

UNIVERSITY OF PÉCS
FACULTY OF HEALTH SCIENCES
DOCTORAL SCHOOL OF HEALTH SCIENCES

Head of the Doctoral School:

Prof. Dr. István Kiss, DSc

Program Manager of the Doctoral School:

Prof. Dr. Gábor L Kovács, DSc

Thesis Supervisor:

Dr. habil. Ákos Levente Tóth

**Examination of the Effects of Horse-Assisted Activities on Social
Behaviour, Sense of Coherence and Aggression Among Adolescents in
Vocational Training**

Theses of PhD Dissertation

Imre Zoltán Pelyva



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Introduction

At the time of writing, we had not even heard of the COVID-19 pandemic, yet we thought that the world was somehow heading in a direction where more and more people were struggling with emotional, behavioural and peer problems and needed help to cope with them. Certain periods of life, such as adolescence or old age, are particularly affected in this respect, and you don't have to be medically 'sick' to benefit from a little outside help.

The pandemic, confinement, insecurity and fear have had a multiplier effect of such phenomena in society. That is why in our opinion it is crucial to explore all the resources in our environment that can help, even a little, to reduce anxiety, control emotions and maintain a positive attitude.

Horses, as representatives of nature, can play an important role in the lives of people and, in the specific context of our study, adolescents, in creating peace and balance in their lives. The closeness of nature, which is an inherent part of equine-assisted activities, provides us with a break from our everyday lives and points to things that can help us to develop and live more fully. Healing processes can take place between humans and animals, and the proximity of animals can make the younger generation stronger and more emotionally secure. Adolescence is a critical time of personal growth and development. We believe it is important to help adolescents become more self-aware and reflective of their behaviour, thus promoting their emotional and social development.

Objective

The aim of this study is to collect empirical data in order to promote positive behaviours and create a healthier school and community environment.

There is no known research to date that has investigated the impact of regular equine-assisted activities among adolescents in vocational training in the following aspects:

- prevalence of behavioural problems
- prosocial behaviour
- the relationship between behavioural problems and prosocial behaviour
- tendency to aggressiveness
- salutogenetic sense of coherence
- the relationship between prosocial behaviour, sense of coherence and tendency to aggressiveness.

Two studies were carried out as part of our research. The first was before the COVID-19 pandemic, in 2018, and the second was in May 2020, during the first wave of the epidemic, when a curfew was still in place. The second study was a replication of the first in terms of target population and main research questions (a quasi-follow-up study), but the pandemic raised new research questions and allowed new research objectives to be set.

Objectives of the first study

- To explore the factors influencing the behaviour, social and emotional development and sense of salutogenetic coherence of vocational school students, with a primary focus on the impact of horse-assisted activities.
- To find links between behavioural problems, prosocial behaviour, sense of coherence and level of aggression.
- To investigate whether there is a difference in these areas between students studying equine vocations – doing equine-assisted activities on a daily basis – and students studying other disciplines, not working with horses.

Objectives of the second study

- To investigate whether the pandemic and/or the curfew affected sense of coherence and aggression levels of adolescents, comparing participants in horse related and non-horse related trainings.
- To explore what factors influenced their experience of the changes caused by the lockdown in their daily lives, with a particular focus on human-animal interactions and activities with animals.

Hypotheses

The following hypotheses were formulated along our objectives:

Hypotheses of the first study

A) We assume that among vocational school students (whether or not they are regularly involved with horses):

H1: girls have fewer behavioural problems than boys

H2: prosocial behaviour of both boys and girls improves over the school years

H3: prosocial behaviour and the frequency of behavioural problems are negatively correlated

H4: boys have a stronger sense of coherence than girls

H5: there is a positive correlation between sense of coherence and prosocial behaviour

H6: there is a negative correlation between sense of coherence and behavioural problems

H7: there is a negative correlation between sense of coherence and tendency to aggressive behaviour

H8: both boys' and girls' sense of coherence is stronger towards the end of their studies.

B) We assume that students who work with horses almost daily (studying equine vocations):

H9: are more helpful and empathetic than students in other disciplines

H10: have fewer behavioural problems

H11: have a lower tendency to be aggressive

H12: have a stronger sense of coherence.

