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Regular Article

How are apprentice satisfaction and concerns changing as a consequence of the coronavirus pandemic?

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ABSTRACT

For more than a year, the coronavirus pandemic has severely restricted everyday life. This has had an impact on the economy, on working life and on the organisation of school routines. Apprentices in dual vocational training have been doubly challenged as they have had to cope with changes both at work and at vocational school. Therefore, it is worthwhile to explore what psychosocial consequences the coronavirus pandemic has had on apprentices. However, little research has been conducted on the impact of the pandemic on the worries and life satisfaction for apprentices in general. This mixed-methods study fills this research gap by using data from 167 apprentices (16–35 years old) in technical and commercial trade apprenticeships in Southern Germany. When designing the survey, particular attention was paid to a visual presentation of Likert scales suitable for adolescents to assess their worries and satisfaction during and prior to the coronavirus pandemic. Explicit questions were asked about their satisfaction with work, social contacts and life in general, as well as concerns about their financial situation, job loss and health. Furthermore, these aspects are analysed with respect to gender differences based on the assumption that the coronavirus pandemic has a different impact on the satisfaction and worries of women and men. The results show that apprentices’ worries significantly increased with their satisfaction decreasing and that women were particularly affected.

1. Introduction

The global spread of the coronavirus has fundamentally changed lives since the beginning of 2020. Significant challenges arose due to governmental measures such as contact restrictions and closures of businesses that were not considered to be systemically relevant and schools. There was a significant increase in unemployment as well as in the number of people on short-time work in Germany. The Institute for Employment Research reported in a special survey that about 27% of respondents were on short-time work between March and May 2020, with a particularly high incidence among those without a higher education qualification and those employed in the manufacturing sector (Frodermann et al., 2020). The first analyses of the corona survey conducted by the Science Centre in Berlin also reveal that around 19% of participants had lost their jobs; concerns about a possible job loss were also high among respondents (Bünning et al., 2020). Those whose employment continued in the home office also experienced a heavier workload due to higher level of work-family conflicts (Abendroth et al., 2018).

Apprentices who are exposed to change in two learning locations – in the workplace and in vocational school – are therefore logically doubly challenged. These circumstances gain relevance with the coronavirus pandemic. However, the impact of the pandemic on apprentices’ worries and life satisfaction is still poorly researched. Furthermore, there is the additional question of the extent to which there are gender differences. The aim of this paper is to provide a topical overview of which factors and mechanisms affect apprentices’ satisfaction and worries during the pandemic. Based on the research question "To what extent do the satisfaction and worries in different life domains of apprentices change during the pandemic in Southern Germany?", the data of the current research project EStarA (Erfolgreicher Start in die Ausbildung – Successful Start in Apprenticeships) of the University of Applied Labour Studies in Mannheim are being analysed. The data are based on the first survey and the content is based on the period of the first school closures in Germany. Firstly, the theoretical foundations of satisfaction research and coping with crisis situations are explained as well as the current state of research is outlined and the link to the special situation of the coronavirus pandemic is established. We also discuss the specifics of
interviewing adolescents and how these are implemented. Subsequently, three general hypotheses are derived from this. Based on these hypotheses, selected descriptive statistics of quantitative elements and central statements of the qualitative elements are summarised. At the end, the results of the evaluations as well as the ensuing peculiarities and difficulties of this analysis are discussed.

2. Theoretical frame

2.1. Bottom-Up vs. Top-Down theories and the set point

Life satisfaction is a part of subjective well-being and corresponds to an individual assessment for evaluating one’s life situation (Pavot & Diener, 2008). There are two central theoretical approaches to explaining general life satisfaction. Top-down theories rely on personality traits and genetic factors to explain life satisfaction (Diener et al., 1999). On the other hand, the logic of the bottom-up approach is based on the computed satisfaction in different areas of the individual’s life and represents an overall average assessment of his/her situation (Headey and Michalos, 2014). In the long-term, an individual’s satisfaction level is considered stable which is then referred to as the set point (Diener & Ryan, 2009). Individuals differ fundamentally in the long-term expression of the set point. In addition to personality traits, long-term factors include material factors such as wealth, income, employment situation as well as social factors such as marital status and one’s position in society (Tichy, 2011).

