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**To cite this article:** László Lippai, Dóra Katalin Szabó-Prievara, Viola Osváth & Klára Tarkó (2024) Mental Health Status Questionnaire based on parental observations – A new diagnostic tool in the educational setting, Cogent Education, 11:1, 2373518, DOI: [10.1080/2331186X.2024.2373518](https://doi.org/10.1080/2331186X.2024.2373518)

**To link to this article:** <https://doi.org/10.1080/2331186X.2024.2373518>



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Published online: 10 Jul 2024.



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# Mental Health Status Questionnaire based on parental observations – A new diagnostic tool in the educational setting

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## ABSTRACT

The validation process of a gap-filling diagnostic tool that allows educators to monitor children's mental health status by processing parental observations is presented. This quantitative pilot study, conducted on a Hungarian convenience sample, highlighted that the results obtained with the Mental Health Status Questionnaire - parental version are consistent with the results of parent surveys measuring other aspects of children's psychological quality of life, e.g. subjective well-being, peer support or risk of internet addiction. Analyses along the categories of mentally healthy, vulnerable, and endangered calculated from the questionnaire items also revealed significant differences along the above indicators of psychological quality of life, so the measure may also have a screening function. It also provides an informative categorisation of the risk of so-called internalising problems, which are important in childhood and adolescence but tend to be more hidden. However, parental observations should be treated with caution, especially for children in dysfunctional families, so the questionnaire should be used as part of a sufficiently broad pedagogical methodological toolkit, compared to the results of other methods of collecting pedagogical information and working in close collaboration with mental health professionals.

## ARTICLE HISTORY

Received 27 August 2023  
Revised 5 January 2024  
Accepted 24 June 2024

## KEYWORDS

Adolescent; mental health; diagnostic tool; parental observations

## REVIEWING EDITOR

Richard Kruk, University of Manitoba, Canada

## SUBJECTS

Mental Health; Health Promotion; Education – Social Sciences; Mental Health; Health Education and Promotion; Health & Society

## 1. Introduction



### 1.1. Study background: a holistic health approach to mental health promotion

There is a growing social demand for the public education system and its educators to address not only academic achievement but also the health of children and young people in kindergartens, schools, and dormitories (World Health Organisation [WHO], 2021a).

The concept of holistic health goes well beyond the physical aspect (WHO 2021b). In the interpretations of health that underpin school health promotion (Antonovsky, 1980; Hurrelmann & Razum 2016), health is a process that describes not only the individual's objective and subjective state of well-being but also the degree to which the physical, cognitive, emotional, social, societal and spiritual aspects of the person's current life situation are in harmony with their opportunities, goals and external life circumstances (Eriksson and Lindström 2008; Scriven et al., 2010; Vilacça et al. 2020).

This understanding of health underlies the World Health Organization's (WHO) health promotion initiative, which is '... the process of enabling people to increase their control over and improve their health' (WHO 1986, p. 1; WHO 2021b).

School health promotion includes, but goes beyond, health education. School health education is the transfer of individual competencies (knowledge, attitudes, skills) necessary for a healthy lifestyle through educational means. However, in addition to this socially important educational task, the role of the

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public educational institution (kindergarten, school, or dormitory) in becoming a healthy setting is increasingly emphasised (WHO 2021a). Ultimately, it can be argued that all schools should become health-promoting schools and that their day-to-day operations should be characterised by the continuous improvement of health opportunities, adapting to changing circumstances (WHO 2021a; Vilaça et al. 2020).

Mental health promotion is a specific health promotion intervention (cf. WHO 2023) that aims to develop mental health, understood as the integration of the cognitive, emotional, and spiritual aspects of an individual's health. Mental health is therefore an inherent part of holistic health, which means that all health promotion activities have a positive impact on mental health. However, the individual and societal importance of mental health – ill health – also justifies grouping health promotion activities that are central to mental health under the umbrella of mental health promotion. Accordingly, the methodology of mental health promotion encompasses the full spectrum of the health promotion toolkit (WHO 2023), i.e. the mental health-focused application of methods appropriate for improving the physical, cognitive, emotional, social, societal and spiritual aspects of health. Mental health promotion also includes risk-factor oriented prevention of mental disorders, but its main task is the salutogenic development of individual/group/organisational/community/societal habits, lifestyle elements and characteristics related to the school community as a setting, with a view to improving opportunities for mental health (cf. WHO 2023; Lippai & Erdei, 2014).

## 1.2. Problem statement

There is a growing professional consensus among mental health practitioners that for such a large number of children and young people affected in the public education system, therapy-based interventions alone are not sufficient, and that population-level promotion of mental health and well-being is essential (WHO 2021a; Clarke et al., 2021; Singh et al., 2022).

The public education setting is well suited to this task for a number of reasons. First, in developed countries, a large proportion of adolescents attend kindergarten and school, so mental health programmes can be made accessible to them. Secondly, teachers can monitor young people's emotional, mood and behavioural characteristics over time and intervene early if they detect negative changes (WHO 2021a; WHO 2023).

A key role in the development of mental health is also played by comprehensive, mainly teacher-led, school-based interventions to improve young people's mental health and well-being, which are implemented throughout the year and across the curriculum and are thus pervasive throughout the public education system (cf. Whole school approach). Good examples are school-based programmes to promote social and emotional learning (SEL), the effectiveness of which has been demonstrated by a number of methodologically sound studies (see Clarke et al., 2021; WHO 2023). It is important to emphasise that, similar to holistic health promotion, mental health promotion in schools is most effective when it has become part of the daily work of teachers. However, this required in-depth training, supervision and professional support for the teachers involved in each intervention (Vilaça et al., 2020; WHO 2021a).

This complex task for teachers can be greatly facilitated if they can draw not only on their own observations of children and young people's mental health, but also on information from children (e.g. self-monitoring or metacognitive teaching methods) and their parents (Ellis et al., 2014; Mitsea & Drigas, 2019).

## 1.3. Research objective

The aim of our study is to develop an adapted version of the Mental Health Status Questionnaire (MHSQ) (Lippai & Erdei, 2014), developed and validated for the adult population, to be used as a screening-type measure of mental health status in children and adolescents.

The Mental Health Status Questionnaire (Lippai & Erdei, 2014) aims to assess physical and mental symptoms associated with difficulties in coping with stressful life situations. The absence or presence, to a greater or lesser extent, of symptoms of coping difficulties allows the person's mental state to be described by one of the categories 'mentally healthy', 'vulnerable' and 'endangered'. This is an indicative

categorisation for screening purposes and is not suitable for psychiatric or clinical psychological diagnosis.