Hypotheses of the second study

We assume that:

H1: the level of the sense of coherence varied temporarily during the pandemic, but not to the same extent across genders

H2: levels of aggressiveness increased during the pandemic

H3: the level of aggressiveness of students with a stronger sense of coherence increased less during the pandemic than that of students with a weaker sense of coherence

H4: students who had been working with horses almost daily before the pandemic and did not have the opportunity to do so during the curfew had higher levels of aggression than students who had the opportunity to work with horses or other animals during the pandemic

H5: perception of changes due to curfew is more positive for physically active people

H6: perception of changes due to curfew is more positive for those who had the opportunity to work with horses or other companion animals during the curfew

H7: perception of changes due to curfew is more positive for those with a strong sense of coherence.

Research methodology

Target population and presentation of samples

The target population of the study was Hungarian vocational school students aged 14-18 years with no diagnosed physical or mental disabilities, who were around horses on a weekly basis (9-13 hours, i.e. 2 days/week) as part of their studies. The riding sessions included feeding and grooming the horses, stable work, and lunging, driving and riding the animals. The aim of the vocational training is to enable students, to provide professional care and feeding of horses. To carry out practical tasks related to breeding and to participate in the daily management of the horse. This group will be referred to as the 'equine' group.

Members of the control group had studied some other profession within the same schools (e.g. gardener, animal breeder, butcher, baker), but had not worked around horses, or done any horse-assisted activities, either inside or outside school. They constituted the 'non-equine' group.

The study population was selected from a sample of students attending four-year trainings in 10 different agricultural secondary schools.

Preparation and conduct of the studies

First study

Once the PTE Regional Committee for Research Ethics had approved the planned research, we wrote to the school principals, describing in detail the content and purpose of the research and asking for their consent and help in conducting the study. After receiving positive feedback, we discussed which classes would participate in the study and then had the selected pupils and their parents sign a consent form, also providing detailed information about the study.

After signing the consent forms, students filled in the paper questionnaires, ensuring anonymity. We checked that the inclusion and exclusion criteria were met and then recorded the data from the questionnaires eligible for participation in the study in an Excel 16 spreadsheet.

The number of items in the study sample was five hundred and twenty-five (n=525).

Second study

The PTE Regional Committee for Research Ethics also approved the design of the second survey, so we repeated the communication with the heads of the institutions and provided students in the same institutions and departments with the link to access the questionnaire online, using Google's questionnaire builder. The heads of institutions and teachers supported

the survey, so that a sufficient number of validly completed questionnaires were obtained before the end of the academic year, during the curfew period.

The number of items in the study sample was four hundred and twelve (n=412).

Research tools

In both studies on which the dissertation is based, in addition to the self-designed questions, we used several internationally used questionnaires validated for domestic conditions.

First study

A. Self-constructed questions

This part of the questionnaire examined:

- the type of the living environment the target group
- their attitude to sport and recreation with animals, especially horses
- the difficulties they encounter in acquiring skills and competences
- what gives them a sense of achievement
- ways to reduce their failures and
- ways to help them spend quality time with horses.

B. Strengths and Difficulties Questionnaire, SDQ

The 25-item version of the "Strengths and Difficulties Questionnaire" was used to assess students' prosocial behaviour and possible behavioural problems. The 25 attributes belong to 5 different dimensions: (1) emotional difficulties (ED), (2) behavioural difficulties (BD), (3) hyperactivity (H), (4) peer relations (PR), and (5) prosocial behaviour (PB). The sum of the scales (1) to (4) gives the total difficulty score (TS) (based on 20 items). Subjects have to decide whether the statement is 'Not true', 'Somewhat true' or 'Certainly true' for them. Responses are scored 0, 1 or 2, sometimes 'Not True' is scored 0, in other cases the choice 'Definitely True' is scored 0; the total score for each scale is between 0 and 10.

C. Aggression Questionnaire, AQ-12

The 12-item Bryant-Smith (B12) test was used to measure the level of aggression (trait aggression). The test contains four subscales: physical aggression, verbal aggression, hostility and anger. Responses are measured on a Likert scale of 1 to 5, with 1= "Strongly disagree" and 5= "Strongly agree". The possible range of scores is 12-60 points. A higher score indicates a higher level of aggressiveness.

D. Sence Of Coherence Scale, SOC-13

To measure the sense of coherence, we used the 13-item Sense of Coherence (SOC-13) scale by Antonovsky. The semantic scale of response alternatives to each item of the questionnaire is a score from 1 to 7, where 1 and 7 represent extreme emotions with respect to questions (and statements) about life experience. The minimum total score available on the questionnaire is 13 and the maximum is 91. A higher total score indicates a stronger sense of coherence and a lower total score indicates a weaker sense of coherence.