2.1.1. The effect of employment

Easterlin (2001) observes with regard to income that individuals with a higher income are more satisfied at a certain point in time, which is attributed to desires to be fulfilled and a better position in terms of satisfaction level made possible by this. Thus, increasing income over the life course as well as a marginal increase in desires lead to a stable level of life satisfaction that differs among individuals (Easterlin, 2001).

2.1.2. Social contacts: adaption and the buffering effect

In the short-term, life satisfaction depends on situational factors and changes. Positive events increase satisfaction; negative associations decrease it. If the individual’s life situation changes, a process of adaptation occurs. The confrontation and adaptation to a situation caused by critical life events such as those caused by the current coronavirus pandemic are in turn dependent on personal coping strategies and resources such as material compensations or social factors such as psychological support (Diener & Ryan, 2009; Kuhn & Brülé, 2019) which act as a protective factor (buffering effect) in the situation and reduce the negative effect on life satisfaction. Argyle (2013) highlights the importance of social relationships for life satisfaction as the most important factor. These are substantially dependent on personality traits such as extraversion and have an effect on satisfaction via positive perceptions. Close social contacts in particular have a positive effect on life satisfaction (Diener & Oishi, 2005). However, Kuhn and Brülé (2019) emphasise the independence of the coping resource. If the coping resource itself is associated with a negative association, this could lead to an amplification of the effect on life satisfaction. Accordingly, due to the higher risk of social isolation which arises, for example, from poverty (Colberg-Schrader et al., 2008; Eckhard, 2017) as well as a lack of financial opportunities for compensation (Kuhn & Brülé, 2019), negative effects of critical life events are amplified among financially disadvantaged individuals. Against the backdrop of the pandemic and the severe economic impact in combination with social contact restrictions, this mechanism in particular acquires great relevance. In addition, other contextual effects such as the social environment must be taken into account. The fear of unemployment, for example, is less negatively associated by individuals in whose environment high unemployment prevails (Tichy, 2011).

3. Current state of research

3.1. Satisfaction

In a comparative analysis based on 27 European countries, Kohler and Böhne (2007) show that people in higher income groups are more satisfied. What is surprising is that people in richer countries are more satisfied than those in poorer countries, irrespective of their income (Kohler & Böhne, 2007). Above all, the overall economic impact of the pandemic is relevant as regards this aspect. In another European analysis, the income effect for Germany is shown to be particularly strong (Noll & Weick, 2010), underscoring the importance of material resources for life satisfaction. Further research also identifies that a descent into poverty leads to a decline in well-being and social participation which only allows for a slow adaptation. In this context, income losses reduce life satisfaction more than income gains increase it (Böhne, 2009; D’Ambrosio et al., 2020) especially when these are unexpected (Ekici & Koydemir, 2016). Such an unexpected drastic change was likely to occur in the first wave of the pandemic. Keuschnigg and Wolbring (2012) add that lower educational attainment not only reduces life satisfaction but also negatively affects the long-term stability of satisfaction. Occupational factors such as role conflict (Pusch & Rehm, 2017) and job security (Berth et al., 2005; Hangelberger, 2011; Hummelshain, 2015; van Suntum et al., 2010) can empirically be proven as further determinants. It has also been shown that working from home is associated with a higher level of work-family conflict (Abendroth et al., 2018).

In addition, a close correlation can be observed between satisfaction in individual areas of life such as health, work and leisure (Lesch et al., 2011) and the housing situation (Heidl et al., 2012). In this regard, previous studies show that individual factors such as cultural participation (Reuband, 2013) as well as support from family (Kohl et al., 2012) and friends (Kohler & Böhne, 2007) have a protective effect especially in women and individuals with a lower educational levels (Becchetti et al., 2008) which confirms the adaptation theory and the protective effect through social support. In addition, there is evidence that lack of contacts can in part be compensated by higher income (Powlthavey, 2008), underscoring the interdependence of these two factors. With the pandemic affecting both factors, this is particularly important because not all individuals have the opportunity to compensate.

