

Embodied Routes to Wellbeing: Horses and Young People

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Introduction

A key element of wellbeing is connection, social connection through knowing and being together. Animals left to their own devices will make and work to maintain and enhance emotional relationships and connections with others and as human animals we are lucky that this proclivity also extends to us...provided we behave in an `acceptable` way for that animal and that species remembering who we are as human animal hunter gatherers. This article will focus on strategies in partnership with animals through which we may promote wellbeing in young people and will expand on Hanlon et al.'s (Hanlon et al., 2011, p. 34) articulation of a current need to “discover a new image of what it is to be human” too begin to promote wellbeing (Eckersley, 2004; Lane, 2000). This chapter will consider humans as part of nature, one element within our ecology (Bateson 1972), and will consider ways to promote wellbeing which tap into our nature and our ability to learn to be well using our bodies and our emotions; the underpinning philosophy of which focuses on inter-dependence, intersubjectivity and cooperation with each other and with other species (Hemingway 2011).

This chapter is going to consider two areas in relation to the current knowledge base, learning to be well (All Party Parliamentary Health Group & The Health Foundation 2016), and the contribution of animals to this. It begins with a consideration of what is meant by wellbeing and then proceeds into the evidence to date on how animals in general and then specifically horses can contribute to our wellbeing. The chapter will then go on to consider in detail research developments relating to young people and horses and this growing area of study, focused on learning to be well.

Wellbeing

Understanding wellbeing and its determinants allows for a whole new endeavour that of wellbeing promotion that builds on the work of the positive psychology movement (Csikszentmihalyi, 2004). This movement is concerned with enabling people and communities to see well-being as achievable and something that they can influence. The wellbeing of a person can be seen in terms of the “wellness” of the persons’ being. A person consists of his or her “beings” and “doings” (Sen, 2002) the

elements of this can vary from being adequately fed, in good health and escaping early morbidity and mortality, to more complex achievements such as having security, self-respect, potential, happiness and love (Nussbaum, 1988). These complex achievements can also be articulated in existential terms as “dwelling” or feeling peacefully at home and “mobility” relating to one’s potential thoughts, experiences and actions (Todres & Galvin, 2010). It is important to note however, that problems of social justice and inequities in health relate strongly to extensive disparities in well-being, including the freedom to achieve or strive for increased well-being or “wellbeing freedom” (Sen, 2002).

Since the mid19th Century UK public health policy has progressed from immediate threats to health (water and sanitation) to longer term issues such as housing standards and health care provision. Most recently it has been interested in the habits of individuals, such as smoking and diet, and since the early 2000s in promoting wellbeing and Quality of Life (QoL) at the individual and societal level (Hanlon et al., 2011; Hemingway, 2011). These concerns have been reflected in national and international public health strategy, which has similarly begun to move from a treatment paradigm to a consideration of how to build the wellbeing and QoL of individuals and communities (Anderson et al., 2010; Local Government Improvement and Development, 2010, All Party Parliamentary Health Group & The Health Foundation 2016). These developments mirror those in a number of other developed countries, in the UK, important practical outcomes of this have been the development of cycle ways and hiking routes, and the promotion of sports and outdoor activities of all kinds, including the concept of “green” and “blue” gyms (Cresswell, 2010; Birch, 2005) to encourage us to exercise and crucially engage with nature.

Wellbeing can be measured as satisfaction with life in general (uni-dimensional measurement) or satisfaction with different aspects, or domains, of life (a multi-dimensional approach) (Nawijn, 2010). Subjective wellbeing differs between individuals (Camfield & Skevington, 2008). It depends upon socio-political, economic, cultural, and geographical contexts and changes, all of which influence people’s perceptions of wellbeing (Bohnke, 2008; Ferriss, 2010). Wellbeing has been closely correlated with life and job satisfaction (Wu et al., 2009) however, subjective wellbeing has a hedonic element, concerned with maximising the pleasant effects of life and avoiding unpleasant experiences and their consequent negative feelings and also a eudaimonic element, concerned with self-development, self-actualisation and making a contribution to the lives of others (Le Masurier et al., 2010; McMahan & Estes, 2010). While the hedonic aspect is mainly concerned with the self, the eudaimonic perspective tends to be socially and pro-actively oriented, and together they represent the richness of human life satisfaction and happiness in a holistic way (Le Masurier et al., 2010).

Animals and Wellbeing

In a review of animal assisted therapy (Kamioka et al., 2014) which included only randomised controlled trials a potential positive impact on wellbeing was seen in individuals with mental and behavioural disorders, and the need for more research was articulated in order to better identify longer term impacts and effectiveness in different groups along with more detail being offered of the intervention itself. Animals included in the papers within this review as partners for humans were dogs, dolphins and farm animals. In a recent review of animal assisted therapy for young people the authors found that interventions which had been studied and published in order to measure outcomes have primarily included dogs and horses as human partners although there is also a fewer number of studies including diverse animals such as dolphins and cats (May et al., 2016). This review found that although research approaches to this area have become more rigorous in recent years more funding for evaluation is needed and that the description of interventions is still limited in published work. In addition the review found that research funders, policy makers and consumers need to gain confidence in being influenced by the positive findings of some studies so far.

Background to Equine Assisted Interventions (EAI)

In the broader equine intervention related literature there have been studies showing positive impacts on wellbeing through equine assisted therapy with individuals suffering with disabilities, (Gabriels et al., 2015, Rosario-Montejo et al., 2013, Benda, McGibbon, & Grant, 2003, MacPhail et al., 1998, McGibbon et al., 1998 Brogen et al., 1996, Haehl, 1996) chronic illness physical or mental (Dabelko-Schoeny et al., 2014, Lasa et al., 2013, Araujo et al., 2011, Hakanson et al., 2009), or individuals with eating disorders (Haumery, 2010, Hakanson, 2009, Christian, 2005). In addition, the potential benefits of equine assisted psychotherapy or experiential therapy have also been studied although the outcomes have been mixed in terms of the effectiveness of the interventions with some studies showing positive results and some no effect (Rothe, Vega et al., 2007, Klontz et al., 2007, Shambo, 2008; Selby, & Smith-Osborne, 2012, De Villers et al., 2013, Yorke et al., 2013, Alfonso et al., 2015, Kendall et al., 2015).

