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Factors Supporting and Threatening the Adolescence of Transplanted Youth – Resilience, Well-Being, and Difficulty with Chronic Illness

Abstract.

Objective: The present research investigated the proportion of vulnerable and protective factors in terms of mental health in transplanted adolescents compared to the age-matched control group. *Method:* We collected data using a complex procedure; questionnaires, interviews and projective tests involving transplanted

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adolescents at the 1st Department of Pediatrics of Semmelweis University. In this work, we present the results of the analysis of the questionnaires. The sample included 59 transplanted and 116 control group members. *Results:* We found differences between the groups, with the transplanted adolescents being more likely to have depressive mood, more intense experience of anxiety states and stress, and well-being. Parents of transplanted adolescents were also more likely to have depressive mood and anxiety states. The members of the control group were characterized by self-efficacy, emotion-focused coping, and prosocial behavior. We found no differences between the groups in terms of resilience. *Conclusions:* The optimal development of transplanted youth is hampered by depression, anxiety and stress management problems, and their exposure to risk factors is significant. In the case of transplanted adolescents and their parents, negative emotional overload is typical, therefore we recommend integrative and psychotherapeutic assistance for them.

Keywords: quality of life, well-being, organ transplant, chronic patients, adapting to a challenge

Introduction

With the development of medicine, organ transplants now allow the treatment of serious diseases such as liver failure, lung disease, heart disease, or kidney failure. Such serious diseases can be treated with life-saving interventions. After a successful transplant, children's quality of life and well-being may improve, and the possibility of a "new" normal life becomes available. However, transplantation also involves significant physical changes and psychological and emotional challenges.[8] One significant change is that children and adults who have undergone surgery live as chronic patients for the rest of their lives and need medication appropriate to their condition. In addition to significant somatic changes, transplantation also presents the patient and their family with a complex situation in psychological terms. When the transplanted young person gets a chance for a new life (since there is a good chance that the person would have deteriorated without the transplant), they have to adapt to many challenges. The recovery phase now leads to the acceptance of regular medication treatment with ongoing monitoring.

[8] TONG, Allison et al. (2009): Adolescent Experiences Following Organ Transplantation: A Systematic Review of Qualitative Studies. In: *The Journal of Pediatrics*. 155, 4. 542–549.e5. https://doi.org/10.1016/j.jpeds.2009.04.009.

The stress and uncertainty that accompany transplantation and the change in lifestyle that usually lasts for a long time also mean a significant psychological burden. After the operation, this is supplemented by the stigmatization resulting from the chronic disease.[9] Recovery and subsequent quality of life and well-being are determined by how the patient and their family can handle the change that comes with continuous stress, cope with the new situation, and adapt to the challenges. The decisive segment in recovery is the way in which the stress accompanying the challenges is handled on a personal and family level. The focus of our research was on resilience potential, examining it in the context of several threatening and supporting factors by examining adolescents. We consider it important to specifically identify during our study the factors that contribute to well-being and increasing resilience potential in the transplanted adolescent age group and support optimal adolescent processes such as identity maturation.

Theoretical Overview

Followers of the positive psychology trend study the "good" side of man. The approach emphasizes the recognition of pathology, diagnosis and treatment, as well as the recognition of strengths and excellences on an empirical basis.[10] Werner and Smith formulate a complex system of protective factors, whose aspects originating from the individual, family, and social environment were identified.[11] Protective factors help the individual to thrive in solving life events and in critical situations such as trauma, accident, serious illness or transplantation, over which the person typically has no control. Acceptance of extreme and uncontrollable situations, adaptation to the situation, and a positive attitude can help adaptation.[12,13] Acceptance is accompanied by a trusting experience, which can alleviate the fear of losing control and change the emotional experience. Some

[9] SHEMESH, Eitan ([4]2004): Adherence to Medical Regimens. In: Walker, W. A. et al. (eds.): *Pediatric Gastrointestinal Disease: Pathophysiology, Diagnosis, Management*. B.C. Decker.

[10] SELIGMAN, Martin E. P. – CSIKSZENTMIHALYI, Mihály (2000): Positive Psychology: An Introduction. In: *American Psychologist*. 55, 1. 5–14. https://doi.org/10.1037/0003-066X.55.1.5.

[11] WERNER, Emmy E. – SMITH, Ruth S. (1992): *Overcoming the Odds: High-Risk Children from Birth to Adulthood*. Cornell University Press.

[12] KULCSÁR, Zsuzsanna (2009): *Trauma Processing and Religion*. Trefort Kiadó.

[13] COPING with Chronic Illness in Childhood and Adolescence (n. d.). In: *Annual Reviews*. Available at: https://www.annualreviews.org/content/journals/10.1146/annurev-clinpsy-032511-143108 (last accessed on: 1 May 2025).

authors suggest that giving up control in a highly vulnerable situation reduces the risk of depression. Also, positive emotions have a positive physical and psychological effect on personal well-being.[14]

On the long journey to transplantation, the illness can also be a traumatic experience from a psychological perspective. One has to face the loss of health – or the worsening of the condition – the possibility of finitude, vulnerability and uncertainty while waiting for the organ. This period is accompanied by complex, extremely stressful and long-lasting emotional states.

Resilience is considered a complex, dynamically changing potential. There are many definitions, but the most expressive of the theoretical considerations of the research presented later is Masten's definition from the point of view of clinical psychology, according to which; *resilience is closely related to the ability to adapt, and is characterized by internal control, empathy, optimism, a positive self-image, positive handling of changes and self-efficacy*.[15] Masten describes different phenomena as the dynamic process of resilience: 1) it occurs when vulnerable individuals show better results than could be expected; 2) when positive adaptation is experienced despite stressful experiences; 3) when good recovery from trauma occurs.[16]

Protective and Vulnerable Factors of Maintaining Health

Vulnerable factors – e.g. stress, anxiety, or depression – and protective factors – e.g. resilience or self-efficacy – have played a significant role in mapping the background of individual psychopathological disorders and risk factors.[17] Research conducted

[14] PRINZING, Michael M. et al. (2022): Staying 'in Sync' with Others during COVID-19: Perceived Positivity Resonance Mediates Cross-sectional and Longitudinal Links between trait Resilience and Mental Health. In: *The Journal of Positive Psychology*. 17, 3. 440–455. https://doi.org/10.1080/17439760.2020.1858336.

[15] MASTEN, Ann S. (2001): Ordinary Magic: Resilience Processes in Development. In: *American Psychologist*. 56, 3. 227–238. https://doi.org/10.1037/0003-066X.56.3.227.

[16] MASTEN, Ann S. et al. (1990): Resilience and Development: Contributions from the Study of Children Who Overcome Adversity. In: *Development and Psychopathology*. 2, 4. 425–444. https://doi.org/10.1017/S0954579400005812.