3.2. Effects of the coronavirus pandemic

Especially in crisis situations such as the current pandemic, differences between social groups become apparent. The initial findings of the Mannheim Corona Study and the Corona Survey of the WZB (Wissenschaftszentrum Berlin für Sozialforschung – Berlin Social Science Center) indicate that people with low income are particularly affected by short-time work and job losses and that people with a lower educational attainment are less likely to be given the opportunity to continue working from home (Bünning et al., 2020; Möhring et al., 2020). Limited childcare options also create role conflicts (Bünning et al., 2020; Kohlrausch & Zucco, 2020) especially for women who are also more likely to work from home (Frodermann et al., 2020; Reichelt et al., 2021). These findings also support the assumptions of adaptation theory in that social disadvantage creates relevant coping disadvantages through lack of resources or higher levels of stress. Some studies show a reduction in life satisfaction since the onset of the coronavirus pandemic which has been particularly pronounced among women (Ahleim et al., 2020), families with young children (Huebener & Wittenberg, 2020) and adolescents (Bair & Kamenowski, 2020).

Bünning and colleagues (2020) use a German dataset from the Berlin Social Science Center to examine the impact of the pandemic on employment. While men and women did not differ significantly in terms of job satisfaction before the pandemic, women are more dissatisfied...
with work than men during the pandemic. Individuals who work less than they did before the pandemic or have to work more from home, report the greatest reduction in satisfaction. Employed individuals are also more satisfied during the pandemic if they feel supported by their employer. Apprentices are generally less likely to have the opportunity to work from home than university students. In addition, the authors report that not only did satisfaction change but so did concerns, too. Concerns about the financial situation and job loss due to the pandemic were on the rise. If no gender differences were observed before the pandemic, during the pandemic women were more concerned than men regarding both aspects. Apprentices and persons with completed vocational training reported more financial worries than university graduates even before the pandemic. For both groups, worries increased during the pandemic though worries about job loss were not any higher for apprentices than for university graduates.

With respect to subjective well-being, there is an effect on satisfaction which is reduced by the changes and a rise in negative associations due to increasing worries.

### 3.3. Satisfaction among apprentices

There are also specific mechanisms for adolescents. A study by Jovanović (2019) identifies that the impact of negative associations on life satisfaction is not mediated by personality traits and is thus highly context-dependent and influenced by cultural characteristics. Apprentices are at the beginning of their working lives in transition to the labour market. A study from Australia shows that education affects the life satisfaction of adolescents. Graduates with higher levels of education are more satisfied with their assessment of their future, with career and education and with the transition from school to work (Dockery, 2010). Regarding the twofold context in the dual education system in Germany, apprentices show a particularly complex context structure in terms of education satisfaction. To this end, a study by Volodina and colleagues (2019) analyses data from 2,477 individuals in their first year of apprenticeship in Germany. For the analysis, the general Life Satisfaction, the Basic Psychological Need Satisfaction, consisting of Autonomy Satisfaction, Competence Satisfaction and Social Relatedness Satisfaction, as well as the VET Satisfaction are specified and examined separately. Factor analyses show differences between psychological need satisfaction in the three subareas between the company and the vocational school and thus confirm context effects in apprenticeships. The results of a regression analysis also show that better cognitive skills increase satisfaction with vocational training. Satisfaction also differs across occupational groups. Industrial electronics technicians and laboratory assistants are more satisfied than industrial clerks. Another very interesting result is that the need for social inclusion is the strongest predictor of apprenticeship satisfaction. The effect is even stronger than the need for competence on the job (Volodina et al., 2019). In particular, the effects of social inclusion and perceived competence in the workplace are especially relevant during the pandemic. Contact restrictions and short-time work can be expected to reduce both factors.

### 3.4. Peculiarities of surveying adolescents

When planning an interview with adolescents, special requirements must be considered in order to generate successful data collection. Surveys in a household context are negatively affected by the presence of parents (Oberwittler & Naplava, 2002) while the school context leads to biases due to a perceived testing situation and social desirability (Nachtsheim et al., 2019; Simonson et al., 2009). Adolescents who frequently use mobile internet in their free time are more likely to participate in online surveys (Heim et al., 2016). Moreover, online surveys offer high methodological flexibility (Maurer et al., 2009). In addition, adolescents’ concentration span in surveys is low and requires easy language and features with personal experience (Nachtsheim et al., 2019). Furthermore, visual presentation influences response behaviour (Christian & Dillman, 2004), and multimedia elements supporting question content improve data quality among adolescents (Mavletova, 2015). In particular, when mapping rating scales, symbols are most suitable to represent positive and negative dimensions (Stange et al., 2018; Toepoel et al., 2019).

