

## Article

# The Relative Importance of Family, School, and Leisure Activities for the Mental Wellbeing of Adolescents: The Young-HUNT Study in Norway

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**Abstract:** It is well-known that the social environment in which children and adolescents live and grow has an impact on their mental wellbeing, though the relative importance of different social contexts may vary. In the present study, we used data from the Young-HUNT4 survey in Norway (n = 8066, age range 13 to 19 years). Linear regression models were used to investigate the relative importance of family cohesion, school climate, and number of leisure activities on psychological distress, loneliness, and life dissatisfaction among Norwegian adolescents by investigating whether the strength of association varied across social contexts for the three outcomes. Additionally, analyses were stratified by parental education to investigate whether the relative importance of family, school, and leisure activities differed between adolescents from families with low and high parental education. We found that family cohesion showed the strongest association with all three outcomes, followed by the school climate and number of leisure activities. These associations did not vary significantly between low and high parental education. Understanding the relative importance of social contexts may be essential in developing effective public health policies and interventions in preventing mental ill health and promoting mental wellbeing in children and adolescents.

**Keywords:** family; school; leisure activities; psychological distress; loneliness; life dissatisfaction; the Young-HUNT Study



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## 1. Introduction

The prevention of mental ill health and the promotion of mental wellbeing among children and adolescents is high on the public health agenda. Recent reports suggest that children and adolescents' mental health and wellbeing have declined in recent years [1,2], and further, that socioeconomic inequalities in mental wellbeing continue to be a public health challenge [3,4].

An individual's mental wellbeing is ultimately the result of a set of complicated processes involving interactions between environmental factors, personal characteristics, and biology. Previous research on the mental health and wellbeing of children and adolescents has highlighted the importance of social contexts such as family, school, and leisure activities [5,6]. Regarding the family context, studies have shown that maladaptive parenting practices are associated with higher levels of mental health problems [7], and lower life satisfaction among children and adolescents [8]. Further, adolescents who experience high levels of interparental conflict and stress within the family have an increased risk of depression and anxiety [9], and higher levels of loneliness [10].

School represents another important social context in which children and adolescents interact with peers, and develop friendships and cognitive skills. Furthermore, studies suggest that the quality of the teacher-pupil and peer relationships is related to the mental health and wellbeing of the pupils. For example, studies have shown that socioemotional support from teachers is associated with both academic achievement and socioemotional symptoms [11], and that school peer support is related to the mental wellbeing of children and adolescents as well.

Lastly, leisure activities may be another important arena in children's and adolescents' lives. Participating in physical recreational activities has been shown to be related to lower levels of depression and anxiety [12], and to be associated with adolescents' self-esteem, experiences of social interaction, and life satisfaction [13]. Furthermore, participating in a breadth of organized leisure activities has been found to be related to lower levels of psychological complaints and higher levels of life satisfaction in children and adolescents [14].

The importance of these social contexts has been highlighted by the WHO, describing how public health policies should target children and adolescents and aim to improve the conditions in which they are born, grow, and live; referred to as the social determinants of health [15]. Furthermore, improving the social determinants of health has also been emphasized as crucial to mitigate socioeconomic inequalities, as the living conditions are generally worse among people of low socioeconomic positions (SEP) [15]. In a systematic review, it was estimated that children and adolescents of low SEP had about a two to three times higher risk of developing mental health problems [3], and that low family income and low parental education seemed to be the strongest predictors for socioeconomic inequalities in mental health problems [3]. Moreover, studies have found that family stress and maladaptive parenting practices may be potential mechanisms in which SEP is associated with mental health problems in children and adolescents [7,16], and adolescents of low SEP have been found to participate in fewer leisure activities compared to adolescents of high SEP [17]. Thus, these social contexts may be potential causes for socioeconomic inequalities in mental health and wellbeing among children and adolescents.

Though research suggests various social contexts play an important role in the mental health and wellbeing of children and adolescents, the relative importance of these social contexts has rarely been investigated. Moreover, the relative importance of these social contexts may vary across populations and may change over time. Thus, we wanted to investigate the relative importance of family, school, and leisure activity participation for psychological distress, loneliness, and life dissatisfaction in a sample of Norwegian adolescents.

