

A special bond

How equine-assisted services helps families impacted by domestic abuse

For millennia, humans and horses have enjoyed a special relationship. Recent research shows that working with horses can improve human mental health and wellbeing. Professor Ann Hemingway is part of a multidisciplinary team that has demonstrated that equine-assisted services can improve outcomes for families impacted by domestic abuse and mitigate the conditions that fuel it, and believes that the benefits of such an intervention could be delivered through virtual reality technology.

Ask any person about the role of horses in society today, and the chances are they'd refer to horseracing and show jumping, leisure activities for those with the financial means to own a horse. Very few would connect horses with domestic violence. And yet, a dedicated team of public health scientists, neuropsychologists, social psychologists, and specialists in equine science and sensor science are exploring how the remarkable bond between humans and horses can help prevent domestic violence and mitigate the conditions that fuel it. Furthermore, with the help of specialists in virtual reality, they're looking at ways to roll out the mental health benefits of such interactive equine-assisted services without people ever even touching a horse.

For much of human history, horses have been humans' most prized companions. Since domestication, horses have been powerful symbols in many cultures, representing nobility, freedom, and strength. They feature prominently in art, mythology, and literature. They have also fulfilled functional purposes; facilitating the development of agriculture and spreading cultures and ideas between distant regions. They were instrumental in expanding empires, such as those of the Huns, the Mongols, and the Persians, by providing a rapid and effective means of transport and communication across vast territories. For centuries, horses were also central in human combat, sports and war.

At the heart of this multifaceted relationship between humans and horses that has spanned thousands of years,

there is potential for a remarkable and enduring connection to be built based on communication and respect. This connection is of particular interest to Dr Ann Hemingway, a professor of public health at the University of Bournemouth in England. Her research focuses on non-medical, nature-based interventions to improve mental health and wellbeing. For Hemingway, the horse-human interaction is an ancient, largely untapped resource which needs however, to focus on the wellbeing of the horse as well as the human moving forward.

PARTNERSHIP AND COMMUNICATION

While horses are no longer essential for warfare or transport in most parts of the world, their strong bond with humans remains. They are highly social animals with a sophisticated sense of awareness and an ability to perceive human emotions and intentions. Their emotional intelligence makes them adept at interpreting human gestures, tone of voice, and even non-verbal cues such as physical poise and facial expressions, enabling them to adjust their behaviour in response. Horses can also sense human

emotions such as fear, anxiety, happiness, or calmness, often mirroring these emotions in their own behaviour.

At best, the relationship between a horse and its caretaker is not one of dominance of one over the other but built on mutual trust and respect, partnership, and communication. For example, a horse rider should understand and respond to the horse's signals and respect its limits, so that the horse learns to trust the rider's guidance. The act of grooming and caring for a horse may reinforce trust and affection between horse and human while enabling the horse to live with 'friends, freedom, and forage'. Not only are these acts essential for the horse's health, but also ensure that their wellbeing is given equal importance in their lives with humans.

This sensitivity and focus on mutual respect, consideration, and communication forms the basis of working with horses in some equine-assisted services, and Hemingway and researcher Kezia Sullivan have shown how these services can help families experiencing domestic abuse.

EQUINE-ASSISTED EDUCATION

Hemingway has been working with a charity, called TheHorseCourse, to understand how learning natural horsemanship skills can positively affect mental health outcomes. The team has been exploring whether working with horses can help families rebuild the damage caused by domestic violence and situations affecting children in need (CiN) – children identified by social services as at risk of harm or needing additional help to achieve a reasonable standard of health or development.

In an observational study of British families with a history of domestic violence who were part of the Troubled Families Programme (now called The Supporting Families Programme), which aims to support families with multiple disadvantages experiencing poor life outcomes, Hemingway and Sullivan examined the potential benefits of an equine-assisted services (EAS) intervention. Participants of this intervention are taught to understand and respect the horse's perspective, which requires clear, non-aggressive communication and controlling their



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body language. The intervention, structured around the participant's and horse's needs, involves a series of horse-human interaction games, and aims to foster calmness and improve communication, among participants.

Analysing data collected by local authorities, including police crime data, health services, and social worker data, Hemingway and Sullivan compared the outcomes for families who participated

in EAS with those who did not receive any intervention, those who received support from a key worker only, and those who received additional non-EAS support.

The data covered the period 2015 to 2018 for participants undergoing the EAS intervention compared with year-on-year for 2017 and 2018 for all other comparison group participants. In total, there were over 13,000 participants.