[17] HÁMORI, Eszter (2013): Rizikófaktorok, adaptáció és reziliencia a korai fejlődésben – A koraszülöttség a fejlődési pszichopatológia modelljében [Risk Factors, Adaptation and Resilience – Prematurity in the Model of Developmental Psychopathology]. In: *Magyar Pszichológiai Szemle*. 68, 1. 7–22. https://doi.org/10.1556/MPSzle.68.2013.1.2.

among an adult population (N = 438) supports the importance of resilience in terms of health behaviour. Resilience values of the healthy group were significantly higher than those of the autoimmune adult patients' group; in terms of personality, harm avoidance negatively correlated, while perseverance, self-direction, and cooperation positively correlated with resilience among adults.[18] The positive role of resilience in recovery has also been demonstrated among adolescent girls with anorexia.[19] Depression and anxiety showed a significantly negative relationship with resilience potential in both adolescents and adults.[20,21,22] Among adolescents with diabetes, the low resilience has been shown to be associated with high distress, poor quality of life, and poor glycaemic control.[23] Chronic diseases are often associated with anxiety and depression, which reduce the quality of life and well-being.[24,25] Resilience has a positive impact on several chronic diseases.[26]

[18] GYÖNGYÖSINÉ KISS, Enikő et al. (2008): Ego-Control and Ego-Resiliency in Systemic Autoimmune Disorders. In: *Horizons in Psychology*. 17, Suppl. 8.

[19] KÖVESDI, Andrea (2018b): Reziliencia a serdülőkori anorexia nervosaban. PhD thesis, University of Pécs (Hungary). Available at: https://search.proquest.com/openview/c324506c6f381b82af86cb95ced8ddcd/1?pq-origsite=gscholar&cbl=2026366&diss=y.

[20] KISS, Enikő – MAKÓ, Hajnalka (eds.) (2015): *A gyász, krízis, trauma és a megküzdés lélektana*. Pro Pannónia.

[21] KÖVESDI, Andrea (2018a): A személyiségfaktorok és a reziliencia összefüggése az anorexia nervosaban. In: *Psychologia Hungarica Caroliensis*. 6, 1. 7–22.

[22] BIRMAHER, Boris et al. (1996): Childhood and Adolescent Depression: A Review of the Past 10 Years. Part II. In: *Journal of the American Academy of Child & Adolescent Psychiatry*. 35, 12. 1575–1583. https://doi.org/10.1097/00004583-199612000-00008.

[23] YI-FRAZIER, Joyce P. et al. (2015): The Association of Personal Resilience with Stress, Coping, and Diabetes Outcomes in Adolescents with Type 1 Diabetes: Variable- and Person-Focused Approaches. In: *Journal of Health Psychology*. 20, 9. 1196–1206. https://doi.org/10.1177/1359105313509846.

[24] EDWARD, Karen L. (2013): Chronic Illness and Well-Being: Using Nursing Practice to Foster Resilience as Resistance. In: *British Journal of Nursing*. 22, 14. 741–46. https://doi.org/10.12968/bjon.2013.22.14.741.

[25] ZAUTRA, Alex J. et al. (2005): Positive Affect as a Source of Resilience for Women in Chronic Pain. In: *Journal of Consulting and Clinical Psychology*. 73, 2. 212–220. https://doi.org/10.1037/0022-006X.73.2.212.

[26] CAL, Silvia F. et al. (2015): Resilience in Chronic Diseases: A Systematic Review. In: *Cogent Psychology*. Article 1024928. https://www.tandfonline.com/doi/abs/10.1080/23311908.2015.1024928.

Helping chronic patients develop stress management strategies contributes to increasing resilience potential.[27,28]

In addition to resilience, personal resources such as self-efficacy and problem-solving skills are crucial in overcoming difficulties and supporting the healing process.[29,30] In the case of transplant patients, the role of self-efficacy is emphasized in following treatment instructions, actively participating in the healing process, and making life-affecting health decisions.[31] Patients with higher self-efficacy cope better with stress and challenges caused by the disease and can influence disease management strategies.[32] Self-efficacy has been shown to be strongly positively correlated with resilience in many studies.[33,34,35] Individuals with low self-efficacy may be more likely to use passive or avoidant strategies such as denying illness, suppressing negative emotions, or rejecting social support.[36] The association between self-efficacy and psychological well-being has been demonstrated in transplant and *sine morbo* populations. Individuals with higher self-efficacy tend to report lower levels of anxiety and depression and better quality of life.[37]

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[27] HAMMEN, Constance – RUDOLPH, Karen D. ([2]2003): Childhood Mood Disorders. In: Mash, E. J. – Barkley, R. A. (eds.): *Child Psychopathology*. Guilford Press.

[28] RESILIENCE over the Lifespan: Developmental Perspectives on Resistance, Recovery, and Transformation (2010). Available at: https://awspntest.apa.org/record/2010-10101-011 (last accessed on: 29 April 2025).

[29] Op. cit.

[30] ZIMMERMAN, Mark A. – BRENNER, Allison B. (2010): Resilience in Adolescence: Overcoming Neighborhood Disadvantage. In: *Handbook of adult resilience*. The Guilford Press.

[31] LEVENTHAL, Howard et al. (1998): Self-regulation, Health, and Behavior: A Perceptual-Cognitive Approach. In: *Psychology and Health*. 13, 4. 717–733. https://doi.org/10.1080/08870449808407425.

[32] BANDURA, Albert (1977): Self-efficacy: Toward a Unifying Theory of Behavioral Change. In: *Psychological Review*. 84, 2. 191–215. https://doi.org/10.1037/0033-295X.84.2.191.

[33] RESILIENCE 2010.

[34] ZIMMERMAN – BRENNER 2010.

[35] KÖVESDI, Andrea et al. (2022): Study of Transplanted Adolescents with a Focus on Resilience. In: *Psychologia Hungarica Caroliensis*. 10, 1. 75–94.

[36] COPING n. d.

[37] GALLAGHER, Matthew W. ([2]2012): Self-efficacy. In: Vohs, K. D. (ed.), *Encyclopedia of Human Behavior*. Academic Press. https://doi.org/10.1016/B978-0-12-375000-6.00312-8.

The Protective Role of Resilience in Chronically Ill Adolescents

Resilience has been identified as a protective factor for health anxiety and the quality of family relationships.[38,39,40,41] Less resilient individuals are less able to cope adaptively with the stress and challenges of their illness.[42] Kövesdi drew attention to the beneficial effect of resilience potential on the chances of recovery, in a domestic sample of anorexic adolescent girls undergoing hospital treatment. Recognizing and applying resilience potential in treatment may imply changes in health behaviour in the long term, and optimism and positive expectations contribute to flexible adaptation in the case of tumour patients.[43,44]

Van der Laan et al. in their systematic review study (review of 8,766 studies) examined the correlates of resilience among chronically ill children and adolescents and classified resilience outcomes into three main groups: 1) personal characteristics, 2) psychosocial functioning, and 3) illness-related outcomes.[45] In another study, Woodgate analysed the relationship between illness-related stress and resilience from the perspective of adaptation (see *Figure 1*).[46]

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[38] KISS – MAKÓ 2015.