The key difference emerging from the literature between equine facilitated learning interventions (EFL) and equine assisted psychotherapy (EAP) seems to be that EFL focuses on participants learning key social and communication skills with EAP focusing on finding ways to solve participant`s emotional problems. However the evidence base is not well developed or defined at this stage.

Exploratory qualitative research has identified particular insights and emotions that may be experienced from interaction with horses and these include trust, motivation, patience respect and empathy (Cumella & Simpson, 2007, Schultz et al., 2007). Furthermore, some research suggests that horses may be able to reduce anxiety (Lessick et al., 2004) and develop mental and emotional self-control (All et al., 1999). Further qualitative research with young vulnerable adults has found improvements in disruptive behaviour, relationships with others and self-esteem, (Trotter et al., 2008) while research by Burgon (2011) explored the experiences of 'at-risk' young people who participated in a therapeutic horsemanship program, finding improved feelings of self-confidence, self-esteem, self-efficacy and a sense of mastery and empathy.

In addition research by Dell's (2011) focused on equine assisted education (as opposed to psychotherapy) captured through a qualitative study, the enhanced communication skills and sense of pride which the young participants experienced through their ability to communicate with the horses. While Hemingway et al., (2015) gained qualitative insights into the positive impacts of an Equine Assisted Intervention (EAI) with prisoners in a young offender's institution who reported feeling calmer, and more positive about education and whom also experienced marked improvements in behaviour in prison. In addition a qualitative study in Guatemala focused on developing natural horsemanship horse handling techniques in order to reduce violent behaviour which produced positive results particularly in relation to calmness (Gibbons et al., 2015).

Pendry and Roeter (2013) published a randomised controlled trial (undertaken in the US) focused on evaluating the effectiveness of an EAI using natural horsemanship techniques on improving child social competence. Their findings reported moderately significant improvements in the social competence of 5th to 8th grade children following the intervention. Further research is required however to gain other insights than the participant's parents into potential improvements such as teachers or social workers.

Social competence is an outcome of interest in relation to EAI's as it is considered a key domain of development that plays a critical role in mental health and overall wellbeing (Shonkoff & Phillips, 2000). Lower social competence is positively associated with the development of anti-social behaviour which also impacts on those communities in which the young person is living (school, home, neighbourhood) (Sorlie et al., 2008). Depression (Rockhill et al., 2009), substance use (Griffin et al., 2001) and lower educational attainment (Wentzel, 1991, Sorlie & Nordhal, 1998) have

also been linked to lower social competence. Young people with lower social competence are more likely to experience difficulty regulating negative emotion and arousal, which can interfere with initiating and maintaining positive peer interactions, leading to peer rejection (Dodge & Somberg, 1987); relationship problems with peers and adults, difficulty with emotion regulation, behaviour and attention challenges contribute to the development of mental health issues and poor wellbeing.

Interestingly a systematic review of equine assisted interventions on psychological outcomes found that the quasi-experimental design studies included in their review (n=7) tended to find no outcomes in relation to self-control, satisfaction and interpersonal trust. However all these studies showed improvements in social and behavioural outcomes thereby suggesting a potential role for equine assisted interventions in developing socially appropriate responses (Kendall et al., 2015).

Overall the papers included here have been primarily from a psychological or sociological perspective focused on either psychological changes in mood or behaviour or capturing the emotions and responses of participants and have been primarily qualitative in nature. Two recent reviews of animal assisted therapy for youth have highlighted the need for studies in this area to offer detailed insights into the description of the intervention offered and using reliable measures as well as detailed qualitative exploration (May et al., 2016, Selby & Smith-Osborne, 2012). The systematic review reported above (Kendall et al., 2015) also concluded that the differences between equine assisted interventions themselves were substantial in that some courses offered four sessions whereas others offered 40. Interestingly the study which provided 40 sessions reported reductions in the negative symptoms of schizophrenia (Cerino et al., 2011) which are traditionally hard to treat (McGlaskin & Fenton, 1992).

Learning to be `Well`

To date there have been attempts to develop programs for young people which focus on building resilience which one could argue begins to get us thinking about teaching wellbeing to youngsters, (Seligman 2011, All Party Parliamentary Health Group & The Health Foundation 2016) such as the Penn Resiliency Program in the U.S. Many studies have been undertaken on this Program including several randomised controlled trials including over three thousand youngsters aged 8-22. This program teaches about how to handle every-day problems common for teenagers it teaches relaxation, assertiveness, decision making and other coping skills (Seligman 2011). However for those youngsters disengaged from traditional education and for whom talking therapies do not work

learning these important skills may need to be tackled another way, possibly using an embodied route for learning.

Despite its growth in international popularity little is known currently about how inter species equine facilitated interventions may impact on human beings emotionally and physically during and after the learning experience (Selby & Smith-Osborne 2012, Hemingway et al, 2015). The project now considered in this chapter provides a unique opportunity to begin to understand and develop this area of research, with the overall aim being to improve the wellbeing of young vulnerable people. The EAI (www.thehorsecourse.org/) is a charity which operates across counties in Southern England and in London and is referred over 150 young people (normally aged 8-18) every year by Schools & Pupil Referral Units, Children's Services, NHS Mental Health Services, Troubled Families, Offender Services and other specialist agencies (such as charities working with Domestic Violence or Drug and Alcohol Services). The youngsters referred have typically more than four issues from the list below and they are referred because they are 'stuck' or disengaged from talk-based support.