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The multidisciplinary team is tapping into the millennia-old special bond between humans and horses.

Photo Credit: mammal.tech

Using horse–human EEG data in conjunction with further psychophysiological measures of emotion, the team is now working to create a VR version of TheHorseCourse.

By tracking the pre-intervention and post-intervention indicators, or 'flags', of domestic violence and CiN used by various social care agencies, the researchers were able to ascertain how EAS measured up with other interventions – or no intervention at all – at reducing incidents of domestic violence or CiN prospectively.

MORE COMPLEX CASES

What became evident in the study were the significant reductions in domestic violence and CiN status for those families who had at least one member complete the EAS intervention, with domestic violence reducing by 51% and a statistically significant reduction in CiN status. That, in itself, was notable; what made it remarkable, though, was that participants in this intervention were some of the more complex cases for whom traditional talk-based therapies,

educational or parenting interventions, or counselling opportunities were ineffective or unattended.

The data supported observations from parents and findings from qualitative studies with EAS intervention participants that highlight the perceived potential for change and improvement in family interactions and individual behaviours. In brief, working with horses brought a different dynamic to building the foundations for stronger, more resilient families. While the data supported the argument for the benefits of EAS, there's a scientific argument for understanding the deeper dynamics of horse-human interaction and whether it can be replicated using technology. EAS interventions have one significant drawback: horses are expensive and high-maintenance – not everyone can have one at home.

Hemingway has been working with a specialist team at Bournemouth University's Multimodal Immersive Neuro-sensing (MINE) cluster to bring the benefits of EAS intervention into the virtual sphere. The MINE team combines cognitive neuroscience and clinical and social psychology with virtual reality environments to develop new insights into understanding and changing people's behaviour. Central to their techniques is the use of electroencephalography (EEG) technology to record electric human brain activities. Horses get a look-in, too.

GOING VIRTUAL

Working with mammal.tech, a company that specialises in breakthrough analytics tools for equine performance and wellbeing, smart sensor innovator Dr Liucheng Guo and his TGO team, TheHorseCourse, Hemingway and the MINE team are planning to examine the EEGs of horses and humans when they interact. Using this horse–human EEG data in conjunction with further psychophysiological measures of emotion, the team is now working to create a VR version of TheHorseCourse to duplicate its many beneficial aspects in a virtual space.

The advantages of combining neuroscience and VR techniques to address social and mental health issues are wide-ranging. Not only is the technology scalable and can provide valuable feedback on users' cognitive and emotional reactions to various situations, but it enjoys enthusiastic uptake by young people, often the victims of domestic abuse, who are particularly vulnerable and need social services support. Unfortunately, while such VR interventions for mental health wellbeing may be on the horizon, the need for them is immediate and acute.

Hemingway and the multidisciplinary team's investigation and application of the benefits of horse–human interaction may be hi-tech, but the special bond between humans and horses they are tapping into is millennia-old. It is a complex, reciprocal relationship that needs better understanding, but the benefits, as shown, will come as no surprise to those who work with horses and know they can bring out the best in humans.



Behind the Research

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W: www.bournemouth.ac.uk/research/centres-institutes/centre-public-health
W: www.bournemouth.ac.uk/research/projects/mine-multimodal-immersive-neuro-sensing-natural-neuro-behavioural-measurement

Research Objectives

A multidisciplinary research team investigates the potential of equine-assisted services for horses and humans.

Detail

Bio

Ann Hemingway is a professor of public health and wellbeing focusing on nature-based interventions to improve mental health and wellbeing. She is regularly funded by international and UK funders, and publishes in peer reviewed scientific journals. All of Hemingway's publications are freely available on the internet through [Bournemouth University Research Online \(BURO\)](http://Bournemouth University Research Online (BURO)).

Funding

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Collaborators

- [Kezia Sullivan](#)
- [TheHorseCourse](#)
- [mammal.tech](#)
- [TGO](#)
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Photo Credit: TheHorseCourse

References

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Personal Response

Equine-assisted services provide a very hands-on intervention; how do you see it working in a virtual space?

Our aim is to develop a game whereby the virtual horse gives feedback on how effectively and calmly the human is communicating, just as happens in real life when the horse gives clear feedback to participants on TheHorseCourse. This will enable many more people to benefit from this unique intervention. In addition, the humans playing the game will grow to respect the unique nature of the horse and how a relationship based on mutual respect and effective communication is possible not only with these wonderful animals but with all mammals, including their fellow humans.