Norwegian adolescents, like adolescents in all western societies, experience the opportunities and challenges of living in a globalized world. Norway is considered a social democratic welfare state characterized by universalism, redistribution, and public social and health services. National statistics show that about 77 percent of Norwegian adolescents live within a nuclear family [18], and that most adolescents are satisfied with their families [19]. The school system in Norway is divided into lower secondary school (ages 13 to 16) and upper secondary school (ages 16 to 19), and about 95 percent of Norwegian adolescents attend public schools [20]. In addition, pupils attending lower secondary school have a right to attend the school which is nearest to their home [21]. In upper secondary school, adolescents can choose to either attend program for general studies or vocational education. Thus, many adolescents living within the same geographical area will attend the same school regardless of socioeconomic background. Furthermore, national reports have shown that about 50 percent of Norwegian adolescents participate in organized leisure activities [19], though the type of organized leisure activities adolescents participate in seems to differ between adolescents living in urban and rural areas of Norway [22].

The present study has three aims of investigation. First, we want to investigate whether the average score on family cohesion, school climate, and number of leisure activities differs between adolescents from low and high SEP using parental education as a measure of SEP. Second, we want to investigate and compare the relative strength of the association between family cohesion, school climate, and number of leisure activities on the outcomes

psychological distress, loneliness, and life dissatisfaction. Lastly, we want to investigate whether the strength of association between family cohesion, school climate, and leisure activity participation and the three outcomes differs between adolescents from low and high parental education.

## 2. Materials and Methods

### 2.1. Study Population

The sample consisted of adolescents between 13 and 19 years old who participated in the Young-HUNT4 survey in Norway ( $n = 8066$ , response = 76%). The Young-HUNT4 survey is the fourth survey conducted between 2017 and 2019 as part of the Young-HUNT studies. The Young-HUNT studies employ a cross-sectional design, and we used data from the questionnaire portion of the survey in which the total youth population of the former county Nord-Trøndelag in central Norway was invited to participate. The population is ethnically and socioeconomically homogeneous, and the population resides in mostly rural areas and small urban cities. However, the county is considered representative of Norway in terms of demography and geography. Informed consent was provided by the adolescents themselves who were above the age of 16, and parents provided informed consent for adolescents below the age of 16. For further details of the procedure and sample characteristics of the Young-HUNT Study, see [23]. Registry data provided by Statistics Norway was used to obtain information on family IDs and parental levels of education using the participants' Norwegian personal ID number.

### 2.2. Outcomes

#### 2.2.1. Psychological Distress

Psychological distress was measured by the Symptom Checklist 10 (SCL-10) [24], a shortened version of the Hopkins Symptom Check List (HSCL) [24]. The scale consists of 10 items measuring symptoms of depression and anxiety, where adolescents answer on a four-point scale to what degree they have experienced the mentioned symptoms in the last 14 days. An average score between one to four was calculated, in which a higher score indicated a higher symptom burden (missing values: 8%).

#### 2.2.2. Loneliness

The level of loneliness was measured using one item in which the adolescents were asked how often they feel lonely at school or during their spare time, answered on a five-point scale from "very rarely or never" to "very often", where a higher score indicated a higher level of loneliness (missing values: 4%).

#### 2.2.3. Life Dissatisfaction

Life dissatisfaction was assessed using one item from the Inventory of Life and Quality in children and adolescents (ILC) [25,26]. The adolescents were asked the following question: "If you summarize all of the mentioned relationships and areas of your life. How are you, all in all?", answered on a five-point scale from "very good" to "very bad". The variable was coded so that a higher score indicated a higher degree of life dissatisfaction (missing values: 7%).

### 2.3. Social Contexts

#### 2.3.1. Family Cohesion

Family cohesion was assessed by the Resilience Scale for Adolescents (READ) [27,28] using the following three items from the subscale family cohesion: "I feel comfortable with my family", "In my family we share views of what is important in life", and "My family views the future as positive, even when very sad things happen". The adolescents answered on a five-point scale from "totally agree" to "totally disagree". An average score was calculated ranging from one to five, in which a higher score indicated a higher level of family cohesion (missing values: 5%).

### 2.3.2. School Climate

School climate was measured using items from the Health Behavior in School-Aged Children (HBSC) [29]. The adolescents were asked to rate how much they agree with the following seven statements: “My main teacher treats me with respect”, “My fellow pupils treat me with respect”, “I receive help from my teacher when I need it”, “My teacher encourages good social environment and friendship in the class”, “If someone in class are treated poorly or unfairly we help each other”, “I’ve become friends with many in this class”, and “When I have problems or I’m sad I can talk to my teacher”, on a four-point scale from “strongly disagree” to “strongly agree”. An average score was calculated ranging from one to four, in which a higher score indicated a better school climate (missing values: 11%).