### 4. Deduction of the hypotheses

From previous results of the research literature, it is formed that negatively associated events reduce satisfaction leading to an adaptation to a new situation. The coronavirus pandemic represents such a negative event and leads to difficulties both from an economic and professional perspective as well as from a social point of view. Social contacts which represent an important coping resource (Diener & Ryan, 2009; Kuhn & Brüel, 2019) are limited. In order to investigate the effects on apprentices who are under particular stress, the following hypotheses have been formulated and empirically tested:

**Hypothesis 1.** Satisfaction with life in general, with social contacts and with work is lower during the coronavirus pandemic than before.

**Hypothesis 2.** Worries about financial situation, job loss and one’s health are greater during the coronavirus pandemic than before.

**Hypothesis 3.** The differences in satisfaction and worries are stronger for women than for men.

### 5. Data and methods

#### 5.1. Data

The data used for the present analysis are collected as primary data in the EStarA project at the University of Applied Labour Studies in Germany. This enables the study design to be specifically geared to the target group.

In order to take into account the challenges explained when surveying adolescents, the survey is conducted in cooperation with the professional chambers. The apprentices answer the questionnaire as a computer-assisted self-interview (CASE) during supervision time on-site. The online questionnaire had been optimised for processing on a smartphone, formulated in easy-to-use language, and the scales were supported by visual elements that depicted the gradation of the answers. Appendix A shows the original German scale used, including the visual representation and an English translation. The survey period was between the first and second waves of the coronavirus pandemic from October to December 2020.

The sample included 167 adolescents from Southern Germany, assisted by the Chambers of Handicraft and Commerce and Industry. Due to the selectivity of the sample, the gender and age distribution differ from the basic population of apprentices. They were between 16 and 35 years of age. The average age in the sample is 19.74 with a standard deviation of 3.076 years, indicating a high age range. The distribution is also highly right skewed (2.043). The kurtosis takes a value of 6.634, indicating a high concentration of cases in the lower part of the age range (see histogram in Appendix B), which is why no age-specific evaluations can be given. The respondents are primarily apprentices in male-dominated occupational groups, such as handicraft and manufacturing sector, resulting in a low proportion of women with 17.2%.

The questionnaire contained a quantitative part with closed questions as well as a qualitative part with the possibility to add free comments to selected closed questions. This intended to gather important aspects from the adolescents’ point of view that had not been taken into account when the questionnaire was created. Open-ended questions were used sparingly and answering was optional. The free comments were expected to provide further insights that were not reflected in the closed questions and that could possibly be used in subsequent surveys.
In addition, open-ended questions allowed for self-formulated assessments that better reflect subjective views (Kuckartz et al., 2009). The inclusion of quantitative and qualitative parts in the survey allowed for a deeper understanding and a higher explanatory power because one can examine the matter in greater detail and discover new dimensions (Gläser-Zikuda et al., 2011).

5.2. Conceptual specification and operationalisation

In order to examine satisfaction and concerns and change in the pandemic, a ten-point rating scale was used based on a survey conducted by the WZB (Bünning et al., 2020). Respondents indicated how satisfied they were with life in general (work, social contacts) (1 = very dissatisfied, 10 = very satisfied) and then rated how satisfied they were before the pandemic (1 = no worries, 10 = great worries). The scale was identical for concerns about their financial situation, job loss and health.

Gender was represented by the three categories male, female and diverse. Since only three participants assigned themselves to the diverse category, this category was removed for gender-specific analyses.

5.3. Method

Descriptive statistical methods were used to evaluate the quantitative component of the survey. SPSS Statistics was used. In addition, graphs were created and significance tests for subgroup analyses were conducted to highlight gender differences. Furthermore, Cohen’s d effect size measure was reported (Cohen, 2013). The free comments were analysed and categorised using MAXQDA. On one hand, the categories are based on the open-ended questions to which the comments refer. On the other hand, the categories are formed inductively from the comments, i.e. above all the subcodes to the respective questions were oriented to the open answers. A total of 255 free comments were gathered of which 172 were coded as useable answers with 179 codings. The open-ended questions to which the comments refer. On the other hand, the categories are formed inductively from the comments, i.e. above all the subcodes to the respective questions were oriented to the open answers.