Our study focuses on a novel potential application of the MHSQ. Essentially, we focus on parents and aim to present a measurement tool for educators and mental health professionals that, by incorporating parental observations, can be used to inform educational decisions related to children's mental health at the individual, classroom, or school level.

First, we analyse the adaptability of the instrument, which has already been validated on a representative Hungarian sample of adults (cf. Lippai & Erdei, 2014), to assess the mental health of children and adolescents aged 3–18 years. Our analyses have shown that if we are thinking about a measurement instrument that can be used uniformly across the whole spectrum of public education, i.e. for the age group 3–18 years, in the case of the MHSQ it can only be implemented by building on parents and their observations. In order to better exploit the potential of the MHSQ, the advantages and limitations of the parent-observation-based mode of completion were then explored.

Finally, we present the results of our current study using the MHSQ-P (P stands for parent), which was developed according to the above criteria. This is not only to illustrate the descriptive statistical potential of the MHSQ-P instrument. Our results also allow us to begin to validate our instrument using indicator variables that indicate positive and negative aspects of children's and adolescents' psychological quality of life.

## 2. Methodological background

### 2.1. Educators' decisions about pupils' mental health in public education settings

The role of public education organisations in promoting mental health also raises the complex issue of educators' decisions about the borderline between mental health and mental illness. In relation to the mental health of children and young people, the range of decisions that can be made by educators extends from those that directly affect the individual child or pupil to those that affect the curriculum and organisational culture of the public education organisation (cf. Clarke et al., 2021; WHO 2023; Anthony et al., 2023).

The day-to-day work of public education organisations has a significant impact on children's mental health. In other words, the responsibility of public education organisations for children's mental health is integrated into their educational and pedagogical competencies. By consciously developing a mental health promotion strategy in line with its competencies, a public education organisation can make an empirically verifiable contribution to protecting and promoting the mental health of children and adolescents (Clarke et al., 2021; WHO 2023).

On the other hand, for young people with subclinical or clinical symptoms, if we really want to correct the mental or behavioural problems they already have, it cannot be left to educators alone. The systematic involvement of mental health professionals (see Clarke et al., 2021) is essential for effective school-based prevention interventions. In this case, the public education organisation has a 'mental health alarm' function. Educators are faced with the task and responsibility, whether in the form of societal expectations or legal requirements, of early identification of negative mental or behavioural trends in the children and young people they educate (see Singh et al., 2022).

Some of these negative mental or behavioural tendencies have visible signs and symptoms and are therefore easy to identify. Behaviour that causes harm or distress to others (e.g. conduct disorder, aggression, hyperactivity, etc.) is conspicuous and easily identifiable, and there are usually clear professional or legal standards for public education organisations to decide how and to what extent to address these issues within their own remit. In child psychiatry, this group of mental disorders in children and adolescents is classified as externalising disorders (Zahn-Waxler et al., 2000).

In addition to externalising disorders, there are also internalising disorders in children and young people. Internalising disorders include negative emotions and moods such as sadness, guilt, fear, and worry. Internalising disorders in childhood and adolescence include problems related to anxiety, fear, shyness, low self-esteem, sadness, and depression.

These problems often interact and occur simultaneously in children and have become increasingly common in recent years (Kriston & Pikó, 2018; Ollendick & King, 1994).

Studies in recent years have shown that early intervention is necessary for effective treatment of mental disorders (Gilliom & Shaw, 2004; Burt et al., 2016). However, it is also clear that internalising problems in children and young people often go undiagnosed and untreated (Public Health England [PHE], 2016). Given the potential negative outcomes and the opportunity for early intervention, it is crucial to understand the development of internalising problems from a young age and identify them as early as possible (Gutman and Codioli McMaster 2020).

The use of a cognitive model of signal detection is also relevant to teachers' mental health alerting activities. It can be concluded that in the context of internalising mental disorders, 'false alarms' can be as dangerous as 'missing alarms'. In the case of 'false alarms', if the teacher overestimates the importance of certain negative emotions and moods, this can be a source of self-esteem problems that can extend into adulthood or even initiate the start of a 'pathological career'. However, 'missing out' can also be dangerous if the teacher fails to recognise certain negative emotions and moods in time or fails to attach importance to them (see Lynn & Barrett, 2014).

## **2.2. Developing the Mental Health Status Questionnaire – parental version (MHSQ-P)**

For the task of educators outlined in section 2.1, we believe that there are currently insufficient methodological tools available to them. Therefore, in line with the methodological aim of our study, we investigated the possibility of using the MHSQ in schools. The MHSQ scale, published by Lippai and Erdei (2014), was designed to identify 'mentally healthy', 'vulnerable' and 'endangered' mental states. The questionnaire was developed by reviewing previously used lists of symptoms and complaints, i.e. by adapting the Hamilton Anxiety Scale and the Beck Anxiety Inventory (Perczel Forintos, Kiss and Ajtay 2012) and the European Health Interview Survey (EHIS) 2009 (Ádány et al., 2011). The constructable mental health categories of the questionnaire were validated on a representative Hungarian sample at the city level, and statistical measures were completed using a validated research tool covering several aspects of mental health (Lippai & Erdei, 2014). The MHSQ included 15 physical or psychological symptoms and complaints related to mental health. For each complaint, respondents were given a choice of 'never' (0 points), 'rarely' (1 point) and 'often' (2 points) on a three-point scale. Respondents were classified using a simple formula based on the frequency of complaints (see Lippai & Erdei, 2014 for more details).

In practice, the adult version has proven to be extremely useful in surveying the mental health status of local communities and organisations, also from a research and screening perspective (Benkő et al., 2013; Lippai, 2019; Tarkó et al., 2016), so the need to develop a version that could be used for children under 18 was also raised.

The under-18 version is based on the adult version but excludes symptoms and complaints that are not interpretable or relevant in childhood, based on the expertise of the clinical child psychologist in our research team. On the other hand, we chose to use the parent-completion method rather than the self-completion method of the adult version (see Appendix A).

The advantage of the parent questionnaire is that it makes it easier to address differences in children's development of cognitive and self-reflective skills. An additional advantage for use in public education is that parents can observe the child in situations that are not accessible to the teacher. A systematic collection of parents' observations of their children can therefore be used to refine the teacher's observations in school.

A disadvantage of the parent-completion method is that parental observations may also be incomplete or biased. This methodological problem is also present in self-administered measures, but the possibility of parental perceptual bias should be considered more carefully when interpreting the results.