Second study

A. Self-constructed questions

The questions on leisure activities of the first survey were supplemented with questions on lifestyle related to curfew. We also asked the question "Overall, how would you rate your lifestyle under curfew restrictions compared to before the pandemic (regardless of the fact that the pandemic is of course a very bad thing)?" The response options were "much worse", "worse", "neither worse nor better", "better", "much better".

The two questionnaires below are identical to those used in the first survey:

B. Sence Of Coherence Scale, SOC-13

C. Aggression Questionnaire, AQ-12

Statistical methods

Descriptive statistical results for continuous variables are presented with the mean or the median and the standard deviation, and their 95% confidence intervals.

According to the results of the normality test (Kolmogorov-Smirnov test), parametric or non-parametric tests (t-test, ANOVA, Wilcoxon, Mann-Whitney U test) were used for hypothesis testing. Correlations were examined using Spearman or Pearson correlation analysis and multiple linear or multiple binary logistic regression models. Cluster analysis was used to create groups with the same characteristics.

For sample size estimation, G*Power software was used. For statistical analysis, SPSS v. 25.0 (IBM Corp. Released 2017. IBM SPSS Statistics for Windows, Version 25.0, IBM Corp., Armonk, NY, USA) software was used. Figures were prepared in Excel 2016.

Ethical aspects of research

These studies have ethical approval. The study protocol complied with the latest version of the Helsinki Declaration. Participation in the study was anonymous and voluntary. The Regional Committee for the Research Ethics of the Clinical Centre of the University of Pécs approved the conduct of the study (licence number 7280-PTE 2018).

Results

First study

Description of the sample

In all three types of settlement, there are significantly more girls than boys in the equine groups. In terms of settlement types, the sex ratios show a significant difference in the villages, with relatively more girls in the 14-16 age group. For this reason, the relationship between the explanatory and predictor variables and effect variables should be controlled for by the gender and age group variables. There is no significant relationship between effect variables and settlement type (town, village, farm) within gender and age groups.

Results of the SDQ questionnaire

Examination of factors influencing SDQ using binary analysis

According to the Mann-Whitney test, there is a significant difference ($p < 0.001$) between boys and girls in behavioural problems, except for hyperactivity.

Girls have more emotional problems, while boys have more behavioural and peer problems.

According to the Mann-Whitney test, the means of equine students and non-equine students differ significantly ($p < 0.001$) in all components of behavioural problems.

The fifth scale of the Strengths and Difficulties Questionnaire is prosociality. It was found that prosociality is higher for both sexes in the equestrian group.

The relationships between the main explanatory variable (equine vs. non- equine) and the effect variables (emotional difficulties, behavioural difficulties, hyperactivity, peer relations, prosocial behaviour) were analysed using binary logistic regression models controlled for gender and age. In general, girls (i.e. regardless of age or whether they belong to the target or control group) show more emotional symptoms but fewer peer problems. The older age group has lower prevalence of emotional symptoms and peer problems – including lower prevalence of hyperactivity –, and significantly more prosocial behaviour than the younger age group.

Based on the SDQ questionnaire, the most significant difference was whether the respondent was in the target or control group. The equine group had significantly fewer emotional difficulties and behavioural problems than average, and significantly better prosocial behaviour. The odds of having emotional difficulties or behavioural problems, controlled for gender and age, are approximately four times higher for non- equine than for equine. This suggests that equine-assisted activities (EAA) play a protective role in behaviour.

A linear regression model was used to test the association of the variable with horse-assisted activity, controlling for gender and age (as a bivariate variable).

On average, 17–18-year-olds have significantly ($p < 0.001$) fewer behavioural problems overall than 14–16-year-olds; likewise equine students have fewer behavioural problems overall than non-equine students ($p < 0.001$). By gender (as measured by the partial regression coefficient), the average number of behavioural problems does not differ significantly.

The contribution of regular horse-assisted sessions to more favourable behaviour

In a pre-post design, we investigated the extent to which the positive behaviour (fewer behavioural problems) observed among equine students can be attributed to regular activities with horses.

In Figure 1, the relational signs show which group had a higher average total score for behavioural problems.