Table 1 shows relevant descriptive statistics of the variables for women’s and men’s satisfaction as well as the significance and effect size (Cohen’s d) of the mean difference in satisfaction before and during the coronavirus pandemic. In terms of Cohen (Cohen, 2013), an effect of 0.2 or greater is considered small, 0.5 or greater is considered medium and 0.8 or greater is considered large. Table 1 shows relevant descriptive statistics of the variables for women’s and men’s satisfaction as well as the significance and effect size (Cohen’s d) of the mean difference in satisfaction before and during the coronavirus pandemic. In terms of Cohen (Cohen, 2013), an effect of 0.2 or greater is considered small, 0.5 or greater is considered medium and 0.8 or greater is considered large. Table 2 reports the sex difference with significance test and effect size measure of these changes. Boxplots are shown in Fig. 1. Here, the cross within the box represents the mean, and the horizontal bar represents the median, the value reached by at least half of the individuals. The box itself provides information on how the assessments are distributed across the scale. They are delimited by the first quartile, the value given by at least 25% of the respondents, and the third quartile, the value reached by at least 75%. Longer boxes show higher heterogeneity. The whiskers basically represent the minimum and maximum values given by the respondents. If there are outliers, the whiskers show the usual values outside the quartile limits and the outliers are marked by dots.

In terms of job satisfaction, women were more satisfied than men before the pandemic. During the pandemic, satisfaction decreased for both genders but levels off at the decrease was greater for women. Men rated their job satisfaction at an average of 6.44 scale points during the pandemic and 6.97 before the pandemic. This mean difference is significant (p = 0.09/0.07) and Cohen’s d indicates a small effect with a value of 0.25. For women, it is 6.73 scale points during the pandemic (7.38 before). This difference is also significant, and Cohen’s d indicates a small effect here as well. Using skewness, it showed that there was a significant change in the distribution of apprentices across the scale. The distribution before the pandemic is highly left-skewed (men 0.87 and women 0.88), with only a few individuals dissatisfied and the majority classifying themselves in the upper range of the scale. During the pandemic, the left skewness decreased, meaning that more individuals were in the lower ranges and were dissatisfied. The change in the distribution was stronger for men as regards job satisfaction. This implies that based on the mean the change is not clearly visible for men but that the distribution has restructured significantly. In Fig. 1, this can also be clearly seen by the fact that the job satisfaction box has shifted downward for men. The graph also shows that the distribution of men has become slightly more homogeneous. For women, in addition to the downward shift, an increase in heterogeneity can also be seen. However, Table 2 indicates that there are no significant gender differences in job satisfaction in the wake of the coronavirus pandemic. A different pattern emerged for social contacts. Before and during the pandemic, men were on average more satisfied with their social contacts (8.00 and 6.71) than women (7.77 and 5.96), and the reduction due to the pandemic is

### Table 1

|                | median | mean  | SD   | skew | pΔ* | Cohen’s d |
|----------------|--------|-------|------|------|-----|-----------|
| **Work**       |        |       |      |      |     |           |
| male           | current| 7.00  | 6.44 | 2.61 | -0.65 | 0.09   |
|                | before | 7.00  | 6.97 | 2.62 | -0.87 | 0.07   |
| female         | current| 7.00  | 6.73 | 2.22 | -0.75 | 0.07/0.37 |
|                | before | 8.00  | 7.38 | 2.26 | -0.88 | 0.07   |
| **Contacts**   |        |       |      |      |     |           |
| male           | current| 7.00  | 6.71 | 2.70 | -0.65 | 0.00   |
|                | before | 9.00  | 8.00 | 2.21 | -1.33 | 0.00   |
| female         | current| 6.50  | 5.96 | 2.66 | -0.47 | 0.00   |
|                | before | 8.50  | 7.77 | 2.22 | -0.98 | 0.00   |
| **Life**       |        |       |      |      |     |           |
| male           | current| 7.00  | 6.72 | 2.47 | -0.58 | 0.00   |
|                | before | 8.00  | 7.39 | 2.57 | -1.07 | 0.00   |
| female         | current| 7.00  | 6.42 | 2.27 | -0.53 | 0.00   |
|                | before | 9.00  | 7.85 | 2.24 | -1.11 | 0.00   |

* pΔ shows the significance of a two-tailed t-test with dependent sample.