[39] KÖVESDI, Andrea (2016): A reziliencia hatása a krónikus betegségekben. In: *Gyermekgyógyászat*. 67, 4. 225–230.

[40] KÖVESDI 2018.

[41] KÖVESDI, Andrea et al. (2020): The Protective Role of Self-efficacy for Resilience in the COVID-19 Period. In: *Acta Scientific Neurology*. 3, 11. 87–91. https://doi.org/10.31080/asne.2020.03.0276.

[42] YI-FRAZIER et al. 2015, 1196–1206.

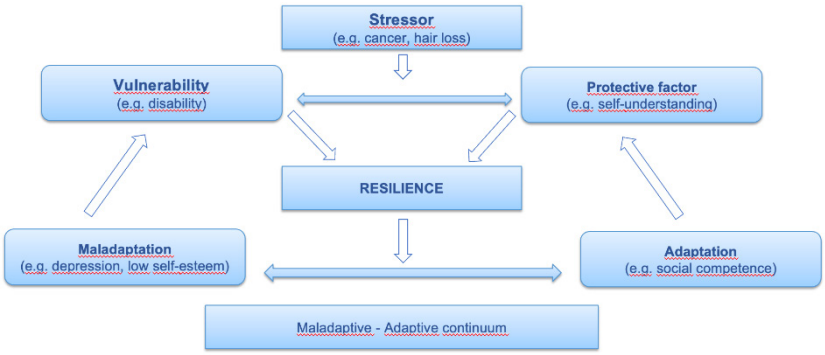
[43] GALLAGHER, Matthew W. – LOPEZ, Shane J. (2009): Positive Expectancies and Mental Health: Identifying the Unique Contributions of Hope and Optimism. In: *The Journal of Positive Psychology*. 4, 6. 548–556. https://doi.org/10.1080/17439760903157166.

[44] GALLAGHER, Matthew W. et al. (2019): Resilience and Coping in Cancer Survivors: The Unique Effects of Optimism and Mastery. In: *Cognitive Therapy and Research*. 43, 1. 32–44. https://doi.org/10.1007/s10608-018-9975-9.

[45] LAAN, Sabine E. I. van der et al. (2023): Defining and Measuring Resilience in Children with a Chronic Disease: A Scoping Review. In: *Adversity and Resilience Science*. 4, 2. 105–123. https://doi.org/10.1007/s42844-023-00092-2.

[46] WOODGATE, Roberta L. (1999): Conceptual Understanding of Resilience in the Adolescent with Cancer: Part I. In: *Journal of Pediatric Oncology Nursing*. 16, 1. 35–43. https://doi.org/10.1177/104345429901600105.

Figure 1. *Woodgate's adaptation model*[47]



Source: WOODGATE 1999, 38; transl. Kövesdi 2018

Resilient functioning after transplantation can be grouped into 3 different risk factors: 1) medical risk factors (e.g. side effects, rejection episodes, drug therapy adherence), 2) personal factors (e.g. time elapsed, age, medical history, low self-esteem, and emotional state), 3) family factors (e.g. family conflicts, income, parental mental state, parental distress level, physical functioning).[48,49] The resilience of the transplanted adolescent is associated with positive improvements in physical status.[50]

In the case of adolescents living with chronic pain, the mediating role of self-efficacy has been demonstrated between pain intensity, quality of life, physical well-being, psychological well-being, mood, self-esteem, autonomy, and school environment.[51] Our previous pilot study shows that there is a relationship between the resilience of

[47] Op. cit.

[48] HAAVISTO, Anu et al. (2013): Risk Factors for Impaired Quality of Life and Psychosocial Adjustment after Pediatric Heart, Kidney, and Liver Transplantation. In: *Pediatric Transplantation*. 17, 3. 256–265. https://doi.org/10.1111/petr.12054.

[49] TAYLOR, Rachel M. et al. (2009): Study of the Factors Affecting Health-Related Quality of Life in Adolescents after Liver Transplantation. In: *American Journal of Transplantation*. 9, 5. 1179–1188. https://doi.org/10.1111/j.1600-6143.2009.02604.x.

[50] HAAVISTO 2013, 256–265.

[51] GRASAAS, Erik et al. (2020): Health-Related Quality of Life in Adolescents with Persistent Pain and the Mediating Role of Self-efficacy: A Cross-Sectional Study. In: *Health and Quality of Life Outcomes*. 18, 1. 19. https://doi.org/10.1186/s12955-020-1273-z.

transplanted children and positive peer relationships and the number of friends.[52] Previous research reports similar results.[53,54,55]

Presentation of the Research

Circumstances of the Investigation

The title of our research is *Resilience and Immunological Study among Transplanted Children and Adolescents*, ethical permit number: SE REKB-2013-1/2020, which was established in cooperation with Károli Gáspár Reformed University, Institute of Psychology, Resilient Development-Positive Research Group (RFP) and the First Department of Pediatrics of Semmelweis University. The research began in October 2020, and data collection is currently ongoing. Transplanted adolescents who were treated in Hungary (kidney, liver, and lung) and had undergone at least one transplant were included in the sample. The transplant had been performed in Vienna or Budapest. Adolescents who had undergone organ transplantation within one year have been excluded from the sample. Data collection takes place twice a week at the SU (Semmelweis University) Pediatric Clinic in the liver and kidney outpatient clinic, the kidney department, and the internal medicine department using self-administered questionnaires and semi-structured interviews. Information about the study is provided before the study begins, and signed informed consents are kept by the research director. In the past four years, we included adolescents aged 11–18 who had undergone lung, liver, and kidney transplants at the First Department of Pediatrics of Semmelweis University in the research. The study criterion was transplantation performed more than one year before. Data collection began after the subjects and their parents were informed and informed consent was completed.

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[52] FARKAS, Fanni et al. (2023): *Szervtranszplantált gyermekek rezilienciáját támogató pszichoszociális tényezők.* Conference paper presented at Országos Tudományos Diákköri Konferencia (OTDK), 2023.

[53] HAUSER, Stuart T. et al. (2006): Narrative in the Study of Resilience. In: *The Psychoanalytic Study of the Child*. 61, 1. 205–227. https://www.tandfonline.com/doi/abs/10.1080/00797308.2006.11800771.

[54] AMATYA, Kaushalendra et al. (2021): Psychological Functioning and Psychosocial Issues in Pediatric Kidney Transplant Recipients. In: *Pediatric Transplantation*. 25, 1. e13842. https://doi.org/10.1111/petr.13842.

[55] CAL 2015.

Measuring Instruments Used in the Study

The validated measurement tools used in the study are presented in this section.