The mental states obtained from scoring the questionnaire should not be considered as psychodiagnostic categories. They are an indication of the extent to which a parent's observation of their child's current coping skills is sufficient to enable their child to function in their current life situation. The instrument is designed to measure psychophysiological responses to a current life situation and is therefore not suitable for assessing children's habitus or enduring personality traits.

Based on parental observations, children who can be characterised as mentally healthy are likely to have coping skills that are adequate to function smoothly in their current life situation. Parental observations suggest that they have few complaints or symptoms [up to 4 rare symptoms or complaints can be identified in their case].

Children whose parental observations indicated a few prominent or many minor but cumulative psychophysiological symptoms were classified as having a vulnerable mental health state. This mental state, which we call vulnerable, indicates that the child may be experiencing persistent adaptive difficulties in some area of their lives (not identified by the MHSQ-P). It justifies a heightened awareness on the part of educators to monitor the child's subjective well-being in the future. However, given the low level of adaptation difficulties, it can also be assumed that by enriching the coping styles of children (and parents) classified as having a vulnerable mental state, and in particular by using pedagogical methods aimed at developing their social and emotional competences (cf. SEL), the mental health chances of these children can be significantly improved (cf. Clarke et al., 2021). [5 or more rare symptoms or 1 common symptom with up to 3 rare symptoms].

Parental observations of children who are currently classified as being endangered indicate psychophysiological symptoms indicating significant coping difficulties. Again, the MHSQ-P does not identify the life situation(s) that cause these reactions. However, they are an indication that the child's subjective well-being and emotional equilibrium may be at risk. It is clear that for a child with such coping difficulties, pedagogical methodological tools alone are unlikely to be sufficient. Psychophysiological symptoms in parents' observations of these children suggest that the involvement of mental health professionals may be relevant from the educator's perspective in order to gain a deeper understanding of the child's (and parents') situation and to determine the necessary interventions. [1 common symptom with more than 4 rare symptoms or more than 2 common symptoms].

### 3. Research design and methods

#### 3.1. Research design

The main aim of our study was to begin to gather research evidence for the analysis of the screening validity of the MHSQ-P instrument. Therefore, when designing our research, we considered using the MHSQ-P as an independent, categorical variable and sought to select indicators that could be used as dependent variables, informative and indicative of positive (i.e. general resistance resource type, cf. Antonovsky, 1980) and negative (i.e. risk factor) aspects of mental health in young people aged 3–18 years. In our current study, we only had the opportunity to interview parents, so we had to think about measurement tools that already existed in a parent version or that could be developed by our research team. After considering the above aspects, it was decided to use the WHO-5 Well-being Index – parent version, the Multidimensional Scale of Perceived Social Support and the Internet Addiction Test for Families (IAT-F) as dependent variables. An overview of the variables used in the research is shown in Figure 1.

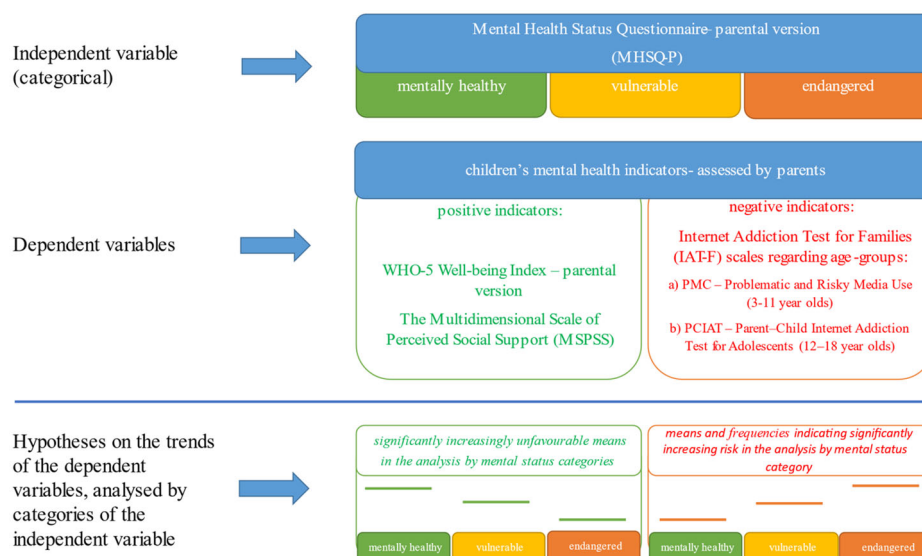
In terms of the research questions, we had two objectives. Our first research question was the descriptive statistical analysis and sociodemographic processing of the data obtained using the independent and dependent variables and measures used in our study.

For our second research question, our theoretical hypothesis was that if the mental health categories of healthy, vulnerable, and endangered, developed by the MHSQ-P, indicate real differences in the mental health of children and adolescents, this would be associated with a trend towards increasingly negative scores for the positive indicators of mental health and an increasing trend towards risk for the negative indicators (see Figure 1). Our second research question aimed to empirically test this theoretical premise, the details of which are presented in section 3.4.

#### 3.2. Research process and sample

The non-representative data collection in 2022 included parents with children aged 3–18. If parents had more than one child of this age, they could complete the questionnaire for each child separately. The





**Figure 1.** Overview of the variables used in the research.

questionnaire was paper and pencil and focused on parents' perceptions of their child's health behaviour. Participation was voluntary and anonymous. The research was approved by the ethics committee of the Doctoral School of Education of the university where the authors work. The ethical approval number is 3/2022. Participants gave informed consent to the researchers to use their responses for research purposes and to publish statistical aggregates of the sample.

A total of 225 parents living in Hungary participated in the study and validly completed the questionnaires for 117 girls (52%) and 108 boys (48%). A total of 50.7% of the children were aged 3–11 years ( $n = 114$ ) and 49.3% were aged 12–18 years ( $n = 111$ ).

Of the parents who described their children, 73.8% were female ( $n = 166$ ) and 25.8% were male ( $n = 58$ ), with missing information for 1 person. The mean age of the responding parents was 42.52 years, with a standard deviation of 6.25 years.

Most of the parents who responded were married (71.1%,  $n = 160$ ), but there were also a significant number who were in a partnership (13.8%,  $n = 31$ ) or divorced (12.9%,  $n = 29$ ). One or two people lived alone or were widowed.

