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Author(s): Nygård, Mikael; Hakovirta, Mia; Lindberg, Marja; Sarkia, Aino; Vuorenlinna, Emily

Title: Covid, financial stress and mental wellbeing of Finnish adolescents

Year: 2024

Version: Published version

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Please cite the original version:

Nygård, M., Hakovirta, M., Lindberg, M., Sarkia, A., & Vuorenlinna, E. (2024). Covid, financial stress and mental wellbeing of Finnish adolescents. *Finnish Journal of Social Research*, Early online. <https://doi.org/10.51815/fjsr.142735>

Covid-19, financial stress and mental wellbeing of Finnish adolescents

Mikael Nygård, Mia Hakovirta, Marja Lindberg, Aino Sarkia and Emily Vuorenlinna

Abstract

This article investigates the link between perceptions of financial stress and the mental well-being of Finnish adolescents during the second year of the Covid-19 pandemic. Did adolescents perceive an increase in financial stress and a deterioration of their mental wellbeing during the beginning of the pandemic? Moreover, to what extent can perceptions of increased financial strain explain experiences of mental wellbeing, and what protecting factors mitigate this association? We use unique national survey data collected among Finnish 12–17-year-olds in 2021 (N=1102) for answering our research questions. We found only a moderate increase in financial stress but a considerable deterioration in perceived mental wellbeing. Moreover, financial stress and mental wellbeing were negatively correlated, even if this correlation was moderated by social, psychological as well as school-related factors.

Keywords: Mental wellbeing, Financial stress, Adolescents, Covid-19 pandemic, Finland, Survey data

Introduction

The Covid-19 crisis brought numerous challenges to young people worldwide (e.g., Adibelli & Siimen, 2020; Kauhanen et al., 2022; Rider et al., 2021; Theberath et al., 2022; World Health Organization, 2022). For example, beyond the risk of infection and disease, increasing social isolation related to temporary school closedowns, periods of distance teaching and restrictions of services and leisure activities had an undermining influence on children's and adolescent's mental health and wellbeing (e.g., Brooks et al., 2020; Cusinato et al., 2020). Another and perhaps more subtle challenge was the economic recession following in the wake of the pandemic causing increasing financial stress across countries, including households with children (World Bank, 2022; Xiao et al., 2023). In families affected by layoffs and unemployment, there is an increasing risk of economic strain and worries about money, and such financial stress is also likely to have a deteriorating effect on a person's health and wellbeing – not least children and adolescents (Chzhen et al., 2017; Conger et al., 1992). Yet there is surprisingly scant research on how children and adolescents experienced financial stress during the pandemic and how this affected their wellbeing in a Nordic context, and – as far as we know – none of these focus on the relation between financial stress and mental wellbeing.

In this article, therefore, we investigate the association between adolescent financial stress and mental

Nygård (Åbo Akademi University), Hakovirta (University of Turku), Lindberg (Åbo Akademi University), Sarkia (University of Jyväskylä) and Vuorenlinna (Åbo Akademi University). Corresponding author's e-mail: mikael.nygard@abo.fi. © Author(s) 2024. This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0). ISSN 2736-9749 (print), 2814-5038 (online).

wellbeing during the first year of the Covid-19 pandemic by using Finland as our case. Conceptually, mental wellbeing can be defined as a form of subjective life satisfaction, which also involves different coping resources for handling different threats or crises (see next section, and Mendolia et al., 2021; Rider et al., 2021). By using survey data for 12–17-year-olds, we assess both reported financial stress and mental wellbeing among adolescents at the time of the study (2021). In addition, we assess how they perceive change in these two phenomena since the outbreak of the pandemic.

Finland can be considered a suitable case for this investigation since the pandemic brought with it an economic recession that may have served as a trigger for financial concern in many households. Due to falling demand and disruptions in supply chains, domestic economic activity started to decrease in Finland in 2020, especially in economic sectors such as tourism and hospitality. According to Statistics Finland (2021), 164 000 employees were laid off temporarily in April 2020, and in May 2020, the official unemployment rate had climbed to 8.6 percent of the workforce, while the unemployment rate for young people (15–24 year-olds) was 18.9 percent for men and 18.5 percent for women (OECD, 2024). In order to restrict the spread of virus, Finland used different policies such as temporary school closures and lock-downs, although these measures were relatively short-lived compared to other countries (Daly et al., 2023; Finnish Government, 2021). Moreover, to counteract an economic downfall and preventing financial stress, the Finnish government used financial supports to boost families and other vulnerable groups (Finnish Government, 2021).

Beyond the focus on how young persons experienced their mental wellbeing during the Covid-19 pandemic, and how this was related to financial stress, the article also contributes to the understanding of how social, psychological, and school-related control variables influence the association between these two main variables. Such factors relates, for example, to friend support, parenting, feelings of security and study problems and have been found to play a mediating role in this respect (e.g., Forsberg & Thorvaldsen, 2022; McGill et al., 2022; Ranta et al., 2020; Rider et al., 2021; Scrimin et al., 2022; Theberath et al., 2022). Moreover, the article contributes to the understanding of the multi-dimensionality of financial stress, since it compares how material deprivation and subjective financial stress relates to mental wellbeing (cf. Chzhen et al., 2017; Schenck-Fontaine & Panico, 2019). It is, however, important to note that the article do not investigate the direct impact of the pandemic on financial stress or wellbeing, even if it situates itself during the pandemic period. Nevertheless, it shows reported – or subjective – perceptions of these phenomena at the actual time of the study, and the perceived change during the last year.

The article discusses four research questions. First, to what extent did Finnish adolescents perceive an increase in financial stress during the first year of the Covid-19 pandemic? Second, did they experience a deterioration of their mental wellbeing during this period? Third, to what extent can perceptions of financial strain explain experiences of mental wellbeing? Fourth, how do social, psychological and school-related factors mediate the link between perceived financial stress and mental wellbeing?