Connor–Davidson Resilience Scale, CD-RISK

The original version of the instrument was developed by Connor and Davidson.[56] The measuring instrument we currently use is a 10-item shortened version of the original 25-item English measuring instrument, translated into Hungarian, which is used by researchers with the permission of the authors. The adaptation of the version we use is currently in progress in the child and adolescent age group. Cronbach's alpha values for the research sample can be considered reliable: 0.84 for the parent group and 0.80 for the transplanted children group.

Depression, Anxiety and Stress Scales, DASS-21[57]

This is a questionnaire for measuring negative feelings caused by depression, anxiety, and stress. The shortened 21-item version can be reliably used among both adults and adolescents.[58] The measuring instrument has excellent psychometric properties in a Hungarian sample (Rózsa et al. [in preparation]). It has adequate reliability in the research sample – Cronbach's alpha values in the sample are as follows: Depression: 0.80, Anxiety 0.85, Stress 0.84, Total: 0.94.

Public Health Surveillance Well-Being Scale[59]

The questionnaire was developed to assess general well-being. The Hungarian version of the measuring instrument has been used in several studies, and the psychometric

[56] CONNOR, Kathryn M. – DAVIDSON, Jonathan R. T. (2003): Development of a New Resilience Scale: The Connor–Davidson Resilience Scale (CD-RISC). In: *Depression and Anxiety*. 18, 2. 76–82. https://doi.org/10.1002/da.10113.

[57] LOVIBOND, Peter. F. – Lovibond, Sydney H. (1995): The Structure of Negative Emotional States: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. In: *Behaviour Research and Therapy*. 33, 3. 335–343. https://doi.org/10.1016/0005-7967(94)00075-U.

[58] SZABÓ, Marianna (2010): The Short Version of the Depression Anxiety Stress Scales (DASS-21): Factor Structure in a Young Adolescent Sample. In: *Journal of Adolescence*. 33, 1–8. https://doi.org/10.1016/j.adolescence.2009.05.014.

[59] BANN, Carla M. et al. (2012): The Health Literacy Skills Instrument: A 10-Item Short Form. In: *Journal of Health Communication*. 17. 191–202. https://www.tandfonline.com/doi/abs/10.1080/10810730.2012.718042.

indicators of the questionnaire are excellent, with Cronbach's alpha values for mental well-being of 0.76, physical well-being 0.64, social well-being 0.64, and general well-being 0.83, indicating that the test has good internal consistency.

Coping Inventory for Stressful Situations (CISS-21)

The Coping in Stress Situations Questionnaire was developed by Endler and Parker.[60] Its shortened version consists of 21 items that assess the coping strategy characteristics of individuals along three subscales: *problem-focused coping*, *emotion-focused coping*, and *avoidance*. In a domestic sample (N = 6,272), it proved to be reliable on all three scales.[61] In the present study, Cronbach's alpha values are as follows: 0.78 for problem-focused coping, 0.76 for emotion-focused coping, and 0.77 for avoidance.

Strengths and Difficulties Questionnaires (SDQ)[62]

This is a 25-item, internationally recognized screening tool for childhood behavioural and emotional problems. The items of the instrument form the following five scales: *Emotional Symptoms*, *Behaviour Problems*, *Hyperactivity*, *Peer Relationship Problems*, and *Prosocial Characteristics*, each of which includes 5 items. In the present research sample, Cronbach's alpha values are between 0.62 and 0.71. The behaviour problems scale is an exception, with an alpha of 0.45. However, this is not surprising because international and domestic results generally indicate similarly low reliability for this scale.

General Self-Efficacy Scale (GSE)[63]

The Hungarian version of the 10-item questionnaire developed to measure general self-efficacy was adapted to Hungarian by Mária Kopp et al.[64] The reliability and validity of the scale have been supported by domestic research. The Cronbach's alpha value for the present research sample is 0.83.

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[60] ENDLER, Norman S. – PARKER, James D. A. (1994): Assessment of Multidimensional Coping: Task, Emotion, and Avoidance Strategies. In: *Psychological Assessment*. 6, 1. 50–60. https://doi.org/10.1037/1040-3590.6.1.50.

[61] KÖVI, Zsuzsanna et al. (2015): A vallásosság és a lelki jóllét alakulása általános és középiskolásoknál. In: *Vallástudományi Szemle*. 3–4. 58–69.

[62] GOODMAN, Robert (1997): The Strengths and Difficulties Questionnaire: A Research Note. In: *Journal of Child Psychology and Psychiatry*. 38, 5. 581–586. https://doi.org/10.1111/j.1469-7610.1997.tb01545.x.

[63] SCHWARZER, Ralf – JERUSALEM, Matthias (1995): *Self-efficacy for Academic Attainment: Scale for Children*. Berlin, Freie Universität.

[64] KOPP, Mária S. et al. (1995): *Hungarian Questionnaire in Psychometric Scales for Cross-cultural Self-efficacy Research*. Freie Universität.

Big Five Inventory

BFI is a short, 10-item version of a measuring instrument developed to assess general personality traits, which includes the following scales: *Extraversion*, *Agreeableness*, *Conscientiousness*, *Emotional Instability*, and *Openness.*[65] The items can be rated on a 5-point Likert scale. Hungarian studies conducted with the measuring instrument supported the validity and reliability of the questionnaire.[66] In the present research sample, Cronbach's alpha values were not calculated for the two-item scales, but the correlations between the responses to the items were acceptable.

Impact on Family Scale (IFS)

Parents are asked to complete the 33-item IFS, which is used to characterize the impact of a child's illness on family functioning.[67,68] The questionnaire covers the following sub-areas: *burden on the family*, *family and social impact*, *personal burden*, and *coping with the situation*. The instrument is widely used to examine the impact of chronic illnesses on the family. The instrument has not yet been introduced in our country.

Presentation of Test Results

Sample Description, Comparison of Transplanted and Control Groups

The transplanted (hereinafter: TX) group consisted of 61 and the age-matched control group (hereinafter: KO) of 116 individuals. In terms of gender ratios, the TX group was made up of 34 boys (56%) and 27 girls (44%) while the control sample of 68 boys (58.6%) and 48 girls (41.4%). In terms of age, the mean age of the TX group was 13.85 years (SD 2.169 years), while the control group had a mean of 14.66 years and a SD of 2.211 years.

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[65] JOHN, Oliver P. – SRIVASTAVA, S. (²1999): The Big Five Trait Taxonomy: History, Measurement, and Theoretical Perspectives. In: Pervin, L. A. – John, O. P. (eds.): *Handbook of Personality: Theory and Research*. Guilford Press.

[66] RÓZSA, Sándor et al. (2013): Gyermekkori spiritualitás és jól-lét. Conference paper presented at *Magyar Pszichológiai Társaság XXII. Országos Tudományos Nagygyűlése, 2013*.

[67] STEIN, Ruth E. K. – RIESSMAN, Catherine K. (1980): The Development of an Impact-on-Family Scale: Preliminary Findings. In: *Medical Care*. 18, 4. 465.