- Attention Deficit Hyper-activity Disorder
- Autism Spectrum Disorder
- Anxiety diagnosis
- Not attending school (training, work)
- Relationship difficulties
- Mood swings/impulsivity
- Highly disengaged
- Self-harm
- Bullying, aggression, anger management issues
- Being bullied
- Risk taking behaviour
- Drug & alcohol misuse
- Eating disorder
- Offending
- Domestic violence
- Neglect / abuse
- Parents with mental health problems, offending or Drug & Alcohol issues
- Living in care or leaving care
- Conduct disorder

The course teaches, rehearses and repeats key resilience skills in an intensive 5 day course with feedback in-the-moment from specially trained horses and 1-to-1 facilitator support. Thus far this intervention has been evaluated using qualitative (Hemingway 2015) and quantitative methodologies (before and after measures) and currently a one year follow up is being undertaken to gain insights into any possible longer term impacts of the program. The before and after (two month follow up with referrers) score results thus far show a statistically significant increase in the following areas (n=126):

- Calmness,
- empathy,
- focus and perseverance,
- assertiveness,
- engagement with education/relationships,
- communication,
- planning, and
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http://www.thehorsecourse.org/docs/THC_Youth_Summary_2015.pdf 2015)

Details of the Intervention (EAI)

The intervention uses the principles of the Parelli Natural Horsemanship program as its philosophical basis and structure (Parelli, 2011). Although this program has existed for thirty years its use with this group of vulnerable young people is innovative. This approach is based on cooperation and partnership development. At this introductory level this involves ‘playing’ with horses inviting them to respond to requests with the young person on the ground and the horse on a loose rope. The learning is facilitated by the course instructor and the students are taught how to play the seven ‘games’ (Parelli, 2011) with the horses. The course takes place over seven two and a half hour sessions. The games taught are:

- 1) *The friendly game* (creating relaxation through touch, grazing, grooming, hanging out).
- 2) *The Porcupine game* (moving the horse`s feet through using steady pressure, touching the horse).
- 3) *The Driving game* (moving the horse`s feet through rhythmic pressure, not touching the horse).
- 4) *The Yo-yo game* (moving the horse backwards and forwards).
- 5) *The Circling game* (asking the horse to travel around you on the circle).
- 6) *The Sideways game* (asking the horse to move sideways).

7) *The Squeeze game* (asking the horse to go through, under or over something, Parelli 2011).

Although the students are learning, the horses are highly trained but will only comply if the young person can gain the horses trust through appropriate actions and behaviour. These games help to establish a simple yet comprehensive communication between horses and humans. However in order to be effective the human needs to use clear, phased assertive communication and control their body language and energy in an assertive, non-aggressive way. Rather than using the horse as a passive adjunct or emotional `mirror` to a therapeutic intervention as in many other EAI's these horses teach the human participants through their responses while playing these games. A horse which has been developed to communicate with humans in this way is able to be an active participant in the development of the young person. They will respond appropriately only when the human succeeds in developing these essential embodied skills.

The approach used in this program enables the students to make progress with the horses without direct physical management by another person, students spend the majority of their time on the course rehearsing the skills of empathy, communication and calm assertiveness, rather than talking about them. This rehearsal process gradually enables the human to become an effective partner and leader for the horse. Interestingly the interactions between the facilitator and the student in this intervention are guided by the same principles used for teaching horses, which focus on reading body language and responding appropriately. The course teaches through simulation rather than explanation and uses non-verbal methods (through rehearsal) to positively impact on the thoughts and emotions of the students. The course facilitator allows the students to try and aims to help them achieve excellent horsemanship skills from the start of the program.

The course facilitator also takes a ten minute video of the student playing with a horse which is submitted to the Parelli organisation who assess the performance of the human (Parelli 2011). All the students who have undertaken this program so far have achieved their level 1 natural horsemanship qualification with one achieving level 2 and another achieving some components of level 3 of the program. At the end of the course the students will be able to demonstrate their new skills with horses to the course facilitator and invited guests, normally their social workers/teachers, parents, as appropriate.