### Table 2

|                | Mean  | SD   | pΔ* | Cohen’s d** |
|----------------|-------|------|-----|-------------|
| **Work**       |       |      |     |             |
| male           | -0.49 | 1.97 | 0.70 | 0.08        |
| female         | -0.65 | 1.77 |     |             |
| **Contacts**   |       |      |     |             |
| male           | -1.28 | 2.65 | 0.36 | 0.20        |
| female         | -1.81 | 2.58 |     |             |
| **Life**       |       |      |     |             |
| male           | -0.68 | 1.68 | 0.04 | 0.45        |
| female         | -1.42 | 1.58 |     |             |

*pΔ shows the significance of a two-tailed t-test with dependent sample.

** the differences in the number of cases according to gender are taken into account.
stronger for women. The comparison of satisfaction with contacts before the pandemic with satisfaction during the pandemic is significant for both men and women. Cohen’s $d$ indicates that there is a medium effect of 0.48 for men and 0.70 for women. This can also clearly be seen graphically by the downward shift of the boxes. As with job satisfaction, the skewness shows that more men and women classify themselves as dissatisfied during the pandemic than before. Before the pandemic, only a few individuals, indicated by the dots for outliers in Fig. 1, were very dissatisfied. During the pandemic, these no longer represent exceptional deviations, which can be attributed to the increase in frequencies at the margin. However, the mean difference in the change in satisfaction with contacts between men and women is not significant, and according to Cohen’s $d$ has a small effect size. Before the pandemic, women were also more satisfied with life in general with an average of 7.85 scale points than men with an average of 7.39. During the pandemic, this advantage reversed. Women were more dissatisfied on average with 6.42 than men with an average of 7.39. During the pandemic, this advantage reversed. Women were more dissatisfied on average with 6.42 than men with 6.72 scale points. The comparison of life satisfaction before the pandemic with satisfaction during the pandemic is significant for both men and women. However, the effect size is larger for women (0.90) than for men (0.40). The change in skewness shows an increase in frequencies in the lower margin, with more men and women dissatisfied with their lives in general during the pandemic than before the pandemic. Higher heterogeneity was also observed for men. As shown in Table 2, the negative trend in satisfaction with life in the wake of the coronavirus pandemic was significantly greater for women than for men. Cohen’s $d$ (0.45) indicates a small effect here.

6.1.2. Worries

Women and men have been more worried about their financial situation since the pandemic. For women, the increase in worry from an average of 4.56–5.79 scale points is slightly greater than for men, from 4.46 to 5.30 scale points; see Table 3. For both men and women, this trend is significant. However, Cohen’s $d$ indicates that the effect is larger for women (0.52) than for men (0.32). Significant changes can be seen based on the skewness of the distribution. Before the pandemic, it was in the right-skewed range, the upper fringes with major worries are indicated only with a low frequency, and this is stronger for women, who worry less. During the pandemic, a slight left skew forms; most individuals are more worried about their financial situation. This can also be seen in Fig. 2. Women then worry to a similar degree as men, but heterogeneity has increased. However, the mean difference in the change in financial worries between men and women is not significant (Table 4) and only has a very small effect size (0.15) according to Cohen’s $d$.

Job loss worries increased from 2.92 to 3.72 scale points on average for men, and these worries increased from 2.88 to 3.60 for women. Both changes are significant, and Cohen’s $d$ indicates a small effect for both men and women (0.35 and 0.43). The distribution is more often in the low worry range at both points in time. Male and female apprentices thus have little concerns about potentially losing their jobs, even during the pandemic. The gender differences in the mean values are small. Graphically, however, there was a shift in the overall box for women, but not for men. During the pandemic, 25% of men also reported not worrying about job loss, but there are individual outliers of male apprentices who are very worried. In contrast, 25% of women score 2 points out of 10. However, Table 4 indicates that there are no significant gender differences regarding concern about job loss during the coronavirus pandemic. Cohen’s $d$ also indicates no effect (0.00).