Literature review

The first of the two central concepts, *financial stress*, is closely related to concepts such as economic strain, subjective poverty or relative deprivation. It conveys feelings of stress, concern or anxiety arising from persistent feelings of poverty, scarce material resources or the threat thereof (Hilton & Devall, 1997; Lindberg et al., 2020). It is also often related to feelings of stigma due to incapacities to consume regular goods or to regulate financial obligations, such as paying bills (Vuorenlinna et al., 2023). Financial stress can therefore be seen as detrimental to human wellbeing, as in not only implies problems relating to some sort of insufficiency regarding material recourses, but since it is also likely to have emotional, psychological and social effects on people (Crous, 2017; Knifton & Inglis, 2019; McGill et al., 2022). Such effects are likely to be different for adolescents than for adults. To begin with, they cannot choose their background or parents, nor do they generally control their own means or have incomes. Secondly, they lack sufficient

capacities to handle financial stress psychologically (Buchmann & Kriesi, 2011; Chzhen et al., 2017; Main et al., 2019). Therefore, experiences of financial stress at a young age can have adverse long-term effects on a person's mental wellbeing, and also lead to drop-outs from school or other problems (Danziger & Waldvogel, 2000).

Previous research suggests that financial stress among families and young people tends to increase in times of economic crises or other turmoil, such as the Covid-19 pandemic, due to rising unemployment and income losses (Ahrendt et al., 2015; Chzhen et al., 2017; Fanjul, 2014). In a Finnish context, the economic crises during the 1990s, and the 2008–2009 financial crisis, led to increasing financial stress among families (Ahrendt et al., 2015; Lindberg, 2021). The 2020–2021 Covid-19 pandemic was no exception, as it brought along increasing economic strain for many households, for example, those affected by layoffs, unemployment, or business bankruptcy (Forsberg & Thorvaldsen, 2022; McGill et al., 2022; World Bank, 2022).

The other central concept in this article, *mental wellbeing*, is not very well-rooted in research on wellbeing and happiness. It resembles concepts such as psychological wellbeing, happiness, subjective wellbeing, or life satisfaction, and is often used more or less as a synonym to mental health (van Agteren & Iasiello, 2020; Diener & Suh, 1997; Rider et al., 2021). The World Health Organization (2022), defines mental wellbeing as 'a person's ability to recognize their own capacities, manage regular stresses of life, work productively, and contribute to their community.' Thus, it can perhaps be seen as a more dynamic concept than mental health, which is more common in health research, and which, according to the World Health Organization (2021, p. 2), relates "to a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity". Accordingly, we define mental wellbeing as the subjective satisfaction with one's life as well as the ability to recognize and use one's resources for managing changes or challenges in life (cf. van Agteren & Iasiello, 2020; Mendolia et al., 2021; Rider et al., 2021). Not only does this concept go beyond the mere non-occurrence of mental disorder symptoms, such as hyperactivity or emotional affects, it also includes aspects of coping or resilience in the face of mental challenges or crises (cf. Mendolia et al., 2021; Moore et al., 2019). Due to this generality, and the dynamic characteristics of the concept, it can be seen as especially suitable for registering wellbeing and capabilities in life situations that are characterized by stark adverse influences, such as a pandemic (Rider et al., 2021).

Mental wellbeing is shaped by many factors, both on the individual level as well as on the family and societal level (e.g., Ben-Zur, 2003; Conger & Conger, 2002; Mendolia et al., 2021). Previous research suggests a negative association between financial stress and (mental) wellbeing of adolescents (e.g., Conger et al., 1992; Crous, 2017; Fanjul, 2014; Hilton & Devall, 1997; Knifton & Inglis, 2020; Main, 2018; Main et al., 2019), although such links are dependent on many intervening factors, such as the type and communicative culture of families, individual coping resources, the national context, as well as other factors (e.g., Cusinato et al. 2020; Crous, 2017; Main, 2018). According to the so-called Family Stress Model (Conger et al., 1992), financial stress can lead to higher strain on parents, which in turn can undermine their parenting and result in poorer wellbeing and health of their children (Lindberg et al., 2020; Voydanoff, 1990). Some occasional studies on this theme suggest that this association became enhanced during the Covid-19 pandemic. In one of the few studies in this research field focusing on American children, child mental health were found to be more strongly associated with financial worries than school disruptions and social distancing (Xiao et al., 2023). Another study from Canada found that financial stress during the Covid-19 pandemic was associated with poorer child well-being, although parental behavior significantly mediated these associations (McGill et al., 2022). A third study on Italian families found that child health was associated with the socioeconomic position of the family, the amount of family support, and parental financial stress (Scrimin et al., 2022). However, these and also other studies (e.g., Lindberg et al., 2020) show that this association is modified by other factors, such as parenting, social factors and contexts. For instance, parents' ways of addressing or communicating economic issues within the family can aggravate, or ease, financial stress (e.g., Ben-Zur, 2003; Conger & Conger, 2002). Also, school teachers or other important adults can influence such things through the ways they address questions about the economy (James &

Prout, 1997; Spyrou, 2019). Obviously, this association also depends on the dimension of wellbeing, and how we measure financial stress of children.

On the other hand, it has been suggested that subjective wellbeing is more squarely linked to family-related factors, such as incomes, than to societal factors (e.g., James & Prout, 1997). For a young person, the family represents the closest and most intimate sphere (cf. James & Prout, 1997; Spyrou, 2019). Children are a part of the same household as their parents, and concerns, arguments and anxiety arising from low income, financial vulnerability and other economic challenges translate to children, although there are many moderating factors, such as how financial concerns are acknowledged, communicated and discussed by parents together with their children (Lindberg, 2021; Cusinato et al., 2020).