Half of the responding parents in our sample had one minor child living in their household (52.9%,  $n = 119$ ) and one third had two minor children (34.2%,  $n = 77$ ). In our sample, the proportion of parents with 3 or more minor children living in the same household was around one tenth (9.3%,  $n = 21$ ). The proportion of parents who did not live in the same household as the child described was not significant (3.6%,  $n = 8$ ).

Half of the respondents lived in what would be considered a metropolitan area in Hungarian terms ( $n = 122$ , 54.2%), a third in a small town ( $n = 78$ , 34.7%) and a tenth in a township ( $n = 24$ , 10.7%). Almost half of the respondents rated their financial situation as very good (8.4%,  $n = 19$ ) or good (40%,  $n = 90$ ), 44.4% ( $n = 100$ ) reported a satisfactory financial situation, 5.3% ( $n = 12$ ) rated their financial situation as poor and 1 person rated their financial situation as very poor.

When analysing our sample according to the educational attainment of the parents of the children assessed, one third of the children (33.3%,  $n = 75$ ) had both parents with tertiary education. A fifth of them had both parents with secondary education (19%,  $n = 42$ ) and 11.3% ( $n = 25$ ) of the children had a mother with tertiary education and a father with secondary education. For 20 children (9%), the father had a vocational education, and the mother had an (academic) secondary education. For the remaining quarter of the sample (27.4%), the educational attainment of the parents was spread across the remaining combinations, with a relatively small number of cases per combination for the total sample.

### 3.3. Methods

#### 3.3.1. Mental Health Status Questionnaire – parental version (MHSQ-P)

In our research we used the MHSQ-P measurement tool, which was created as a result of the development process described in [section 2.2](#).

#### 3.3.2. WHO-5 Well-being Index – parental version

The World Health Organisation's Well-being Index (WHO-5) is a brief measure used as a one-dimensional indicator of subjective mental well-being. It is most commonly used in the population over the age of 9, mainly for screening depression in the general population, in a self-report version. For a measure that is available in several versions based on the number of items tested, our team used the shortest 5-item index (cf. [Bech et al., 1996](#); [WHO 1998](#); [Topp et al., 2015](#)).

The original version of the test measures on a 6-point Likert scale, but when adapted to Hungarian this scale was reduced to 4 points (0 = not at all characteristic, 1 = slightly characteristic, 2 = characteristic, 3 = completely characteristic). For the sake of comparability with representative Hungarian data, we have also adopted this version (cf. [Susánszky et al., 2006](#)). There are no reverse-scoring items, so the total score is the sum of the item scores. Higher scores indicate higher subjective well-being, and the range of the total score is [0, 15].

We are not aware of any previous research using the WHO-5 scale in a parent-completed version. However, the criteria used in the scale were also considered suitable for the standardised collection of parental observations, so the original instrument was adapted for this type of survey (see [Appendix B](#)). However, one of the limitations of our method is that parental observations may be incomplete or biased.

#### 3.3.3. The Multidimensional Scale of Perceived Social Support (MSPSS)

There is a strong relationship between subjective mental well-being and perceived levels of social integration. The original English version of the instrument, developed by [Zimet et al. \(1988\)](#), is based on a 12-item, three-factor model that forms the basis for the development of the Family, Friends and Significant Others subscales. During the validation of the Hungarian adaptation of the MSPSS scale, items 5 and 7 did not fit the confirmatory factor analytic model (cf. [Papp-Zipernovszky et al., 2017](#)); therefore, in our study we used the 10-item version, which is more clearly assessable in the Hungarian language. For this measure, we also made the necessary adjustments to the parental completion of the original scale (cf. [Appendix C](#)).

#### 3.3.4. Internet Addiction Test for families (IAT-F)

Based on the widely used Internet Addiction Test (IAT), experts have developed a family version, the IAT-F ([Young, 1998, 2017](#)). The test is typically completed by parents about their child's internet and media use habits. The questionnaire is divided into two subtests: Problematic and risky media use in children – Problematic Media Checklist, PMC, and the Parent-Child Internet Addiction Test for Adolescents – PCIAT. When each test is completed by a professional, it can be used as a diagnostic tool, and when parents provide self-administered responses, the data can be used to screen for risk behaviours ([Young, 1998; 2017](#)).<sup>1</sup>

##### a. PMC – Problematic and Risky Media Use in 3- to 11-year-old Children

For 3–11 year olds, the PMC measure was used to identify the potential for problematic or risky media use by children. The questionnaire is based on reporting total screen time in addition to internet use. Screen time is any time a child spends on a TV, computer, laptop, tablet, smartphone, or other portable digital device. Parents are asked to rate their child's media use habits and typical responses by answering yes or no to eight questions. If a parent answers yes to three or more of the eight questions, this indicates that the child's screen use is considered risky or problematic.

##### b. Parent–Child Internet Addiction Test for Adolescents (PCIAT) – risk of problematic internet use in 12–18-year-olds

The PCIAT examines the impact of internet addiction on young people aged 12–18. This test not only detects addictive behaviour, but also gives an indication of the early stages of the



development of risky behaviour. The frequency of the situations indicated in the test items requires a response on a five-point Likert scale (1 = rarely, 2 = occasionally, 3 = frequently, 4 = often, 5 = always). In our study, the reliability of the overall test was high, with a Cronbach's alpha of 0.967 and individual subscale scores above the accepted value of 0.8. The sum of the responses provided the child's level of Internet addiction. The PCIAT offers the following levels of internet addiction severity: the risk of Internet addiction is unlikely (0–30 points); low risk of Internet addiction, i.e. the adolescent may surf the Internet for long periods of time but seems to be in control of screen use (31–49 points); moderate risk of Internet addiction, when the child is characterised by occasional to frequent problems related to Internet use (50–79 points); and severe Internet addiction, when Internet use and screen time cause significant problems in the child's life, family relationships and school performance (80–100 points). In addition to a total score, the PCIAT can also be scored along 3 subscales: attention, social behaviour, and aggressive behaviour (Young, 1998; 2017).

### 3.4. Analytic plan

In line with our first research question, the basic data obtained using the measurement tools described above were first analysed further from a demographic perspective, based on sex and age variables. For the analysis by age, a dichotomous independent variable was constructed in which the child was classified by the parents into one of the age groups '3–11 years' or '12–18 years'. The frequency distributions of the results from our instruments were calculated along the sex and age variables constructed in this way, and the significance of the differences in the frequency distributions was analysed using the  $\chi^2$  test. For instruments that allowed the calculation of means, an independent two-sample t-test was used to analyse the significance of the difference in means, and Cohen's d-test was used to analyse the power of the difference in means.