[68] STEIN, Ruth E. K. – JESSOP, Dorothy Jones (2003): The Impact on Family Scale Revisited Further Psychometric Data. In: *Journal of Developmental & Behavioral Pediatrics*. 24, 1. 9.

Two-Sample t-test

The two groups were compared using several questionnaires at time 0, i.e. at the beginning of the measurement (in the case of the experimental group, a further follow-up study lasting several months/years was conducted, the data of which are currently being processed). Thus, in this study, the organ transplant group and the control group are compared. The results of our own retrospective control study will be published in a later study. The averages and respondent numbers of the groups are contained in *Table 1* in the *Appendix*.

A two-sample t-test was used to compare the two groups, and the homogeneity of variance was checked with Levene's test. In cases of violation of the homogeneity of variance, Welch's d-test was used.

The effect size was characterized by Cohen's effect size (delta). Based on our decision-making mechanism, when either the t-test or the Welch's d-test indicated a significant difference, we took Cohen's effect size into account. If this was at least of medium magnitude (i.e. an absolute value of 0.3 or greater), we examined and interpreted the difference between the two groups.

The two-sample t-test / Wech's d-test and Cohen's effect sizes are included in *Table 2*, which can be viewed in the *Appendix*.

The differences we consider important (significant and with an appropriate effect size) are included separately, in *Table 3*, for greater transparency (note that in the case of the other scales no significant difference was detected between the experimental/TX and control group respondents).

Positive values with Cohen's d are shown in bold, while negative values are shown in normal font. Positive values mean that members of the TX/control group have significantly higher mean values, at least with a medium effect size (significant, above 0.7).

In other cases, conversely, members of the control group have higher values. For ease of understanding, the averages of the groups are shown in *Table 4* in the *Appendix*.

The TX group's average is higher on the three subscales of DASS-21 (depression, anxiety, stress) (and their parents also have higher averages on the first and second subscales of the DASS-21) although this average remains below 2 in all cases. Furthermore, the TX group's average is also higher on the general well-being (PHS WB) scale.

The control group shows higher values for the IFS (family burden due to illness), the third subscale of the Big Five (conscientiousness), the GSE (self-efficacy), the second subscale of CISS-21 (emotion-focused coping), and the fifth subscale of SDQ (prosocial behaviour). We cannot report such differences for the other subscales. The test statistics and averages are shown in *Table 4* in the *Appendix*.

Discussion of the Results

The analysis of the comparison of the transplanted and control groups points to the differences between the groups. The group of *transplanted adolescents is more characterized by depressive mood, anxiety states, and more intense experience of stress. Parents of transplanted adolescents are also characterized by depressive mood and anxiety states compared to the control group.* Our results are consistent with previous research examining chronic conditions, identifying poorer mental health in parents of chronically ill children.[69,70,71] The fact that transplanted adolescents report higher well-being seems to contradict the depressed mood and anxiety. The assessment of well-being is a subjective experience, which may partly explain the contradictory results, but further investigation is needed to provide a reassuring explanation of the result. Parents of transplanted adolescents experience their child's illness as less of a burden on family life. In the event of a transplant, parents also have to face the possibility of losing their child. The lifestyle of the entire family changes compared to before, and parents have a major role in care before, during, and after the transplant. Saving their child's life, to which they can contribute through care, may be one way of coping, which is presumably not perceived as a burden.

Members of the *control group* are characterized by a sense of self-efficacy, emotion-focused coping, and prosocial behaviour. The dominance of emotion-focused coping is explained

[69] BIRMAHER et al. 1996.

[70] OERS, Hans A. van et al. (2014): Anxiety and Depression in Mothers and Fathers of a Chronically Ill Child. In: *Maternal and Child Health Journal*. 18, 8. 1993–2002. https://doi.org/10.1007/s10995-014-1445-8.

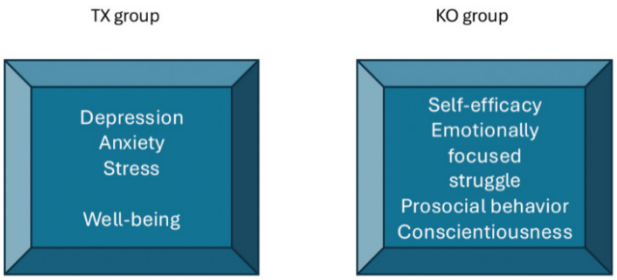
[71] COHN, Liel N. et al. (2020): Health Outcomes of Parents of Children with Chronic Illness: A Systematic Review and Meta-Analysis. In: *The Journal of Pediatrics*. 218. 166–177.e2. https://doi.org/10.1016/j.jpeds.2019.10.068.

by normative adolescence, where emotion regulation and the development of emotional life are central areas.

The difference between the groups in the personality trait of conscientiousness is a surprising result. Our search on the topic did not lead to any results. The stable nature of personality traits is a general professional belief, and further research is needed to explain the results.

Considering the factors that threaten and support optimal development, we can conclude from the results that the threatening factors – mood, anxiety, and stress – are more characteristic of the transplanted adolescent group. The presence of supporting factors – self-efficacy, prosocial behaviour – is more characteristic of the control group. There is no significant difference between the groups in terms of resilience potential. Further studies are necessary to understand the complex phenomenon of resilience in the studied sample. Transplanted young people have few personal supporting factors that help them develop optimally, and their exposure to threatening factors is significant in psychological terms (see *Figure 2*).

Figure 2. *Dominance of protective and vulnerable factors in the comparison of groups*



Outlook

Results draw attention to the prevalence of negative emotions in transplanted adolescents and their parents; therefore, we recommend psychotherapy-based support for them. In children and adolescents with chronic illnesses, anxiety disorders can develop secondarily as a result of experienced events such as abandonment during a long hospital stay instead of the safety of home, pain associated with the illness, or fear of treatment;

therefore, it is necessary to diagnose and treat anxiety and depressive states in order to avoid serious consequences.[72] Furthermore, the development of prosocial behaviour and increasing self-efficacy can also be part of psychological support, which presumably contributes to increasing resilience potential. The development of prosocial behaviour is a prominent area of normative adolescent development, maintaining contact with peers, which is almost impossible unless the young person is surrounded by a strong supportive environment. However, it should also be noted that the motivation of transplanted adolescents for psychological work is questionable, since according to their subjective assessment, they live their everyday lives in a state of well-being, and it is questionable how they think about the future. Psychological support for parents is also necessary, since studies have shown that depression and anxiety can be identified at a higher rate among parents raising chronically ill children.[73] In a study conducted with a small number of items, parents' compassion for themselves in their life situation (self-compassion) contributed to the recognition of strengths and emotional acceptance of the life situation.[74]

An integrated approach can play a key role in considering treatment aspects in addition to psychological support, supporting the family, providing education during periods when the child's health condition does not allow them to attend school, educating fellow students about the events associated with a chronic illness, and increasing social acceptance.[75,76]

Limitations

The sample size of this study was constrained by the total number of adolescent recipients of liver, kidney, and lung transplants in Hungary. Although our sample included a substantial proportion of this population, it remained insufficient to conduct statistical analyses. For example, the limited sample size precluded subgroup analyses by transplant

[72] PAO, Maryland – BOSK, Abigail (2011): Anxiety in Medically Ill Children/Adolescents. In: *Depression and Anxiety*. 28, 1. 40–49. https://doi.org/10.1002/da.20727.

