

**Presenter's name:** Ann Hemingway

**Degree, affiliation:** PhD, Bournemouth University UK

**Curriculum vitae:**

Dr Ann Hemingway is Professor of Public Health and Wellbeing at Bournemouth University UK, she is a public health academic. Ann's research is focused on the reduction of inequities in health and wellbeing through public health action. Ann is regularly commissioned to undertake international and UK based research projects she has been studying the horse human relationship for the last ten years and works with a multidisciplinary group of researchers to explore the outcomes, impacts and mechanisms of action of equine assisted services. She has recently published (open access) a first for the global evidence on this area, an observational study which has shown a reduction in domestic violence in families following attending an equine assisted service (Hemingway A, Sullivan K. Reducing the incidence of domestic violence: An observational study of an equine-assisted intervention. *Fam Process*. 2022 Jun;61(2):549-570. doi: 10.1111/famp.12768. Epub 2022 Mar 30. PMID: 35355260).

**Category:** Oral presentation abstract

**Topic:** Horse Related Topic: Intersubjectivity (Researches based on a conscious understanding of the non-verbal reciprocal relationship between horses and humans.

**Authors:**

Xun He, PhD Bournemouth University UK

Fred Charles, PhD Bournemouth University UK

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**Title:** EEG 8 ELECTROENCEPHALOGRAPH) BRAIN ACTIVITY IN HUMANS WHILE PLAYING WITH HORSES

**Keyword 1:** human horse interaction

**Keyword 2:** brain activity in humans

**Keyword 3:** animal assisted service

**Abstract:**

**Objective:** The team from Bournemouth University (UK) which included Prof Hemingway, Dr Xun He, Prof Fred Charles and Dr Roya Haratian, conducted a pilot study jointly with TheHorseCourse, funded by the Esme Fairbairn Foundation, with the eventual aim of developing a 'virtual reality' version of the course which will aim to produce the same positive impacts with the virtual participants.

**Design:** Using electroencephalogram (EEG) to collect brain activity and psycho-physiological data from the students while active on the course has enabled the team to capture instantly, moment by moment, the key changes in brain activity as they were taking place, providing an entirely new, neurological understanding of what is happening in the human's brain as it learns to communicate with a horse. In addition, the data from beginners has been compared with experienced EAS facilitators to show how the brain activity changes as one's expertise grows. Heart rate data was also collected from the horses involved in the pilot to further understand their experiences of involvement in the interaction.

**Results:** This is the first time the brain and body response in a equine assisted intervention has been mapped in this way using EEG and psycho-physiological technology in real time. Our current analysis of the data builds on our previous findings showing that emotional arousal occurs when humans interact with the horse. This may mean that human participants undertaking the course are learning to deal with an emotional experience and being coached to success which may underpin the positive outcomes seen from the course.

**Conclusion:** This research is an important step forward in understanding the benefits of this ancient relationship between humans and horses while in addition, the team believes the techniques and methods used in this research study can be used to further understand other examples of inter-species' interactions in future.