However, according to Ranta and colleagues (2020), macroeconomic conditions and global uncertainty, such as stress arising from pandemics, tend to have an adverse effect on the wellbeing of adolescents and children (cf. Fanjul, 2014; Schenck-Fontaine & Panico 2019). Also, social distancing, isolation, and quarantines arising from the Covid-19 pandemic have been shown to have negative effects on both adults' and younger persons' wellbeing (Brooks et al., 2020; Rider et al., 2021; Xiao et al., 2023). Moreover, the overall economic situation in a country and financial stress emanating from one's own family are likely to have adverse effects on wellbeing (Conger & Conger, 2002). For instance, children generally experience more problems relating to health and wellbeing if parents are unemployed and have low incomes (e.g., Karhula et al., 2017; Reinhardt Pedersen & Madsen, 2002). Financial stress can also lead to experiences of stigma and social exclusion (Heinrich, 2014; Vuorenlinna et al., 2023), since it reduces the level of purchasing power and undermines the social identity that consumption can buy (e.g., Baiocco et al., 2018; Fattore & Mason, 2017).

Sociodemographic factors, such as age or gender, as well as social, psychological, health-related and other factors also play a role here (e.g., Mendolia et al., 2021; Kauhanen et al., 2022). As an example, some studies highlight the meaning of gender by suggesting that boys seem to be more satisfied with their lives than girls, even in times of the pandemic (e.g., Mendolia et al., 2021; O'Sullivan et al., 2021). However, one of the most significant factors challenging a young person's subjective wellbeing seems to be whether one has been, or is being bullied (e.g., Lyng, 2018), and some studies show an increase in this problem during the pandemic (e.g., Forsberg & Thorvaldsen, 2022).

To sum up, there seems to be good causes to expect financial stress to have adverse influences on the mental wellbeing of adolescents. Consequently we can postulate a number of hypotheses corresponding to the research questions stated in the introduction. To begin with, we expect to find a perceived increase in financial stress (H1) and a deterioration of mental wellbeing (H2) among Finnish adolescents during the first year of the Covid-19 crisis. We also expect to find a strong correlation between perceptions of financial stress and mental wellbeing, even when controlling for demographic, family-related and other background variables (H3). Finally, we expect to find that this correlation is mediated by social, psychological and school-related factors, such as availability of social support, feelings of security and study problems (H4). However, as noted in the introduction, it should be emphasized that the study only shows the reported impact, not the direct impact of the pandemic on fiscal stress or wellbeing

Data and methods

Data and sample

The article uses data from the *Children's Voice* survey conducted in 2021 by the Save the Children, Finland (Save the Children, Finland, 2021). Save the Children is a NGO active worldwide with the aim of advocating children's rights. The data collection was conducted anonymously as a nationwide online *Webropol* survey that could be answered between April 12 and May 2, 2021. Similar surveys have also been conducted earlier and later by this organization, but with different focuses and slightly different

questions. The questionnaire could be answered both in Finnish and Swedish, and it was distributed and made available through various social media channels and sent out to education officials and municipal schools in various geographical areas throughout Finland.

The questionnaire was completed by 1102 12–17-aged adolescents. The largest age group consisted of 16-years-olds (26.6 %), whereas 12-years-olds constituted the smallest group (8.2 %). The mean age was 15.005 (standard error = .047). Girls were rather more represented than boys (75.8 % to 13.8 %), while 10.4 percent refused to define their gender or to answer the question. 86.5 percent spoke only Finnish at home, and most of the respondents attended secondary school (56.6 %) or high school (21.0 %). The 19 geographical regions that were represented in the responses correspond to the provincial/county division of Finland. The majority of the respondents lived in the southern part of Finland (42.6 %), in some kind of urban area (61.9 %). Due to the fact that the number of respondents was small, non-randomized and had the characteristics of a convenience sample, a strictly representative sample of Finnish adolescents could not be obtained.

Variables

Outcome variables

The analysis of H1 and H2, included two outcome variables, perceived *over-time change in financial stress*, and *perceived over-time change in mental wellbeing* (see Table 1). Over-time change in financial stress was measured by using the following question: ‘In your opinion, has the Corona pandemic undermined your family’s economic situation?’ The response categories were: ‘Not at all’, ‘Very little’, ‘Somewhat’, ‘Quite much’, ‘Much’, and ‘Cannot say’. Over-time change in mental wellbeing was measured with the question ‘If you compare your current mental wellbeing to that of one year ago, is it...?’ followed by six response categories: ‘Much better than a year ago’, ‘Somewhat better than one year ago’, ‘Roughly the same’, ‘Somewhat worse than one year ago’, ‘Much worse than one year ago’, and ‘Cannot say’.

In the analysis of H3 and H4, we used *present-day mental wellbeing* as outcome variable, and it was measured by asking ‘How is your mental wellbeing at this moment?’ and the response categories were: ‘Good’, ‘Rather good’, ‘Average’, ‘Rather bad’, and ‘Bad’. Since the explanative analyses used logistic regression, we dichotomized the original response categories of the outcome variable into ‘Good’ (original values: ‘Good’, ‘Rather good’ and ‘Average’) and ‘Bad’ (original values: ‘Rather bad’ and ‘Bad’). This dichotomization was informed by previous literature (e.g., Lindberg et al., 2020) suggesting the three first values represent a positive evaluation of life including normal variations, whereas the two final values take a clear negative stand. To check robustness of the dichotomization we ran control analyses with the original variables and found it to be robust.