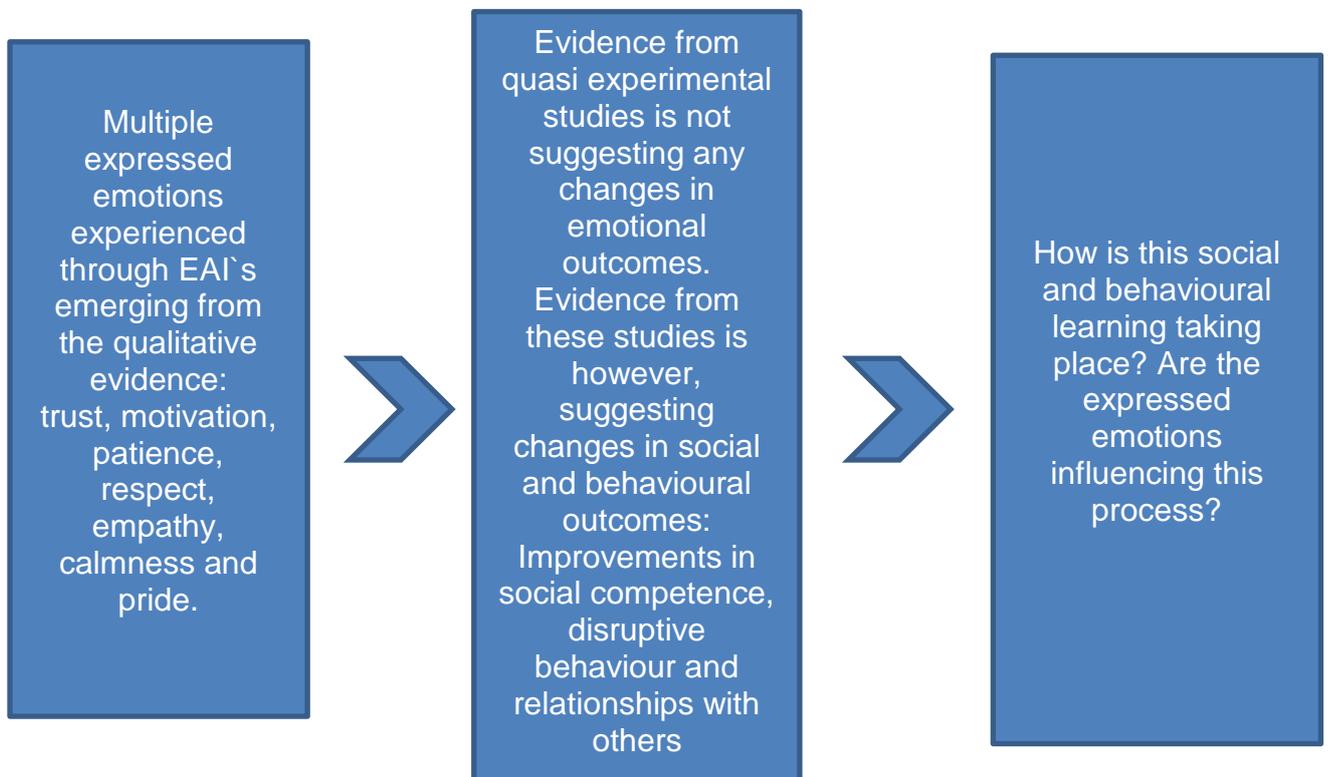
Emotions and Learning

The relationship between emotions and learning is well established in theory (Carter & Smith Pasqualini 2004, Damasio 2010), however, has not been tested in real world applications focused on behaviour change. Indeed research has suggested that stronger autonomic responses produce better learning, indeed that somatic marking facilitates learning (Carter & Smith Pasqualini, 2004). A growing body of literature suggests that somatic states related to emotion are involved in cognitive processes, including learning (Lo & Repin 2002). An example of this development is Damasio's somatic marker hypothesis (SMH) which states that for every life event, somatic consequences are marked and then reproduced when that event recurs. These somatic consequences are strongly connected with the emotion systems of the brain according to the SMH the prefrontal cortex coordinates external stimulus information with internal information about emotion based body states provided by brainstem nuclei, somatosensory and insular cortex and the amygdala. When this loop is activated by the recurrence of an external event it can take the form of a complete reproduction of the body experience or a weaker reproduction which bypasses the bodily experience. This reproduction of emotional state assists in distinguishing the merits of one option over another therefore somatic marking enables us to make decisions based on previous learning quickly. This would suggest that emotional marking of experiences as either rewarding or punishing enables us to learn how to behave (Damasio 1994, 1999).

Further support for this hypothesis has come from various sources, Critchley et al., (2000) found using functional magnetic resonance imagery that changes in activity of the prefrontal cortex were related to spontaneous fluctuations in Skin Conductivity Responses (SCR, measuring emotional responses). Since then similar effects have been found using positron emission tomography (Ernst et al., 2002). Then in 2004 research was undertaken with healthy volunteers to examine whether a stronger autonomic response accompanies better learning essentially testing out Damasio's somatic marker hypothesis (Carter & Smith Pasqualini 2004). This research found that positive emotions enable effective learning and behaviour change.

It would appear that from the literature considered here so far interacting and learning with horses is an emotional experience for us as humans, however the overall impacts seem to be behavioural (see Figure 1.) is this mechanism what enables us as human mammals to pass from emotional embodied learning to behaviour change through undertaking EAI?

Emerging ideas from the literature review (Figure 1.):



In order to explore this relationship between emotions and learning in the context of EAI and develop research methodologies in order to describe this process further a team of researchers in the UK have undertaken a small experimental pilot study in order to attempt to understand whether interventions which include horses may be tapping into this mechanism. In order to do this we have used psycho physiological measurement and qualitative interviews to help us understand the learning taking place on TheHorseCourse. The aim of the study was to explore the psycho physiological mechanism of action of this equine assisted intervention.

The objectives were to:

- Analyse the psychophysiological responses captured while participants watch themselves on video within twenty four hours of undertaking the intervention.
- Phenomenological exploration of the experiences and perceived learning of the participants undertaking the intervention.

The participants were volunteer sports science students in the second year of their degree in a university in the South of England. The following methods of data collection were used to inform this study:

- Analysis of psychophysiology data specifically measuring, heart rate, heart rate variability, breathing, galvanic skin response and neurological/emotional measurements (facial EMG) were recorded to establish base line measures then while the students watched and listened to themselves undertake elements of an EAI within 24 hours of practically undertaking the course.
- Qualitative interviews undertaken with the participants while they watched themselves on video undertaken within five days of undertaking the course. Used in order to explore how they felt (the emotions they experienced) while undertaking the learning experience.

Students were filmed as they learned natural horsemanship skills in the `field` (indoor equine sand school) for approximately thirty minutes then measurements and interviews (in two separate sessions) were carried out within a quiet calm setting (university lab) while students watched and listened to themselves on video to study in detail responses and learning. Students were also asked about their feelings at certain points during the data collection in the laboratory in order to gain further phenomenological insights into their emotions while undertaking the course.

This pilot project with volunteer university sports science students (n=7) as subjects in early 2016 has shown interesting insights into the emotional journey of undertaking elements of TheHorseCourse. This has been done in order to test and refine this research methodology which was found in this pilot to be effective and engaging for the student participants. Interestingly for these participants the emotional changes shown below were described by them after watching themselves complete a thirty minute period of being taught elements of the course, and being able to rehearse them with the horses. These emotional changes are congruent with previous studies and the evaluation of TheHorseCourse to date.

Emotional Changes Described by the Pilot Study Participants (Figure 2.)



The early psycho physiology results would suggest that the student`s skin conductance response (SCR) and facial EMG were activated by asking the horse to do something and the SCR declined

immediately if the horse responded appropriately. This response also known as the electrodermal response (and in older terminology as "galvanic skin response"), is the phenomenon that the skin momentarily becomes a better conductor of electricity when either external or internal stimuli occur that are physiologically arousing. Arousal is a broad term referring to overall activation, and is widely considered to be one of the two main dimensions of an emotional response. Measuring arousal is therefore not the same as measuring emotion, but is an important component of it. Arousal has been found to be a strong predictor of attention and memory. The stimuli to which skin conductance is sensitive are manifold, including in novel, significant or intense situations or experiences. Many different kinds of events can elevate your response including strong emotion, a startling event or a demanding task. It is unclear at this point whether the participants in this pilot responded to the demands of the course or the emotion of interacting with horses or both.

