a phase characterised by cognitive and physical developmental processes that increase the risk of perceived social isolation (Laursen & Hartl, 2013). In 2022, 18.2% of pupils in Luxembourg felt lonely most of the time or always for the past 12 months. Prevalence rates for adolescent loneliness in Europe are limited, in 2018, the HBSC study found prevalences in four northern European countries ranging from 7.7% in Denmark to 19.2% in Finland (Lyyra et al., 2021).

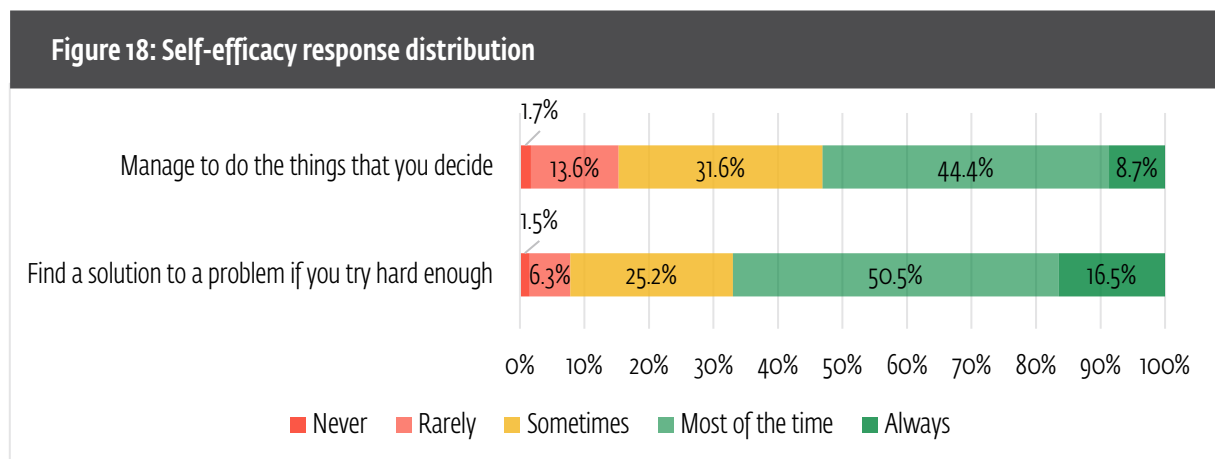


Consistently with the literature, girls are more likely to feel lonely than boys (Boys: 12.0%; 95% CI [11.0, 13.1]; Girls: 24.1%; 95% CI [22.8, 25.5]; Favotto et al., 2019). Loneliness increases with age (11-12 years old: 10.3%; 95% CI [9.0, 11.7]; 17-18 years old: 23.7%; 95% CI [21.6, 25.9]; Figure 17), and adolescents with lower socioeconomic status are more likely to feel lonely than their high-status counterparts (Figure 27 and Table 11 in the appendix; Qualter et al., 2021) and participants with migration background are at increased risk for loneliness (Madsen et al., 2016). However, as for life satisfaction, differences in relation to migration might be explained by family affluence differences.

## Self-efficacy

General self-efficacy refers to individuals' belief in their ability to cope with challenging situations or accomplish a certain performance (Bandura, 1997). Accordingly, people with higher self-efficacy are more willing to accept challenges and to set themselves ambitious goals (Jerusalem & Schwarzer, 1992). A higher self-efficacy is associated with numerous positive behaviours, such as physical activity, condom use or even stopping smoking (Sheeran & Webb, 2016), as well as with higher levels of life satisfaction (Danielsen et al., 2009), better academic achievement (La Fuente et al., 2021), less risk behaviours and a general healthier lifestyle (Schwarzer & Luszczynska, 2006).

To measure self-efficacy, pupils were asked to answer two questions: "How often do you find a solution to a problem if you try hard enough?" and "How often do you manage to do the things that you decide to?" The possible answers ranged from "never" (1) to "always" (5). The response distribution can be seen on Figure 18.



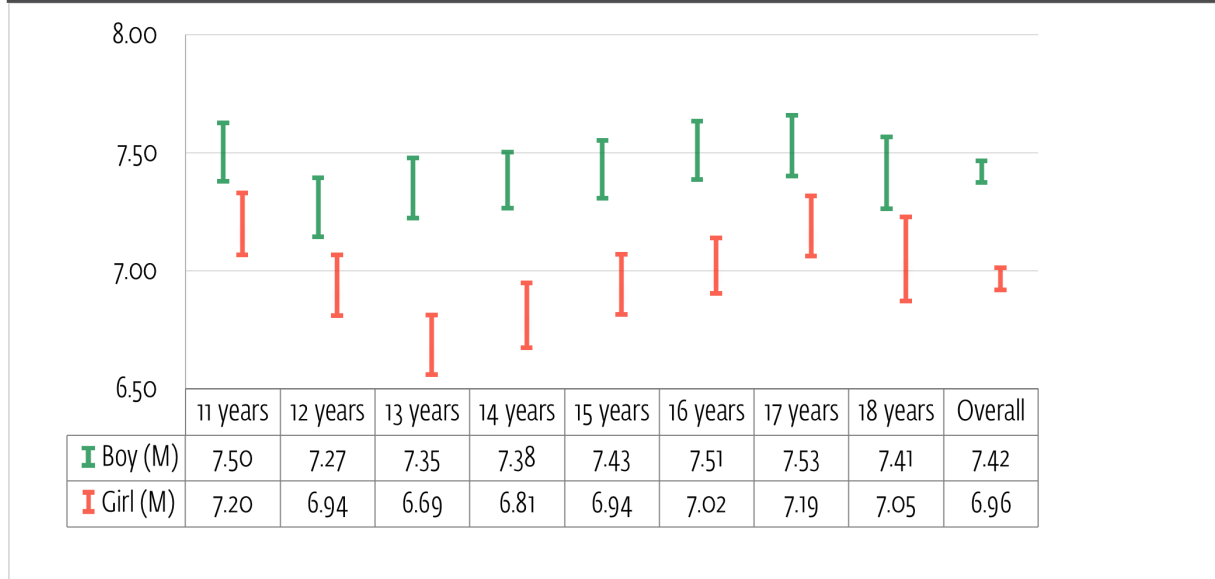
For further evaluation, the answer codes of both questions were added to compute a general score ranging from 2 to 10. Mean scores are presented in the following figures. The self-efficacy general mean score was 7.19 (95% CI [7.16, 7.22]). Complementary chi-square analyses, split by "high self-efficacy" (range 9-10), "medium self-efficacy" (range 7-8) and "low self-efficacy" (range 2-6), can be found in the appendix. Most participants reported a medium self-efficacy (54.2%), while 28.9% and 16.9% reported low and high self-efficacy, respectively (see appendix Figure 28 and Table 12).

As shown in Figure 20, results indicate a significant difference in self-efficacy by gender and age. At all ages, boys have a higher self-efficacy than girls ( $M_{\text{BOYS}} = 7.42$ ; 95% CI [7.38, 7.46];  $M_{\text{GIRLS}} = 6.97$ ; 95% CI [6.92, 7.01]). The gap is especially widened between the ages of 13 and 16 years old. Over the years, boys present little to no variation in their perceived self-efficacy, while girls present a significant drop at the age of 13 ( $M = 6.69$ ; 95% CI [6.56, 6.81]) and a follow-up increase up to the age of 16 ( $M = 7.02$ ; 95% CI [6.90, 7.14]).

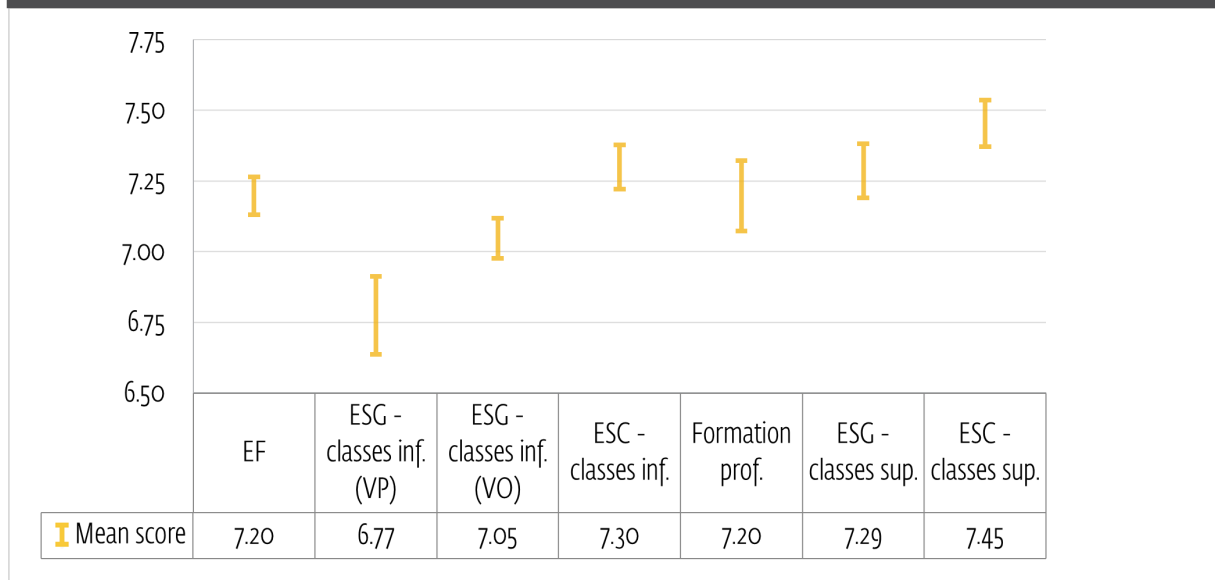
Sociodemographic differences in self-efficacy are presented in the appendix (Figure 28, Table 12 and Table 13). Regarding family affluence, the higher the affluence category, the higher the prevalence of participants with a higher

self-efficacy. In addition, adolescents living with both parents have a higher self-efficacy than adolescents from other family constellations. In relation to migration, differences are mainly explained by the family affluence.

**Figure 19: Self-efficacy according to age and gender**



**Figure 20: Self-efficacy according to type of school**



Self-efficacy presents an interesting relation to type of school (Figure 20), with pupils from ESG – *classes inférieures* reporting an especially low sentiment of self-efficacy ( $M_{VP} = 6.77$ ; 95% CI [6.64, 6.91]), despite the fact that type of school is composed of a majority of boys (Catunda et al., 2023), who have a higher sentiment of self-efficacy. Interestingly, this gender ratio also exists in *Formation Professionnelle*, but the difference between the mean self-efficacy

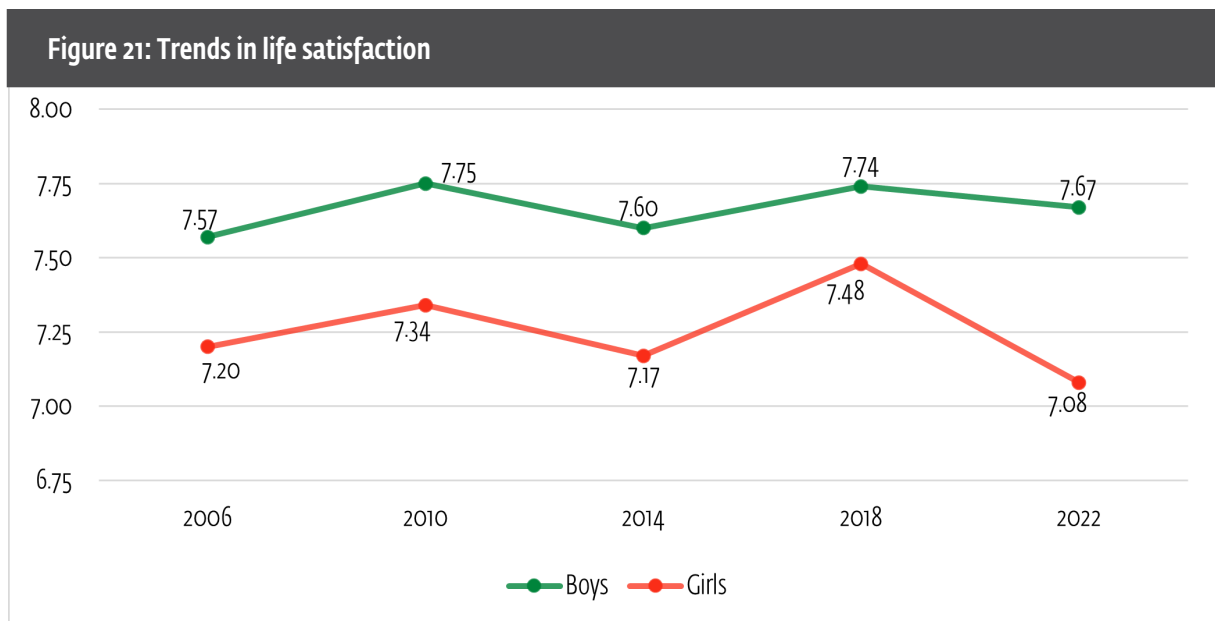


of this group and their peers from ESG and ESC – *classes supérieures* is smaller. Therefore, once pupils leave *Enseignement Fondamental* and enter *Enseignement Secondaire Général*, it seems they feel less confident on their personal abilities to manage challenging situations and find solutions to their problems. A possible explanation to this relation might be due to school achievement, known to be lower within pupils reporting lower self-efficacy (La Fuente et al., 2021), but this hypothesis should be tested in the Luxembourg context. Especially because, as they advance in the school system, their sentiment of self-efficacy increases, suggesting that there might be a period of adjustment to the challenges present in this new environment, reflected in on their beliefs in their personal abilities to cope with it.