### 2.3.3. Number of Leisure Activities

To assess the adolescents’ participation in leisure activities, we chose to measure participation in the following eight activities: “Play an instrument with others”, “Play theatre or dance with others”, “Do other creative/artistic activities with others”, “Café or a meeting place for people your age”, “Go to meeting in associations or organizations”, “Go to religious meetings or to church”, “How often do you usually partake in non-organized training with others?”, and “How often do you usually partake in organized training (training through sport club or other organizations)?”. The adolescents answered on a five-point scale to what degree they participated in these activities ranging from “Never” to “4 times a week or more”. All variables were dichotomized (0 = less than one time a week, 1 = at least one time a week) and we then created a variable summarizing the number of leisure activities the adolescents participated in at least once a week ranging from zero to eight (missing values: 9%).

## 2.4. Parental Education

Parental education was used to measure the adolescents’ SEP using register data from Statistics Norway (missing values: 4%), which is often used as a marker when measuring socioeconomic inequalities in health in Norway [30]. The variable parental education was dichotomized separating adolescents into low or high parental education, where high parental education was defined as having at least one parent who had a university level education. Furthermore, we used a family ID provided by Statistics Norway to identify siblings within families.

## 2.5. Covariates

Covariates included in the study were the participants’ age (rounded to the nearest integer) and sex (coded 0 = female, 1 = male). Further, the participants were asked to report their subjective judgement of their family’s economy (missing values: 1%), in which the participants were asked: “How well off do you think your family is compared to most others?”. Response categories were “About the same as most others”, “Better financial situation”, and “Worse financial situation”. Lastly, the participants were asked whether their parents were separated (missing values: 1%), answered on the following response categories: “No”, “Yes, they lived separately or were separated, but they later moved back together again”, and “Yes, they were divorced or separated”.

## 2.6. Statistical Analyses

Basic cross-tabulations reporting numbers and percentages were performed. We investigated both whether the level of family cohesion, school climate, and number of leisure activities, and the level of psychological distress, loneliness, and life dissatisfaction differed between adolescents from low and high parental education using linear regression models, adjusted for sex, age, parental separation, and subjective family economy. Furthermore, linear regression models were used to investigate the relative strength of association between family cohesion, school climate, and number of leisure activities, and the outcomes psychological distress, loneliness, and life dissatisfaction, adjusted for age,

sex, parental separation, and subjective family economy. Both the scores on the social contexts (e.g., family cohesion, school climate, and number of leisure activities) and outcomes (e.g., psychological distress, loneliness, and life dissatisfaction) were standardized to have a mean of 0 and standard deviation of 1. After fitting the models, we tested the equality of the standardized coefficients across family cohesion, school climate, and number of leisure activities for each respective outcome using a Wald chi-square test. This enabled the assessment in which social contexts had the strongest association with each separate outcome. Similarly, we tested whether the relative strength of association between the social contexts and the outcomes differed between low and high parental education by stratifying the linear regression models by parental education and performing a Wald test on the coefficients. We report standardized beta coefficients and 95% confidence intervals (CI), where the latter were corrected for potential clustering of siblings by allowing for intragroup correlation within families using the `vce(cluster)` function in Stata. All data management and statistical analyses were conducted using Stata version 17 [31].

### 3. Results

#### 3.1. Descriptive Statistics

A total number of 8066 (51% female) adolescents participated in the Young-HUNT4 survey. The mean score of the included social arenas suggests that most of the adolescents experience their families as cohesive ( $M = 4.27$ ,  $SD = 0.79$ ), and their school climate ( $M = 3.24$ ,  $SD = 0.56$ ) as good, considering the range of one to five and one to four, respectively. The mean score on participation in leisure activity suggests that, on average, adolescents participate in about one to two leisure activities at least once a week ( $M = 1.43$ ,  $SD = 1.07$ ). See Table 1 for full descriptive statistics.