Independent and control variables

The main independent variable in the explanative analysis was *financial stress*. Following previous studies (e.g., Lindberg et al., 2020), this phenomenon was assessed by asking the respondents about how difficult they felt that it was for their family to get by financially (exact formulation: ‘How easy/difficult it is for your family to manage expenditures with the current income?’). The response options were: ‘Very easy’, ‘Easy’, ‘Only small difficulties’, ‘Somewhat difficult’, ‘Very difficult’, and ‘Cannot say’. We dichotomized this variable as *Low* (original values: ‘Very easy’, ‘Easy’ and ‘Only small difficulties’), and *High* (original values: ‘Somewhat difficult’ and ‘Very difficult’). The value ‘Cannot say’ was recoded as missing values. This dichotomization was informed by previous studies (e.g., Vuorenlinna et al., 2023) suggesting that the categories ‘Somewhat difficult’ and ‘Very difficult’ reflect a clear stand of financial stress, while ‘Only

Table 1. *The distribution (in %) of variables (N=1102)*

| Variable | n | Valid % |
|--|----------|----------------|
| Present-day mental wellbeing | | |
| Good | 153 | 13.9 |
| Rather good | 237 | 21.5 |
| Medium | 294 | 26.7 |
| Rather bad | 267 | 24.2 |
| Bad | 151 | 13.7 |
| Over-time mental wellbeing change (as compared to one year ago) | | |
| Much better | 97 | 8.8 |
| Somewhat better | 193 | 17.5 |
| Roughly the same | 265 | 25.1 |
| Somewhat worse | 313 | 28.4 |
| Much worse | 204 | 18.5 |
| Cannot say | 30 | 2.7 |
| Financial stress ('How difficult for the family to make ends meet') | | |
| Very easy | 114 | 10.3 |
| Easy | 415 | 37.7 |
| Only small difficulties | 292 | 26.5 |
| Somewhat difficult | 159 | 14.4 |
| Very difficult | 32 | 2.9 |
| Cannot say | 90 | 8.2 |
| Over-time change in financial stress due to the Covid-19 pandemic (deterioration of economic situation) | | |
| Not at all | 346 | 31.4 |
| Very little | 318 | 28.9 |
| Some | 197 | 17.9 |
| Rather much | 46 | 4.2 |
| Much | 29 | 2.6 |
| Cannot say | 166 | 15.0 |
| Material deprivation | | |
| Yes (2 or more items missing) | 235 | 21.3 |
| No (0-1 item missing) | 867 | 78.7 |
| Gender | | |
| Girl | 835 | 75.8 |
| Boy | 152 | 13.8 |
| Other | 115 | 10.4 |
| Age | | |
| 12 | 90 | 8.2 |
| 13 | 131 | 11.9 |
| 14 | 185 | 16.8 |
| 15 | 194 | 17.6 |
| 16 | 282 | 25.6 |
| 17 | 220 | 20.0 |
| Language (speaks only Finnish at home) | | |
| Yes | 953 | 86.5 |
| No | 149 | 13.5 |
| Minority status | | |
| Yes | 542 | 49.2 |
| No | 560 | 50.8 |

Table 1. (continued)

| Variable | n | Valid % |
|---|-----|---------|
| Region | | |
| Southern Finland | 470 | 42.6 |
| Western Finland | 231 | 21.0 |
| Eastern Finland | 208 | 18.9 |
| Northern Finland | 193 | 17.5 |
| Residence | | |
| Urban | 682 | 61.9 |
| Rural | 420 | 38.1 |
| Family type | | |
| Nuclear | 671 | 66.2 |
| One-parent | 266 | 26.3 |
| Other | 76 | 7.5 |
| Parental labor market situation | | |
| 2 working parents/guardians | 782 | 71.0 |
| 1 working parent/guardian | 255 | 23.1 |
| No working parent/guardian | 65 | 5.9 |
| Use of public welfare services | | |
| Yes | 720 | 65.3 |
| No | 382 | 34.7 |
| Prevalence of bullying (during last year) | | |
| Yes | 289 | 26.2 |
| No | 813 | 73.8 |
| Friend support | | |
| Yes | 957 | 86.8 |
| No | 145 | 13.2 |
| Adult support | | |
| Yes | 779 | 70.7 |
| No | 323 | 29.3 |
| Given up hobby or leisure activity due to Covid-19 | | |
| Yes | 325 | 29.9 |
| No | 762 | 70.1 |
| Learning and study problems due to the Covid-19 | | |
| Yes | 637 | 59.3 |
| No | 438 | 40.7 |
| Feeling of security (dichotomized index) | | |
| High | 498 | 45.3 |
| Low | 601 | 54.7 |

small difficulties' can be said to reflect normal fluctuations in a family's income situation. On the basis of control analyses using the original variable categorizations we found this dichotomization to be robust.

Since we wanted to compare the role of financial stress with some other economic measure being more individual, and personal, to young people, we used *material deprivation* as a control variable. This variable measures whether a person lacks goods or activities that can be seen as a part of a 'normal' lifestyle, that is, things that one cannot afford, but that are desired and considered normal for a society at a given point in time (Main & Bradshaw, 2012). The *Children's Voice* survey from 2021 included questions about ten consumption items: clothes that are new, daily access to fruits and vegetables, access to a smartphone similar to other kids' phones, access to a computer, disposal over an own room, having own pocket money, access to regular leisure activities, being able to go to the movies, concerts or similar events, capacity to arrange a party at special occasions, and being able to go on a vacation trip at least once a year. Based on these, a 10-grade index of material deprivation was calculated in line with earlier similar studies (cf. Main & Bradshaw, 2012). Following Main (2013), we recoded this index into a dummy variable, according to which the value '0 or 1 missing item' signifies non-deprivation, while 'two or more missing items' indicates material deprivation. Fiscal stress and material deprivation represent two different aspects of economic hardship. One relates to the perceived income situation of one's family, while the other refers to a person's own consumption ability. As expected, the deprivation index was positively correlated with financial stress (Pearson $r^{xy}=-.392$), but showed no multicollinearity in the regression analyses.