# The gender gap in life satisfaction

## Introduction

Gender differences in life satisfaction have been examined for decades, with inconsistent results, however. For instance, whereas Jackson et al. (2014) found girls to have a higher life satisfaction than boys, Moksnes and Espnes (2013) highlighted the exact opposite trend, and Huebner et al. (2000) observed no gender differences in adolescents' life satisfaction. In a recent review of the literature, Chen et al. (2020) echoed the heterogeneity of the study findings within this research area, suggesting that national context may partly explain such discrepancies. Owing to their consistency over time, results from the Luxembourg HBSC surveys tend to support this view. Indeed, boys have appeared to exhibit a greater life satisfaction than girls since 2006, year of the first administration of the HBSC survey. As shown in Figure 21, this gender gap has been rather stable over the past 16 years. It reached its peak in 2022, though. The difference in question was statistically significant and the corresponding effect size was small (Cohen's  $d = 0.31$ ).



In the previous chapter, gender differences in life satisfaction mirrored gender differences in mental health (e.g., anxiety). As girls generally experience more psychological and social distress than boys (Wade et al., 2002), one might expect this difference to be reflected in life satisfaction self-assessment. However, as mentioned above, some studies have found girls to report higher levels of life satisfaction than boys. This suggests that several factors – including national and cultural contexts – influence life satisfaction, the identification of which is crucial in the understanding of gender differences in life satisfaction.

In the present section, we aim to account for the adolescents' gender gap in life satisfaction observed in Luxembourg. To this end, we relied on inferential analysis employing the HBSC 2022 data. More specifically, we seek to (1) assess

the influence of gender when controlling for psychosocial factors known to affect life satisfaction and (2) estimate whether the respective influence of these factors varies with gender.

## Method

### *Dependent variable*

We used the Cantril ladder to assess life satisfaction in adolescents (see Table 4). This measure ranges from 0 (“worst possible life”) to 10 (“best possible life”).

### *Independent variables*

We employed five sociodemographic factors in the conducted analyses, namely age, family affluence, family structure, gender, and migration background, as in the previous section.

We also used four psychological and health-related predictors. Anxiety was estimated with a general score ranging from 0 to 6. Health complaints were measured with a dichotomic variable differentiating between participants who reported at least two complaints on a weekly frequency and others. Loneliness was used dichotomously, distinguishing between the participants who reported to have felt lonely most of the time or always over the past year and the others. Self-efficacy was assessed based on a general score ranging from 2 to 10, afterwards categorised as having low ( $\leq 6$ ), medium (7-8) score, and high (9-10) levels of self-efficacy.

Finally, we employed the mean score of two sub-scales of social support, namely family and friends support. Both measures were excerpted from the Multidimensional Scale of Perceived Social Support (Zimet et al., 1988). Each subscale involves four items on 1-7 rating scale (e.g., “I get the emotional help and support I need from my family”).

### *Statistical analyses*

First, we performed a 3-step hierarchical regression analysis comprising sociodemographic factors (step 1), psychological and health-related factors (step 2), as well as social support factors (step 3). This step-by-step process allowed us to estimate the predictive power of our sets of predictors and to assess the effect of gender on life satisfaction when controlling for different types of predictors. Second, we then reran the analysis split by gender. This permitted us to compare the respective impact of our predictors on life satisfaction separately in boys and in girls and to examine potential gender differences at a deeper level. We used a level of statistical significance of 0.05.

## Results and discussion

As shown in Table 1, focusing on the influence of sociodemographic factors on life satisfaction (step 1) led to identify a significant effect of gender. However, the inclusion of psychological and health-related factors into the model (step 2) cancelled this gender effect. Adding the social support factors (step 3) further diluted the impact of gender found in step 1. It is worth noting that gender was the only predictor exhibiting a non-significant  $p$  value in steps 2 and 3.

Importantly, the erosion of the gender effect in steps 2 and 3 should not be interpreted as the demonstration that gender does not matter. The analysis suggests that the variance linked to gender in step 1 was captured by the variables included in steps 2 and 3. As mentioned above, there has been long evidence that girls suffer more than boys from psychological disorders such as anxiety or depression (Biswas et al., 2020; Moreno-Agostino et al., 2021).

**Table 1: Summary of the linear regression analysis predicting life satisfaction**

	Step 1			Step 2			Step 3		
	B	SE	p	B	SE	p	B	SE	p
Age [11-18]	-0.176	0.010	.000	-0.111	0.009	.000	-0.082	0.009	.000
Family affluence	0.385	0.036	.000	0.248	0.031	.000	0.180	0.030	.000
Family structure	-0.259	0.029	.000	-0.145	0.025	.000	-0.116	0.024	.000
Gender	-0.600	0.044	.000	-0.021	0.040	.592	0.005	0.038	.890
Migration	-0.165	0.032	.000	-0.133	0.028	.000	-0.064	0.026	.015
Anxiety [0-6]				-0.197	0.014	.000	-0.152	0.013	.000
Health complaints				-0.617	0.046	.000	-0.450	0.044	.000
Loneliness				-1.009	0.056	.000	-0.676	0.055	.000
Self-efficacy				0.475	0.031	.000	0.350	0.029	.000
Family support							0.314	0.013	.000
Friends support							0.050	0.013	.000
Adjusted R <sup>2</sup>		.110			.352			.415	

Interestingly, carrying out the same analysis split by gender showed that most predictors have a similar influence on life satisfaction, irrespective of gender (see Table 2). It should be noted that such similarities do not imply that the prevalence, for instance, of anxiety or loneliness is the same in boys and in girls. These similarities solely indicate that the influence of these factors on life satisfaction does not vary with gender. Among the examined factors, age was the only one whose influence on life satisfaction varied with gender. As mentioned in the previous chapter, the decrease in life satisfaction occurs sooner in girls than in boys, perhaps due to puberty (Krieger et al., 2015).

**Table 2: Summary of the linear regression analysis predicting life satisfaction, split by gender**

	Boys			Girls		
	B	SE	p	B	SE	p
Age [11-18]	-0.111	0.012	.000	-0.053	0.012	.000
Family affluence	0.176	0.043	.000	0.189	0.042	.000
Family structure	-0.110	0.034	.001	-0.120	0.033	.000
Migration background	-0.080	0.037	.030	-0.049	0.037	.194
Anxiety [0-6]	-0.153	0.019	.000	-0.153	0.018	.000
Health complaints	-0.452	0.063	.000	-0.464	0.063	.000
Loneliness	-0.652	0.089	.000	-0.674	0.070	.000
Self-efficacy	0.316	0.042	.000	0.378	0.042	.000
Family support	0.317	0.020	.000	0.311	0.018	.000
Friends support	0.045	0.019	.015	0.058	0.018	.001
Adjusted R <sup>2</sup>		.358			.432	

Overall, the present findings suggest that the gender gap we observed in life satisfaction may be mainly affected by age and psychosocial factors. The present study supports the view that girls reported a lower life satisfaction partly because of gendered difference in psychological distress. However, it should be reminded that the gap in life satisfaction was rather low (Cohen's  $d = 0.31$ ), especially compared to the gender gap in anxiety (Cohen's  $d = 0.55$ ) and in loneliness (Cohen's  $d = 0.55$ ). Consequently, differences in psychological distress likely represent one explanatory factor among others. Within our framework, family support appeared as another key factor accounting for the gender gap in life satisfaction. Indeed, boys reported higher family support than girls ( $M_{\text{BOYS}} = 5.72$ ;  $SD_{\text{BOYS}} = 1.52$ ;  $M_{\text{GIRLS}} = 5.16$ ;  $SD_{\text{GIRLS}} = 1.78$ ; Cohen's  $d = 0.34$ ). However, more comprehensive models are needed to better understand the underpinnings of the gender gap in life satisfaction. The consideration of factors such as risk behaviours and substance use may enrich such understanding.

At an international level, our results are in line with those of most countries of the HBSC network (Inchley et al., 2020). However, as mentioned above, other studies have found inconsistent results. It remains unclear, for instance, how gender differences in life satisfaction vary with national gender equality. Notably, most studies showed that the higher the national gender equality, the higher the life satisfaction. However, whether a higher gender equality benefits similarly to boys and girls remains open to question. Indeed, relying on data from the 2014 HBSC survey, de Looze et al. (2018) found that national gender equality improved boys' and girls' life satisfaction to a similar extent. Contrarily, Heinz, Catunda et al. (2020) and Guo et al. (2022), using data from the HBSC 2018 survey and from PISA 2015 and 2018 studies, respectively, found that national gender equality improved boys' life satisfaction to a larger extent than girls' life satisfaction. A few studies have suggested that individuals from Western countries, which are considered the most equal in that respect, are more susceptible to take into account gender differences in the rating of their own life satisfaction than individuals from non-Western countries (Costa et al., 2001; Guimond et al., 2007). However, it is important to note the differences in the survey years. Keys et al. (2019) noted that depressive symptoms among US adolescent girls decreased from 1991 to 2012 to then reverse in course and reach their peak in 2018. Therefore, differences found in the previous studies dedicated to life satisfaction might be due to a period effect. Here again, further research is needed.



## Conclusions and perspectives

There has been a general concern about a decline in adolescents' mental health and well-being over the past two decades (Bor et al., 2014; Cosma et al., 2020), with the impact of the COVID-19 pandemic increasing this concern (Nearchou et al., 2020). This report aims to give an overview of the mental health and well-being situation of adolescents in national schools in Luxembourg in the year 2022. More specifically, we examined the following mental health and well-being indicators: life satisfaction, multiple health complaints, perceived health, depression, anxiety, loneliness, and self-efficacy.

First of all, because the HBSC survey has monitored life satisfaction, health complaints and perceived health since 2006, we were able to compare the 2022 data with previous findings. We thus observed that the prevalence of adolescents reporting a high life satisfaction and an excellent health was rather stable over time. However, our analyses identified an important increase of the prevalence of adolescents experiencing multiple health complaints, especially in girls.

Secondly, our results pinpointed important gender differences for every single examined indicator. Girls, in comparison to boys, report lower life satisfaction and well-being, more frequent health complaints, higher prevalence of depression and anxiety symptoms, and a lower self-efficacy. Girls also feel more often lonely and rate their health as excellent less often than boys. In addition, with age, most indicators deteriorate (the only exception being self-efficacy). However, this deterioration varies with gender. Girls present a significant drop in the different mental health and well-being indicators between the ages of 11-12 and 13-14 years old, whereas for boys this decrease happens more slowly during adolescence.

Thirdly, we found family affluence to play an important role in mental health and well-being. More specifically, adolescents from lower affluence background exhibit lower mental health and well-being than their counterparts, irrespective of the examined indicator. The same applies to the adolescents who (or whose parents) migrated to Luxembourg, notably because of the link between family affluence and migration background. In addition, living with both parents seems to have a protective effect in all the indicators covered here. Adolescents living with their both parents report a significantly better mental health and well-being than adolescents living in other family constellations.

Finally, with the exception of self-efficacy, differences in relation to type of school are rather a reflexion of a homogeneous sociodemographic composition of each type of school (for instance, pupils from *Enseignement Fondamental* are younger). However, in the case of self-efficacy, this explanation is less likely. The *Enseignement Secondaire Général – classes inférieures (voie professionnelle)* have a significantly higher prevalence of pupils reporting a low sentiment of self-efficacy.

In light of the major gender differences encountered in all the mental health and well-being indicators explored, further analyses were undertaken to better understand the gender gap in life satisfaction. When controlling for sociodemographic variables (i.e., age, family affluence, family structure, and migration) and psychosocial factors known to affect life satisfaction (anxiety, health complaints, loneliness, self-efficacy, family support and friends support), gender appeared as a non-significant predictor of life satisfaction. This finding indicates that the examined

factors accounted for the gender variability in life satisfaction. Our analyses therefore suggest that gender differences in life satisfaction manifest gender differences in psychological distress and social relationships.

In sum, general trends of mental health and well-being have been stable since 2006. However, those findings are rather a reflection of boys' current reality. For girls, a different scenario appears, with a decrease in their life satisfaction and a marked increase in multiple health complaints. The gender gap in life satisfaction, even though present in all HBSC Luxembourg surveys, is the highest in 2022 in the favour of boys. Our additional analyses suggest that this gap is rather due to psychosocial factors, which show similar differences between boys and girls than life satisfaction. Future studies may further investigate the causes and processes of the decrease in girls' mental health that we observed.

Considering these results, furthering adolescents' well-being and addressing adolescent mental health challenges should be a priority in Luxembourg and the measures in the following paragraphs should be considered (World Health Organization, 2020).