Worries about one’s own health increased significantly. Before the pandemic, the mean score for men was 4.27 and increased to 5.59 during the pandemic. This difference is significant with an effect size of 0.48. As women gave an average of 4.52 scale points before and 6.36 during the coronavirus pandemic, they were already more concerned about their health before, and the gender difference increases during the pandemic. This trend is also significant and shows a moderately strong effect with a Cohen’s $d$ of 0.70. This can also be seen on the graph. While the box of men before the pandemic started at a value of 1, the first quartile of women already reached worries on a scale value of 2. During the pandemic, 75% of men indicated maximum health worries of 8, the value of women being clearly higher with 9. However, these gender differences were not significant here either, and Cohen’s $d$ with a value

![Boxplot satisfaction.](image_url)

**Fig. 1.** Boxplot satisfaction.

**Table 3**

|          | Median | Mean  | SD    | Skew | $\Delta^*$ | Cohen’s $d$ |
|----------|--------|-------|-------|------|------------|-------------|
| Finance  |        |       |       |      |            |             |
| male     | current| 5.00  | 5.30  | 3.07 | $-0.01$    | 0.00        |
|          | before | 4.00  | 4.46  | 2.94 | 0.40       | 0.40        |
| female   | current| 6.00  | 5.76  | 2.88 | $-0.01$    | 0.02        |
|          | before | 4.00  | 4.56  | 2.65 | 0.76       | 0.52        |
| Job loss |        |       |       |      |            |             |
| male     | current| 3.00  | 3.76  | 3.08 | 0.84       | 0.00        |
|          | before | 1.00  | 2.92  | 2.78 | 1.36       | 0.35        |
| female   | current| 3.00  | 3.60  | 2.42 | 1.03       | 0.04        |
|          | before | 2.00  | 2.88  | 2.65 | 1.42       | 0.03        |
| Health   |        |       |       |      |            |             |
| male     | current| 6.00  | 5.59  | 2.95 | $-0.04$    | 0.00        |
|          | before | 3.00  | 4.27  | 3.04 | 0.51       | 0.48        |
| female   | current| 6.00  | 6.36  | 2.50 | 0.06       | 0.00        |
|          | before | 5.00  | 4.52  | 2.86 | 0.33       | 0.70        |

*$\Delta^*$ shows the significance of a two-tailed $t$-test with dependent sample.
of 0.16 shows a very small effect only.

6.2. Qualitative results

The qualitative responses complement and underline the quantitative results. In some cases, these are new aspects that were not addressed in the quantitative questions. In some cases, however, comments were given that had previously been answered in the closed questions. This suggests that certain aspects are particularly important to the adolescents, which is why they are addressed again in the comments.

The open questions relevant to this article are presented below with the summarised answers.

6.2.1. Are there currently any other areas of your life important to you that have changed as a result of the corona pandemic?

With regard to this question, the focus of the open comments was on private life in particular. Here, it becomes clear how the lockdown negatively affects social contacts with family and friends, the partnership, the pursuit of hobbies and sports and the mental health. The restricted contact with close family and friends is explicitly mentioned by several adolescents. In two cases, problems in the partnership were reported. In addition, three adolescents reported having suffered from depression since the beginning of the pandemic. Consequently, these comments underline the quantitative results described earlier and particularly highlight the deterioration of the adolescents’ mental state due to contact restrictions.

6.2.2. Is there any other change since the coronavirus pandemic in your professional life that you would like to share?

When it comes to changes in the professional environment, the compulsory wearing of masks both in the company and at vocational school and the associated restrictions were very frequently mentioned. Short-time work in the company and changes in working hours also caused difficulties in the training process with, for example, no contact persons being available for the adolescents in the company.

Furthermore, some adolescents complained that they were not released from work for vocational school days during school closures. In one case, remedial classes were deemed unnecessary by the company and the apprentice was not allowed to attend.

Overall, the apprentices felt overwhelmed with self-organised learning and being left on their own by their teachers. As the adolescents have to learn most of the learning content by themselves and find it difficult to learn independently, the lack of understanding on the part of the company for the needs of their apprentices placed an additional burden on the young people. As a result, academic performance suffered, and the adolescents expressed concern about successfully finishing their apprenticeships.