In addition in the students this SCR response seemed to lower as the horse visibly relaxed (head lowering, blowing out through their nostrils) and vice versa indicating that there may be some kind of reciprocal drop in arousal occurring although this study is obviously limited and all findings require further research. Interestingly in the interviews the participants were not aware of these psycho physiological changes until later...around ten minutes later when they started to express feelings of calmness and happiness, this concurs with Damasio's SMH which suggests that this learning is occurring through our emotions and our bodies rather than cognitively, our cognitive recognition of changes in mood or emotion seem to happen later.

The relevance for equine assisted interventions

In relation to the study of equine facilitated interventions this study offers a small step forward as little has been published to date on the potential mechanism of action for these interventions. It may be possible that this pilot has started to shed light on the possible route to impact of embodied interspecies learning and its hypothetical ability to impact our emotions and our learning therefore potentially influencing our behaviour (the next stage of the study).

TheHorseCourse intervention does not use cognitive (talking or classroom based) approaches as is generally the default within interventions for this group currently, indeed students are responded to in the same way as horses by the facilitator, in response to their body language primarily rather than the spoken word. It is particularly important when evaluating an intervention to consider the qualities of the intervention that render it effective. From evaluation of TheHorseCourse undertaken

by the author in a young offenders institute the immediate feedback `in the moment` from the horses and the facilitator was an essential quality of the intervention rather than, “just talking about it” in a classroom. In addition, the researcher observed the participants learning to learn and learning to empathise. They had to try to understand the point of view of the horse as a prey animal in order to be effective when communicating with them through their bodies, the very qualities which Prior & Mason (2010) highlighted when considering the evidence so far on what works to engage young people. As a result of this course participants learnt to `listen` to another `being` through their body language and rehearsal and then reflected extensively on the positive impact that had made on their relationships with others which they and the prison staff reported impacted positively on their overall behaviour in prison (Hemingway et al., 2015). Another key element of this intervention is that the facilitator and the student in this intervention are guided by the same principles used for teaching horses, which focus on reading body language and responding appropriately. The course teaches through simulation rather than explanation and uses non-verbal methods (through rehearsal) to positively impact on the thoughts and emotions of the students. In this intervention neither the `student or the horse` can ever be wrong each is responding to the other in the moment using body language. Crucially the students are able to try and ...succeed when learning, possibly the first time for many of these youngsters that they have experienced success in this way.

Conclusion – horses and wellbeing

Natural horsemanship has a comparatively small but growing following across the world. As the particular version used here has a system and clear games to learn and play it lends itself to evaluative research due to this structure. The communication system allows for detailed observation of the horse and human interaction in a way which has not arguably been possible before and has great potential to further our understanding of this unique cross species `symphical` relationship phenomena (vulnerability and togetherness, Acampora 2006). In addition this pilot study has been the first of its type to focus on evaluating emotional responses and learning in the evaluation of EAI.

Starting to think about how to help our young people develop or learn the path to wellbeing is a new way of thinking about this area. I would argue that the experience of `being` with horses offers us as human animals the ultimate in wellbeing using the `dwelling, mobility` theory outlined by Todres & Galvin (2010).

Figure 3.



As being together peacefully with a horse has the ability to calm and relax us yet the potential for movement, play and sensory embodied experience and learning in the moment is immense. It is clear that for those youngsters for whom current `cognitive talking or classroom based` options are not effective or not engaging or both we need to think about innovate routes to wellbeing. To finish this chapter I would like to share a quote from Martin Seligman whose work on positive psychology has helped to inspire some of the complexity of ideas considered here: “Question 1 asked of parents: What do you want for your children? If you are like thousands of parents polled you responded, happiness, confidence, contentment, fulfilment, balance, good stuff, kindness, health, satisfaction, love, being civilised, meaning, – wellbeing. Question 2: What do schools teach? Achievement, thinking skills, success, conformity, literacy, maths, work test taking, discipline....” (Seligman 2011 page 78).

I believe that we should consider how nature, of which both ourselves, and animals are part can help us towards wellbeing. Indeed I would argue that our `nature` enables us to engage in an embodied way with learning to, or recognising what it is to be well. I would suggest that along with exposure to nature of all kinds in the school curriculum that embodied routes to wellbeing should be considered as the answer to some of the public health issues we face today and that our obsession with waiting

until young people are struggling and then relying on cognitive (talking) and pharmacological remedies as the only options for investment in terms of research and development should urgently be questioned by researchers, funders and practitioners alike.

“Today we pump a little natural history into children along with a little “art” so that they will forget their animal and ecological nature and the aesthetics of being alive and will grow up to be good businessmen” (Bateson 1979 p 133).

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References

Acampora R. (2006) *Corporal Compassion*, Pittsburgh US: University of Pittsburgh Press.

Alfonso S.V., Alfonso L.A., Llabre M.M. & Fernandez M.I. 2015 Project Stride: an equine assisted intervention to reduce symptoms of social anxiety in young women. *EXPLORE*, Nov/Dec, Vol. 11, No. 6 461-467.

All Party Parliamentary Health Group & The Health Foundation 2016 *A Healthier Life for All: The Case for Cross Government Action*. London: APPHG & THF.

Anderson, R., Mikulic, B., & Sandor, E. (2010). *Quality of life in the EU: trends in key dimensions 2003-2009*. Paper presented at the 96th Directors General of the National Statistical Institutes (DGINS) conference, Sophia (Bulgaria), 30 September 2010. Retrieved December 19, 2011, from <http://www.dgins-sofia2010.eu/pdocs/Eurofound%20Quality%20of%20life%20in%20the%20EU%20Trends%20in%20key%20dimensions.pdf>.