Furthering adolescents' well-being and mental health starts with ensuring that existing services are adolescents friendly and age-specific barriers to accessing health promotion programs and health care institutions are reduced. This can involve informing professionals about age-specific challenges and needs and ensuring services respect and protect minors' individual rights to privacy and confidentiality.

The similarity in the results across all observed indicators suggest that a holistic approach to mental health prevention in adolescence could be most effective. This could include the multi-sectoral implementation of programs and interventions across a variety of settings (e.g. families, schools, communities, peers) to create supportive and protective environments for adolescents. Awareness thus needs to be promoted among adolescents, parents, community leaders, teachers, and health professionals alike and training on mental health sensitivity should be provided in all concerned sectors.

The over-proportional mental health burden on girls as well as the observed decrease in their well-being and mental health indicate a need to gather evidence on the underlying causes of these phenomena. Mental health and well-being support programmes that are tailored to girls and that address the gender specific societal challenges girls face while growing up should be developed and, where already existing, strengthened.

Similarly, the heightened vulnerability of adolescents from less affluent families in terms of well-being and mental health should be counteracted with additionally offers of support for adolescents from less privileged backgrounds. In light of the worse well-being and mental health of adolescents who do not live with two parents and in view of the increased risk of poverty of mono-parental families, addressing the likelihood of adolescents facing the combination of these two risks should be an urgent priority. Policies reducing overall socio-economic inequalities and financially supporting families with fewer resources should however also be continued and extended. While additional resources should be specifically allocated to support girls and adolescents from less affluent families, other groups of adolescents should not be deprived of resources.

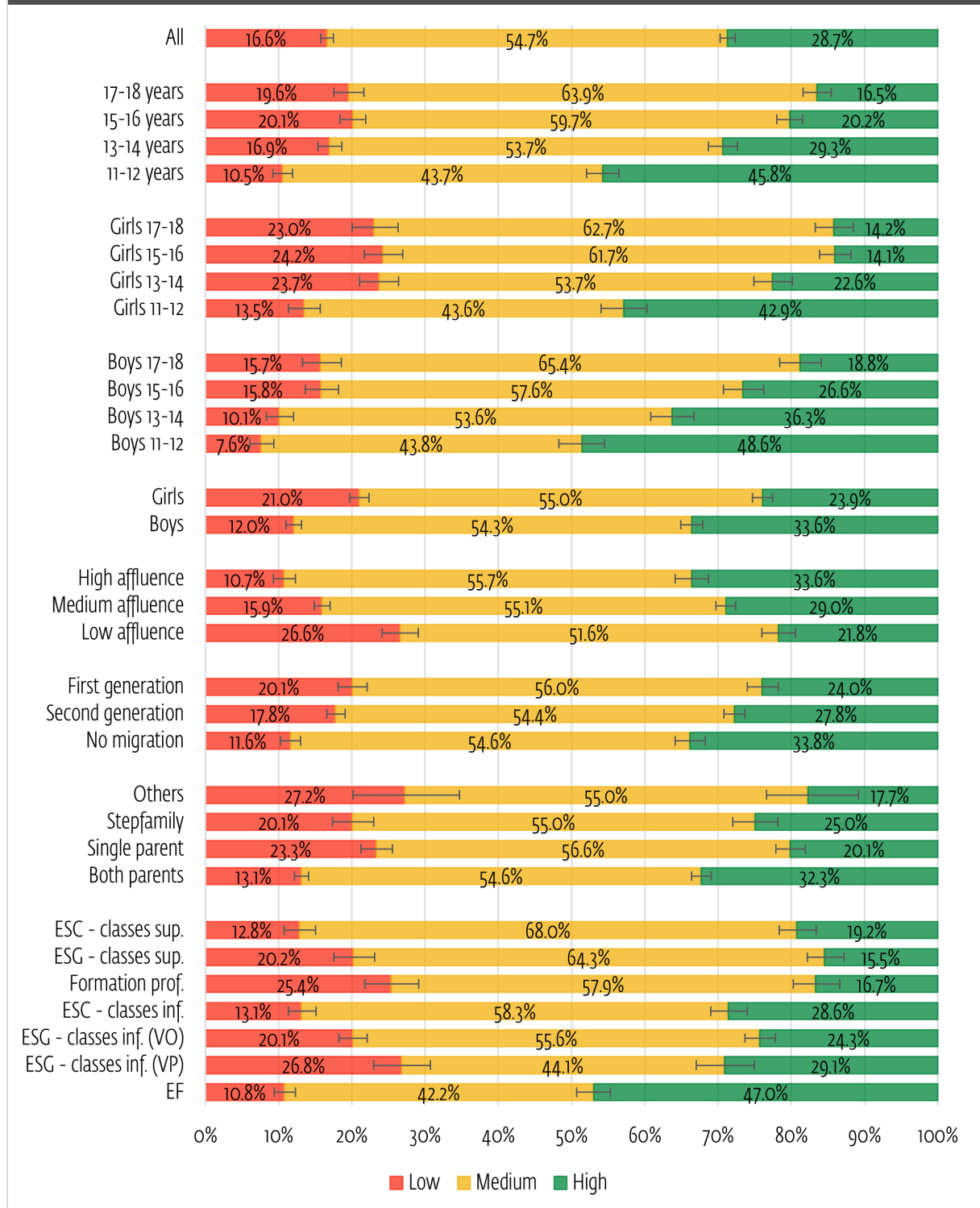


# Appendix



Life satisfaction

Figure 22: Prevalence of life satisfaction according to sociodemographic groups



**Table 3: Prevalence of life satisfaction according to sociodemographic groups**

	Low satisfaction (0-5)	Medium satisfaction (6-8)	High satisfaction (9-10)	Chi square test
<b>All</b>				N = 7 446
	16.6 (15.8 - 17.5)	54.7 (53.5 - 55.8)	28.7 (27.7 - 29.7)	
<b>Age</b>				N = 7 446
11-12 years	10.5 (9.2 - 11.9)	43.7 (41.5 - 45.9)	45.8 (43.6 - 48.0)	
13-14 years	16.9 (15.4 - 18.6)	53.7 (51.5 - 55.9)	29.3 (27.4 - 31.3)	$p < .001$
15-16 years	20.1 (18.4 - 21.9)	59.7 (57.5 - 61.8)	20.2 (18.5 - 22.0)	$\gamma = -.288$
17-18 years	19.6 (17.6 - 21.7)	63.9 (61.4 - 66.4)	16.5 (14.6 - 18.5)	
<b>Age x Gender</b>				N = 3 656
Girls 11-12	13.5 (11.4 - 15.7)	43.6 (40.5 - 46.8)	42.9 (39.8 - 46.1)	
Girls 13-14	23.7 (21.1 - 26.4)	53.7 (50.5 - 56.7)	22.6 (20.1 - 25.3)	$p < .001$
Girls 15-16	24.2 (21.7 - 26.9)	61.7 (58.7 - 64.7)	14.1 (12.0 - 16.3)	$\gamma = -.275$
Girls 17-18	23.0 (20.1 - 26.3)	62.7 (59.1 - 66.3)	14.2 (11.7 - 16.9)	
<b>Gender</b>				N = 3 742
Boys 11-12	7.6 (6.1 - 9.3)	43.8 (40.7 - 46.9)	48.6 (45.5 - 51.6)	
Boys 13-14	10.1 (8.3 - 12.0)	53.6 (50.5 - 56.7)	36.3 (33.4 - 39.3)	$p < .001$
Boys 15-16	15.8 (13.7 - 18.2)	57.6 (54.5 - 60.7)	26.6 (24.0 - 29.5)	$\gamma = -.302$
Boys 17-18	15.7 (13.3 - 18.6)	65.4 (61.9 - 68.8)	18.8 (16.1 - 21.8)	
<b>Gender</b>				N = 7 398
Girls	21.0 (19.7 - 22.4)	55.0 (53.4 - 56.6)	23.9 (22.6 - 25.3)	$p < .001$
Boys	12.0 (11.0 - 13.1)	54.3 (52.8 - 55.9)	33.6 (32.1 - 35.1)	Cramér's V. = .143
<b>Family affluence</b>				N = 7 265
High	10.7 (9.3 - 12.3)	55.7 (53.2 - 58.0)	33.6 (31.3 - 35.9)	$p < .001$
Medium	15.9 (14.9 - 17.0)	55.1 (53.6 - 56.6)	29.0 (27.6 - 30.3)	$\gamma = .197$
Low	26.6 (24.2 - 29.1)	51.6 (48.8 - 54.4)	21.8 (19.5 - 24.1)	
<b>Migration background</b>				N = 7 177
First generation	20.1 (18.2 - 22.1)	56.0 (53.5 - 58.4)	24.0 (21.9 - 26.1)	$p < .001$
Second generation	17.8 (16.6 - 19.1)	54.4 (52.8 - 56.1)	27.8 (26.3 - 29.2)	Cramér's V. = .074
No migration	11.6 (10.2 - 13.0)	54.6 (52.4 - 56.7)	33.8 (31.8 - 35.9)	
<b>Family structure</b>				N = 7 031
Others	27.2 (20.1 - 34.7)	55.0 (47.1 - 63.3)	17.7 (12.1 - 24.7)	
Stepfamily	20.1 (17.3 - 23.0)	55.0 (51.4 - 58.4)	25.0 (21.9 - 28.1)	$p < .001$
Single parent	23.3 (21.2 - 25.5)	56.6 (54.0 - 59.0)	20.1 (18.1 - 22.2)	Cramér's V. = .107
Both parents	13.1 (12.2 - 14.1)	54.6 (53.2 - 56.0)	32.3 (30.9 - 33.6)	
<b>Type of school</b>				N = 7 446
ESC – classes sup.	12.8 (10.8 - 15.1)	68.0 (64.9 - 70.9)	19.2 (16.8 - 21.9)	
ESG – classes sup	20.2 (17.6 - 23.1)	64.3 (60.9 - 67.5)	15.5 (13.2 - 18.2)	
Formation prof.	25.4 (21.8 - 29.1)	57.9 (53.7 - 62.1)	16.7 (13.7 - 20.0)	
ESC – classes inf.	13.1 (11.3 - 15.1)	58.3 (55.6 - 61.1)	28.6 (26.1 - 31.2)	$p < .001$
ESG – classes inf. (VO)	20.1 (18.2 - 22.1)	55.6 (53.2 - 58.0)	24.3 (22.3 - 26.4)	Cramér's V. = .195
ESG – classes inf. (VP)	26.8 (23.0 - 30.7)	44.1 (39.8 - 48.5)	29.1 (25.3 - 33.2)	
EF	10.8 (9.4 - 12.3)	42.2 (39.9 - 44.5)	47.0 (44.7 - 49.3)	

Respondents were asked to indicate how satisfied they are with their lives overall, from 10 (best possible life) to 0 (worst possible life). Life satisfaction was categorised in: low life satisfaction (categories 0-to-5), medium life satisfaction (categories 6-to-8) and high life satisfaction (categories 9-10). The results are in % (95.0% Confidence Interval).

**Table 4: Means of life satisfaction according to sociodemographic groups**

	Life satisfaction	N	ANOVA	pvalue
<b>All</b>	7.37 (7.32 - 7.41)	7 446		
<b>Age</b>				
11 years	8.21 (8.09 - 8.32)			
12 years	7.83 (7.72 - 7.94)			
13 years	7.48 (7.37 - 7.6)			
14 years	7.22 (7.10 - 7.34)	7 899	F = 62.11	< .001
15 years	7.12 (7.00 - 7.23)			
16 years	6.98 (6.87 - 7.09)			
17 years	7.03 (6.91 - 7.14)			
18 years	6.86 (6.70 - 7.01)			
<b>Age x Gender</b>				
Girls 11	8.10 (7.93 - 8.27)			
Girls 12	7.57 (7.41 - 7.74)			
Girls 13	7.01 (6.84 - 7.18)			
Girls 14	6.85 (6.67 - 7.02)			
Girls 15	6.79 (6.64 - 6.95)			
Girls 16	6.70 (6.55 - 6.84)			
Girls 17	6.85 (6.69 - 7.01)			
Girls 18	6.72 (6.50 - 6.94)			
		7 847	F = 45.00	< .001
Boys 11	8.31 (8.16 - 8.46)			
Boys 12	8.09 (7.95 - 8.23)			
Boys 13	7.99 (7.85 - 8.14)			
Boys 14	7.58 (7.43 - 7.73)			
Boys 15	7.46 (7.3 - 7.62)			
Boys 16	7.26 (7.11 - 7.42)			
Boys 17	7.22 (7.05 - 7.38)			
Boys 18	7.04 (6.82 - 7.26)			
<b>Gender</b>				
Girls	7.09 (7.02 - 7.15)	7 847	191.79	< .001
Boys	7.66 (7.60 - 7.71)			
<b>Family affluence</b>				
High	7.69 (7.61 - 7.77)			
Medium	7.40 (7.35 - 7.46)	7 709	F = 88.87	< .001
Low	6.83 (6.71 - 6.94)			
<b>Migration background</b>				
First generation	7.12 (7.02 - 7.21)			
Second generation	7.31 (7.25 - 7.37)	7 617	F = 43.95	< .001
No migration	7.66 (7.58 - 7.73)			
<b>Family structure</b>				
Others	6.70 (6.34 - 7.06)			
Stepfamily	7.11 (6.97 - 7.25)	7 464	F = 66.80	< .001
Single parent	6.91 (6.81 - 7.01)			
Both parents	7.58 (7.53 - 7.63)			