**Table 1.** Descriptive statistics of the Young-HUNT4 Survey (2017–19).

	Low Parental Education (N = 3075)		High Parental Education (N = 4627)		Total (N = 8066)	
	No. or Mean	(% or SD)	No. or Mean	(% or SD)	No. or Mean	(% or SD)
Sex						
Girls	1587	(52%)	2342	(51%)	4105	(51%)
Boys	1488	(48%)	2285	(49%)	3959	(49%)
Parental separation						
No	1768	(58%)	3184	(69%)	5112	(64%)
Yes, but have since moved back together	93	(3%)	85	(2%)	192	(2%)
Yes	1172	(38%)	1330	(23%)	2663	(33%)
Subjective family economy						
Worse than others	336	(11%)	251	(5%)	627	(8%)
About the same as most others	2226	(74%)	3246	(71%)	5682	(72%)
Better than others	465	(15%)	1086	(24%)	1636	(21%)
Age	16.22	(1.81)	16.09	(1.85)	16.15	(1.83)
Social contexts <sup>1</sup>						
Family cohesion	4.21	(0.83)	4.32	(0.76)	4.27	(0.79)
School climate	3.25	(0.56)	3.25	(0.55)	3.24	(0.56)
No. of leisure activities	1.27	(1.06)	1.53	(1.05)	1.43	(1.07)
Outcomes <sup>2</sup>						
Psychological distress	1.69	(0.71)	1.62	(0.64)	1.64	(0.68)
Loneliness	1.94	(1.21)	1.81	(1.10)	1.87	(1.15)
Life dissatisfaction	2.06	(0.95)	1.92	(0.88)	1.98	(0.91)

<sup>1</sup> A higher score indicates an improved family cohesion and school climate, and a higher number of leisure activities. Score on family cohesion ranges from one to five, school climate from one to four, and number of leisure activities from zero to eight. <sup>2</sup> A higher score indicates a higher level of psychological distress, loneliness, and life dissatisfaction. Score on psychological distress ranges from one to four, loneliness from one to five, and life dissatisfaction from one to five. SD; standard deviation, No.; number.

#### 3.2. Parental Education and Family Cohesion, School Climate, and Number of Leisure Activities

Results from the adjusted linear regression models showed a statistically significant association between high parental education and higher levels of family cohesion ( $\beta$  0.04,

95% CI 0.00 to 0.08) and leisure activity participation ( $\beta$  0.23, 95% CI 0.18 to 0.28), while the association between high parental education and school climate was non-significant ( $\beta$   $-0.02$ , 95% CI  $-0.05$  to  $0.01$ ).

### 3.3. Parental Education and Psychological Distress, Loneliness, and Life Dissatisfaction

In the unadjusted linear regression models, we observed a statistically significant association between high parental education and lower levels of psychological distress ( $\beta$   $-0.07$ , 95% CI  $-0.11$  to  $-0.04$ ), loneliness ( $\beta$   $-0.13$ , 95% CI  $-0.18$  to  $-0.07$ ), and life dissatisfaction ( $\beta$   $-0.13$ , 95% CI  $-0.18$  to  $-0.09$ ). When adjusted for covariates, the association between high levels of parental education and loneliness ( $\beta$   $-0.07$ , 95% CI  $-0.12$  to  $-0.01$ ) and life dissatisfaction ( $\beta$   $-0.07$ , 95% CI  $-0.11$  to  $-0.02$ ) remained statistically significant, while the association between high parental education and psychological distress became non-significant ( $\beta$   $-0.03$ , 95% CI  $-0.05$  to  $0.00$ ).