[73] COHN 2020.

[74] FRANCO, Phoebe L. et al. (2024): Exploring How Parents of Chronically Ill Children Learn Self-compassion. In: *Discover Psychology*. 4, 1. 175. https://doi.org/10.1007/s44202-024-00287-3.

[75] Op. cit.

[76] ANNUNZIATO, Francesco et al. (2007): Phenotypic and Functional Features of Human Th17 Cells. In: *Journal of Experimental Medicine*. 204, 8. 1849–1861. https://doi.org/10.1084/jem.20070663.

type, which restricted our ability to examine potentially significant differences such as duration of hospitalization, recovery times, and quality-of-life outcomes. Consequently, no prospective sample size calculation was performed. Therefore, the generalizability and validity of our findings should be interpreted with caution.

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Conflict of Interests

The authors declare no potential conflict of interests with respect to the research, authorship, and/or publication of this article.

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Appendix

Table 1. *Group statistics*

GROUP		No. of respondents	Means	Dispersion	Std. error mean
HO0_BFI_SC1	TX	59	3.97	1.00	0.13
	KO	116	4.06	0.97	0.09
HO0_BFI_SC2	TX	59	3.08	0.72	0.09
	KO	116	3.10	0.74	0.07
HO0_BFI_SC3	TX	59	2.22	0.62	0.08
	KO	116	2.56	0.75	0.07
HO0_BFI_SC4	TX	59	3.12	1.01	0.13
	KO	116	2.95	0.99	0.09
HO0_BFI_SC5	TX	59	3.59	1.04	0.14
	KO	116	3.57	1.05	0.10
HO0_GSE_SC	TX	63	2.61	0.83	0.10
	KO	116	3.06	0.47	0.04
HO0_CISS_SC1	TX	59	2.75	0.78	0.10
	KO	116	2.74	0.85	0.08
HO0_CISS_SC2	TX	59	3.39	0.68	0.09
	KO	116	3.66	0.66	0.06
HO0_CISS_SC3	TX	59	2.87	0.80	0.10
	KO	116	3.01	0.88	0.08
HO0_SDQ_SC1	TX	59	1.66	0.50	0.07
	KO	116	1.73	0.48	0.04
HO0_SDQ_SC2	TX	59	1.34	0.35	0.05
	KO	116	1.26	0.28	0.03
HO0_SDQ_SC3	TX	59	1.51	0.40	0.05
	KO	116	1.40	0.46	0.04
HO0_SDQ_SC4	TX	59	1.11	0.41	0.05
	KO	116	1.02	0.37	0.03
HO0_SDQ_SC5	TX	59	12.19	2.10	0.27
	KO	116	13.02	1.81	0.17
HO0_CDRISK_SC1	TX	59	2.61	0.66	0.09
	KO	116	2.73	0.62	0.06
HO0_DASS21_SC1	TX	59	1.63	0.73	0.09
	KO	115	0.73	0.67	0.06
HO0_DASS21_SC2	TX	59	1.45	0.60	0.08
	KO	114	0.67	0.64	0.06
HO0_DASS21_SC3	TX	59	1.77	0.66	0.09

GROUP		No. of respondents	Means	Dispersion	Std. error mean
HO0_PHQ_SC	KO	114	0.96	0.77	0.07
	TX	55	5.36	4.03	0.54
HO0_MAIA_SC1	KO	109	6.61	4.48	0.43
	TX	56	2.71	1.10	0.15
HO0_MAIA_SC2	KO	115	2.97	1.20	0.11
	TX	58	3.82	1.13	0.15
HO0_altj_let_1	KO	115	3.81	0.98	0.09
	TX	57	6.58	2.10	0.28
HO0_altj_let_2	KO	116	6.79	1.84	0.17
	TX	57	8.89	1.46	0.19
HO0_PHSWB_SC4	KO	116	8.58	1.38	0.13
	TX	58	3.93	1.06	0.14
HO0_PHSWB_SC5	KO	116	4.05	0.82	0.08
	TX	58	22.97	8.07	1.06
HO0_PHSWB_SC1	KO	116	21.30	7.28	0.68
	TX	57	3.76	0.85	0.11
HO0_PHSWB_SC2	KO	116	3.84	0.77	0.07
	TX	57	2.96	0.33	0.04
HO0_PHSWB_SC3	KO	116	3.06	0.49	0.05
	TX	58	8.11	1.68	0.22
HO0_szul_SDQ_SC1	KO	116	7.53	1.61	0.15
	TX	59	1.57	0.47	0.06
HO0_szul_SDQ_SC2	KO	16	1.53	0.48	0.12
	TX	59	1.11	0.29	0.04
HO0_szul_SDQ_SC3	KO	16	1.19	0.37	0.09
	TX	59	1.34	0.45	0.06
HO0_szul_SDQ_SC4	KO	16	1.33	0.61	0.15
	TX	59	1.04	0.37	0.05
HO0_szul_SDQ_SC5	KO	16	0.98	0.28	0.07
	TX	59	12.85	2.10	0.27
HO0_IFS_SC	KO	16	13.19	1.56	0.39
	TX	60	1.98	0.63	0.08
HO0_szul_CDRISK_SC1	KO	32	2.51	0.66	0.12
	TX	60	2.98	0.68	0.09
HO0_szul_DASS21_SC1	KO	7	2.87	0.38	0.14
	TX	59	1.47	0.52	0.07
HO0_szul_DASS21_SC2	KO	7	1.10	0.16	0.06
	TX	59	1.27	0.38	0.05
	KO	7	1.08	0.08	0.03

GROUP		No. of respondents	Means	Dispersion	Std. error mean
HO0_szul_DASS21_SC3	TX	59	1.76	0.53	0.07
	KO	7	1.63	0.49	0.19
HO0_szul_PHSWB_SC4	TX	59	3.41	0.83	0.11
	KO	7	3.86	0.90	0.34
HO0_szul_PHSWB_SC5	TX	58	19.40	8.35	1.10
	KO	7	21.43	10.29	3.89
HO0_szul_PHSWB_SC1	TX	59	3.97	0.66	0.09
	KO	7	4.24	0.60	0.23
HO0_szul_PHSWB_SC2	TX	59	2.58	0.42	0.05
	KO	7	2.71	0.27	0.10
HO0_szul_PHSWB_SC3	TX	59	7.28	1.61	0.21
	KO	7	8.19	1.37	0.52

Notes: BFI 1–5 = personality trait scales; GSE = self-efficacy scales; CISS-21 (1–3) coping scales; SDQ 1–5 = abilities and difficulties scales; CD-RISK = resilience; DASS-21/ 1–3 = depression, anxiety, and stress scales; PHSWB = general well-being. The abbreviations described also apply to parental responses; IFS = family burden).