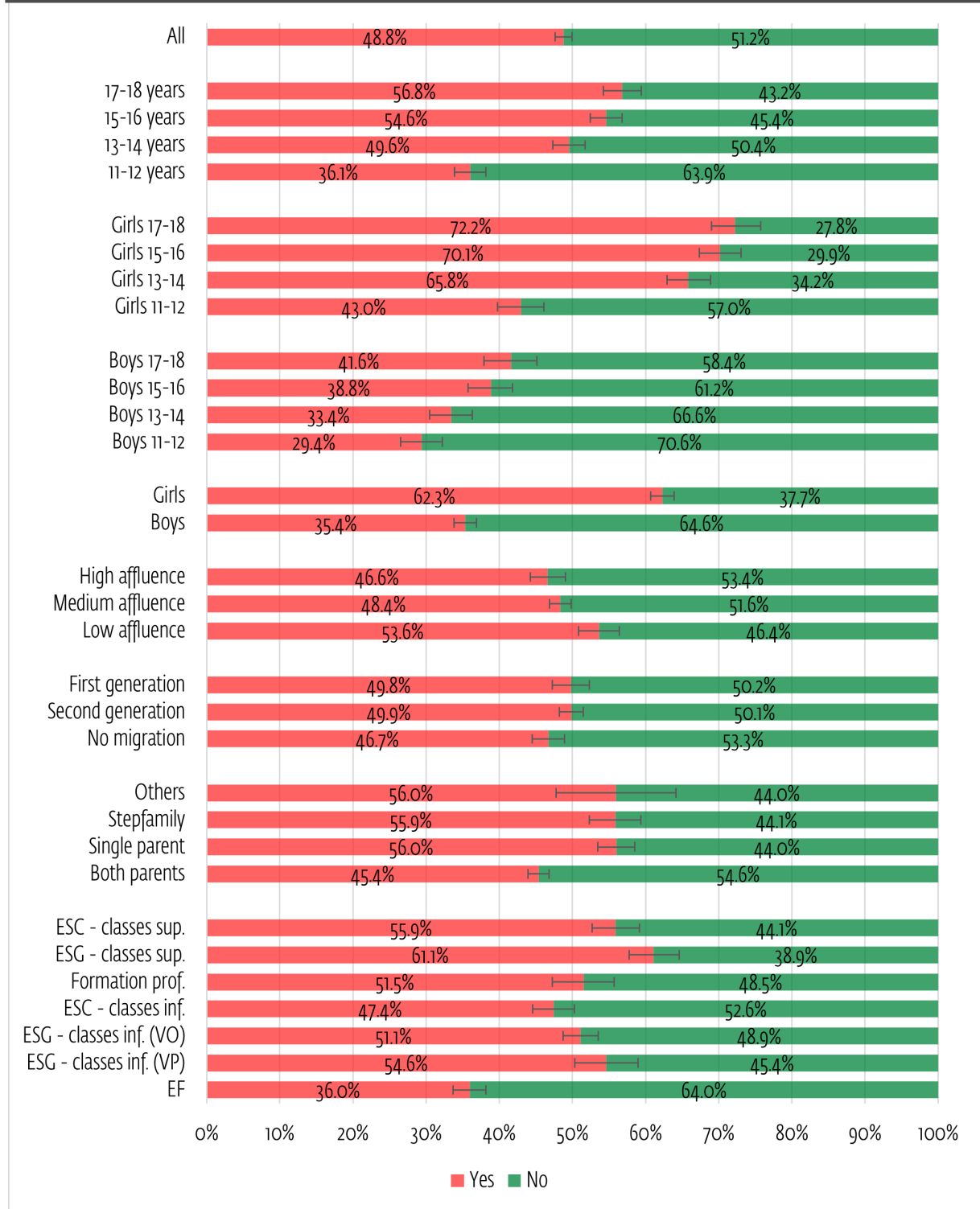
**Table 4: Means of life satisfaction according to sociodemographic groups (Cont.)**

	Life satisfaction	N	ANOVA	pvalue
<b>Type of school</b>				
ESC – classes sup.	7.28 (7.17 - 7.38)			
ESG – classes sup	6.93 (6.81 - 7.05)			
Formation prof.	6.78 (6.62 - 6.94)			
ESC – classes inf.	7.43 (7.33 - 7.53)	7 899	F = 68.59	< .001
ESG – classes inf. (VO)	7.14 (7.05 - 7.23)			
ESG – classes inf. (VP)	7.05 (6.86 - 7.24)			
EF	8.03 (7.95 - 8.11)			

Respondents were asked to indicate how satisfied they are with their lives overall, from 10 ("best possible life") to 0 ("worst possible life"). The results are means (95.0% Confidence Interval).

Multiple health complaints

Figure 23: Prevalence of multiple health complaints according to sociodemographic groups



**Table 5: Prevalence of multiple health complaints according to sociodemographic groups**

	No	Yes	Chi square test
<b>All</b>			N = 7 307
	51.2 (50.1 - 52.3)	48.8 (47.7 - 49.9)	
<b>Age</b>			N = 7 307
11-12 years	63.9 (61.8 - 66.1)	36.1 (33.9 - 38.2)	
13-14 years	50.4 (48.2 - 52.6)	49.6 (47.4 - 51.8)	$p < .001$
15-16 years	45.4 (43.2 - 47.6)	54.6 (52.4 - 56.8)	$\chi = .224$
17-18 years	43.2 (40.6 - 45.7)	56.8 (54.3 - 59.4)	
<b>Age x Gender</b>			N = 3 575
Girls 11-12	57.0 (53.9 - 60.2)	43.0 (39.8 - 46.1)	
Girls 13-14	34.2 (31.3 - 37.3)	65.8 (62.8 - 68.8)	$p < .001$
Girls 15-16	29.9 (27.1 - 32.8)	70.1 (67.2 - 72.9)	$\chi = .326$
Girls 17-18	27.8 (24.6 - 31.3)	72.2 (68.7 - 75.4)	
			N = 3 683
Boys 11-12	70.6 (67.8 - 73.5)	29.4 (26.6 - 32.4)	
Boys 13-14	66.6 (63.7 - 69.5)	33.4 (30.6 - 36.4)	$p < .001$
Boys 15-16	61.2 (58.0 - 64.1)	38.8 (35.9 - 42.0)	$\chi = .150$
Boys 17-18	58.4 (54.7 - 61.9)	41.6 (38.1 - 45.3)	
<b>Gender</b>			N = 7 259
Girls	37.7 (36.2 - 39.3)	62.3 (60.7 - 63.9)	$p < .001$
Boys	64.6 (63.1 - 66.2)	35.4 (33.8 - 36.9)	Cramér's V. = .269
<b>Family affluence</b>			N = 7 144
High	53.4 (51.0 - 55.8)	46.6 (44.2 - 49.0)	
Medium	51.6 (50.1 - 53.1)	48.4 (46.9 - 49.9)	$p < .001$
Low	46.4 (43.6 - 49.2)	53.6 (50.8 - 56.4)	$\chi = -.075$
<b>Migration background</b>			N = 7 052
First generation	50.2 (47.7 - 52.7)	49.8 (47.3 - 52.3)	
Second generation	50.1 (48.5 - 51.8)	49.9 (48.2 - 51.5)	$p = .062$
No migration	53.3 (51.1 - 55.5)	46.7 (44.5 - 48.9)	Cramér's V. = .028
<b>Family structure</b>			N = 6 901
Others	44.0 (35.8 - 52.2)	56.0 (47.8 - 64.2)	
Stepfamily	44.1 (40.6 - 47.6)	55.9 (52.4 - 59.4)	$p < .001$
Single parent	44.0 (41.5 - 46.5)	56.0 (53.5 - 58.5)	Cramér's V. = .100
Both parents	54.6 (53.2 - 56.0)	45.4 (44.0 - 46.8)	
<b>Type of school</b>			N = 7 307
ESC – classes sup.	44.1 (40.9 - 47.3)	55.9 (52.7 - 59.1)	
ESG – classes sup	38.9 (35.5 - 42.4)	61.1 (57.6 - 64.5)	
Formation prof.	48.5 (44.2 - 52.6)	51.5 (47.4 - 55.8)	
ESC – classes inf.	52.6 (49.7 - 55.4)	47.4 (44.6 - 50.3)	$p < .001$
ESG – classes inf. (VO)	48.9 (46.5 - 51.3)	51.1 (48.7 - 53.5)	Cramér's V. = .163
ESG – classes inf. (VP)	45.4 (41.1 - 49.7)	54.6 (50.3 - 58.9)	
EF	64.0 (61.8 - 66.3)	36.0 (33.7 - 38.2)	

Respondents were asked how often they had suffered from the following eight health problems during the past six months: headache, backache, stomachache, feeling low, irritability, nervousness, difficulty in getting to sleep, and dizziness. Answer categories ranged from "about every day" (scored as 1) to "rarely or never" (scored as 5). Multiple health complaints were categorised in "no" and "yes". The category "yes" refers to adolescents that had 2 or more health complaints more than once a week (category 1 and 2). The results are % (95.0% Confidence Interval).



**Table 6: Means of multiple health complaints according to sociodemographic groups**

	Multiple health complaints	N	ANOVA	pvalue
<b>All</b>	11.54 (11.38 - 11.70)	7 307		
<b>Age</b>				
11 years	8.66 (8.26 - 9.05)			
12 years	9.73 (9.33 - 10.12)			
13 years	11.75 (11.30 - 12.20)			
14 years	11.86 (11.41 - 12.31)	7 754	F = 48.75	< .001
15 years	12.27 (11.84 - 12.70)			
16 years	12.84 (12.40 - 13.27)			
17 years	12.62 (12.15 - 13.09)			
18 years	13.26 (12.71 - 13.81)			
<b>Age x Gender</b>				
Girls 11	9.51 (8.90 - 10.13)			
Girls 12	11.24 (10.66 - 11.83)			
Girls 13	14.54 (13.91 - 15.17)			
Girls 14	14.90 (14.25 - 15.54)			
Girls 15	15.08 (14.48 - 15.67)			
Girls 16	15.48 (14.90 - 16.07)			
Girls 17	15.52 (14.88 - 16.17)			
Girls 18	15.73 (14.99 - 16.47)			
		7 702	F = 106.58	< .001
Boys 11	7.88 (7.38 - 8.39)			
Boys 12	8.15 (7.67 - 8.63)			
Boys 13	8.69 (8.17 - 9.21)			
Boys 14	9.09 (8.56 - 9.62)			
Boys 15	9.39 (8.86 - 9.93)			
Boys 16	10.15 (9.59 - 10.71)			
Boys 17	9.80 (9.22 - 10.39)			
Boys 18	10.74 (10.04 - 11.43)			
<b>Gender</b>				
Girls	13.93 (13.70 - 14.16)	7 702	F = 1048.83	< .001
Boys	9.14 (8.95 - 9.34)			
<b>Family affluence</b>				
High	11.42 (11.09 - 11.76)			
Medium	11.47 (11.26 - 11.68)	7 585	F = 5.02	.007
Low	12.10 (11.70 - 12.51)			
<b>Migration background</b>				
First generation	11.66 (11.32 - 12.01)			
Second generation	11.67 (11.44 - 11.90)	7 485	F = 2.97	.051
No migration	11.24 (10.92 - 11.56)			
<b>Family structure</b>				
Others	12.46 (11.20 - 13.73)			
Stepfamily	12.36 (11.85 - 12.87)	7 329	F = 31.93	< .001
Single parent	12.80 (12.44 - 13.17)			
Both parents	11.00 (10.80 - 11.20)			