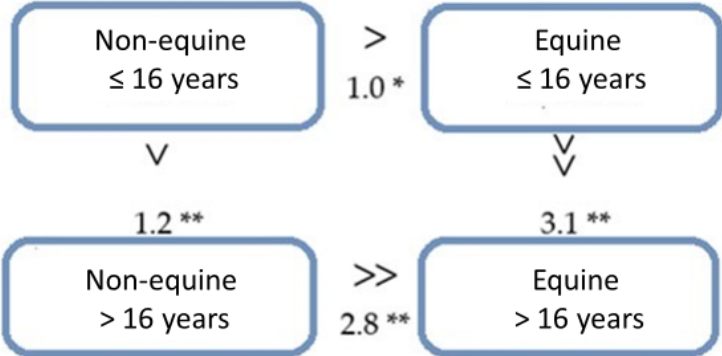


Figure 1
 Difference between the mean of the aggregate score of each group for behavioural problems
 * $p < 0.050$; ** $p < 0.001$ (ANOVA Scheffe post-hoc test)
 (Source: self-edited)

Already at the beginning of their studies (among 14–16-year-olds), equine students on average have fewer behavioural problems than non-equine students (difference in mean score 1.0), and both groups of 17–18-year-olds have fewer behavioural problems than 14–16-year-olds, but the decrease is more significant among equine students (3.1 vs. 1.2).

Correlation between prosocial behaviour and behavioural problems

In the full sample, the total problem score and the prosocial scale scores are negatively correlated. Spearman's rho = - 0.30, $p < 0.001$.

We treated prosocial behaviour as a dichotomous dependent variable (notation $\leq 3 = 0$, $4+ = 1$) and used a logistic regression model to examine the extent to which it is related to different behavioural problems controlling for gender, age and group (equine or non-equine student) variables.

With the exception of peer relation problems, behaviour problems and prosocial behaviour were correlated. The more behavioural problems subjects have, the less prosocial behaviour they exhibit. Members of the equine group, regardless of behavioural problems (controlled for gender and age), were 4.6 times (AOR = 4.57, 95% CI = 2.9-7.1) more likely to exhibit prosocial behaviour than the control group.

Results of the Aggression Questionnaire (AQ-12)

Examination of factors influencing the AQ-12 using binary analysis:

To examine factors influencing aggression levels, scores "measuring" symptoms for each dimension (physical aggression, verbal aggression, hostility, anger) were recoded as 0 or 1 depending on the frequency of the symptom. A score of 1 means that the symptom is more than moderately frequent and a score of 0 means that it is less frequent. Along each dimension, the student was considered more aggressive if they had at least one frequently occurring symptom, i.e. the dimension score was ≥ 1 .

No significant difference was found in each dimension of aggression, neither by gender nor by belonging to the equine or non-equine group.

Examining factors influencing aggression levels using multiple logistic regression models

Similar to the analysis of factors affecting behavioural problems and prosocial behaviour, aggression levels were analysed using multiple (binary) logistic regression models.

The dependent variables of the models were, on the one hand, each dimension and, on the other hand, a complex variable (the cluster variable) generated by two-step cluster analysis that considered all symptoms simultaneously. The main predictor variable was the field of training (equine vs. non-equine), gender and age were included in the models as control variables, and variables related to leisure time were alternately included in the models. (Sample element numbers did not allow for more than four independent variables to be included in the models simultaneously.)

In the models with each dimension and the cluster variable as dependent variables, only the age group variable (indicating whether the learner was at the beginning or end of the training) was found to be weakly significant (AOR=1.73, 95% CI = 1.15-3.01).

The results of the study on the sense of coherence (SOC-13) questionnaire

In line with our objective to investigate, among other things, the impact of equine-assisted activity on students' sense of coherence, we formed four groups per gender: groups of students studying non-equine vocations at the beginning of their studies, groups of students studying equine vocations at the beginning of their studies, and groups of students at the end of their studies, according to the same criteria.

The results show that neither boys' nor girls' sense of coherence at the start of their vocational training differed significantly for any of the two types of trainings. However, the "meaningfulness" dimension of the sense of coherence was stronger among equine boys at the end of their vocational schooling, and more significantly so compared to the non-equine boys. At the end of training, equine students' sense of coherence was also significantly different compared to non- equine students as measured by the SOC-13 total score.