With regard to our second research question, our analysis focused on the validation of the parent version of the Mental Health Status Questionnaire. In this section, using the parent-observed categories of mentally healthy, vulnerable and endangered, created using the MHSQ-P scoring criteria, as grouping variables, we analysed the results of the WHO-5 Well-being Index, the MSPSS, the PMC and the PCIAT scales, which were treated as dependent variables. We attempted to show that the increasing adjustment difficulties reflected in the MHSQ-P categories were also reflected in the means and proportions of the dependent variables. For scales that allowed the calculation of means, one-way ANOVA was used to analyse the differences between the means of the groups based on the MHSQ-P categories, using Levene's statistic to analyse the homogeneity of variances between the groups, F-statistics to test the significance of the differences in the category means, and  $\eta^2$  to measure the effect size of the MHSQ-P on the given dependent variable (Leech et al., 2015). For measures that provided frequency distributions, the significance of the differences in the frequency distributions was analysed using the  $\chi^2$  test.

## 4. Results

### 4.1. Descriptive statistics for the measurement tools used in the research

#### 4.1.1. Mental Health Status Questionnaire – parental version (MHSQ-P)

For our total sample, based on parental observations, 68.4% of children ( $n = 154$ ) were classified as mentally healthy, 14.2% ( $n = 32$ ) were classified as vulnerable, indicating difficulties in coping with life, and 14.2% ( $n = 32$ ) were classified as endangered, indicating the need for the involvement of mental health professionals. For 3.2% ( $n = 7$ ) the questionnaire was not properly completed and therefore could not be analysed.

#### 4.1.2. WHO-5 Well-being Index – parental version

Across our entire sample, based on parent ratings, the mean WHO-5 Well-being Index for children was 10.64 (standard deviation: 2.60).

### 4.1.3. The Multidimensional Scale of Perceived Social Support (MSPSS)

The descriptive results obtained with the scale and how they were calculated are presented in Table 1.

In the factor structure above (cf. Papp-Zipernovszky et al., 2017), calculated by the mean of the responses on a five-point Likert scale, the closer the mean is to 5.00, the higher the level of peer support perceived by the respondent parents for their children.

### 4.1.4. Internet Addiction Test for families (IAT-F)

- a. PMC – Problematic and risky media use in children aged 3-11

In our study, among children aged 3-11 years ( $N = 113$ ), 67.3% ( $n = 76$ ) had no parental observations of media use that could be considered problematic or risky. However, for 32.7% of our sample ( $n = 37$ ), we identified media use patterns that could be classified as risky and problematic on the basis of the PMC questionnaire (for further details see Szabó-Prievara & Tarkó, 2023).

- b. Parent-Child Internet Addiction Test for Adolescents (PCIAT) – risk of problematic internet use in 12-18 year olds

49.3% of the total sample, i.e. a total of 111 parents responded for adolescents aged 12-18 years. Of these, 99 adolescents received complete, evaluable test results. The overall PCIAT score had a mean of 42.88 points and a standard deviation of 20.53 points. Across the severity ranges, 37.4% ( $n = 37$ ) were at no risk of problematic internet use, 31.3% ( $n = 31$ ) were at low risk of internet addiction, and 21.2% ( $n = 21$ ) were at moderate risk of internet addiction. Severe internet addiction occurred in 10.1% ( $n = 10$ ) of our sample (for more details see Szabó-Prievara & Tarkó, 2023).

## 4.2. Demographic analysis of our baseline data

When our results from the parent version of the Mental Health Status Questionnaire (MHSQ-P) were analysed by sex, the proportions of mental health categories were almost identical ( $\chi^2(2) = 1.104$ ,  $p < 0.576$ ). For boys, 68.3% ( $n = 71$ ) could be classified as mentally healthy, 14.4% ( $n = 15$ ) as vulnerable and 17.3% ( $n = 18$ ) as endangered. For girls, 72.8% ( $n = 83$ ) could be classified as mentally healthy, 14.9% ( $n = 17$ ) as vulnerable and 12.3% ( $n = 14$ ) as endangered.

We also obtained almost identical proportions by age ( $\chi^2(2) = 5.755$ ,  $p < 0.056$ ). Among children aged 3-11 years ( $N = 110$ ), 76.4% ( $n = 84$ ) were classified as mentally healthy, 14.5% ( $n = 16$ ) as vulnerable and 9.1% ( $n = 10$ ) as endangered. In our subsample of 12-18 year olds ( $N = 108$ ), 64.8% ( $n = 70$ ) were classified as mentally healthy, 14.8% ( $n = 16$ ) as vulnerable and 20.4% ( $n = 22$ ) as endangered.

Analysing our WHO-5 Well-being Index scores by sex, the mean for girls ( $N = 117$ ) was 10.85 (standard deviation 2.67) and the mean for boys ( $N = 107$ ) was 10.41 (standard deviation 2.52). An independent two-sample t-test for significance of the difference in means between the sexes showed no significance ( $t = 1.275$ ,  $p < 0.102$ ).

By age, the WHO-5 mean for the 3-11 age group ( $N = 113$ ) was 11.4 (standard deviation: 2.56), while the mean for the 12-18 age group ( $N = 111$ ) was 9.88 (standard deviation: 2.43). The results of an independent two-sample t-test ( $t = 4.514$ ,  $p < 0.001$ ;  $d = 0.60$ ) for the difference in means between age groups showed medium significance.

When the results of the Multidimensional Scale of Perceived Social Support were further analysed by sex using an independent two-sample t-test, no significant difference was found in the means for boys and girls for the subscales and total scores. The age distribution of the data for the age groups under 12 ( $N = 112$ ) and over 12 ( $N = 110$ ) was analysed and the results are shown in Table 2.

The PMC, i.e. the measure of problematic and risky media use in children, was developed for the age group 3-11 years, so we only analysed the results by sex. Among girls ( $N = 64$ ), 71.9% ( $n = 46$ ) were not

**Table 1.** Results of the Multidimensional Scale of Perceived Social Support and its subscales ( $N = 222$ ).

MSPSS	Method of computing	Mean	SD	Min	Max
Family subscale	mean of items 3, 4, 6, 9	4.73	0.52	2.00	5.00
Friends subscale	mean of items 5, 7, 10	4.14	0.84	1.00	5.00
Significant others subscale	mean of items 1, 2, 8	4.85	0.38	2.67	5.00
Total scale	mean of all the 10 items	4.59	0.46	2.80	5.00

**Table 2.** Results of the Multidimensional Scale of Perceived Social Support for the age groups under 12 (N = 112) and over 12 (N = 110).