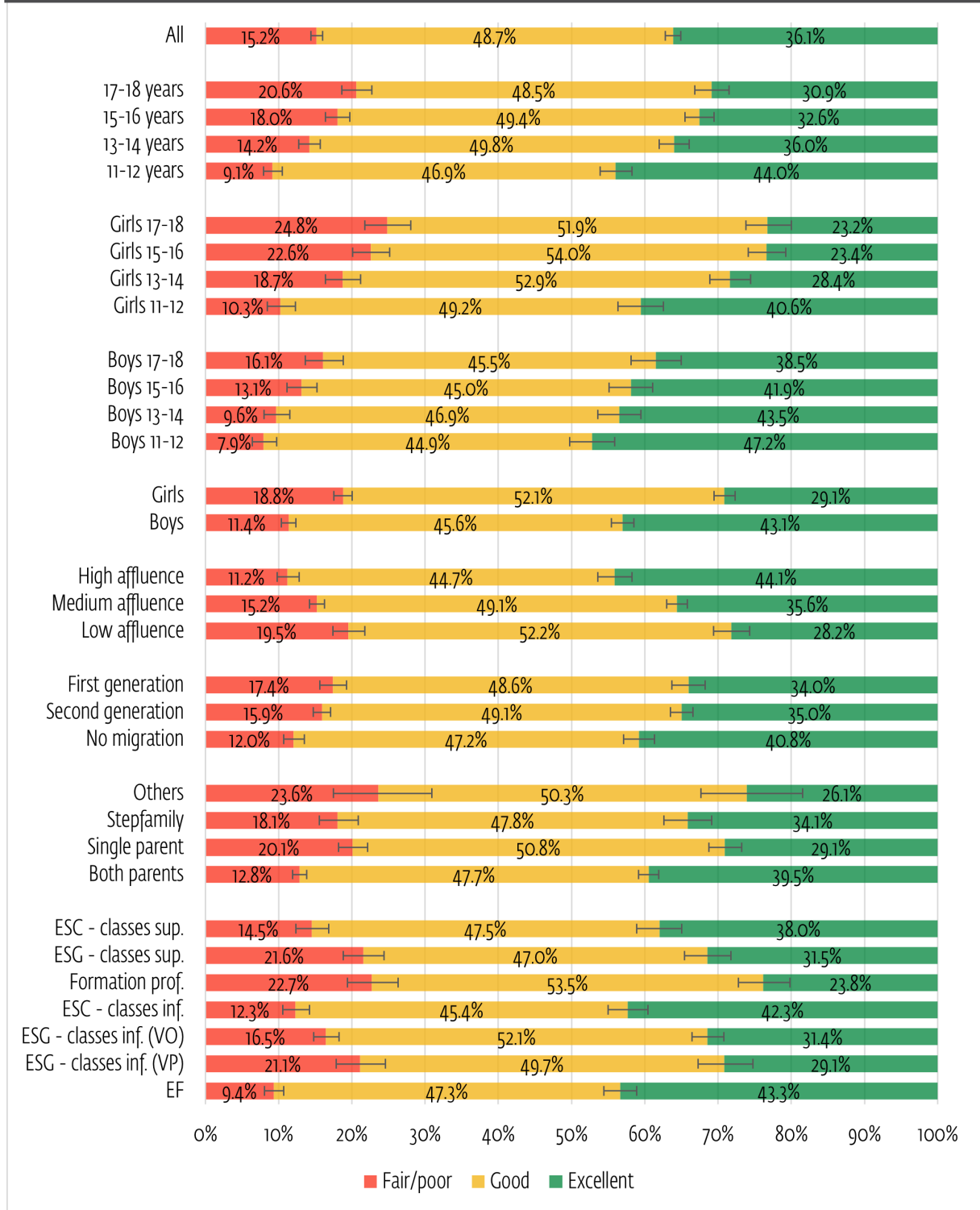
**Table 6: Means of multiple health complaints according to sociodemographic groups (Cont.)**

	Multiple health complaints	N	ANOVA	pvalue
<b>Type of school</b>				
ESC – classes sup.	12.76 (12.34 - 13.19)	7 754	F = 54.43	< .001
ESG – classes sup	13.51 (13.01 - 14.01)			
Formation prof.	11.99 (11.41 - 12.57)			
ESC – classes inf.	11.76 (11.35 - 12.16)			
ESG – classes inf. (VO)	12.02 (11.67 - 12.37)			
ESG – classes inf. (VP)	12.03 (11.40 - 12.67)			
EF	9.18 (8.88 - 9.47)			

Respondents were asked how often they had suffered from the following eight health problems during the past six months: headache, backache, stomachache, feeling low, irritability, nervousness, difficulty in getting to sleep, and dizziness. Answer categories ranged from "about every day" (scored as 1) to "rarely or never" (scored as 5), with a sum score from 0-to-40. The results are means (95.0% Confidence Interval).

Self-rated health

Figure 24: Prevalence of self-rated health according to sociodemographic groups



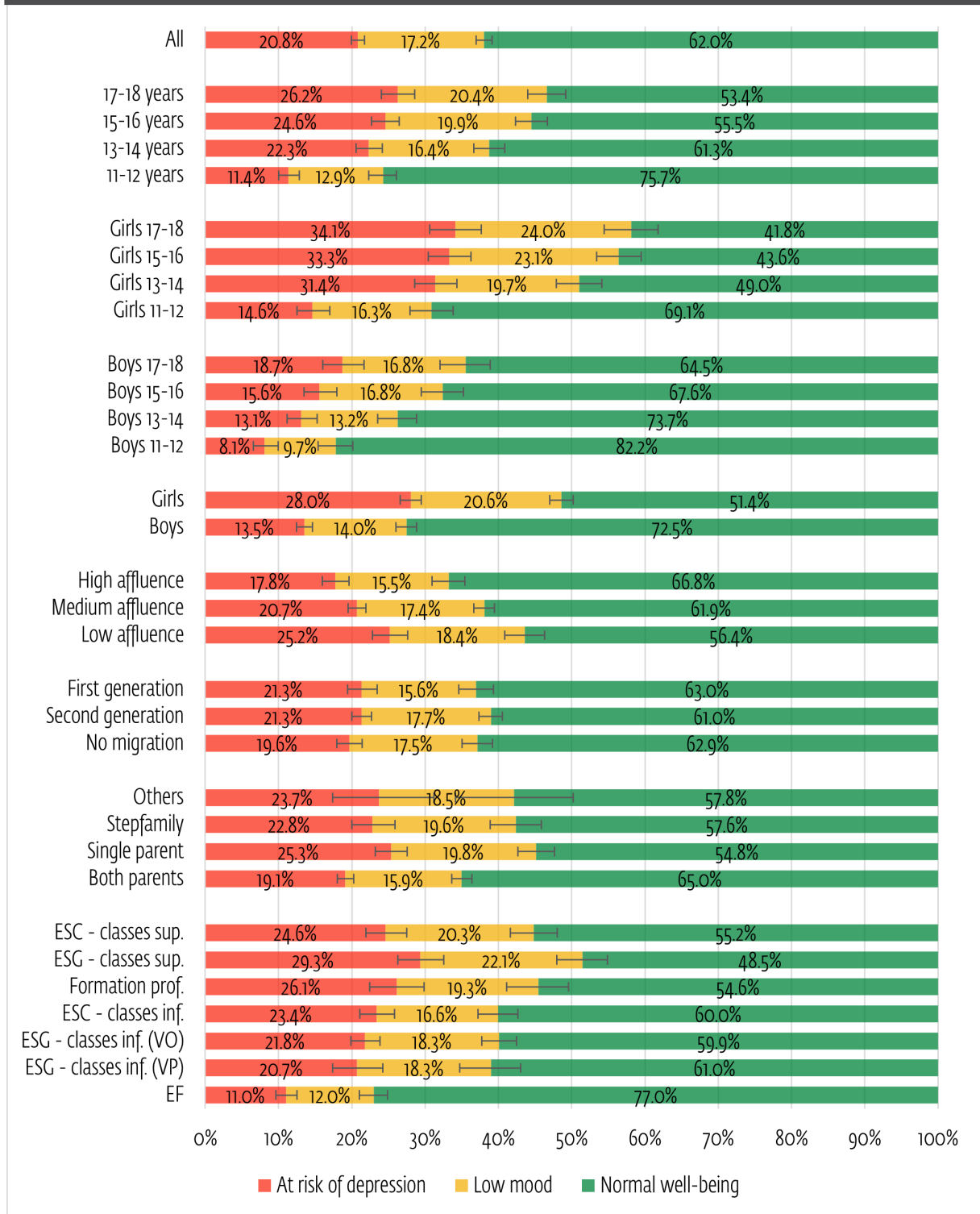
**Table 7: Prevalence of self-rated health according to sociodemographic groups**

	Fair/poor (1-2)	Good (3)	Excellent (4)	Chi square test
<b>All</b>				N = 7 730
	15.2 (14.4 - 16.0)	48.7 (47.6 - 49.8)	36.1 (35.1 - 37.2)	
<b>Age</b>				N = 7 730
11-12 years	9.1 (8.0 - 10.5)	46.9 (44.7 - 49.1)	44.0 (41.8 - 46.2)	
13-14 years	14.2 (12.7 - 15.7)	49.8 (47.7 - 51.9)	36.0 (34.0 - 38.1)	$p < .001$
15-16 years	18.0 (16.4 - 19.7)	49.4 (47.3 - 51.5)	32.6 (30.6 - 34.6)	$\gamma = -.164$
17-18 years	20.6 (18.6 - 22.7)	48.5 (46.0 - 51.0)	30.9 (28.6 - 33.3)	
<b>Age x Gender</b>				N = 3 746
Girls 11-12	10.3 (8.5 - 12.3)	49.2 (46.1 - 52.4)	40.6 (37.5 - 43.6)	
Girls 13-14	18.7 (16.4 - 21.2)	52.9 (49.9 - 56.0)	28.4 (25.6 - 31.2)	$p < .001$
Girls 15-16	22.6 (20.1 - 25.2)	54.0 (51.0 - 57.0)	23.4 (20.9 - 26.1)	$\gamma = -.220$
Girls 17-18	24.8 (21.7 - 28.0)	51.9 (48.3 - 55.6)	23.2 (20.3 - 26.5)	
				N = 3 932
Boys 11-12	7.9 (6.4 - 9.8)	44.9 (41.9 - 48.0)	47.2 (44.1 - 50.2)	
Boys 13-14	9.6 (8.0 - 11.5)	46.9 (44.0 - 49.9)	43.5 (40.6 - 46.5)	$p < .001$
Boys 15-16	13.1 (11.1 - 15.2)	45.0 (42.0 - 48.1)	41.9 (38.9 - 44.9)	$\gamma = -.108$
Boys 17-18	16.1 (13.6 - 18.8)	45.5 (42.0 - 49.0)	38.5 (35.1 - 41.9)	
<b>Gender</b>				N = 7 677
Girls	18.8 (17.6 - 20.1)	52.1 (50.5 - 53.7)	29.1 (27.7 - 30.6)	$p < .001$
Boys	11.4 (10.4 - 12.4)	45.6 (44.0 - 47.1)	43.1 (41.5 - 44.6)	Cramér's V. = .157
<b>Family affluence</b>				N = 7 511
High	11.2 (9.8 - 12.8)	44.7 (42.3 - 47.0)	44.1 (41.8 - 46.5)	
Medium	15.2 (14.2 - 16.3)	49.1 (47.7 - 50.6)	35.6 (34.2 - 37.0)	$p < .001$
Low	19.5 (17.4 - 21.8)	52.2 (49.5 - 55.0)	28.2 (25.8 - 30.7)	$\gamma = .177$
<b>Migration background</b>				N = 7 428
First generation	17.4 (15.6 - 19.3)	48.6 (46.1 - 51.0)	34.0 (31.8 - 36.3)	
Second generation	15.9 (14.7 - 17.1)	49.1 (47.5 - 50.7)	35.0 (33.4 - 36.5)	$p < .001$
No migration	12.0 (10.7 - 13.5)	47.2 (45.0 - 49.3)	40.8 (38.7 - 42.9)	Cramér's V. = .050
<b>Family structure</b>				N = 7 269
Others	23.6 (17.5 - 30.9)	50.3 (42.1 - 57.9)	26.1 (19.8 - 33.7)	
Stepfamily	18.1 (15.6 - 20.9)	47.8 (44.3 - 51.3)	34.1 (30.9 - 37.4)	$p < .001$
Single parent	20.1 (18.2 - 22.1)	50.8 (48.4 - 53.3)	29.1 (26.9 - 31.4)	Cramér's V. = .082
Both parents	12.8 (11.9 - 13.8)	47.7 (46.3 - 49.1)	39.5 (38.1 - 40.9)	
<b>Type of school</b>				N = 7 730
ESC – classes sup.	14.5 (12.4 - 16.8)	47.5 (44.3 - 50.7)	38.0 (34.9 - 41.0)	
ESG – classes sup	21.6 (18.8 - 24.4)	47.0 (43.7 - 50.4)	31.5 (28.3 - 34.7)	
Formation prof.	22.7 (19.4 - 26.3)	53.5 (49.3 - 57.6)	23.8 (20.4 - 27.4)	
ESC – classes inf.	12.3 (10.6 - 14.2)	45.4 (42.6 - 48.2)	42.3 (39.6 - 45.1)	$p < .001$
ESG – classes inf. (VO)	16.5 (14.8 - 18.3)	52.1 (49.7 - 54.4)	31.4 (29.3 - 33.7)	Cramér's V. = .115
ESG – classes inf. (VP)	21.1 (17.9 - 24.6)	49.7 (45.6 - 53.8)	29.1 (25.6 - 33.1)	
EF	9.4 (8.1 - 10.7)	47.3 (45.1 - 49.6)	43.3 (41.1 - 45.6)	

Respondents were asked how they would say their health is. The answer options ranged from "excellent" (1) to "poor" (4). Self-rated health was categorised in: fair/poor (categories 3-to-4), good (category 2) and excellent (category 1). The results are in % (95.0% Confidence Interval).