The same trend can be observed for girls, although age seems to play more of a role in the increase in SOC, as at the end of the training there is only a significant difference in "intelligence" between riders and non-riders, but no significant difference in the overall SOC-13 score.

Second Study

Description of the sample

The sample of the survey during the pandemic, while the curfew was in place, consisted of the same students from the same vocational schools, meeting the same inclusion and exclusion criteria, as in the first survey. Since after two years some of the pupils had changed (new first-

year pupils had arrived and graduates had left the school), it was necessary to check that the recruitment background of the pupils had not changed significantly. Age, gender, place of residence and type of education as possible main influencing factors indicated that the composition of the two samples did not change significantly.

Characteristics of pupils' living conditions during the curfew

Before the outbreak, 43.3% of pupils lived in student accommodation. They were generally staying in their residence during the curfew. During this period, 5.3% (22 people) did not leave home at all; 48.5% (143 people) left home every 2-3 days or less often; 41.2% (17 people) left home once or more a day. Compared with the previous year, 22.7% (56 persons) spent about the same amount of time outdoors, 40.1% (165 persons) less and 37.2% (92 persons) more. Physical activity was also high, with 53.1% (131 people) less active than before, but 21.9% more active. There was no significant difference between boys and girls in this respect. A very high proportion of 74.1% (183) spent time with pets (dogs, cats, rabbits, guinea pigs) in their leisure time – in this group the proportion of girls was significantly higher. In addition, 40.8% (168) spent time specifically with horses, with the same proportion of boys and girls.

Education was delivered online; 93.0% of students used mobile phones and 19.7% used mobile phones exclusively, while the rest used laptops, desktops or tablets in addition to mobile phones. On average, 6.4 ± 2.5 hours per day were spent online, of which 4.2 ± 2.5 hours were spent on compulsory school material. By comparison, the pre-pandemic survey found that respondents spent 5.4 ± 5 hours per day online. In this respect, there is a wide variation. During the pandemic, girls spent on average one hour more online than boys, but the extra time was due to an increase in time spent studying. The difference between boys and girls was significant ($p < 0.050$) for the time spent studying and time spent online but not with school tasks. Compared to the pre-epidemic period, both boys and girls spent on average one hour more on the internet, also a significant difference.

Level of coherence and aggressiveness and its comparison with the results of the pre-pandemic survey

Given that the distribution of scores for the sub-dimensions did not always conform to a normal distribution, we dichotomized the effect variables uniformly along the median and examined whether there was a difference between the first and second study between and within genders.

On the SOC13 scale, in the pre-epidemic sample, boys have a stronger sense of coherence than girls, while in the post-epidemic sample this difference disappears. In the AQ-12 test, the level

of aggression in the first sample does not differ between boys and girls, but during the epidemic the tendency to aggression remains significantly stronger in boys in terms of hostility and verbal aggression, and this difference is also reflected in the aggregate scale. Comparing the two sets of data, it can be concluded that boys' sense of coherence is weakened, while aggression, in all its dimensions, is strengthened. For girls, this was only reflected in physical aggression.

Comparison of the first and second study in terms of the correlation between the main variables and the specialisation of the training

The effects of animal-assisted activities on the sense of coherence and aggression proneness were investigated using a multiple linear regression model. In the model, the dependent variable was the SOC-13 total score and the AQ-12 test total score, and the main explanatory variable was the response to the question whether the participant had engaged in animal-assisted activities for a longer period of time (E vs. NE). Age was included as an independent variable in the model, with two categories: 14–15-year-olds and 16–18-year-olds. This variable indicates whether the respondent is at the beginning of vocational training or has been in training for 1-2 years. Gender was included as a control variable.

The data from the first survey showed that the sense of coherence of students who engaged in activities with horses or animals was slightly stronger than that of students in the control group ($p = 0.048$). Boys' sense of coherence was also significantly stronger than girls' ($p = 0.026$). The differences were not significant in the survey conducted during the pandemic.

The first survey data showed that the sense of coherence of pupils who engaged in horse- or animal- assisted activities was slightly stronger than that of pupils in the control group ($p = 0.048$). Boys' sense of coherence was also significantly stronger than girls' ($p = 0.026$). The differences were not significant in the pandemic survey.

Gender and age were not significant in any of the surveys; however, during the pandemic, the propensity to be aggressive was significantly greater in the rider group ($p = 0.027$) (Table 2.)