MSPSS	Age groups	Mean	SD	Levene's Test	t test	Cohen's d
Family subscale	3–11-year-olds	4.80	0.36	F = 10.453**	t = 2.089*	0.28
	12–18-year-olds	4.66	0.63	p < 0.001	p < 0.038	
Friends subscale	3–11-year-olds	3.96	0.86	F = 0.228	t = -3.167*	-0.43
	12–18-year-olds	4.31	0.78	p < 0.633	p < 0.002	
Significant others subscale	3–11-year-olds	4.92	0.25	F = 20.931**	t = 2.466*	0.33
	12–18-year-olds	4.79	0.47	p < 0.001	p < 0.015	
Total scale	3–11-year-olds	4.58	0.37	F = 4.982*	t = -0.158	-0.02
	12–18-year-olds	4.59	0.53	p < 0.027	p < 0.875	

Levene's Test: \*\*, \* Equal variances not assumed for the t-test.

**Table 3.** Frequency distribution of PCIAT internet use risk category classification by sex among adolescents.

PCIAT Internet risk category classification	Sex of the adolescent (12–18-year-olds)			
	boy (N = 55)		girl (N = 44)	
	Count	% within	Count	% within
none	22	40.0%	15	34.1%
mild	16	29.1%	15	34.1%
moderate	11	20.0%	10	22.7%
severe	6	10.9%	4	9.1%

identified as having risky or problematic media use, while 28.1% (n = 18) were. Among boys (N = 49), 61.2% (n = 30) had no parental ratings of media use that could be considered risky or problematic, while 38.8% (n = 19) had such ratings. We therefore obtained different proportions by sex for each risk category, but this did not prove to be a significant difference according to the  $\chi^2$ -test ( $\chi^2$  (1) = 1.429,  $p < 0.232$ ).

The PCIAT (Parent-Child Internet Addiction Test) scale, which measures the risk of problematic internet use from the perspective of parents, was also developed for a specific age group of 12–18 year olds, so we also only conducted analyses by sex (Szabó-Prievara & Tarkó, 2023).

We obtained almost identical proportions by sex ( $\chi^2$  (3) = 0.589,  $p < 0.899$ ), as shown in detail in Table 3.

#### 4.3. Validation results for the parent version of the Mental Health Status Questionnaire

Analysing the data from the parental version of the WHO-5 Well-being Index by MHSQ-P categories, we found the following. The results for the index means are shown in Table 4.

As the adaptation difficulties represented by the MHSQ-P categories increased, we obtained decreasing means per category for the WHO-5 Well-being Index. The result of the Levene statistic (1.227,  $p < 0.295$ ) confirmed the homogeneity of variance of the three categories, so we had to analyse the variance of the means to confirm the differences between the categories.

The result of the F-statistic (F = 18.491;  $p < 0.001$ ) from the one-way ANOVA test indicates that the difference in the means of the three MHSQ-P categories calculated from the WHO-5 Well-being Index is significant. The  $\eta^2$  effect size measure was 0.1473, i.e. 14.73% of the variance in the WHO-5 Well-being Index is explained by the MHSQ-P categories.

For the data of the Multidimensional Scale of Perceived Social Support data, the analysis by MHSQ-P categories yielded the following results. The means of the MSPSS total score and subscales are summarised in Table 5.

The means of the Family, Friends and Significant Others subscales of the MSPSS, as well as the mean of the total scale, show a steady decrease as the adaptation difficulties represented by the MHSQ-P categories increase. The results of the one-way ANOVA test are summarised in Table 6.

The results of the Levene statistics did not confirm the homogeneity of variance, neither for subscales nor for the total scale, so it can be stated that there is also a significant difference among the three mental health categories based on the standard deviations of the MSPSS scores.

**Table 4.** Results from the parent version of the WHO-5 Well-being Index by MHSQ-P categories.

MHSQ-P category	WHO-5 Well-being Index – parental version		
	N	Mean	SD
mentally healthy	153	11.24	2.39
vulnerable	32	10.28	2.17
endangered	32	8.40	2.83

**Table 5.** Results of the parent version of the Multidimensional Scale of Perceived Social Support by MHSQ-P categories.

MHSQ-P category	N	MSPSS Family		MSPSS Friends		MSPSS Significant others		MSPSS	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
mentally healthy	151	4.83	0.33	4.30	0.76	4.92	0.23	4.70	0.33
vulnerable	32	4.70	0.48	3.81	0.97	4.80	0.51	4.46	0.49
endangered	32	4.30	0.92	3.72	0.80	4.64	0.37	4.23	0.63

**Table 6.** Results of the one-way ANOVA test on the scores of the parent version of the Multidimensional Scale of Perceived Social Support by the MHSQ-P categories.

MSPSS	Levene Statistic		F statistic		$\eta^2$
	Based on Mean	Sig	F	Sig	
MSPSS – Family	36.467	$p < 0.001$	15.638	$p < 0.001$	0.128
MSPSS – Friends	3.108	$p < 0.047$	9.847	$p < 0.001$	0.084
MSPSS – Significant others	20.726	$p < 0.001$	8.149	$p < 0.001$	0.071
MSPSS – Total scale	12.497	$p < 0.001$	18.218	$p < 0.001$	0.146

**Table 7.** Analysis of problematic and risky media use among children aged 3–11 by MHSQ-P categories.

MHSQ-P category	PMC – ‘no risk’		PMC – ‘yes risk’		Total	
	no	%	no	%	No	%
mentally healthy	60	55.1%	24	22.0%	84	77.1%
vulnerable	7	6.4%	9	8.3%	16	14.7%
endangered	5	4.6%	4	3.6%	9	8.2%
Total:	72	66.1%	37	33.9%	109	100%

The differences in the MSPSS mean scores for the mentally healthy, vulnerable, and endangered categories shown in Table 5 are supported by the F-statistic, which shows the significance of the difference in mean scores for all subscales and for the total scale.

The  $\eta^2$  effect size measure is the highest for the total scale (0.146) and for the Family subscale (0.128); thus, 14.6% of the total variance of the MSPSS scale and 12.8% of the variance of the Family subscale are explained by the MHSQ-P categories.

For the PMC, i.e. the measure of problematic and risky media use among children aged 3–11 years, it was deemed necessary to use a slightly different method of analysis than the one described above, as the PMC results in a dichotomous variable. First, we analysed the frequency distribution of this variable, broken down by MHSQ-P categories. The results are presented in Table 7.