Well-being and depression

Figure 25: Prevalence of well-being and at risk of depression according to sociodemographic groups



**Table 8: Prevalence of well-being and at risk of depression according to sociodemographic groups**

	At risk of depression (0-9)	Low mood (10-12)	Normal well-being (13-25)	Chi square test
<b>All</b>				N = 7 495
	20.8 (19.9 - 21.8)	17.2 (16.4 - 18.1)	62.0 (60.9 - 63.1)	
<b>Age</b>				N = 7 495
11-12 years	11.4 (10.0 - 12.8)	12.9 (11.5 - 14.5)	75.7 (73.8 - 77.6)	
13-14 years	22.3 (20.6 - 24.2)	16.4 (14.9 - 18.1)	61.3 (59.1 - 63.3)	$p < .001$
15-16 years	24.6 (22.7 - 26.4)	19.9 (18.3 - 21.7)	55.5 (53.3 - 57.6)	$\chi^2 = -231$
17-18 years	26.2 (24.0 - 28.6)	20.4 (18.3 - 22.5)	53.4 (50.8 - 56.0)	
<b>Age x Gender</b>				N = 3 653
Girls 11-12	14.6 (12.5 - 17.0)	16.3 (14.1 - 18.8)	69.1 (66.2 - 72.0)	
Girls 13-14	31.4 (28.6 - 34.3)	19.7 (17.3 - 22.2)	49.0 (45.9 - 52.0)	$p < .001$
Girls 15-16	33.3 (30.4 - 36.3)	23.1 (20.6 - 25.8)	43.6 (40.6 - 46.7)	$\chi^2 = -250$
Girls 17-18	34.1 (30.6 - 37.7)	24.0 (20.9 - 27.3)	41.8 (38.1 - 45.5)	
				N = 3 794
Boys 11-12	8.1 (6.5 - 9.9)	9.7 (8.0 - 11.7)	82.2 (79.8 - 84.6)	
Boys 13-14	13.1 (11.1 - 15.2)	13.2 (11.2 - 15.3)	73.7 (71.0 - 76.3)	$p < .001$
Boys 15-16	15.6 (13.5 - 17.9)	16.8 (14.6 - 19.2)	67.6 (64.7 - 70.4)	$\chi^2 = -228$
Boys 17-18	18.7 (16.0 - 21.7)	16.8 (14.3 - 19.7)	64.5 (60.9 - 67.8)	
<b>Gender</b>				N = 7 447
Girls	28.0 (26.6 - 29.5)	20.6 (19.3 - 21.9)	51.4 (49.8 - 53.0)	$p < .001$
Boys	13.5 (12.5 - 14.6)	14.0 (12.9 - 15.1)	72.5 (71.1 - 73.9)	Cramér's V. = .223
<b>Family affluence</b>				N = 7 316
High	17.8 (16.0 - 19.6)	15.5 (13.8 - 17.3)	66.8 (64.5 - 69.0)	
Medium	20.7 (19.5 - 21.9)	17.4 (16.3 - 18.5)	61.9 (60.5 - 63.3)	$p < .001$
Low	25.2 (22.8 - 27.6)	18.4 (16.4 - 20.7)	56.4 (53.6 - 59.1)	$\chi^2 = .115$
<b>Migration background</b>				N = 7 223
First generation	21.3 (19.4 - 23.4)	15.6 (13.9 - 17.5)	63.0 (60.7 - 65.4)	
Second generation	21.3 (20.0 - 22.7)	17.7 (16.4 - 18.9)	61.0 (59.4 - 62.6)	$p = 0.212$
No migration	19.6 (18.0 - 21.4)	17.5 (15.9 - 19.2)	62.9 (60.8 - 65.0)	Cramér's V. = .020
<b>Family structure</b>				N = 7 071
Others	23.7 (17.4 - 31.2)	18.5 (12.5 - 25.1)	57.8 (49.9 - 65.9)	
Stepfamily	22.8 (20.0 - 25.9)	19.6 (16.9 - 22.5)	57.6 (54.2 - 61.1)	$p < .001$
Single parent	25.3 (23.2 - 27.6)	19.8 (17.9 - 21.9)	54.8 (52.3 - 57.4)	
Both parents	19.1 (18.0 - 20.3)	15.9 (14.8 - 16.9)	65.0 (63.6 - 66.4)	Cramér's V. = .064

**Table 8: Prevalence of well-being and at risk of depression according to sociodemographic groups (Cont.)**

	At risk of depression (0-9)	Low mood (10-12)	Normal well-being (13-25)	Chi square test
<b>Type of school</b>				N = 7 495
ESC – classes sup.	24.6 (21.9 - 27.5)	20.3 (17.8 - 23)	55.2 (52.0 - 58.4)	p < .001 Cramér's V. = .137
ESG – classes sup	29.3 (26.3 - 32.6)	22.1 (19.4 - 25.1)	48.5 (45.1 - 52.0)	
Formation prof.	26.1 (22.4 - 29.9)	19.3 (16.1 - 22.8)	54.6 (50.3 - 58.7)	
ESC – classes inf.	23.4 (21.1 - 25.8)	16.6 (14.6 - 18.7)	60.0 (57.3 - 62.7)	
ESG – classes inf. (VO)	21.8 (19.9 - 23.8)	18.3 (16.5 - 20.3)	59.9 (57.5 - 62.2)	
ESG – classes inf. (VP)	20.7 (17.4 - 24.3)	18.3 (15.1 - 21.6)	61.0 (56.8 - 65.1)	
EF	11.0 (9.6 - 12.5)	12.0 (10.6 - 13.6)	77.0 (75.0 - 78.9)	

Respondents answered to the 5 statements on a 6-point rating scale ranging from "at no time" (scored as 0) to "all the time" (scored as 5), with a sum score from 0-to-25. WHO-5 Index was categorised in 2 categories: poor well-being (0-to-12) and normal well-being (13-to-25). Poor well-being includes adolescents at risk of depression and low mood. The category at risk of depression is used as a screening of depression and ranges from 0-to-9. The results are % (95.0% Confidence Interval).

**Table 9: Means of well-being according to sociodemographic groups**

	Well-being	N	ANOVA	pvalue
<b>All</b>	14.14 (14.02 - 14.26)	7 495		
<b>Age</b>				
11 years	16.68 (16.36 - 16.99)			
12 years	15.48 (15.18 - 15.79)			
13 years	14.22 (13.89 - 14.55)			
14 years	13.88 (13.54 - 14.21)	7 948	64.51	< .001
15 years	13.68 (13.36 - 14.00)			
16 years	12.94 (12.62 - 13.26)			
17 years	13.05 (12.72 - 13.39)			
18 years	12.61 (12.19 - 13.03)			
<b>Age x Gender</b>				
Girls 11	16.09 (15.63 - 16.55)			
Girls 12	14.44 (13.99 - 14.89)			
Girls 13	12.49 (12.04 - 12.94)			
Girls 14	12.22 (11.75 - 12.68)			
Girls 15	12.09 (11.65 - 12.54)			
Girls 16	11.56 (11.14 - 11.99)			
Girls 17	11.86 (11.38 - 12.33)			
Girls 18	11.48 (10.90 - 12.06)	7 896	70.93	< .001
Boys 11	17.21 (16.78 - 17.64)			
Boys 12	16.56 (16.17 - 16.95)			
Boys 13	16.11 (15.68 - 16.55)			
Boys 14	15.41 (14.96 - 15.85)			
Boys 15	15.28 (14.85 - 15.72)			
Boys 16	14.33 (13.87 - 14.79)			
Boys 17	14.20 (13.75 - 14.65)			
Boys 18	13.75 (13.17 - 14.33)			
<b>Gender</b>				
Girls	12.83 (12.66 - 13.00)	7 896	509.09	< .001
Boys	15.46 (15.30 - 15.62)			
<b>Family affluence</b>				
High	14.66 (14.41 - 14.91)			
Medium	14.13 (13.98 - 14.29)	7 761	19.98	< .001
Low	13.52 (13.21 - 13.83)			
<b>Migration background</b>				
First generation	14.16 (13.90 - 14.43)			
Second generation	14.00 (13.82 - 14.17)	7 663	3.39	.034
No migration	14.34 (14.11 - 14.58)			
<b>Family structure</b>				
Others	13.35 (12.42 - 14.28)			
Stepfamily	13.64 (13.27 - 14.00)	7 506	22.70	< .001
Single parent	13.32 (13.04 - 13.59)			
Both parents	14.47 (14.32 - 14.62)			



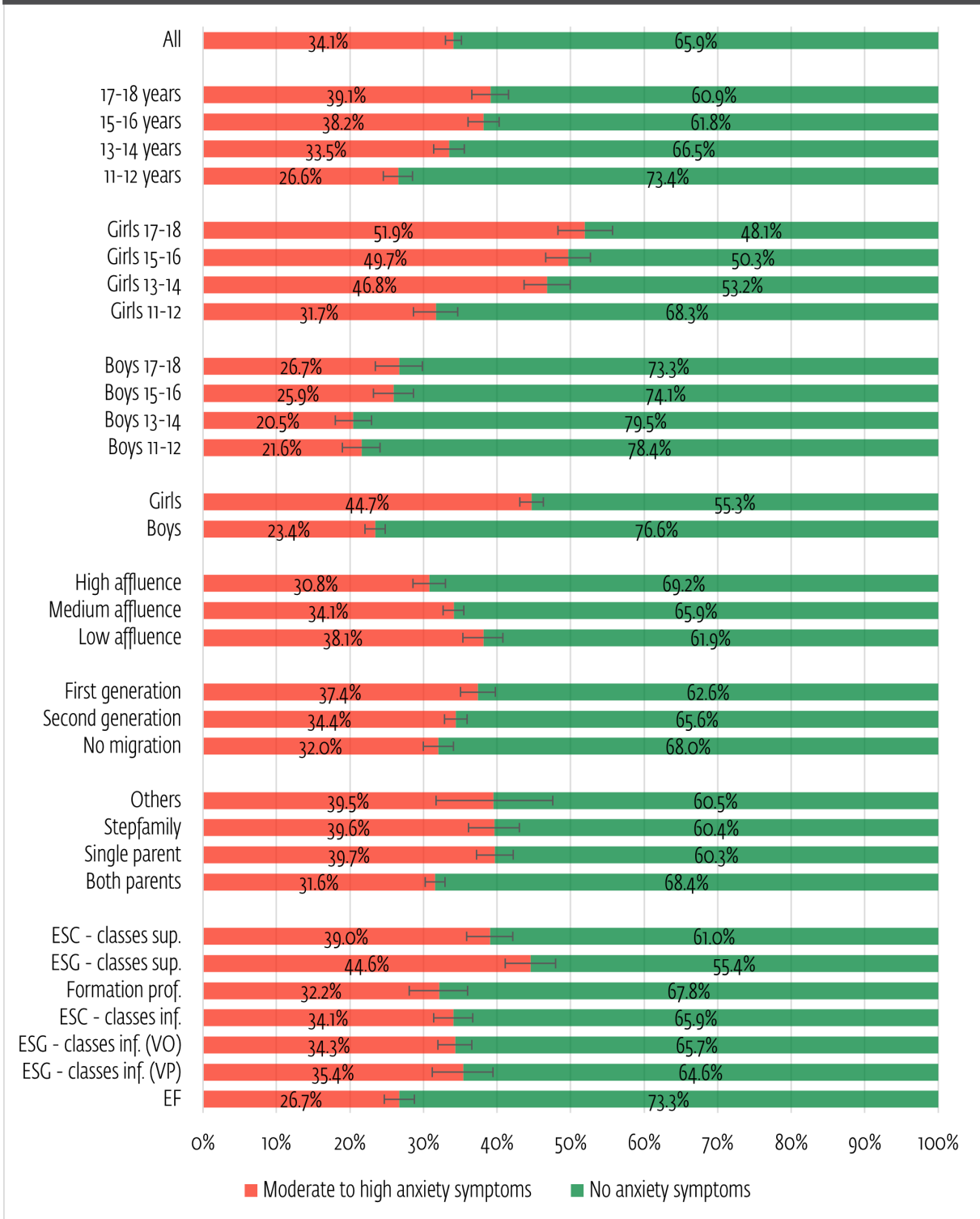
**Table 9: Means of well-being according according to sociodemographic groups (Cont.)**

	Well-being	N	ANOVA	pvalue
<b>Type of school</b>				
ESC – classes sup.	12.99 (12.67 - 13.30)			
ESG – classes sup	12.53 (12.17 - 12.88)			
Formation prof.	12.98 (12.53 - 13.42)			
ESC – classes inf.	13.80 (13.51 - 14.10)	7 948	F = 77.61	< .001
ESG – classes inf. (VO)	13.84 (13.58 - 14.10)			
ESG – classes inf. (VP)	14.48 (14.00 - 14.96)			
EF	16.21 (15.98 - 16.44)			

Respondents answered to the 5 statements on a 6-point rating scale ranging from "at no time" (scored as 0) to "all the time" (scored as 5), with a sum score from 0-to-25. The results are means (95.0% Confidence Interval).