Informed by earlier work (e.g., Ranta et al., 2020; Lindberg et al., 2020; Schenck-Fontaine & Panico, 2019), three other groups of control variables were used in the explanative analysis: demographic, family-related variables, as well as social, psychological and school-related variables. As to the first group of control variables, the original *gender* variable was recoded into a three-response variable consisting of 'Girls', 'Boy' and 'Other'. The last category related to those who reported another gender identity than girl/boy, or that refused to answer this question). *Age* was used in its original form as a continuous variable that ranged from 12 to 17 years. *Language* was analyzed by creating a dummy variable for those speaking solely Finnish at home. We also created a dummy variable assessing whether the respondents reported belongingness to any kind of *minority group*, such as ethnic, linguistic, religious, or sexual minorities. The geographical position of the respondents was analyzed by reclassifying the 19 original regions into four *region* categories: 'Southern', 'Western', 'Eastern' and 'Northern' Finland. Similarly, *type of residence* was analyzed by recoding the four original response categories into 'Urban' and 'Rural' residence.

In the second group of control variables, *family type* was analyzed by recoding the original response categories on whom the adolescents were living with into a three-value variable consisting of 'Nuclear family', 'One-parent family', and 'Other'. As to the *parental labor market situation* of the parents (or guardians), we recoded the original six-value question into a three-value variable consisting of 'Two working parents/guardians', 'One working parent/guardian', and 'No working parent/guardian'. The last control variable in this group was a dummy variable assessing whether the respondent, her/his siblings or parents/guardians had used one or several *public welfare services*, such as child welfare service or mental health services, under an unspecific period of time.

Finally, in the third group of control variables consisting of social, psychological and school-related variables, we used dummy variables for the prevalence of having been *bullied* during the last year, having good *friends* with whom one can discuss confidentially about almost all sorts of things, having access to *adult support* ('is there an adult with whom the respondent can discuss confidentially about almost all sorts of things?'), having had to give up an important *hobby or leisure activity* due to the pandemic, and experiencing that *school closures* and *distance studying* had undermined ones studies. We also created a sum variable of eight original items on *feelings of security*, ranging from feeling secure in one's home and in one's school to feeling secure on the net or in Finland (Cronbach's Alpha = 0.870)¹.

¹ The eight items on security included one's home, school, neighborhood, leisure activities, public transportation, public spaces (e.g., shops, malls etc.), the internet and social media, and Finland.

The original response categories followed a 10-grade Likert scale ranging from (1) ‘Not at all secure’ to (10) ‘Completely secure’. This sum variable was then dichotomized into *High* (mean values ≥ 5), and *Low* (mean values < 5). Table 1 displays descriptive statistics for the abovementioned variables.

Methods of analysis

The data was analyzed with the STATA 17 statistical software package, and consisted of two main phases. First, to test H1 and H2, we performed descriptive analyses to describe the over-time change in financial stress, and mental wellbeing, respectively. Second, to test H3, and H4, we performed multiple logistic regression analyses with odds ratios and levels of significance to assess the association between perceptions of financial stress, and perceptions of present-day mental wellbeing. We estimated four models; a first model with only bivariate associations, a second with our economic variables, financial stress and material deprivation, a third with demographic variables included, a fourth with family-related variables added, and a fifth model with all independent variables included. Since the use of odds ratios for comparing different models is far from unproblematic, we also calculated predicted marginal effects (dy/dx) for our covariates as a way of controlling for potential scaling biases (Mood, 2010) (see Appendix 1).

Findings

As shown in Figure 1 (as well as Table 1), the vast majority of the adolescents participating in the survey did not experience a deterioration of their families’ financial situation during the pandemic. A little over 60 percent had not experienced any, or very little, deterioration in their family’s financial situation, whereas under 7 percent thought that there had been rather much, or significant, deterioration. About 18 percent reported that there had been some increasing difficulties and approximately 15 percent said they cannot say. As to gender, there was no systematic differences (Pearson $\chi^2=10.089$, $P=0.433$). This finding does not support H1 nor previous studies suggesting that crises, such as economic downturns or pandemics, increase financial strain for adolescents (e.g., Ahrendt et al., 2015; Chzhen et al., 2017). However, it should be remembered that the survey was conducted in spring 2021, in the second year of the Covid-19 pandemic, and that there may have been more financial deterioration in a later phase. It is also conceivable that adolescents in this age span might find it difficult to assess over-time change in their family’s financial situation, especially during a shorter period. Moreover, we need to remember that the sample was not statistically representative for the population.

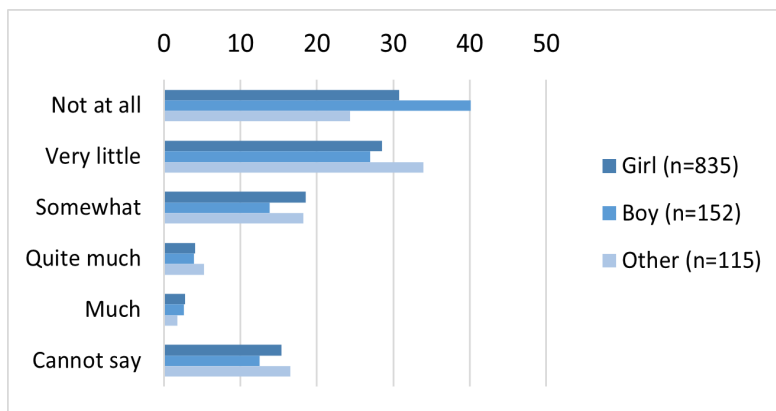


Figure 1. Perceived over-time change in financial stress by gender category (percent)

As to over-time change in mental wellbeing, however, we see a different pattern. As shown in Figure 2 (and Table 1), approximately 47 percent of the respondents reported that their mental wellbeing had become somewhat or much worse as compared to one year back in time. A little over 26 percent reported a slight or considerable improvement and approximately 25 percent reported no noticeable change. Only a small percentage (2.7 %) could not answer this question, which suggests that it was easier for the adolescents to reflect on their mental wellbeing than on changes in their families' economic situation. We can thus find support for H2, which presupposed a deterioration of mental wellbeing during the pandemic. The finding also supports earlier research (e.g., Kauhanen et al., 2022; Cusinato et al., 2020).