Table 2. *Summary of two-sample t-test, Wech's d-test, and Cohen's effect sizes*

	F	Sig .	t	df	Two-Sided p		Point Estimate
HO0_BFI_SC1	0.00	0.98	-0.63	173.00	0.53	Cohen's d	-0.10
			-0.62	113.09	0.54	Hedges' correction	-0.10
HO0_BFI_SC2	0.31	0.58	-0.12	173.00	0.90	Cohen's d	-0.02
			-0.12	119.32	0.90	Hedges' correction	-0.02
HO0_BFI_SC3	**0.82**	**0.37**	**-2.96**	**173.00**	**0.00**	**Cohen's d**	**-0.47**
			-3.14	**136.79**	**0.00**	**Hedges' correction**	**-0.47**
HO0_BFI_SC4	0.03	0.87	1.07	173.00	0.29	Cohen's d	0.17
			1.06	114.48	0.29	Hedges' correction	0.17
HO0_BFI_SC5	0.17	0.68	0.12	173.00	0.91	Cohen's d	0.02
			0.12	117.49	0.90	Hedges' correction	0.02
HO0_GSE_SC	**7.02**	**0.01**	**-4.63**	**177.00**	**0.00**	**Cohen's d**	**-0.73**
			-3.96	**83.81**	**0.00**	**Hedges' correction**	**-0.72**

	F	Sig.	t	df	Two-Sided p		Point Estimate
HO0_CISS_SC1	0.51	0.47	0.02	173.00	0.98	Cohen's d	0.00
			0.02	125.85	0.98	Hedges' correction	0.00
HO0_CISS_SC2	**0.00**	**0.95**	**-2.49**	**173.00**	**0.01**	**Cohen's d**	**-0.40**
			-2.47	**113.53**	**0.02**	**Hedges' correction**	**-0.40**
HO0_CISS_SC3	0.53	0.47	-1.03	173.00	0.30	Cohen's d	-0.17
			-1.07	127.10	0.29	Hedges' correction	-0.16
HO0_SDQ_SC1	0.00	0.99	-0.92	173.00	0.36	Cohen's d	-0.15
			-0.90	112.75	0.37	Hedges' correction	-0.15
HO0_SDQ_SC2	4.36	0.04	1.63	173.00	0.10	Cohen's d	0.26
			1.52	97.65	0.13	Hedges' correction	0.26
HO0_SDQ_SC3	2.53	0.11	1.63	173.00	0.11	Cohen's d	0.26
			1.71	133.38	0.09	Hedges' correction	0.26
HO0_SDQ_SC4	1.70	0.19	1.37	173.00	0.17	Cohen's d	0.22
			1.33	107.52	0.19	Hedges' correction	0.22
HO0_SDQ_SC5	**2.00**	**0.16**	**-2.72**	**173.00**	**0.01**	**Cohen's d**	**-0.43**
			-2.59	**102.99**	**0.01**	**Hedges' correction**	**-0.43**
HO0_CDRISK_SC1	0.18	0.67	-1.18	173.00	0.24	Cohen's d	-0.19
			-1.16	111.08	0.25	Hedges' correction	-0.19
HO0_DASS21_SC1	**1.62**	**0.20**	**8.19**	**172.00**	**0.00**	**Cohen's d**	**1.31**
			7.97	**109.04**	**0.00**	**Hedges' correction**	**1.31**
HO0_DASS21_SC2	**1.35**	**0.25**	**7.81**	**171.00**	**0.00**	**Cohen's d**	**1.25**
			7.98	**124.63**	**0.00**	**Hedges' correction**	**1.25**
HO0_DASS21_SC3	**3.31**	**0.07**	**6.77**	**171.00**	**0.00**	**Cohen's d**	**1.09**
			7.11	**134.49**	**0.00**	**Hedges' correction**	**1.08**
HO0_PHQ_SC	0.85	0.36	-1.74	162.00	0.08	Cohen's d	-0.29
			-1.81	119.03	0.07	Hedges' correction	-0.29
HO0_MAIA_SC1	0.46	0.50	-1.33	169.00	0.19	Cohen's d	-0.22

	F	Sig.	t	df	Two-Sided p		Point Estimate
			-1.37	118.30	0.17	Hedges' correction	-0.22
HO0_MAIA_SC2	2.21	0.14	0.06	171.00	0.95	Cohen's d	0.01
			0.06	101.28	0.95	Hedges' correction	0.01
HO0_altj_let_1	0.76	0.38	-0.69	171.00	0.49	Cohen's d	-0.11
			-0.66	99.15	0.51	Hedges' correction	-0.11
HO0_altj_let_2	0.02	0.88	1.40	171.00	0.16	Cohen's d	0.23
			1.37	105.86	0.17	Hedges' correction	0.22
HO0_PHSWB_SC4	7.26	0.01	-0.83	172.00	0.41	Cohen's d	-0.13
			-0.76	92.46	0.45	Hedges' correction	-0.13
HO0_PHSWB_SC5	0.22	0.64	1.37	172.00	0.17	Cohen's d	0.22
			1.32	104.25	0.19	Hedges' correction	0.22
HO0_PHSWB_SC1	0.35	0.55	-0.59	171.00	0.56	Cohen's d	-0.09
			-0.57	102.30	0.57	Hedges' correction	-0.09
HO0_PHSWB_SC2	7.40	0.01	-1.33	171.00	0.18	Cohen's d	-0.22
			-1.52	155.94	0.13	Hedges' correction	-0.21
HO0_PHSWB_SC3	**0.05**	**0.82**	**2.22**	**172.00**	**0.03**	**Cohen's d**	**0.36**
			2.19	**109.63**	**0.03**	**Hedges' correction**	**0.36**
HO0_szul_SDQ_SC1	0.00	0.96	0.36	73.00	0.72	Cohen's d	0.10
			0.36	23.38	0.72	Hedges' correction	0.10
HO0_szul_SDQ_SC2	0.74	0.39	-0.91	73.00	0.37	Cohen's d	-0.26
			-0.79	20.34	0.44	Hedges' correction	-0.25
HO0_szul_SDQ_SC3	6.49	0.01	0.13	73.00	0.90	Cohen's d	0.04
			0.11	19.61	0.92	Hedges' correction	0.04
HO0_szul_SDQ_SC4	1.52	0.22	0.66	73.00	0.51	Cohen's d	0.19
			0.77	30.35	0.45	Hedges' correction	0.18
HO0_szul_SDQ_SC5	1.16	0.29	-0.60	73.00	0.55	Cohen's d	-0.17