Comparison of overall aggressiveness scores by sense of coherence

Both studies found that the tendency to be aggressive is strongly influenced by "manageability" and "meaningfulness". In the first study, comprehensibility was not significant, in the second study it was, but not as strongly ($p = 0.044$) as the other two components of SOC, which had significance levels of $p < 0.001$. In the second study, a stronger propensity for aggression was

found to be a significant factor for those in the equine group, even when controlling for the sense of coherence.

Impact of changes during curfew on aggressiveness (AQ-12)

As shown above, especially among boys, AQ-12 test scores were higher in the sample taken during the epidemic than in the sample taken before the epidemic. We then sought to determine whether changes in students' lifestyles during the curfew period were associated with this result. We examined the following factors: whether they lived in a town or village during the curfew, how often they were allowed to leave home, how physically active they were compared to before, how much time they spent outdoors, whether they spent more or less time with horses or pets, how much time they spent online during compulsory lessons or studying and how much time they spent in leisure activities, whether they missed their classmates or friends and whether they had the opportunity to meet them in person.

Regardless of gender and age group, there is an increase in time spent online, time spent outdoors is reduced, less physical activity and lack of classmates increases the tendency to be aggressive, while more time spent with horses or pets is beneficial.

Discussion

Our study showed that prosocial behaviour increased with age in both the target and control groups. The prosociality of the equine students was almost four times stronger than that of the non-equine students, as measured by the SDQ questionnaire. This is an outstanding result and supports the idea that time spent with horses improves students' social skills. The present study demonstrates that the presence of horses has beneficial effects even in the absence of therapeutic conditions and goals. This demonstrates that activities with horses do indeed play a role in positive behaviour change, as in other relevant respects the results obtained do not differ statistically. It is also understandable that there is already a difference between the equine and non-equine groups at the beginning of the training, since all the people who were preparing for an equine-related career had already been involved with horses before they entered school. This confirms the hypothesis that human-animal interaction contributes to the development of behaviour.

The study confirmed that equine students had significantly fewer emotional and behavioural problems and exhibited more pro-social behaviour than the control group. We can also conclude that these positive characteristics are already present when students with equine skills enter the institution, which may suggest that students with stronger social skills are attracted to horses.

However, the fact that the reduction in behavioural problems is more significant in the equine group than in the non-equine group suggests that EAA plays a role in the development of these skills. Using cluster analysis, we were able to confirm that EAA is clearly a crucial factor in the development of more positive behaviours.

Among 17–18-year-olds, the differences in behaviour between the equine and non-equine groups were more pronounced compared to 14–16-year-olds - and as the groups did not differ in other important respects - it can be assumed that equine training also plays a role in the positive change in behaviour.

Strengths and restrictions of the study

In the first part of the study, it was found that there are statistically significant differences between equine and non-equine students (control group) in certain types of behavioural problems and prosocial behaviour. However, the role of animal-assisted activity in this could only be clearly stated in a longitudinal design. Since such a study would take several years to conduct and anonymity is difficult to achieve, a quasi-pre-post design was developed out of "necessity". The total sample was divided into two age groups and within these into equine-control groups. The younger age group formed the "pre" and the older age group the "post" samples.

When comparing the main sociological characteristics of students at the beginning and end of their training, there were no significant differences. Thus, these or related factors are not likely to play a significant role in "explaining" the differences between the effect variables studied. It can therefore be concluded that the differences are largely related to the specialisation of the training (i.e. equine or non-equine).

The strength of the study is that the subjects of both the equine and the control group come from all the training centres in Hungary where equine vocational training is provided, and the sample size is relatively large even when restricted to those who are clearly equine/non-equine for statistical analysis.

Another strength of the research is that it uses multiple approaches and multivariate models to analyse how equine-assisted activities influence adolescents' social behaviour.

Based on our review of the literature and research findings, we believe that working with horses is good for all ages, especially adolescents who are at a vulnerable age. What must be remembered is that this can only work if the individuals concerned are made sensitive to the

effects mediated by horses. It is important that the subjects learn to treat the horse as a subject, as a companion, and thus to interpret its reactions (Carlsson et al., 2015). It is the responsibility of the educator to transfer this knowledge. It is therefore necessary to have instructors who convey the right attitude. The horse is not a magical agent, but it has the potential to transmit and instil values and feelings that will help young people to become a better person and develop a positive outlook on life. This of course applies to all horse-human interactions, be they institutional or recreational activities, general horse-related exercises or targeted therapy.