### 3.4. The Relative Significance of Family Cohesion, School Climate, and Number of Leisure Activities

Table 2 shows standardized regression coefficients describing the associations between the social contexts and the three outcomes. A standard deviation (SD) increase in family cohesion was associated with a  $-0.31$  SD ( $-0.33$  to  $-0.28$  95% CI) decrease in psychological distress. A similar increase in school climate was associated with a  $-0.21$  SD ( $-0.24$  to  $-0.19$  CI) decrease in psychological distress, whereas an increase in number of leisure activities was related to a  $-0.04$  SD decrease in psychological distress ( $-0.04$  ( $-0.06$ – $-0.01$  95% CI)). A SD increase in family cohesion was associated with a  $-0.27$  ( $-0.30$  to  $-0.24$  95% CI) SD decrease in loneliness; a SD increase in school climate was associated with a  $-0.23$  ( $-0.26$  to  $-0.20$  95% CI) SD decrease in loneliness; whereas a SD increase in number of leisure activities was associated with an  $-0.06$  SD decrease in loneliness ( $-0.06$  ( $-0.08$  to  $-0.03$  95% CI)). For life dissatisfaction, a SD increase in family cohesion was associated with a  $-0.37$  ( $-0.40$  to  $-0.35$  95% CI) SD decrease in life dissatisfaction; school climate was associated with a  $-0.29$  ( $-0.32$  to  $-0.26$  95% CI) SD decrease in life dissatisfaction; and a SD increase in number leisure activities was associated with a  $-0.11$  ( $-0.13$  to  $-0.08$  95% CI) SD decrease in life dissatisfaction. A comparison of coefficients suggested that family cohesion was the most strongly related to levels of psychological distress, loneliness, and life dissatisfaction compared to school climate (psychological distress:  $p < 0.001$ , loneliness:  $p = 0.017$ , and life dissatisfaction:  $p < 0.001$ ) and leisure activity participation ( $p < 0.001$ ). Further, the strength of association between school climate and the outcomes was higher than the association between leisure activity participation and the outcomes ( $p < 0.001$ ). These results did not change when including all three social contexts within the same model; see Supplementary Table S1.

### 3.5. Parental Education and the Relative Significance of Family, School, and Leisure Activities

Comparing the coefficients across adolescents from low and high SEP showed no statistically significant difference in association between family cohesion, school climate and number of leisure activities and the three outcomes psychological distress, loneliness, and life dissatisfaction (Table 2).

**Table 2.** Associations (standardized coefficients) between family cohesion, school environment, leisure activities and psychological distress, loneliness, and life dissatisfaction.

	Beta	Psychological Distress (95% CI)	<i>p</i> -Value for Diff.	Beta	Loneliness (95% CI)	<i>p</i> -Value for Diff.	Beta	Life Dissatisfaction (95% CI)	<i>p</i> -Value for Diff.			
All <sup>a</sup>												
Family cohesion	−0.31	−0.33 to −0.28	F vs. S	<i>p</i> < 0.001	−0.27	−0.30 to −0.24	F vs. S	<i>p</i> = 0.017	−0.37	−0.40 to −0.35	F vs. S	<i>p</i> < 0.001
School climate	−0.21	−0.24 to −0.19	S vs. LA	<i>p</i> < 0.001	−0.23	−0.26 to −0.20	S vs. LA	<i>p</i> < 0.001	−0.29	−0.32 to −0.26	S vs. LA	<i>p</i> < 0.001
No. of leisure activities	−0.04	−0.06 to −0.01	LA vs. F	<i>p</i> < 0.001	−0.06	−0.08 to −0.03	LA vs. F	<i>p</i> < 0.001	−0.11	−0.13 to −0.08	LA vs. F	<i>p</i> < 0.001
<b>By parental education <sup>b</sup></b>												
Family												
Low parental education	−0.31	−0.35 to −0.27	Low vs.		−0.27	−0.31 to −0.23	Low vs.		−0.37	−0.41 to −0.33	Low vs.	
High parental education	−0.29	−0.33 to −0.26	High	<i>p</i> = 0.485	−0.26	−0.30 to −0.23	High	<i>p</i> = 0.836	−0.38	−0.41 to −0.34	High	<i>p</i> = 0.824
School												
Low parental education	−0.23	−0.27 to −0.18	Low vs.		−0.26	−0.30 to −0.21	Low vs.		−0.30	−0.35 to −0.26	Low vs.	
High parental education	−0.21	−0.25 to −0.18	High	<i>p</i> = 0.621	−0.22	−0.25 to −0.19	High	<i>p</i> = 0.212	−0.29	−0.33 to −0.25	High	<i>p</i> = 0.676
Leisure activities												
Low parental education	−0.06	−0.10 to −0.02	Low vs.		−0.06	−0.10 to −0.02	Low vs.		−0.12	−0.16 to −0.08	Low vs.	
High parental education	−0.02	−0.05 to 0.01	High	<i>p</i> = 0.145	−0.04	−0.08 to −0.01	High	<i>p</i> = 0.505	−0.09	−0.13 to −0.06	High	<i>p</i> = 0.293

<sup>a</sup> Adjusted for sex, age, parental separation, and subjective family economy. <sup>b</sup> Stratified by parental education. CI; confidence interval, F; family cohesion, S; school climate, LA; number of leisure activities, Diff.; difference, No.; number.