## Anxiety

Figure 26: Prevalence of anxiety symptomatology according to sociodemographic groups



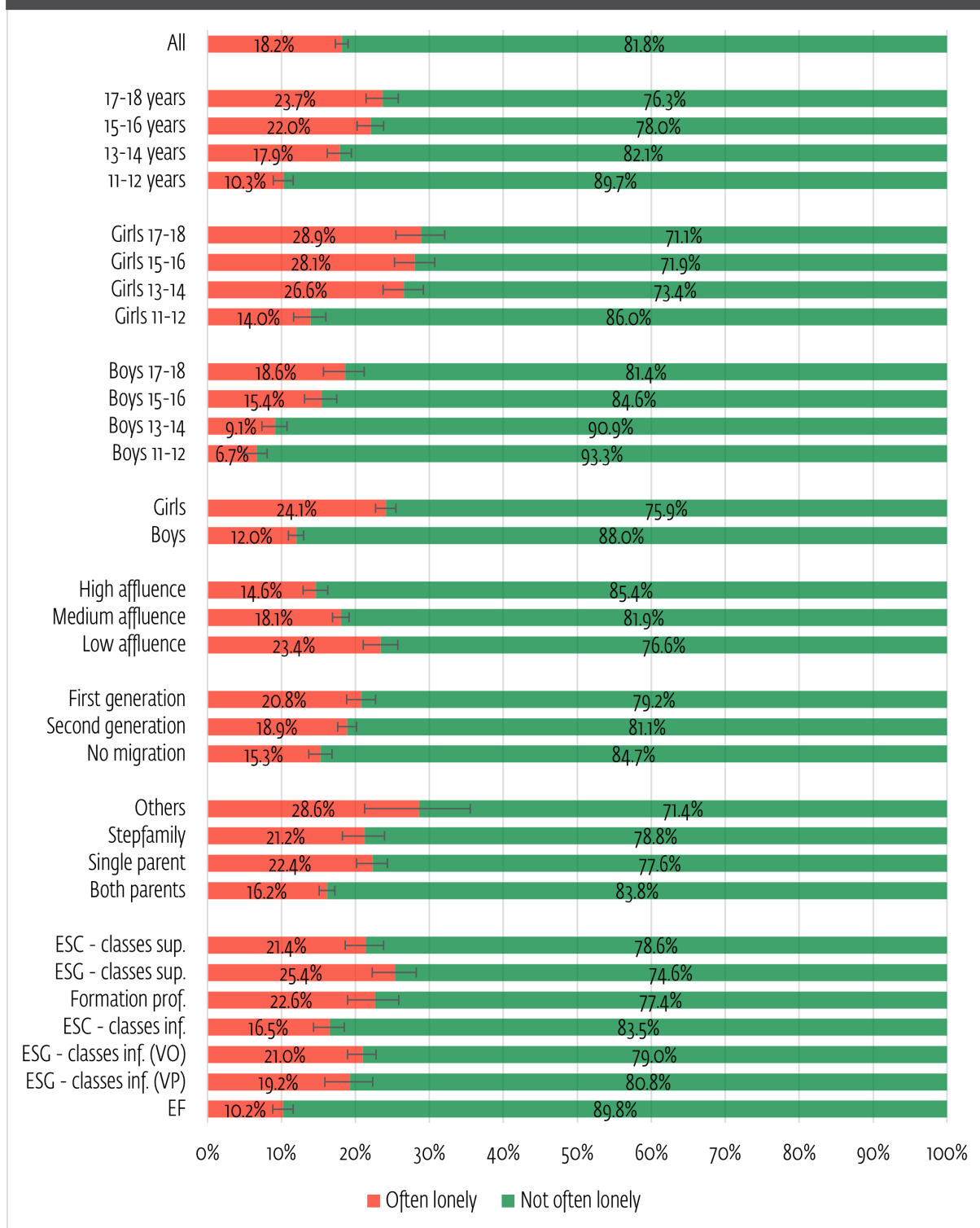
**Table 10: Prevalence of anxiety symptomatology according to sociodemographic groups**

	No anxiety symptoms (0-2)	Moderate to high anxiety symptoms (3-6)	Chi square test
<b>All</b>			N = 7 412
	65.9 (64.8 - 67.0)	34.1 (33.0 - 35.2)	
<b>Age</b>			N = 7 412
11-12 years	73.4 (71.4 - 75.4)	26.6 (24.6 - 28.6)	
13-14 years	66.5 (64.4 - 68.5)	33.5 (31.4 - 35.6)	$p < .001$
15-16 years	61.8 (59.7 - 63.9)	38.2 (36.1 - 40.3)	$\chi^2 = .157$
17-18 years	60.9 (58.4 - 63.4)	39.1 (36.6 - 41.6)	
<b>Age x Gender</b>			N = 3 629
Girls 11-12	68.3 (65.3 - 71.3)	31.7 (28.7 - 34.7)	
Girls 13-14	53.2 (50.1 - 56.4)	46.8 (43.7 - 50.0)	$p < .001$
Girls 15-16	50.3 (47.2 - 53.3)	49.7 (46.7 - 52.8)	$\chi^2 = .213$
Girls 17-18	48.1 (44.4 - 51.8)	51.9 (48.3 - 55.7)	
			N = 3 733
Boys 11-12	78.4 (75.8 - 81.0)	21.6 (19.1 - 24.3)	
Boys 13-14	79.5 (77.1 - 82.0)	20.5 (18.1 - 23.0)	$p = 0.001$
Boys 15-16	74.1 (71.3 - 76.8)	25.9 (23.3 - 28.8)	$\chi^2 = .095$
Boys 17-18	73.3 (70.0 - 76.4)	26.7 (23.6 - 30.0)	
<b>Gender</b>			N = 7 362
Girls	55.3 (53.7 - 56.9)	44.7 (43.1 - 46.3)	$p < .001$
Boys	76.6 (75.2 - 77.9)	23.4 (22.1 - 24.8)	Cramér's V. = .225
<b>Family affluence</b>			N = 7 237
High	69.2 (67.0 - 71.4)	30.8 (28.6 - 33.0)	
Medium	65.9 (64.5 - 67.3)	34.1 (32.7 - 35.5)	$p < .001$
Low	61.9 (59.1 - 64.5)	38.1 (35.4 - 40.9)	$\chi^2 = -.092$
<b>Migration background</b>			N = 7 154
First generation	62.6 (60.2 - 65.0)	37.4 (35.0 - 39.8)	
Second generation	65.6 (64.0 - 67.1)	34.4 (32.9 - 36.0)	$p = 0.004$
No migration	68.0 (65.9 - 70.0)	32.0 (30.0 - 34.1)	Cramér's V. = .040
<b>Family structure</b>			N = 7 022
Others	60.5 (52.7 - 68.6)	39.5 (32.1 - 48.0)	
Stepfamily	60.4 (56.9 - 63.8)	39.6 (36.2 - 43.1)	$p < .001$
Single parent	60.3 (57.8 - 62.7)	39.7 (37.3 - 42.2)	Cramér's V. = .081
Both parents	68.4 (67.1 - 69.7)	31.6 (30.3 - 33.0)	
<b>Type of school</b>			N = 7 412
ESC – classes sup.	61.0 (57.8 - 64.1)	39.0 (35.9 - 42.2)	
ESG – classes sup	55.4 (51.9 - 58.8)	44.6 (41.2 - 48.1)	
Formation prof.	67.8 (63.7 - 71.6)	32.2 (28.4 - 36.3)	
ESC – classes inf.	65.9 (63.2 - 68.5)	34.1 (31.5 - 36.8)	$p < .001$
ESG – classes inf. (VO)	65.7 (63.3 - 67.9)	34.3 (32.1 - 36.7)	Cramér's V. = .113
ESG – classes inf. (VP)	64.6 (60.3 - 68.6)	35.4 (31.4 - 39.7)	
EF	73.3 (71.2 - 75.3)	26.7 (24.7 - 28.8)	

Respondents were asked how often the respondents felt disturbed by nervousness, anxiety or tension, as well as their inability to suppress or control worries in the past two weeks. The answer options ranged from "not at all" (0) to "almost every day" (3), with a sum score from 0-to-6. Anxiety symptomatology was categorised in: no anxiety symptoms (categories 0-to-2), moderate to high anxiety (categories 3-to-6). The results are in % (95.0% Confidence Interval).

## Loneliness

Figure 27: Prevalence of loneliness according to sociodemographic groups



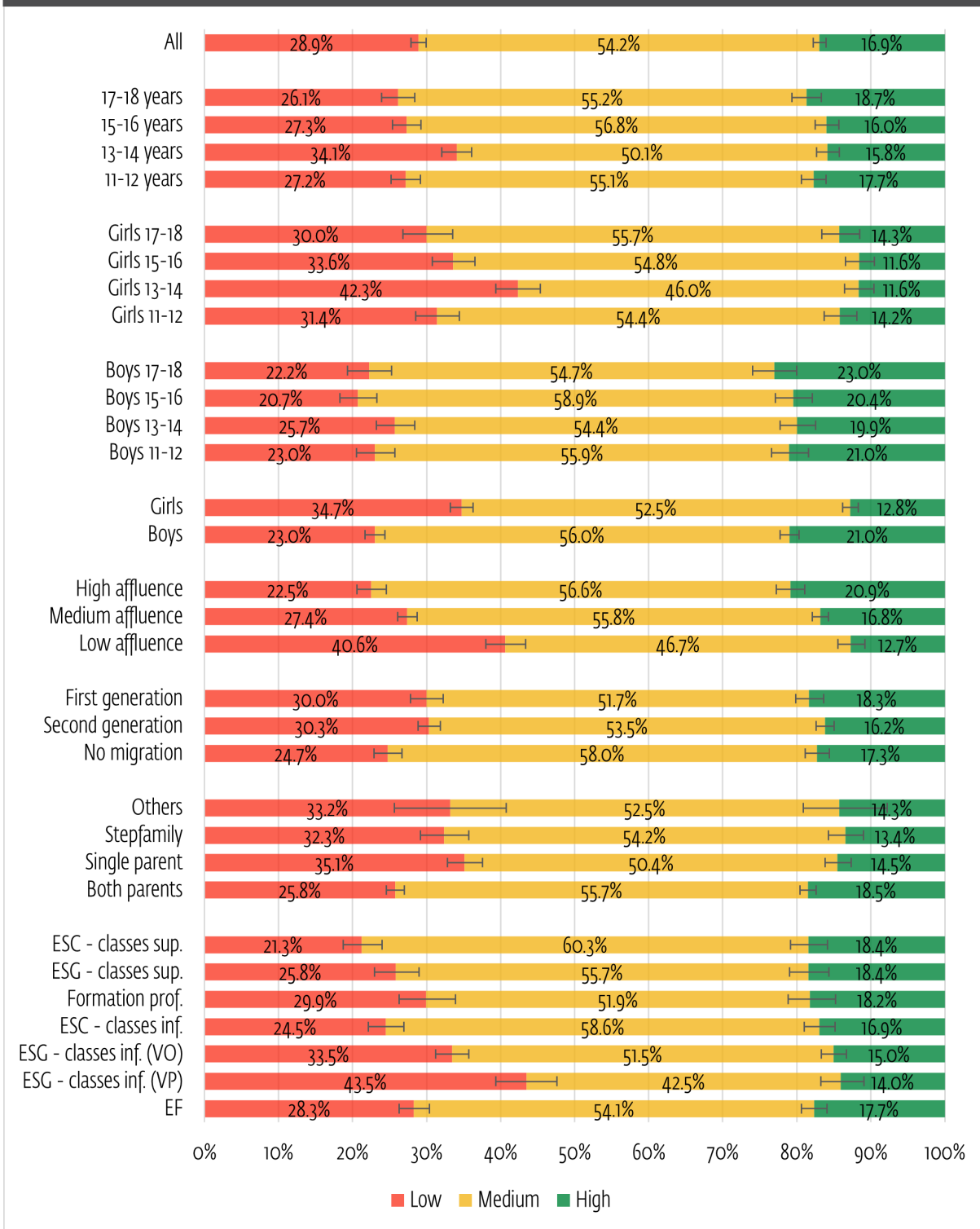
**Table 11: Prevalence of loneliness according to sociodemographic groups**