Moreover, we see that the response pattern is gendered, since a considerable greater proportion of girls and persons with 'other' gender (or that refused to report their gender) reported a deterioration of their mental wellbeing than boys (Pearson $\chi^2=61.917$, $P=0.000$). Around 28 percent of girls and little over 24 percent of 'other' adolescents reported a slight or considerable improvement of their wellbeing, but when it comes to reporting some or considerable deterioration, the shares were noticeable larger than for boys (approximately 48.5 % for girls and 59.13 % for 'other' as compared to 28.94 % for boys). This suggests that the pandemic might have had a more eroding effect on the mental wellbeing of girls and adolescent with unspecified gender than that of boys, although we cannot say what the causes of these changes were. This result aligns with earlier findings (e.g., Kauhanen et al., 2022; Marmet et al., 2021; Mitchell et al., 2021; Ranta et al., 2020) suggesting that girls fared less well during the pandemic than boys.

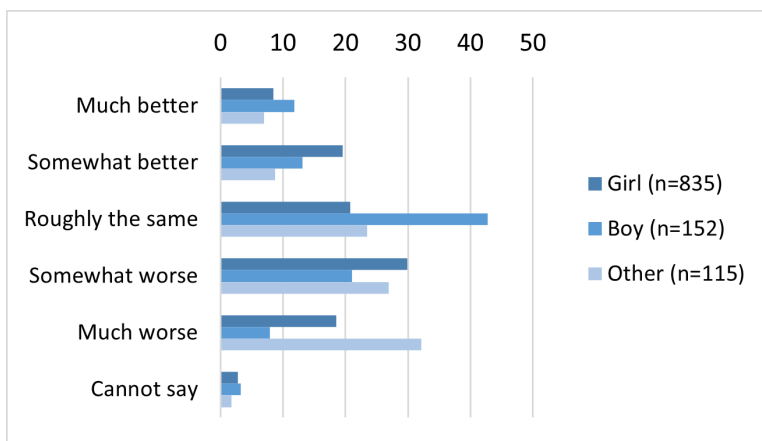


Figure 2. Perceived over-time change in mental wellbeing by gender category (percent)

How, then, is financial stress associated with mental wellbeing? In Table 2, we present odds ratios, standard errors and significance levels of five logistic regression models. The first model reports odds ratios from bivariate logistic regressions, whereas the other models report odds ratios from multiple logistic regressions. Model 2 reports predicted odds ratios for financial stress and deprivation, model 3 adds demographic variables, model 4 family-related variables, and model 5 social, psychological and school-related variables.

As we can see, financial stress in terms of perceptions on how easy it is for one's family to make ends meet is associated with mental wellbeing. Moreover, there is a association between material deprivation and mental wellbeing. In model 1, we see that the odds for experiencing good mental wellbeing are almost 2.5 times higher for those experiencing low financial stress than for those experiencing high stress, and approximately 1.95 times higher for those not experiencing material deprivation than for those experiencing deprivation. These associations weaken when both variables are inserted simultaneously (model 2), but stay significant. However, when we control for demographic variables (model 3), the odds ratio for financial stress drops to 2.092 while still being significant, whereas material deprivation

Table 2. Predictors of adolescents' present-day mental wellbeing (logistic regression with odds ratios and standard errors for 'good' wellbeing). Odds ratios being significant on at least the 0.05-level reported in bold

| Independent and control variables | M1 | | M2 | | M3 | | M4 | | M5 | |
|--|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|-------------|
| | OR | SE | OR | SE | OR | SE | OR | SE | OR | SE |
| Financial stress | | | | | | | | | | |
| High (ref.) | 1 | | 1 | | 1 | | 1 | | 1 | |
| Low | 2.429 | .321 | 2.167 | .312 | 2.092 | .323 | 1.661 | .281 | 1.394 | .258 |
| Material deprivation | | | | | | | | | | |
| Yes (ref.) | 1 | | | | 1 | | 1 | | 1 | |
| No | 1.949 | .290 | 1.422 | .242 | 1.243 | .228 | 1.473 | .293 | 1.121 | .234 |
| Gender | | | | | | | | | | |
| Girl (ref.) | 1 | | | | 1 | | 1 | | 1 | |
| Boy | 2.966 | .673 | | | 2.217 | .545 | 2.438 | .643 | 2.418 | .722 |
| Other | .326 | .068 | | | .382 | .093 | .394 | .106 | .386 | .112 |
| Age (continuous) | .791 | .033 | | | .829 | .039 | .871 | .045 | .859 | .051 |
| Language | | | | | | | | | | |
| Only Finnish (ref.) | 1 | | | | 1 | | 1 | | 1 | |
| Other | 1.052 | .192 | | | 1.471 | .313 | 1.372 | .324 | 1.502 | .380 |
| Minority status | | | | | | | | | | |
| Yes (ref.) | 1 | | | | 1 | | 1 | | 1 | |
| No | 3.054 | .396 | | | 2.441 | .361 | 1.982 | .319 | 1.468 | .257 |
| Region | | | | | | | | | | |
| Southern Finland (ref.) | 1 | | | | 1 | | 1 | | 1 | |
| Western Finland | 1.131 | .186 | | | 1.173 | .221 | 1.026 | .208 | 1.120 | .248 |
| Eastern Finland | 1.780 | .319 | | | 1.487 | .307 | 1.427 | .315 | 1.475 | .357 |
| Northern Finland | 1.240 | .218 | | | 1.209 | .249 | 1.144 | .254 | .986 | .243 |
| Residence | | | | | | | | | | |
| Urban (ref.) | 1 | | | | 1 | | 1 | | 1 | |
| Rural | 1.245 | .160 | | | 1.174 | .178 | 1.176 | .194 | 1.165 | .209 |
| Family type | | | | | | | | | | |
| Nuclear family (ref.) | 1 | | | | | | 1 | | 1 | |
| One-parent family | .746 | .111 | | | | | 1.161 | .215 | 1.030 | .205 |
| Other | .607 | .148 | | | | | .728 | .216 | .694 | .223 |
| Parental labor market situation | | | | | | | | | | |
| Two adults working (ref.) | 1 | | | | | | 1 | | 1 | |
| One adult working | .682 | .099 | | | | | .917 | .169 | .912 | .182 |
| No adult working | .827 | .218 | | | | | 1.267 | .437 | 1.174 | .439 |