It is important to note that the positive effects of EAA depend largely on the extent to which students understand and are receptive to the communication of horses. The horses' sensitivity forces those in contact with them to be vigilant, because the slightest change in their behaviour, whether voluntary or not (for example, holding their breath), can be interpreted as a threat by the horse and trigger a fearful reaction. The mere presence of horses is less likely to have an effect if the equine professional present does not explain the meaning of their behaviour. However, this knowledge (i.e. an understanding of how horses communicate and behave) is essential if we are to work safely and effectively with these animals. This means that you don't need a therapeutic goal to teach students to listen to and respect horses - in a professional setting, this is a fundamental requirement of all equine interaction. This is why the results described above could also be demonstrated in the traditional (i.e. non-therapeutic or specialised) school settings we studied.

We believe that the relationship that develops between man and horse helps to develop trust, acceptance and understanding towards other people. Our research shows that young people who learn to listen to and care for horses can transfer this knowledge to their human relationships

New scientific results

1. Before the pandemic (based on the first study), it was found that adolescents who have regular and strong relationships with horses
 - have fewer behavioural and emotional problems than their peers who do not have contact with horses
 - have stronger prosocial skills
 - their sense of salutogenetic coherence increases significantly with age.
2. Repeated testing during the pandemic curfew confirmed (that):

- the beneficial effect of horse-assisted activities on adaptation to difficult and unusual situations, with less increased levels of aggression in the equine group during the Covid-19 epidemic
 - adaptation is positively influenced by the sense of coherence, as young people in both groups with a stronger sense of coherence showed a lower tendency to be aggressive during the Covid-19 epidemic
 - adolescents who were allowed to handle horses during curfew periods did not have increased levels of aggression, compared to those who were not allowed to do so during horse training.
3. All these results support our hypothesis that regular equine-assisted activities in the context of vocational training (in the two different disciplines) can have a beneficial effect on adolescents' behaviour, adaptation to unusual situations, sense of coherence and, through this, on their healthy development.

Recommendations

As mentioned in the introduction, adolescence is a difficult period of life, during which young people have to face many difficulties. They need help to understand the world and find their place in it, or just to succeed in general. The more fortunate receive appropriate support from family and friends, while others - a very limited number - receive professional help with more serious problems. Our research has shown that with a little care and attention, school education can help develop skills that are useful in everyday life. Considering the high cost of specific programmes in this area, the importance of highlighting possible tools and factors that are already available is perhaps not negligible. If horses can be used to help adolescents with their problems, and if there are schools where adolescents and horses are present, why not use this opportunity? Perhaps with a small investment we can achieve significant results. We believe that, alongside the statistically significant scientific results indicating the beneficial effects of horses on young people, this is another important insight from our work that may prove useful to a wider, non-scientific audience.

The results of the study demonstrated that equine-assisted activities (EAA) have a vital role to play in the development of adolescents' social competences. In our view, working with horses (EAA), alongside vocational training tasks, is a specific approach which involves activities with horses to promote personal and professional development. Emphasis is placed on interactions

with horses designed to help individuals improve a range of skills, including communication, leadership, problem solving and teamwork.

These may include grooming, leading and observing horses to better understand their behaviour and communication style. Horse riding is not always part of the (EAA) but can be used to improve physical coordination and balance, as well as to build confidence and self-esteem. Skill tasks can also be used, which may include guiding a horse along a course, working with other participants to solve problems, or completing challenges that develop teamwork and communication skills.

The presence of the horse can be particularly effective in promoting self-awareness and empathy, and in providing individuals with opportunities to practice leadership and communication skills in a non-judgmental environment.

Overall, equine-assisted activities aim to create a safe and supportive environment where individuals can work with horses to develop the skills they need to thrive in their personal and professional lives.

In our opinion, equine-assisted sessions in an institutional setting could provide a very good platform for further research on the psychological effects of horses in Hungary. Changes in children could be monitored and, once the methods have been standardised, reliable conclusions could be drawn from the results. Equine education in primary schools would be an excellent place to do this. Institutions dealing with equine professions could also be a good starting point, as could riding schools themselves, through which, in addition to adolescents, small schoolchildren could be involved in the studies as well. Studies that measure specific skills and sub-skills could help to develop research into the impact of equine-assisted activities, which in turn could support the ultimate goal of making learning more enjoyable and education more effective.

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