#### 4. Discussion

Our data showed that high parental education was associated with higher levels of family cohesion and a higher number of leisure activities, while no statistically significant difference was observed for the score on school climate. Further, we observed that high parental education levels were associated with lower levels of loneliness and life dissatisfaction, whereas we did not observe a statistically significant association between high parental education and psychological distress when adjusting for covariates. In terms of the relative importance of family cohesion, school climate, and number of leisure activities, we found that family cohesion showed the strongest association with the outcomes psychological distress, loneliness, and life dissatisfaction, followed by the school climate and number of leisure activities. Further, the relative importance of the social contexts did not seem to differ between adolescents from high and low parental education for any of the outcomes.

Overall, the adolescents in the present sample seemed to experience, on average, relatively low levels of loneliness and life dissatisfaction, though in comparison, they seemed to experience somewhat higher levels of psychological distress, comparable to national surveys of Norwegian adolescents [19]. Furthermore, in line with previous studies [3], we found that low parental education levels were associated with higher levels of psychological distress, loneliness, and life dissatisfaction, though the association between parental education and psychological distress became non-significant when adjusting for covariates. Additionally, low parental education levels were associated with lower levels of family cohesion and lower number of leisure activities, which align with previous studies reporting that low SEP is associated with various negative familial outcomes, such as family stress [18] and maladaptive parenting practices [7], as well as less participation in leisure activities [17].

In comparison, no statistically significant difference was observed between low and high parental education regarding school climate. These results may suggest that socioeconomic inequalities in certain populations may be more evident in contexts within one's leisure time, such as family and leisure activity participation, compared to shared social contexts such as school. These results should, however, be understood in the context of the study population. As mentioned, most Norwegian adolescents attend public schools, meaning that most adolescents will attend the same school regardless of their socioeconomic background. However, a recent national report suggests that socioeconomic inequalities in academic achievement and attainment are evident among Norwegian children and adolescents, and that adolescents from low affluent backgrounds seem to experience worse teacher-student relationships [30]. Thus, integrating the perspective of socioeconomic inequalities within all arenas may still be warranted, though how socioeconomic inequalities become evident may differ depending on the social context and the population which is being studied.

Higher levels of family cohesion, school climate, and number of leisure activities were associated with lower levels of psychological distress, loneliness, and life dissatisfaction. These results were not surprising, as previous studies have shown that familial factors such as parenting practices, family stress, and interparental conflict seem to be important for the mental health and wellbeing of adolescents [7,10,16]. Similarly, experiencing a positive school climate and participating in various leisure activities have been found to be related to better mental health and wellbeing in children and adolescents [11,32]. However, the present results suggest that the relative strength of association between the three social contexts and the included outcomes varies.

In the present study, family cohesion showed the strongest association with psychological distress, loneliness, and life dissatisfaction. These results may not be surprising as the family context is often regarded as the most immediate social context in children's and adolescents' lives [5]. Similar to the present results, Ford et al. [33] found that familial factors were the only factors that remained independently associated with childhood psychiatric disorders after controlling for school disadvantages and neighborhood deprivation.



However, another study which investigated the relative importance of family adult support, school adult support, and school peer support showed all sources of support were independently associated with the mental wellbeing of the children and adolescents, though peer support seemed to be especially important for the children's and adolescents' mental wellbeing [34]. Thus, though family cohesion was found to show the strongest association with psychological distress, loneliness, and life dissatisfaction in the present study, it is evident that other social contexts, such as the school and peers, are also important for the mental health and wellbeing of children and adolescents and should not be underestimated.

Understanding the relative importance of various social contexts in children's and adolescents' lives could have practical implications by guiding public health policies. For example, the present results may suggest that public health policies should prioritize improving the family environment, such as targeting the structural determinants of health within families (e.g., income, job opportunities, housing) that are known to be associated with mental ill health among children and adolescents [16,35]. Furthermore, family support programs may be important in order for parents to have access to information and support, which may increase their empowerment to successfully attend to their children's needs [36]. However, many of these family support programs are aimed at parents [36] who may have varying degrees of resources and capacity to participate, or who may be unaware of the various interventions that are available to them. Interventions aimed at the school environment, on the other hand, may be more practically feasible as the school is an institution which most adolescents attend. For example, universal interventions may have the potential to promote mental wellbeing among many adolescents simultaneously, while also being less stigmatizing than selective interventions aimed at high-risk adolescents [37,38]. As mentioned, teachers' use of emotional support seems to be especially important for the mental wellbeing of pupils [11], and may have potential spill-over effects by improving classroom peer relations [39]. Thus, policies aimed to improve the school environment may be an important and effective part of public health policies to promote mental health and wellbeing.