6.2.3. Are there other goals in your life that are important to you which are not included in the selection and which you would like to share with us?

In this question, the answers are distributed among the areas of health, private life and work. With regard to the goal of staying healthy, the statements relate both to the individual and to the family. Material wishes such as buying a car or a home are expressed. Life planning primarily includes the desire for a family of one’s own and for a happy life. This clearly shows the connection between life satisfaction and life goals on one hand in material terms and on the other hand in family or social terms. Both financial aspects and social contacts play an essential role in the apprentices’ future life planning.

In the vocational field, the adolescents showed a strong interest in further training to become technicians, business economists or master craftsmen. In addition, some aspired to become self-employed at a later date. The desire to become self-employed was expressed exclusively by apprentices in skilled trades, where taking over or setting up their own business is the norm. This is associated with higher income prospects and the goal of being one’s own boss.

7. Discussion and conclusions

In summary, the analyses in this paper show that satisfaction with life in general, social contacts and work decreased significantly
The open-ended comments that were voluntarily provided. Since the motivation among survey participants to add their own answers varied greatly, these do not represent all views and do not allow for any generalisations to be made. These comments are rather an extension of the quantitative responses and thus have a hypothesis-generating rather than a hypothesis-testing character and serve primarily as a basis for subsequent surveys. A further problem arises from the fact that additional relevant information on the social environment was not available which nevertheless plays an important role in the perception of change because, for example, the threat of losing one’s job loss is perceived as less serious if it occurs more frequently in the individual’s social environment (Tichy, 2011).

In order to ensure successful vocational training and consequently a good start to a working career, the effects of the pandemic on the situation of apprentices must be studied more and reflected on in detail in order to create urgently needed support services that ensure the continuation of the training relationship. Earlier studies show effects by income and employment situation, social factors, cultural characteristics and an individual’s position in society (Tichy, 2011), cultural characteristics (Jovanovic, 2019) and occupational groups (Volodina et al., 2019). This was not possible with the data used as more complex methodological procedures would have been necessary which were not possible due to the small number of cases. In addition, age differences can be accounted for by a higher number of cases, since it can be assumed that satisfaction as well as concerns differ between age groups.

To address the concerns of apprentices, both vocational schools and training companies must provide better guidance and support for apprentices at the beginning of their professional careers. For a more in-depth analyses in the particularly relevant topic areas a second survey is currently ongoing. This is based partly on some of the apprentices’ open comments. Derived from these open comments, the following questions are particularly interesting. To what extent do apprentices experience a double burden due to the dual structure of their apprenticeship with vocational school and training company? To what extent are the apprentices supported by their training company during the coronavirus pandemic? Are the apprentices supported in their learning progress? Are learning spaces and technical equipment made available by the company?

In addition, the differences between the first and second school closures are the focus of the follow-up survey. For example, the following questions will be examined: How has the apprentices’ perception of worries changed? Do apprentices have better technical equipment? Has the situation at the vocational schools been improved?

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**CRediT authorship contribution statement**

Melanie Hochmuth: Conceptualization. Alina Nadine Gellser: Methodology, Validation, Formal analysis, Resources, Investigation, Writing – original draft, preparation, Writing – review & editing. Silke Seyffer: Methodology, Validation, Formal analysis, Resources, Writing – original draft, preparation, Investigation, Writing – review & editing. Andreas Frey: Writing – review & editing.
Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A

Current Satisfaction
Please select whether you are very dissatisfied or very satisfied according to different life domains. With the answer options in between, you can grade your answer.

How satisfied are you currently with the following areas of your life?

- Work
- Quality of social contacts
- Life in general

Satisfaction before the pandemic

How satisfied were you before the beginning of the coronavirus pandemic with the following areas of your life?

- Work
- Quality of social contacts
- Life in general

Current Worries
Please select whether you are not worried or very worried according to different life domains. With the answer options in between, you can grade your answer.

To what extent are you currently concerned according to different life domains?

- Finance
- Job loss
- Health

Worries before the pandemic

To what extent were you before the pandemic concerned according to different life domains?

- Finance
- Job loss
- Health
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