	F	Sig .	t	df	Two-Sided p		Point Estimate
			-0.71	31.42	0.48	Hedges' correction	-0.17
HO0_IFS_SC	**0.45**	**0.50**	**-3.75**	**90.00**	**0.00**	**Cohen's d**	**-0.82**
			-3.68	**60.44**	**0.00**	**Hedges' correction**	**-0.81**
HO0_szul_CDRISK_SC1	2.50	0.12	0.42	65.00	0.68	Cohen's d	0.17
			0.65	11.08	0.53	Hedges' correction	0.17
HO0_szul_DASS21_SC1	**5.32**	**0.02**	**1.85**	**64.00**	**0.07**	**Cohen's d**	**0.74**
			4.05	**26.12**	**0.00**	**Hedges' correction**	**0.73**
HO0_szul_DASS21_SC2	**2.98**	**0.09**	**1.31**	**64.00**	**0.19**	**Cohen's d**	**0.52**
			3.33	**49.69**	**0.00**	**Hedges' correction**	**0.52**
HO0_szul_DASS21_SC3	0.14	0.71	0.61	64.00	0.55	Cohen's d	0.24
			0.64	7.74	0.54	Hedges' correction	0.24
HO0_szul_PHSWB_SC4	0.07	0.79	-1.34	64.00	0.18	Cohen's d	-0.54
			-1.26	7.27	0.25	Hedges' correction	-0.53
HO0_szul_PHSWB_SC5	0.00	0.95	-0.59	63.00	0.55	Cohen's d	-0.24
			-0.50	6.99	0.63	Hedges' correction	-0.23
HO0_szul_PHSWB_SC1	0.04	0.84	-1.02	64.00	0.31	Cohen's d	-0.41
			-1.10	7.82	0.30	Hedges'' correction	-0.40
HO0_szul_PHSWB_SC2	0.53	0.47	-0.80	64.00	0.43	Cohen's d	-0.32
			-1.13	9.88	0.29	Hedges' correction	-0.32
HO0_szul_PHSWB_SC3	0.39	0.53	-1.43	64.00	0.16	Cohen's d	-0.57
			-1.62	8.10	0.14	Hedges' correction	-0.56

Notes: BFI 1-5 = personality trait scales; GSE = self-efficacy scales; CISS–21 (1–3) coping scales; SDQ 1–5 = abilities and difficulties scales; CD-RISK = resilience; DASS-21/ 1–3 = depression, anxiety, and stress scales; PHSWB = general well-being. For parental responses (see *szul.*), the described abbreviations also apply; IFS = burden on the family).

Table 3. *Summary of significant differences between groups*

	F	Sig.	t	df	Two-Sided p		Point Estimate
HO0_BFI_SC3	0.82	0.37	-2.96	173.00	0.00	**Cohen's d**	-0.47
			-3.14	136.79	0.00	Hedges' correction	-0.47
HO0_GSE_SC	7.02	0.01	-4.63	177.00	0.00	Cohen's d	-0.73
			-3.96	83.81	0.00	Hedges' correction	-0.72
HO0_CISS_SC2	0.00	0.95	-2.49	173.00	0.01	Cohen's d	-0.40
			-2.47	113.53	0.02	Hedges' correction	-0.40
HO0_SDQ_SC5	2.00	0.16	-2.72	173.00	0.01	Cohen's d	-0.43
			-2.59	102.99	0.01	Hedges' correction	-0.43
HO0_DASS21_SC1	1.62	0.20	8.19	172.00	0.00	Cohen's d	**1.31**
			7.97	109.04	0.00	Hedges' correction	**1.31**
HO0_DASS21_SC2	1.35	0.25	7.81	171.00	0.00	Cohen's d	**1.25**
			7.98	124.63	0.00	Hedges' correction	**1.25**
HO0_DASS21_SC3	3.31	0.07	6.77	171.00	0.00	Cohen's d	**1.09**
			7.11	134.49	0.00	Hedges' correction	**1.08**
HO0_PHSWB_SC3	0.05	0.82	2.22	172.00	0.03	Cohen's d	**0.36**
			2.19	109.63	0.03	Hedges' correction	**0.36**
HO0_IFS_SC	0.45	0.50	-3.75	90.00	0.00	Cohen's d	-0.82
			-3.68	60.44	0.00	Hedges' correction	-0.81
HO0_szul_DASS21_SC1	5.32	0.02	1.85	64.00	0.07	Cohen's d	**0.74**
			4.05	26.12	0.00	Hedges' correction	**0.73**
HO0_szul_DASS21_SC2	2.98	0.09	1.31	64.00	0.19	Cohen's d	**0.52**
			3.33	49.69	0.00	Hedges' correction	**0.52**

Notes: BFI 1–5 = personality trait scales; GSE = self-efficacy scales; CISS-21 (1–3) coping scales; SDQ 1–5 = abilities and difficulties scales; CD-RISK = resilience; DASS-21/ 1–3 = depression, anxiety, and stress scales; PHSWB = general well-being. The abbreviations described also apply to parental responses; IFS = family burden).

Table 4. *Group averages summarized and indicating the differences between the two groups*

	Group Statistics				
	GROUP	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
HO0_BFI_SC3	TX	59	2.22	0.62	0.08
	KO	116	2.56	0.75	0.07
HO0_GSE_SC	TX	63	2.61	0.83	0.10
	KO	116	3.06	0.47	0.04
HO0_CISS_SC2	TX	59	3.39	0.68	0.09
	KO	116	3.66	0.66	0.06
HO0_SDQ_SC5	TX	59	12.19	2.10	0.27
	KO	116	13.02	1.81	0.17
HO0_DASS21_SC1	**TX**	**59**	**1.63**	**0.73**	**0.09**
	KO	**115**	**0.73**	**0.67**	**0.06**
HO0_DASS21_SC2	**TX**	**59**	**1.45**	**0.60**	**0.08**
	KO	**114**	**0.67**	**0.64**	**0.06**
HO0_DASS21_SC3	**TX**	**59**	**1.77**	**0.66**	**0.09**
	KO	**114**	**0.96**	**0.77**	**0.07**
HO0_PHSWB_SC3	**TX**	**58**	**8.11**	**1.68**	**0.22**
	KO	**116**	**7.53**	**1.61**	**0.15**
HO0_IFS_SC	TX	60	1.98	0.63	0.08
	KO	32	2.51	0.66	0.12
HO0_szul_DASS21_SC1	**TX**	**59**	**1.47**	**0.52**	**0.07**
	KO	**7**	**1.10**	**0.16**	**0.06**
HO0_szul_DASS21_SC2	**TX**	**59**	**1.27**	**0.38**	**0.05**
	KO	**7**	**1.08**	**0.08**	**0.03**

Notes: BFI 1–5 = personality trait scales; GSE = self-efficacy scales; CISS-21 (1–3) coping scales; SDQ 1–5 = abilities and difficulties scales; CD-RISK = resilience; DASS-21/ 1–3 = depression, anxiety, and stress scales; PHSWB = general well-being. The abbreviations described also apply to parental responses; IFS = family burden).