Number of leisure activities showed the weakest association with psychological distress, loneliness, and life dissatisfaction. However, it is worth noting that the present population resides in small urban and rural areas of Norway, which may limit their access to some of the leisure activities measured. Additionally, leisure activities seem to be an important arena for adolescents to explore and develop their identity [40], and are a central part of the lives of many Norwegian adolescents [17,22]. Moreover, Butler et al. [34] found when comparing family adult support, school adult support, and peer support that there seemed to be a cumulative protective effect of receiving support from multiple sources. Children and adolescents who received support from two, one, or no sources, in comparison to receiving support from all three sources, had increasingly higher odds of low mental wellbeing. Similarly, it is important to ensure that children and adolescents grow up in both a good family and school environment, and have access to leisure activities, in order to promote mental wellbeing in children and adolescents effectively.

Lastly, the present result suggests that the gradient of relative association from family, school, and leisure activities seems to be similar between adolescents of low and high parental education. However, low parental education levels were associated with lower levels of family cohesion and a lower number of leisure activities, which may suggest that selective interventions aimed at adolescents of low parental education could be important to improve family cohesion and participation in leisure activities among this group. However, universal interventions may also be an important approach to mitigate socioeconomic inequalities. Studies have shown that universal interventions may have a heterogeneous effect, in which subgroups within the larger population may experience different effects of an intervention [20]. For example, studies suggest that family support programs seem to be especially beneficial for high-risk families [41], and a smaller classroom size was found to benefit low attaining students the most regarding classroom engagement and individual attention [42]. Additionally, as mentioned, universal education may be less stigmatizing

than selective interventions [38]. Thus, as recommended within public health work, a combination of universal and selective interventions may be important in order to promote mental health and wellbeing among adolescents, as well as to mitigate socioeconomic inequalities [38].

#### *Study Limitations*

There are a few study limitations that need to be mentioned. First, given the cross-sectional design of this study, the potential causality between the predictors and outcomes cannot be assessed. Additionally, the sample population was derived from a county in mid-Norway consisting of mainly small cities and rural areas, which may not be comparable to larger urban areas within Norway. Further, parental education was used as a marker for SEP, which may be insufficient when the aim is to describe different degrees of living condition and adversities. Further, a limited number of questions were used to measure the outcomes and social contexts. Loneliness and life dissatisfaction was measured using one item. Though the use of a limited number of items is common in public health surveys, important nuances may have been overlooked. Participation in leisure activities was measured quantitatively (e.g., number of leisure activities the adolescents participated in at least once a week), meaning that qualitative aspects of participation in leisure activities were not measured. Thus, the relative strength of the association of leisure activities may have been underestimated. Further, though the results highlight the importance of family and school environment, the present study has only highlighted limited aspects of the family and school. Important familial factors such as parental mental health, family conflict and parenting, and school factors such as bullying were not measured. The questions used to measure the three social contexts were not specifically designed to measure these constructs before data collection; hence, the construct validity can be improved when designing future studies.

#### **5. Conclusions**

The findings suggest that a greater gain in adolescent mental health promotion can be achieved by focusing interventions on families and schools. Directing public health programs and interventions towards families and schools implies adopting an ecological perspective where not only individuals, but interpersonal, organizational, and environmental factors are subject to change. However, the findings must be balanced with respect to several other considerations of public health interventions. Public health interventions require a strong theoretical foundation [43], and a careful consideration of possible unintentional adverse effects must be conducted [44]. Additionally, several practical considerations often guide public health decisions, such as the feasibility of the interventions, the cost-effectiveness, the public demand for action, and the degree of political acceptance [45]. Given the limitations of this study, future research with a longitudinal design and careful measurement of these social contexts is warranted to further the understanding of their relative importance on the mental wellbeing of adolescents.

**Supplementary Materials:** The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/soc13040093/s1>, Table S1: Supplementary table.

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