Araujo T.B., Silva N.A., Costa J.N., Pereira M.M. & Safons M.P. 2011. Effect of equine-assisted therapy on the postural balance of the elderly. *Rev Bras Fisioter.* 15(5) 414-419.

Bateson G. 1972 *Steps to an ecology of mind*. New York: Ballantine.

Bateson G. 1979 *Mind and Nature a Necessary Unity*. Cresswell New Jersey: Hampton Press Inc.

Benda W., McGibbon N. & Grant K.L. 2003. Improvements in Muscle Symmetry in Children with Cerebral Palsy After Equine-Assisted Therapy (Hippotherapy). *The Journal of Alternative and Complementary Medicine*. Vol 9, Number 6, 817-825.

Biggam F.H. & Power K.G. 2002. A controlled, problem-solving, group based intervention with vulnerable incarcerated young offenders. *International Journal of Offender Therapy and Comparative Criminology*. Dec, 46; 6, 678-698.

Birch, M. (2005) Cultivating Wildness: Three Conservation Volunteers' Experiences of Participation in the Green Gym Scheme. *British Journal of Occupational Therapy* 68 (6): 244-252. doi: 10.1177/030802260506800602

Bohnke, P. (2008). Does society matter? Life satisfaction in the enlarged Europe. *Social Indicators Research*, 87(2), 189-210.

Boyatzis R.E. 1998. *Transforming Qualitative Information: Thematic analysis and Code Development*. Thousand Oaks, CA: Sage.

Brogen E., Hadders-Algra M. & Forsberg H. 1996. Postural control in children with spastic diplegia: Muscle activity during perturbations in sitting. *Dev Med Child Neurol.* 38: 379-388.

Burgon H. L. 2011. `Queen of the World`: the experiences of at risk young people participating in equine assisted learning. *Journal of Social Work Practice*, June, Vol. 25 Issue 2: 165-183.

Buston K., Parkes A., Thomson H., Wight D. & Fenton C. 2012. Parenting interventions for male young offenders: A review of the evidence on what works. *Journal of Adolescence*. Vol 35, Issue 3, 731-742.

Camfield, L., & Skevington, S. M. (2008). On subjective well-being and quality of life. *Journal of Health Psychology, 13*(6), 764-775.

Carter, S. and Smith Pasqualini, M.C., 2004. Stronger Autonomic Response Accompanies Better Learning: A Test of Damasio's Somatic Marker Hypothesis. *Cognition & Emotion, 18*, 901-911.

Cerino S., Cirulli F., Chiarotti F. & Seripa S. (2011) Non conventional psychiatric rehab in schizophrenia using therapeutic riding. The FISE multicentre Pindar Project. *Annali dell'Istituto Superiore di Sanita, 47*, 409-414.

Christian J.E. 2005. All Creatures Great and Small: Utilising Equine-Assisted Therapy to Treat Eating Disorders; *Journal of Psychology and Christianity*. Vol 24, (1), Spr, 65-67.

Cresswell, J. (2010) Using the Blue Gym. *SportEX Health 2010* (24): 14-15.

Csikszentmihalyi, M. (2004). What we must accomplish in the coming decades. *Zygon, 39*(2), 359_66.

Dabelko-Schoeny H., Phillips G., Darrough E., DeAnna S., Jarden M., Johnson D. & Lorch G. 2014 Equine Assisted Intervention for People with Dementia. *Anthrozoos. 27*:1, 141-155.

Del Rosario-Montejo O., Molina-Reuda F., Munoz-Lasa S. & Alguacil-Diego I.M. 2013 Effectiveness of equine therapy in children with psychomotor impairment. *NEUROLOGIA. 30*: 425-432.

Dell C.A., Chalmers D., Bresette N., Swain S., Rankin D. & Hopkins C. 2011. A Healing Space: The Experiences of First Nations and Inuit Youth with Equine-Assisted Learning (EAL). *Child Youth Care Forum. 40*: 319-336.

Dodge K. A. & Somberg D. R. (1987) Hostile attributional biases among aggressive boys are exacerbated under conditions of threats to the self. *Child Development, 58*, 213-224.

Edgar, K., O'Donnell, I. & Martin, C. 2003. *Prison Violence: The Dynamics of Conflict, Fear and Power*. Devon: Willan.

Eckersley, R. (2004). *Well & good: How we feel and why it matters*. Melbourne, Australia: Text Publishing.

Farrall, S. 2002. *Rethinking What Works with Offenders: Probation, Social Context and Desistance from Crime*. Cullompton: Willan.

Fayers, P. M., & Machin, D. (2007). *Quality of life. The assessment, analysis and interpretation of patient-reported outcomes*. John Wiley & Sons, Chichester, 2007.

Ferriss, A. L. (2010). *Approaches to improving the quality of life: how to enhance the quality of life*. Springer, 2010.

Fine A. H. 2010. (3rd Ed) *Animal Assisted Therapy: Theoretical Foundations and Guidelines for Practice*. London: Elsevier.

Gabriels R.L., Pan Z., Dechant B., Agnew J.A., Brim N. & Mesibov G. 2015 Randomised Controlled Trial of Therapeutic Horseback Riding in Children and Adults with Autism Spectrum Disorder. *Journal of the American Academy of Child & Adolescent Psychiatry*, Jul; 54 (7) 541-549.

Gibbons J.L., Cunningham C.A., Paiz L., Poelker K.E. & Cardenas M.A.M. (2015) “Before he fought every day with the horse and me”: Reducing Violence in a Guatemalan Community Through a Horse Handling Program. *Human Animal Interaction Bulletin*. Vol 3, No2, 37-55.

Greenberg M.T., Domitrovic C. & Bumbarger B. (2000) *Preventing mental disorders in school age children: A review of the effectiveness of prevention programs*. Pennsylvania State University, College of Health and Human Development.

<http://prevention.psu.edu/pubs/documents/MentalDisordersfullreport.pdf>.