Table 2. (continued)

| Independent and control variables | M1 | | M2 | | M3 | | M4 | | M5 | |
|------------------------------------|-------|------|----------|----|----------|----|----------|------|----------|------|
| | OR | SE | OR | SE | OR | SE | OR | SE | OR | SE |
| Welfare service usage | | | | | | | | | | |
| No (ref.) | 1 | | | | | | 1 | | 1 | |
| Yes | .230 | .035 | | | | | .317 | .057 | .335 | .067 |
| Experience of bullying | | | | | | | | | | |
| No | 1 | | | | | | | | 1 | |
| Yes | .447 | .062 | | | | | | | .792 | .157 |
| Friend support | | | | | | | | | | |
| No (ref.) | 1 | | | | | | | | 1 | |
| Yes | 2.254 | .406 | | | | | | | 1.712 | .419 |
| Adult support | | | | | | | | | | |
| No (ref.) | 1 | | | | | | | | 1 | |
| Yes | 3.141 | .430 | | | | | | | 2.878 | .520 |
| Renouncement of hobby | | | | | | | | | | |
| No (ref.) | 1 | | | | | | | | 1 | |
| Yes | .724 | .094 | | | | | | | .929 | .168 |
| Study and learning problems | | | | | | | | | | |
| No (ref.) | 1 | | | | | | | | 1 | |
| Yes | .483 | .064 | | | | | | | .753 | .138 |
| Feeling of security | | | | | | | | | | |
| Low (ref.) | 1 | | | | | | | | 1 | |
| High | 4.994 | .703 | | | | | | | 2.960 | .526 |
| Pseudo R² | | | .037 | | .129 | | .167 | | .252 | |
| Log likelihood | | | -649.891 | | -588.049 | | -515.683 | | -449.581 | |

drops to 1.243 and becomes insignificant. The same pattern is also found in model 4, except that the odds ratio for low financial stress drops to 1.661. When controlling for social, psychological and school-related factors in the final model (model 5), also financial stress becomes insignificant.

If we have a closer look at the other independent variables, we see that gender and age seem to be related to for mental wellbeing. This could also be derived from Figure 2 reporting over-time change in mental wellbeing. Model 1 shows that the odds for having high present-day mental wellbeing is higher for boys than for girls, as well as adolescents with another gender identity, while the odds ratios drop as age increases. On the other hand, demographic variables such as language do not seem to have any significant bearing for present-day mental wellbeing. The only other demographic variable that stays strongly and negatively associated is minority-group status, which suggests that being a member of a minority group, such as ethnic, religious minority or disability groups, significantly increases the risk of having low mental wellbeing. This association, as well as the association between gender and mental wellbeing, remains significant when controlling for family-related and other variables. However, it should be remembered that the distribution of the gender variable was very uneven (75.8 percent were girls, while only 13.8 percent were boys and 10.4 percent belonged to the category ‘other’), which prevents us from drawing any far-reaching conclusions from this. Still, it indicates that mental wellbeing may be strongly associated with gender, and

that girls and those with other gender identity fared less well during the pandemic. It also supports findings from previous and similar studies (cf. Kauhanen et al., 2022; Lindberg et al., 2020; Mendolia et al., 2021) suggesting that girls might have been 'left behind' during the pandemic (Mendolia et al., 2021).

What might come as a surprise is that family-related variables (model 4) played a quite subordinated role for present-day wellbeing, except for welfare service usage. Adolescents living in a family using one or several public welfare services, such as child welfare services, health care services or other social services, faced a significantly lower chance of experiencing high wellbeing and this association remained significant when controlling for other factors. This suggests that adolescents living in families with different kinds of social, mental or health problems face a lower likelihood of good mental wellbeing than others (cf. Crous, 2017; Lindberg et al., 2020).

We also see that present-day mental wellbeing seems to be strongly associated with social, psychological and school-related factors. Model 1 shows that experiences of bullying, social support from friends and adults, having had to give up a hobby or leisure activity due to the pandemic, having experienced learning and studying problems due to school lock-downs and feeling secure are all associated with mental health, but in different ways. However, in model 5, we see that support from friends and adults, as well as feelings of security, are the only variables that remain significant – together with gender, minority status and the use of welfare services. The most important predictor seems to be feelings of security. The odds for having high present-day mental wellbeing is almost three times higher for those feeling secure than for others (cf. Crous, 2017). Also, support from adults and friends are important predictors of mental wellbeing, which suggests that social and psychological factors are central for maintaining mental wellbeing in times of pandemics (Ben-Zur, 2003; Cusinato et al., 2020; Lindberg, 2021).

A robust check showed that these results remained more or less the same, even if we removed those covariates that were not significantly correlated in M1 from the equation (the results not reported here). The only change we found was that age became significant in all models, while the support from friends became non-significant in the final model. Moreover, we found no interaction effects between financial stress and material deprivation, nor between these two covariates and gender. Finally, a comparison between the odds ratios and marginal effects (see Appendix 1) show a high level of robustness, although the marginal effects of minority status and friend support turned insignificant in model 5.

Discussion

The aim of this article was to analyze the association between financial stress and mental wellbeing of Finnish adolescents during the Covid-19 pandemic by using survey data. The findings enable a number of tentative conclusions. Firstly, we see that there was a slight increase in financial stress among Finnish adolescents during this period, but this increase was not significant. Over 60 percent of the respondents had not noticed any increase in financial stress in their family, while only 6.8 percent reported such an increase. This means that we could find some support for H1, postulating an increase in adolescent financial stress during this period. However, it should be noted that we focused on adolescent views, their perceptions, not on family incomes *per se*, and that the studied period was short. This means that we cannot say anything about any rise, or fall, in *real* financial stress, which might be much more noticeable than what our findings indicate. Moreover, we cannot draw any conclusions as to whether such changes emanated from the pandemic, since our data does not allow any comparison with a 'normal' situation.