	Not often lonely (1-3)	Often lonely (4-5)	Chi square test
<b>All</b>			N = 7 725
	81.8 (81.0 - 82.7)	18.2 (17.3 - 19.0)	
<b>Age</b>			N = 7 725
11-12 years	89.7 (88.3 - 91.0)	10.3 (9.0 - 11.7)	
13-14 years	82.1 (80.4 - 83.7)	17.9 (16.3 - 19.6)	$p < .001$
15-16 years	78.0 (76.1 - 79.7)	22.0 (20.3 - 23.9)	$\chi^2 = .246$
17-18 years	76.3 (74.0 - 78.4)	23.7 (21.6 - 25.9)	
<b>Age x Gender</b>			N = 3 754
Girls 11-12	86.0 (83.8 - 88.1)	14.0 (11.9 - 16.2)	
Girls 13-14	73.4 (70.6 - 76.0)	26.6 (24.0 - 29.4)	$p < .001$
Girls 15-16	71.9 (69.2 - 74.6)	28.1 (25.4 - 30.8)	$\chi^2 = .212$
Girls 17-18	71.1 (67.7 - 74.3)	28.9 (25.7 - 32.3)	
			N = 3 921
Boys 11-12	93.3 (91.7 - 94.7)	6.7 (5.3 - 8.3)	
Boys 13-14	90.9 (89.1 - 92.5)	9.1 (7.5 - 11.0)	$p < .001$
Boys 15-16	84.6 (82.3 - 86.7)	15.4 (13.3 - 17.7)	$\chi^2 = .317$
Boys 17-18	81.4 (78.5 - 84.0)	18.6 (15.9 - 21.4)	
<b>Gender</b>			N = 7 674
Girls	75.9 (74.5 - 77.2)	24.1 (22.8 - 25.5)	$p < .001$
Boys	88.0 (86.9 - 89.0)	12.0 (11.0 - 13.1)	Cramér's V. = .158
<b>Family affluence</b>			N = 7 510
High	85.4 (83.6 - 87.0)	14.6 (13.0 - 16.4)	
Medium	81.9 (80.8 - 83.1)	18.1 (17.0 - 19.2)	$p < .001$
Low	76.6 (74.2 - 78.8)	23.4 (21.2 - 25.8)	$\chi^2 = -.163$
<b>Migration background</b>			N = 7 427
First generation	79.2 (77.2 - 81.1)	20.8 (18.9 - 22.8)	
Second generation	81.1 (79.8 - 82.3)	18.9 (17.7 - 20.2)	$p < .001$
No migration	84.7 (83.1 - 86.2)	15.3 (13.8 - 16.9)	Cramér's V. = .052
<b>Family structure</b>			N = 7 262
Others	71.4 (64.0 - 78.3)	28.6 (21.7 - 36.0)	
Stepfamily	78.8 (75.8 - 81.5)	21.2 (18.5 - 24.2)	$p < .001$
Single parent	77.6 (75.5 - 79.6)	22.4 (20.3 - 24.5)	Cramér's V. = .080
Both parents	83.8 (82.8 - 84.8)	16.2 (15.2 - 17.2)	
<b>Type of school</b>			N = 7 725
ESC – classes sup.	78.6 (75.9 - 81.1)	21.4 (18.9 - 24.1)	
ESG – classes sup	74.6 (71.6 - 77.5)	25.4 (22.5 - 28.4)	
Formation prof.	77.4 (73.6 - 80.6)	22.6 (19.3 - 26.2)	
ESC – classes inf.	83.5 (81.3 - 85.4)	16.5 (14.5 - 18.6)	$p < .001$
ESG – classes inf. (VO)	79.0 (77.0 - 80.9)	21.0 (19.1 - 23.0)	Cramér's V. = .131
ESG – classes inf. (VP)	80.8 (77.4 - 83.9)	19.2 (16.1 - 22.6)	
EF	89.8 (88.3 - 91.1)	10.2 (8.9 - 11.7)	

Respondents were asked how often they had felt lonely in the last 12 months. The answer options ranged from "never" (1) to "always" (5). Loneliness was categorised in: not often lonely (categories 1-to-3) and often lonely (categories 4-to-5). The category often lonely represents that report feeling lonely most of the times or always. The results are in % (95.0% Confidence Interval).

## Self-efficacy

Figure 28: Prevalence of self-efficacy according to sociodemographic groups



**Table 12: Prevalence of self-efficacy according to sociodemographic groups**

	Low self-efficacy (2-6)	Medium self-efficacy (7-8)	High self-efficacy (9-10)	Chi square test
<b>All</b>				N = 7 639
	28.9 (27.9 - 29.9)	54.2 (53.1 - 55.3)	16.9 (16.1 - 17.8)	
<b>Age</b>				N = 7 639
11-12 years	27.2 (25.2 - 29.1)	55.1 (52.9 - 57.3)	17.7 (16.1 - 19.4)	
13-14 years	34.1 (32.1 - 36.1)	50.1 (48.0 - 52.3)	15.8 (14.3 - 17.4)	p = 0.115
15-16 years	27.3 (25.4 - 29.3)	56.8 (54.6 - 58.9)	16.0 (14.4 - 17.6)	γ = .023
17-18 years	26.1 (23.9 - 28.4)	55.2 (52.6 - 57.7)	18.7 (16.8 - 20.7)	
<b>Age x Gender</b>				N = 3 721
Girls 11-12	31.4 (28.5 - 34.4)	54.4 (51.3 - 57.6)	14.2 (12.2 - 16.6)	
Girls 13-14	42.3 (39.3 - 45.4)	46.0 (42.9 - 49)	11.6 (9.7 - 13.7)	p < .001
Girls 15-16	33.6 (30.8 - 36.5)	54.8 (51.8 - 57.9)	11.6 (9.7 - 13.6)	γ = .023
Girls 17-18	30.0 (26.8 - 33.5)	55.7 (52.1 - 59.4)	14.3 (11.9 - 17.0)	
				N = 3 868
Boys 11-12	23.0 (20.5 - 25.7)	55.9 (52.9 - 59.0)	21.0 (18.7 - 23.7)	
Boys 13-14	25.7 (23.2 - 28.4)	54.4 (51.4 - 57.4)	19.9 (17.7 - 22.4)	p = 0.176
Boys 15-16	20.7 (18.3 - 23.3)	58.9 (55.9 - 61.9)	20.4 (18.0 - 23.0)	γ = .029
Boys 17-18	22.2 (19.3 - 25.3)	54.7 (51.1 - 58.2)	23.0 (20.1 - 26.1)	
<b>Gender</b>				N = 7 589
Girls	34.7 (33.2 - 36.3)	52.5 (50.9 - 54.1)	12.8 (11.7 - 13.9)	p < .001
Boys	23.0 (21.7 - 24.4)	56.0 (54.5 - 57.6)	21.0 (19.7 - 22.3)	Cramér's V. = .150
<b>Family affluence</b>				N = 7 437
High	22.5 (20.6 - 24.6)	56.6 (54.3 - 59.0)	20.9 (19.0 - 22.8)	
Medium	27.4 (26.1 - 28.7)	55.8 (54.3 - 57.2)	16.8 (15.7 - 17.9)	p < .001
Low	40.6 (38.0 - 43.4)	46.7 (44.0 - 49.4)	12.7 (11.0 - 14.6)	γ = .192
<b>Migration background</b>				N = 7 354
First generation	30.0 (27.8 - 32.3)	51.7 (49.2 - 54.1)	18.3 (16.5 - 20.3)	
Second generation	30.3 (28.9 - 31.8)	53.5 (51.8 - 55.1)	16.2 (15.1 - 17.4)	p < .001
No migration	24.7 (22.9 - 26.6)	58.0 (55.8 - 60.1)	17.3 (15.7 - 19.0)	Cramér's V. = .042
<b>Family structure</b>				N = 7 200
Others	33.2 (25.7 - 40.8)	52.5 (44.7 - 60.7)	14.3 (9.4 - 20.8)	
Stepfamily	32.3 (29.2 - 35.7)	54.2 (50.8 - 57.7)	13.4 (11.1 - 15.9)	p < .001
Single parent	35.1 (32.8 - 37.6)	50.4 (47.9 - 52.9)	14.5 (12.8 - 16.3)	Cramér's V. = .068
Both parents	25.8 (24.5 - 27.0)	55.7 (54.3 - 57.2)	18.5 (17.4 - 19.6)	
<b>Type of school</b>				N = 7 639
ESC – classes sup.	21.3 (18.8 - 24.0)	60.3 (57.2 - 63.4)	18.4 (16.0 - 21.0)	
ESG – classes sup	25.8 (23.0 - 29.0)	55.7 (52.3 - 59.1)	18.4 (15.9 - 21.2)	
Formation prof.	29.9 (26.3 - 33.9)	51.9 (47.7 - 56.0)	18.2 (15.2 - 21.6)	
ESC – classes inf.	24.5 (22.1 - 26.9)	58.6 (55.8 - 61.3)	16.9 (14.9 - 19.1)	p < .001
ESG – classes inf. (VO)	33.5 (31.2 - 35.7)	51.5 (49.1 - 53.9)	15.0 (13.4 - 16.8)	Cramér's V. = .089
ESG – classes inf. (VP)	43.5 (39.3 - 47.6)	42.5 (38.4 - 46.7)	14.0 (11.3 - 17.1)	
EF	28.3 (26.3 - 30.4)	54.1 (51.8 - 56.3)	17.7 (16.0 - 19.4)	

Respondents were asked how often they find a solution to a problem if they try hard enough and how often they manage to do what they set out to do. The answer options ranged from "never" (1) to "always" (5), with a sum score from 2-to-10. Self-efficacy was categorised in: low self-efficacy (categories 2-to-6), medium self-efficacy (categories 7-to-8) and high self-efficacy (categories 9-to-10). The results are in % (95.0% Confidence Interval).

<b>Table 13: Means of self-efficacy according to sociodemographic groups</b>				
	<b>Self-efficacy</b>	<b>N</b>	<b>ANOVA</b>	<b>pvalue</b>
<b>All</b>	7.19 (7.16 - 7.22)	7 639		
<b>Age</b>				
11 years	7.36 (7.27 - 7.45)			
12 years	7.10 (7.01 - 7.19)			
13 years	7.01 (6.91 - 7.10)			
14 years	7.11 (7.02 - 7.20)			
15 years	7.18 (7.09 - 7.27)	8 105	7.64	< .001
16 years	7.26 (7.17 - 7.34)			
17 years	7.36 (7.27 - 7.45)			
18 years	7.23 (7.11 - 7.34)			
<b>Age x Gender</b>				
Girls 11	7.20 (7.07 - 7.33)			
Girls 12	6.94 (6.81 - 7.07)			
Girls 13	6.69 (6.56 - 6.81)			
Girls 14	6.81 (6.67 - 6.95)			
Girls 15	6.94 (6.81 - 7.07)			
Girls 16	7.02 (6.90 - 7.14)			
Girls 17	7.19 (7.06 - 7.32)			
Girls 18	7.05 (6.87 - 7.23)			
		8 051	17.97	< .001
Boys 11	7.50 (7.38 - 7.63)			
Boys 12	7.27 (7.14 - 7.39)			
Boys 13	7.35 (7.22 - 7.48)			
Boys 14	7.38 (7.27 - 7.50)			
Boys 15	7.43 (7.31 - 7.55)			
Boys 16	7.51 (7.39 - 7.63)			
Boys 17	7.53 (7.40 - 7.66)			
Boys 18	7.41 (7.26 - 7.57)			
<b>Gender</b>				
Girls	6.96 (6.92 - 7.01)			
Boys	7.42 (7.38 - 7.46)	8 051	201.37	< .001
<b>Family affluence</b>				
High	7.45 (7.39 - 7.52)			
Medium	7.22 (7.18 - 7.27)	7 892	81.15	< .001
Low	6.79 (6.71 - 6.88)			
<b>Migration background</b>				
First generation	7.19 (7.11 - 7.26)			
Second generation	7.14 (7.10 - 7.19)	7 806	8.56	< .001
No migration	7.30 (7.24 - 7.36)			
<b>Family structure</b>				
Others	7.01 (6.76 - 7.26)			
Stepfamily	7.05 (6.95 - 7.15)			
Single parent	7.01 (6.94 - 7.09)	7 645	18.19	< .001
Both parents	7.29 (7.25 - 7.33)			



**Table 13 : Means of self-efficacy according to sociodemographic groups (Cont.)**

	Self-efficacy	N	ANOVA	pvalue
<b>Type of school</b>				
ESC – classes sup.	7.45 (7.37 - 7.54)			
ESG – classes sup	7.29 (7.19 - 7.38)			
Formation prof.	7.20 (7.07 - 7.32)			
ESC – classes inf.	7.30 (7.22 - 7.38)	8 105	18.71	< .001
ESG – classes inf. (VO)	7.05 (6.98 - 7.12)			
ESG – classes inf. (VP)	6.77 (6.64 - 6.91)			
EF	7.20 (7.13 - 7.26)			

Respondents were asked how often they find a solution to a problem if they try hard enough and how often they manage to do what they set out to do. The answer options ranged from "never" (1) to "always" (5), with a sum score from 2-to-10. The results are in mean (95.0% Confidence Interval).



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# Abbreviations

EF	<i>Enseignement Fondamental</i>
ESC	<i>Enseignement Secondaire Classique</i>
ESG	<i>Enseignement Secondaire Général</i>
FAS	Family Affluence Scale
FP	<i>Formation Professionnelle</i>
HBSC	Health Behaviour in School-aged Children (study/survey)
SCRIPT	<i>Service de Coordination de la Recherche et de l'Innovation pédagogiques et technologiques</i>
VO	<i>Voie d'orientation</i>
VP	<i>Voie de préparation</i>
WHO	World Health Organization

## Report on the Luxembourg HBSC Survey 2022

### HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) STUDY

This report provides information on the mental health and well-being of adolescents aged 11 to 18 years old attending Luxembourg public and private schools whose teaching is based on the national curriculum in 2022.

Gender differences are present across all mental health and well-being areas. In comparison to boys, girls reported lower life satisfaction and well-being, more frequent health complaints, rated their health as excellent less often, had higher prevalence of depression and anxiety symptoms, felt more often lonely and reported lower levels of self-efficacy. Other sociodemographic characteristics, such as age, family affluence, migration background, family structure and type of school are included in the report. Although differences are reported, they are less marked.

Furthermore, this report explores the gender gap in life satisfaction taking into account sociodemographic and psychosocial factors. The conducted analyses show that gender differences in life satisfaction are a reflection of gender differences in other psychosocial and social support factors, such as anxiety, loneliness, and family support.

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