For the 3- to 11-year-olds in our sample, the differences in the frequency distributions of the MHSQ-P categories and the risk of problematic media use were not found to be significant by the  $\chi^2$  test ( $\chi^2 (2) = 5.074, p < 0.079$ ).

To compensate for the loss of information inherent in the construction of the dichotomous PMC variable, we also examined the breakdown of the MHSQ-P categories by the average number of ‘yes’ responses for problematic media use patterns. The results are presented in Table 8.

It can be concluded that as the mental health risks mapped in the MHSQ-P categories increased, we also obtained increasing means per category for the sum of ‘yes’ responses in the PMC.

The result of the Levene statistic (1.239,  $p < 0.294$ ) confirmed the homogeneity of variance of the three categories, so we had to analyse the variance of the means to confirm the differences between the categories. The results of the F-statistic ( $F = 3.413; p < 0.037$ ) from the one-way ANOVA test suggest that the differences between the three MHSQ-P categories are significant in terms of the means of the number of ‘yes’ responses to the PMC questionnaire.

**Table 8.** Analysis of the number of 'yes' answers for problematic media use habits among children aged 3–11 years by MHSQ-P categories.

MHSQ-P category	PMC – Total number of 'yes' answers		
	N	Mean	SD
mentally healthy	84	1.84	2.04
vulnerable	16	3.00	2.00
endangered	9	3.22	2.63

**Table 9.** Analysis of problematic internet use among 12–18 year olds from parents' perspective by MHSQ-P categories.

MHSQ-P category	N	PCIAT							
		attention		social behavior		aggressive behavior		total	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
mentally healthy	64	2.16	1.12	1.98	0.99	1.98	1.09	38.72	18.35
vulnerable	12	2.25	1.21	2.33	1.15	2.25	1.42	45.08	22.92
endangered	21	3.09	1.22	2.76	1.04	2.95	1.28	55.80	21.40

**Table 10.** Results of the one-way ANOVA tests on the means of the PCIAT scale and its subscales by MHSQ-P categories.

PCIAT	Levene Statistic		F statistic		$\eta^2$
	Based on mean	Sig	F	Sig	
Attention subscale	0.122	0.886	5.255	0.007	0.100
Social behavior subscale	0.663	0.518	4.639	0.012	0.089
Aggressive behavior subscale	2.020	0.138	5.352	0.006	0.102
PCIAT – total	1.459	0.238	6.067	0.003	0.114

The  $\eta^2$  effect size measure was 0.060. Thus, 6.0% of the variance in the sum of the 'yes' responses in the PMC questionnaire for children's media use problems is explained by the MHSQ-P categories.

Finally, the results of the *PCIAT*, a test that assesses the risk of problematic Internet use among 12–18 year olds from the perspective of their parents, were analysed according to the categories of the MHSQ-P. The scores for the test and the subscales are shown in [Table 9](#).

In the case of the *PCIAT* total score and the scores of the sub-domains relating to attention, social behaviour and aggressive behaviour, it can be seen that their means tend to increase with increasing levels of adaptive difficulties as represented by the MHSQ-P categories. The results of the one-way ANOVA tests on the above data are summarised in [Table 10](#).

The results of the Levene statistics confirmed homogeneity of variance for both the subscales and the total scale, so it was necessary to analyse the variance of the means to confirm the differences between the categories.

For the mentally healthy, vulnerable, and endangered categories, the differences in the *PCIAT* total score and subscale means shown in [Table 10](#) were confirmed by the F-statistics, i.e. the difference in means was found to be significant.

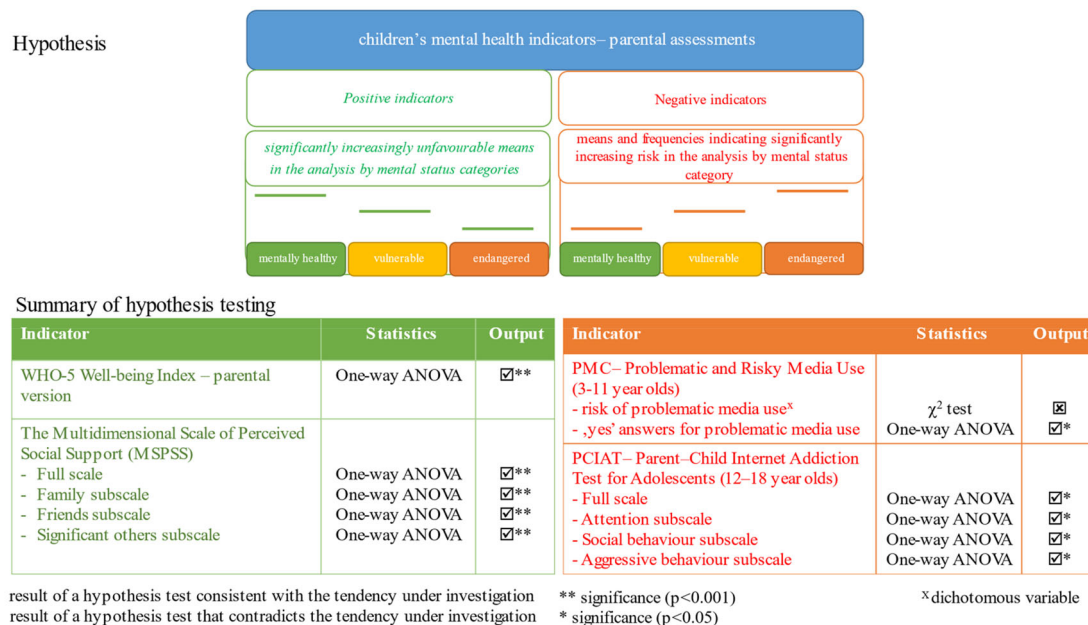
The  $\eta^2$  effect size measure value for the total score was 0.114, meaning that the MHSQ-P categories explained 11.4% of the variance in the *PCIAT*. However, for the subscales, the Attention (0.100) and Aggressive Behaviour (0.102) subscales both have an effect size of 10%.

## 5. Discussion

From the perspective of our first research question, the results presented here are framed by the fact that when evaluating the results of our study, we must take into account that our sample is overrepresented in terms of parents with secondary and tertiary education and a relatively good financial status. Due to the convenience sampling, the descriptive results of our study can only be generalised with considerable limitations, for Hungarian children as well.