Secondly, the findings show a significant deterioration of the perceived mental wellbeing of Finnish adolescents from the start of the pandemic until 2021 when the data was collected. Around 46 percent of the respondents reported that their mental wellbeing was worse or much worse in 2021 than one year ago, while 25 reported no change, and roughly 26 percent said that their wellbeing was better or much better. We also found that such it was predominantly girls and respondents with 'other' gender identities that experienced a deterioration of their mental wellbeing. This supports H2 and also lends support to previous

findings suggesting that girls (and non-binary gender categories) tend to get ‘left behind’ and have greater difficulties coping with financial and other stress arising from a pandemic with different kinds of restrictions and health threats (e.g., Mendolia et al., 2021; Mitchell et al., 2021). The regression models analyzing predictors of present-day mental wellbeing confirm these interpretations. The odds for experiencing high mental wellbeing was almost three times higher for a boy than a girl, and 0.3 times lower for those respondents belonging to another gender group. The exact reasons for this are hard to pinpoint, but it has been suggested that girls are more vulnerable to changes in social networks, social media, lock-downs, and social distancing than are boys (e.g., Mendolia et al., 2021). However, these – and also other – results found here should be handled with care, since the gender distribution was strongly biased (75.8 % girls, and 13.8 % boys) and the sample non-randomized and small-sized.

Third, we found a significant and negative association between financial stress and mental wellbeing. This also holds for the association between material deprivation and mental wellbeing, albeit to a lesser extent. The odds for reporting high mental wellbeing was almost 2.5 times higher for those reporting no financial stress, and almost 2 times reporting no material deprivation. This means that we found support for H3 indicating that financial stress increases the risk for low mental wellbeing, which in turn aligns with previous findings (e.g., Chzhen et al., 2017; Crous, 2017; Knifton & Inglis, 2020; Lindberg et al., 2020; Main, 2018). Economic factors constitute a necessary foundation for mental wellbeing of adolescents, and an increase in financial stress undermines such as foundation and increases anxiety as well as the risk of different kinds of social exclusion or stigmatization (e.g., Vuorenlinna et al., 2023). However, we also found that such associations are mediated, and even over-shadowed, by other factors, such as gender, belonging to a minority group, living in a family using public welfare services as well as different social, psychological, and school-related factors.

This brings us to the fourth conclusion, which is that although financial stress undermines mental wellbeing, it is not the most important factor, since access to social support from friends and adults and feelings of security tend to crowd out such an influence. The odds for reporting high present-day mental wellbeing were around 1.7 times higher for those respondents having close relationships to one or many friends, and almost three times higher for those having one or many adults which whom they could discuss about almost everything as well as those experiencing security in their homes and schools, on the internet, as well as in society as a whole. However, in our control analyses using margin effects, the effects of friend support turned insignificant in the final model. This means that even if financial difficulties increase stress, both within the family as well as in the minds of adolescents, it also matters how the family, or the adolescents themselves relate, understand and cope with such stress together with their parents, or with other adults or/and friends (cf. Conger & Conger, 2002; Lindberg, 2021; Lindberg et al. 2020; Ranta et al., 2020; Voydanoff, 1990; Xiao et al., 2023). This lends support for H4 and also has important policy implications.

One such policy implication is that it is important not to leave any adolescents behind in times of crises or external shocks like the Covid-19 pandemic, and notably to provide services and social support to those that can be considered being more vulnerable. Such services are, for example, counselling or health care services. If the situation restricts access to physical services, there needs to be substituting digital services, phone services, or other alternative ways that can be substituted to give the help and counsel adolescents need in times of distress.

Since the results from this study show that financial stress is likely to undermine mental wellbeing of adolescents, policy makers need to take steps to prevent households with young persons from facing financial stress, for example by using sufficient family policy measures, such as (temporary) income transfers (cf. Hakovirta & Kallio, 2015; Lindberg, 2021) – something which was actually done in Finland during the Covid-19 crisis (Daly et al., 2023). Moreover, since the results indicated that social, psychological and school-related factors mediate this association, investments in young persons’ lives and environments, such as schools, should be seen as vital. It is also central for adults to facilitate contact with young people, not only when it comes to welfare service practitioners and teachers, but also parents and other important adults in an adolescent’s life, such as trainers or hobby leaders. In this way, young people can be heard,

given a chance to address their concerns and to feel safer in their everyday lives. It also helps identifying possible problems and threats to their wellbeing.

However, further analysis of the association between fiscal stress and mental wellbeing is warranted, since cross-sectional surveys fail to capture any causality between financial stress and mental wellbeing of adolescents, or how such associations change over time, especially during times of crises. A way forward here would be to collect longitudinal data on financial stress as well as mental wellbeing.

Acknowledgements

No separate funding was received for this research.

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Author biographies

Mikael Nygård is professor of Social Policy at the Åbo Akademi University, Finland. His research interests cover welfare state change, family policy, the societal participation of various groups, poverty and subjective wellbeing among children and adolescents.

Mia Hakovirta is professor of Social Work at the University of Turku, Finland, and The Invest Flagship, Turku. Her research interests cover family policies and child well-being, mostly from a comparative perspective.

Marja Lindberg is a university lecturer in Social Policy at the Åbo Akademi University. Her interests relate to family policies, as well as parental and child wellbeing.

Aino Sarkia is a special adviser at the Save the Children, Finland. Her research relates to child and adolescent wellbeing.

Emily Vuorenlinna is a doctoral student in Social Policy at the Åbo Akademi University, Finland. Her research relates to poverty and child wellbeing.