Griffin K.W., Epstein J.A., Botvin G.J. & Spoth R.L. (2001) Social competence and substance use among rural young: mediating role of social benefit expectancies of use. *Journal of Youth and Adolescence*, 30. 485-498.

Haehl V. 1996. The influence of hippotherapy on the kinematics and functional performance of two children with cerebral palsy. *Ped Phys Ther*. 11: 89-101.

Hakanson M., Moller M., Lindstrom I. & Mattsson B. 2009. The Horse as the Healer – A study of riding in patients with back pain. *Journal of Bodywork and Movement Therapies*. 13 (1): 43-52.

Hanlon, P., Carlisle, S., Hannah, M., Reilly, D., & Lyon, A. (2011). Making the case for a 'fifth wave' in public health. *Public Health*, 125 (1), 30-6.

Haumery L., Delavous P., Teste B., Leroy C., Gaboriau J.C. & Berthier A. 2010. Equine Assisted Therapy and Autism. *Annales Medico Psychologiques*. Nov, Vol. 168 Issue 9, 655-659.

Hemingway, A. (2011). Lifeworld led care wellbeing, and the 5th wave of public health. *International Journal of Qualitative Studies on Health and Well-being*, 6(4),

Hoffman A.O.M., Lee A.H., Wertenaue F., Riker R., Jansen J.J., Gallinet J. & Lang U.E. 2009. Dog Assisted Interventions reduce anxiety in hospitalised patients with depression. *EU J. of Integrative Medicine*. Oct 1 (3), 145-148.

Ireland J. 2004. Anger management therapy with young male offenders: An evaluation of treatment outcome. *Agressive Behaviour*. Mar/Apr, Vol. 30 Issue 2, 174-185.

Jacobs C. 2011. Benefits of animal assisted interventions to young offenders. *Veterinary Record*, July 30, 115-117.

Karnik N.S. & Steiner H. 2007. Evidence for interventions for young offenders. *Child & Adolescent Mental Health*. Nov, Vol.12 Issue 4, 154-159.

Kendall E., Maujean A., Pepping C.A., Downes M., Lakhani A., Byrne J. & Macfarlane K. 2015 A systematic review of the efficacy of equine-assisted interventions on psychological outcomes. *European Journal of Psychotherapy & Counselling*. 17:1, 57-59.

Klontz B.T., Bivens A., Leinart D. & Klontz T. 2007. The Effectiveness of Equine Assisted Experiential Therapy: Results of an Open Clinical Trial. *Society and Animals*. 15. 257-267.

Kron J. 2006. Pets & Companion Animals. *Journal of Complementary Medicine, CM, The*, Vol 5, No 3, May/June, 30-32.

Lane, R. E. (2000). *The loss of happiness in market democracies*. London: Yale University Press.

Lasa S.M., Bocanegra N.M., Alcaide V.R., Arratibel M.A.A., Donoso E.V. & Ferriero G. 2013
Animal assisted interventions in neurorehabilitation: a review of the most recent literature.
Neurologia. 30 (1) 1-7.

LeBuffe P.A., Shapiro V.B. & Naglieri J.A. (2009) *The Devereux Students Strengths Assessment (DESSA)* Lewisville, NC: Kaplan Press.

Le Masurier, G.C., Corbin, C.B., Greiner, M., & Lambdin, D.D. (2010). *Fitness for life: elementary school physical education lesson plans*. Human Kinetics, 2010.

Liamputtong, I, Ezzy, D. 2005. *Qualitative Research Methods, 2nd Edition* Victoria. Oxford University Press.

Local Government Improvement and Development (2010). *The role of local government in promoting wellbeing. Healthy Communities Programme*. National Mental Health Development Unit. Retrieved January 19, 2012, from: <http://www.idea.gov.uk/idk/aio/23693073>.

MacPhail H.E.A., Edwards J., Golding J., Miller K., Mosier C. & Zwiers T. 1998. Trunk postural reactions in children with and without cerebral palsy during therapeutic horseback riding. *Ped Phys Ther*. 10: 143-147.

May D.K., Nicholas P., Seivert A.C., Casey R.J. & Johnson A. (2016) Animal Assisted Therapy for Youth: A Systematic Methodological Critique. *Human Animal Interaction Bulletin*. Vol 4, No. 1, 1-18.

McGibbon N.H., Andrade C.K., Widener G. & Cintas H.L. 1998. Effect of an equine movement therapy program on gait, energy expenditure, and motor function in children with spastic cerebral palsy: A pilot study. *Dev Med Child Neurol*. 40: 754-762.

McGlaskin T.H. & Fenton W.S. (1992) The positive negative distinction in schizophrenia: Review of natural history validators. *Archives of General Psychiatry*. 49, 381-395.

McMahan, E., & Estes, D. (2010). Measuring Lay Conceptions of Well-Being: The Beliefs About Well-Being Scale. *Journal of Happiness Studies*, 12(2), 267-287.

Nagliere J.A., Bardos A.N. & LeBuffe P.A. (1995) Discriminant validity of the Devereux Behaviour Rating Scale School Form for Students with Serious Emotional Disturbances. *School Psychology Review* 24(1) 104-111.

National Offender Management Service 2012. *NOMS Commissioning Intentions for 2013-14: Negotiation Document*. London: Ministry of Justice.

Nawijn, J. (2010). The holiday happiness curve: a preliminary investigation into mood during a holiday abroad. *International Journal of Tourism Research*, 12, 281-290.

Nussbaum, M. C. (1988). Nature function and capability: Aristotle on political distribution, Oxford studies in ancient philosophy (supplementary volume) Potvin, L., Gendron, S., Bilodeau, A., & Chabo,

O'Rourke K. 2004. Horse-assisted therapy: Good for humans, but how about horses? *J. of the American Veterinary Association*. Vol. 225 Issue 6, 817-820.

Parelli 2011 <http://www.parellinaturalhorsetraining.com/natural-horsemanship/> Accessed 21st July 2011.