With regard to our second research question, the results of our study confirm that, for the 3–18 age group, the parental version of the Mental Health Status Questionnaire (MHSQ-P) can summarise parents'

## Hypothesis



**Figure 2.** Hypothesis testing.

observations of their child in a way that is consistent with parents' perceptions of other aspects of the child's psychological quality of life (see Figure 2).

Based on parental observations, the worsening of subjective well-being and social support scores and the increase in scores indicating risk of problematic media use along the healthy, vulnerable, and endangered categories suggest that the MHSQ-P may be a suitable measure for systematically collecting and processing parental observations of children's psychological quality of life.

## 6. Conclusion and implications

The importance of the mental status categories created by the MHSQ-P for mental health promotion lies in the fact that they provide a meaningful categorisation of the risk of internalising psychological problems in childhood and adolescence. This is underlined by the fact that our results along the mental status categories also show significant differences in the psychological quality of life of the children included in the study.

### 6.1. Implication of the research findings

The MHSQ-P can be said to provide an informative categorisation for the early identification of internalising psychological problems in children. In terms of mental health promotion in schools, these mental health categories require the use of different methodologies.

The identification of the 'endangered' mental status category may reassure the educator (and the parents) that the number and frequency of symptoms identified in the child's case warrant the involvement of mental health professionals. The 'endangered' mental status is not a clear indication of psychopathology in the child. What it does indicate is that the child or young person may be in a stressful situation which may require professional support from mental health professionals in addition to the family and educators.

We also attach particular importance to the identification of 'vulnerable' groups, as it is in their case that the preventive methodology of community-based mental health promotion can be most effectively applied. It is likely that in the case of the vulnerable group, peer support and support from educators to expand the repertoire of coping strategies, school-based skills, and competence development to expand children's coping repertoires (cf. CASEL), and the experience of community situations that foster a sense



of peer support can all promote coping in difficult situations and the development of individual coping skills.

There are also educational tasks concerning the 'mentally healthy' group. We consider it necessary to use pedagogical methods that help to preserve and develop individual resources and the experience of inner harmony. On the other hand, the mentally healthy status also indicates that the child's or adolescent's current mental balance may make it easier for them to participate in strengthening the cohesion of the wider school community.

## **6.2. Limitations of the research**

One of the advantages of the MHSQ-P is that it uses parental observations to assess children's mental state, thus eliminating differences due to children's age and different developmental stages. However, the applicability of the MHSQ-P is also limited by the fact that it is based on parental observations. The adequacy of parental observations may be questionable, especially for children in dysfunctional families. We therefore consider it essential to have a sufficiently broad range of pedagogical methodological tools, where it is possible to compare the results of the MHSQ-P with those of other methods of collecting pedagogical information.

We feel it is important to emphasise that categorisation based on the Mental Health Status Questionnaire is not an adequate replacement for the measures and procedures used in child psychiatric diagnosis. The MHSQ-P is therefore in no way a substitute for child psychological or, where appropriate, child psychiatric assessments required at the borderline of child mental health and mental illness.

## **6.3. Future research**

In relation to the implementation of the MHSQ-P in practice, we have the specific recommendations set out in [section 6.1](#), which also provides the rationale for a follow-up study at a later stage. For us, the real importance of categorising children's mental state on the basis of parental observations lies in its ability to help educators make decisions about each child's behaviour and emotional equilibrium. It allows educators to supplement their own observations and experience with information from parental observations. This could help public educational institutions to better implement their mental health alert function. On the other hand, by analysing the results of the MHSQ-P at class or school level, we can get a picture of the home-based mental health status of children and pupils in a class or even a whole school, which can also help us to fine-tune educational programmes related to mental health promotion.

## **Note**

1. The authors' institute was given permission to administer the Internet Addiction Test for Families (IAT-F) kit by the author and copyright holder Stoelting. As stated in the research agreement, the test battery may not be reproduced without the permission of the copyright holder.

## **Disclosure statement**

No potential conflict of interest was reported by the author(s).

## **Funding**

This work was supported by the Research Programme for Public Education Development of the Hungarian Academy of Sciences under Grant number SZKF-19/2021.

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## Data availability statement

Data not available – participant consent. The participants of this study did not give written consent for their data to be shared publicly, so due to the sensitive nature of the research, supporting data are not available.

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## Appendix

### Appendix A. Mental Health Status Questionnaire – parental version (MHSQ-P)

Please read the list carefully and think about it. For each line, circle the correct option for how many times your child has experienced that symptom this year. Please do not skip a line.

	never	rarely	often
1. Sleeping problems	0	1	2
2. Persistent headache	0	1	2
3. Fear, anxiety without any obvious reason	0	1	2
4. Mood swings, mainly dejectedness	0	1	2
5. Weight loss	0	1	2
6. Weight gain	0	1	2
7. Persistent nausea/diarrhea, constipation	0	1	2
8. Stomach pain (negative medical result)	0	1	2
9. Dizziness, fainting	0	1	2
10. Persistent, unusual impatience for 1 or 2 weeks	0	1	2
11. Decreased capacity for work* (min. 1 or 2 weeks)	0	1	2
12. Fatigue, exhaustion without any obvious reason	0	1	2

\*for a child, it means going to nursery, kindergarten or school.

### Appendix B. WHO-5 well-being scale, parental version

For each of the five statements, please choose the one that best describes how your child has been feeling over the past two weeks.

How often did you see your child	Never	Rarely	Often	Very often
1. ... cheerful in good spirits	0	1	2	3
2. ... calm and relaxed?	0	1	2	3
3. ... active and vigorous?	0	1	2	3
4. ... feeling fresh and rested when waking up?	0	1	2	3
5. Their daily life has been filled with things that interest them?	0	1	2	3

### Appendix C. The Multidimensional Scale of Perceived Social Support (MSPSS) – parental version

By circling the numbers below please indicate the degree of truth of each statement that applies to your child!

	Not at all	Rather not	So-so	Rather yes	Completely
1. There is a special person who is around when your child is in need.	1	2	3	4	5
2. There is a special person with whom your child can share their joys and sorrows.	1	2	3	4	5
3. Your child can always count on their family.	1	2	3	4	5
4. Your child gets the emotional help and support they need from their family.	1	2	3	4	5
5. Your child can always count on their friends.	1	2	3	4	5
6. Your child can talk about their problems with their family.	1	2	3	4	5
7. Your child has friends with whom they can share their joys and sorrows.	1	2	3	4	5
8. There is a special person in your child's life who cares about their feelings.	1	2	3	4	5
9. The family is willing to help your child make decisions.	1	2	3	4	5
10. Your child can talk about their problems with their friends.	1	2	3	4	5