Pendry P. & Roeter S. (2013) Experimental Trial Demonstrates Positive Effects of Equine Facilitated Learning on Child Social Competence. *Human-Animal Interaction Bulletin*. Vol 1, No.1, 1-19.

Princes Trust (2005)

Prior D. & Mason P. 2010. A different kind of evidence? Looking for what works in engaging young offenders. *Youth Justice*. Dec, Vol.10 Issue 3, 211-226.

Quinn Patton M. 2002. (3rd Ed) *Qualitative Research & Evaluation Methods*. Thousand Oaks. CA, Sage.

Reynolds C.R. & Kamphaus R.W. (2004) *Behavioural Assessment for Children (2nd Ed)*. Circle Pines, MN: American Guidance Service.

Rockhill C.M., Vander Stoep A., McCauley E. & Katon W.J. (2009) Social competence and social support as mediators between comorbid depressive and conduct problems and functional outcomes in middle school children. *Journal of Adolescence*, 32, 535-553.

Rothe E.Q., Vega B.J., Torres R.M. Soler S.M.C. & Pazos R.M.M. 2005. From kids and horses: Equine facilitated psychotherapy for children. *Int J. of Clinical and Health Psychology*. Vol 5 (2), May, 373-383.

Seligman M. (2011) *Flourish: A new understanding of Happiness and Wellbeing*. Nicholas Brealey Publishing.

Schultz P.N., Remick-Barlow A. & Robbins L. 2007. Equine-assisted psychotherapy: a mental health promotion/intervention modality for children who have experienced intra-family violence. *Health and Social Care in the Community*. 15(3), 265-271.

Sen, A. (2002). Why health equity? *Health Econ*, 11, 659_666.

Shonkoff J. & Phillips D. (2000) *From neurons to neighborhoods: The science of early childhood development*. Washington, DC: National Academy Press.

Skevington, S.M., Sartorius, N., Amir, M. (2004). Developing methods for assessing quality of life in different cultural settings. The history of the WHOQOL instruments. *Social Psychiatry and Psychiatric Epidemiology*, 39, 1-8.

Smeijsters H., Kil J., Kurstjens H., Welten J. & Willemars G. 2010. Arts therapies for young offenders in secure care-a practice based research. *The Arts in Psychotherapy*. 38(1), 41-51.

Sodha, S. and Margo, J. 2010. *Ex Curricula*. London: Demos.

Sorlie M., Hagen K.A. & Ogden T. (2008) Social competence and anti social behaviour: Continuity and distinctiveness across early adolescence. *Journal of Research on Adolescence*, 18, 121-144.

Sorlie M.A. & Nordahl T. (1998) *Problem behaviour in schools: Main findings, explanations and educational implications*. School and difficult social interactions. Oslo: NOVA.

Syngelaki E.M., Moore S.C., Savage J.C., Fairchild G. & Van Goozen S.H.M. 2009. Executive functioning and risky decision making in young male offenders. *Criminal Justice and Behavior*. Nov; 36; 11, 1213-1227.

Taylor, S.M. 2001. *Equine-Facilitated Psychotherapy: An Emerging Field*. Unpublished master's thesis. Saint Michael's College.

Toulou-Shams M., Hadley W. & Selby C. 2012. The role of family affect in juvenile drug court offenders' substance use and HIV risk. *Journal of Child and Family Studies*. V21, n3, 449-456.

Todres, L., & Galvin, K. (2010). "Dwelling-mobility": An existential theory of well-being. *Int J Qualitative Stud Health Well-being*, (5), 5444. doi: 10.3402/qhw.v5i3.5444.

Townsend E., Walker D., Sargeant S., Vostanis P., Stocker O. & Sithole J. 2009. Systematic review and meta-analysis of interventions relevant for young offenders with mood disorders, anxiety disorders, or self harm. *Journal of Adolescence*. 33(1), 9-20.

Tramutt, J. 2003. *Opening the Gate: Cultivating Self-Awareness and Self-Acceptance through Equine Facilitated Psychotherapy*. Unpublished master's thesis. Naropa University.

Trotter K. S., Chandler C.K., Goodwin-Bond D. & Casey J. 2008. A Comparative Study of the Efficacy of Group Equine Assisted Counseling With At-Risk Children and Adolescents. *Journal of Creativity in Mental Health*. Vol. 3(3) 254-284.

Tyler, J.J. 1994. 'Equine Psychotherapy: Worth more than just a Horse Laugh', *Women and Therapy*, 15, 334-335.

Vidrine, M., Owen-Smith, P. and Faulkner, P. 2002. 'Equine-Facilitated Group Psychotherapy: applications for therapeutic vaulting', *Issues in Mental Health Nursing*, 23(6), pp. 587-603.

Waters I. 2007. The police, intelligence, and young offenders. *International Journal of Police Science & Management*. Autumn, Vol 9 Issue 3, 244-256.

Wentzel K.R. (1991) Relations between social competence and academic achievement in early adolescence. *Child Development*, 62, 1066-1078.

Wu, C-H., Chen, L. & Tsai, Y-M. (2009) Investigating Importance Weighting of Satisfaction Scores from a Formative Model with Partial Least Squares Analysis. *Social Indicators Research*, 90 (3): 351-363. DOI: 10.1007/s11205-008-9264-1

YJB 2008. *Research Strategy* Youth Justice Board: Home Office: London, UK.

Yorke J., Nugent W., Strand E., Bolen R., New J. & Davis C. 2013 Equine assisted therapy and its impact on cortisol levels of children and horses: a pilot study and meta-analysis. *Early Childhood Development and Care*. 183:7 874-894.

Young, T., Creighton, E., Smith, T., & Hosie, C. (2012). A novel scale of behavioural indicators of stress for use with domestic horses. *Applied Animal Behaviour Science*, 140, 33-43.

Zhang K.C., Choo A. & Liping L. 2009. Interventions with young female offenders and teenage girls at risk: alternative educational services in a Singapore girls` home. *Support for Learning*. Aug, Vol 24, Issue 3, 137-143.