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Preliminary evidence of podcast impacts on equine welfare

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Summary

Background

Podcasts have become a popular digital forum for discussing scientific information with peers, as well as with the non-scientific community, often referred to as 'edutainment'. It is unclear how science-based podcasts can support the veterinary industry through, for example, supporting good husbandry practices.

Objectives

To understand the influence of 'edutainment' on equine owners' husbandry decisions

Study Design

The sample population was listeners of the Conversations in Equine Science (CES) podcast recruited to complete an online survey via a link promoted by the CES hosts. The survey contained Likert-like questions assessing how listeners rated the importance of different forms of evidence when making husbandry decisions and questions relating to husbandry changes made.

Methods

A mixed methods approach was used to analyse the data. The Likert package for R was used to explore importance ratings. Free text questions were analysed via a content analysis with a constructionist epistemological position.

Results

The experience of veterinarians and scientific evidence was considered the most important forms of evidence that owners used when making decisions about their horse's management (93% agreed and 91% agreed they were important respectively). Additionally, 74% of respondents had made a change to the management or training principles prompted by an episode of CES, suggesting

edutainment can be a prompt to management change. Of these, the majority (55%) had done so based on a joint discussion of the podcast and their own reading of the evidence.

Main Limitations

This was an opportunistic sample of those already invested in the edutainment format, and may not represent those owners with no interest in scientific evidence.

Conclusions

Podcasts are an easy-access, low-cost medium to convey research and current trends in the equine/equitation science genre. They may be a valuable tool for the veterinary industry to employ to support horse welfare.

Clinical Relevance

- Supporting owners to make good husbandry decisions requires veterinarians and associated professionals to have an understanding of why owners make decisions to change management practices
- In this sample of owners with an interest in equine science, we see that management decisions can be influenced by veterinary opinion and evidence from equitation science
- Veterinary professionals can promote good husbandry and equine welfare through supporting owners to interpret scientific evidence either personally or through edutainment sources

Introduction

Animal welfare encompasses the health, behaviour and environment of the animal and its consideration is a key component of ethical animal husbandry. The management choices equine owners make regarding their animals are an integral part of that animal's subjective experience. A recent, albeit pre-Coronavirus pandemic, set of stakeholder interviews suggested there was a range of health, management and riding/training associated welfare challenges for horses in Great Britain (Horseman et al., 2016). These include weight concerns, laminitis, skin concerns, parasites, rugging choices, food and water provision, social isolation, tack fitting, and the use of positive punishment training aids. Often in the global context, welfare concerns for equids are in the realm of 'hard wins' where the marginal return on the gain may be hard to justify against the cost of implementing the change (Pritchard et al., 2018). However, many of the welfare challenges identified by Horseman et al's stakeholders, such as the use of over-rugging or over-feeding can be addressed through low-cost changes to management. There is extensive research available regarding best practices in management from housing to behaviour (Hothersall & Casey, 2012). Additionally, it has long been recognised that the veterinary professional has a key role to play in informing clients of potential welfare challenges (Green & Tong, 2004), and while there are certainly challenges in communication across associated professions and with clients (Loomans et al., 2009; Moyer et al., 2018) communication skills are an increasingly recognised key component of the veterinary curriculum (Haldane et al., 2017; McDermott et al., 2015). Why then do welfare challenges persist when the veterinary profession has the collective knowledge and skills to communicate these issues to owners?

One lesson from the field of public health is that human behavioural change is surprisingly hard. There is a wealth of information regarding common human health issues such as the impacts of obesity and alcohol consumption, and yet general population behaviours are invariant (Kelly &

Barker, 2016). Behavioural change interventions seem to work best when they incorporate the social and community aspects of behaviour (Abraham et al., 2009; Van Achterberg et al., 2011) and do not rely on evidence 'strength' or the communicated opinions of experts such as doctors (Kelly & Barker, 2016), and presumably veterinarians in the case of equine management choices. To support owners to make effective management choices, veterinarians and related professionals need to explore how different communication methods can support owners to make effective changes to their management choices.

Animal owners are often keen to engage with resources on management and animal welfare (MacKay et al., 2016, 2018), and online resources such as Massive Open Online Courses can provide the impetus for changing attitudes in owners, partly due to their entertainment value and the perceived social relationships with the educators (Watson et al., 2016). Entertaining educational content is often dubbed 'edutainment', broadly referring to media or toys with a dual purpose of developing skills or knowledge while providing positive or playful experiences (Buckingham, 2007). Edutainment has been theorised to support learning by supporting learners to internalise knowledge in a positive and supportive environment (Aksakal, 2015). In this way, it may approach some of the aspects of successful behavioural change interventions, namely in supporting the social aspects of behaviour, e.g., equine owners consuming edutainment products may be supported to make management changes due to the perception of social trends and pressure.

One form of edutainment is the podcast. A podcast can be defined as primarily audio content that is downloadable or streamable via the internet and is broken down into episodes. Comparable to live radio programs, but on demand. A podcast can be accessed anywhere, anytime and can be produced by anyone (Fox et al., 2021). Podcasting, as a medium, began in 2004. Most topics dealt with current and future advances in computer science and technology (Hammersley, 2004). Science-

based podcasts showed only a linear growth from 2004 to 2010 (MacKenzie, 2019) with exponential growth occurring from 2010 to 2018. In 2021 there were over 2 million podcasts with an estimated 48 million episodes encompassing a myriad of topics and genres (Fox et al., 2021). Currently, Apple lists 449,041 active podcasts, defined as episodes being added on a routine basis (Gray, 2023). Smartphones are the preferred device for podcast streaming with 88% of listeners using a smartphone (Buzzsprout Podcast Stats, 2023).

The year 2005, became known as "the year of the podcast" with the word "podcast" being named the word of the year by the New American Oxford Dictionary (Bowers, 2005). This was also the year that one of the first recognized science podcasts, The Point of Inquiry, was launched (Bottomley, 2015). Point of Inquiry is still actively producing episodes in 2023. MacKenzie et al. found a total of 952 English-speaking science podcasts available in February 2018. Their research also found that 65% of science-based episodes were hosted by scientists and 77% of those were geared toward the general public (MacKenzie, 2019). A crucial element of science-based podcasts is the communicators' ability to engage with their audience. For science communication, the audio-only format of podcasts can offer several advantages over traditional print and video mediums. The most popular is the convenience to listen while performing other tasks. Merzagora notes that compared to television and print, audio media is 'more relaxed and reflective'; that it 'allows the audience to hear the true voice of the protagonist' (i.e., the scientists); and that 'the barrier separating the listener from journalists and scientists is less impenetrable' (Merzagora, 2004). In addition, podcast hosts routinely use websites and social media to receive listener feedback and facilitate discussions. This two-way interaction isn't typically available in traditional broadcasting. It also seems to help improve public trust in science (Birch & Weitkamp, 2010; Fox et al., 2021; Wynne, 2006). It has been theorized that podcast audiences may feel more personally connected to the hosts of the podcast than to other forms of media (Markman & Sawyer, 2014). This intimacy and the affective charge that

takes place between the student (listener) and teacher (host) is one of the most widely discussed characteristics of podcasting. These attributes are linked to the intense para-social relationships that develop between podcast listeners and their favourite hosts. This is thought to develop due to the unmediated sound or lack of professional recording studios that gives the listener a feeling that the podcast hosts are talking directly to them (McGregor, 2022). Academic podcasts have also shown improved scientific information retention in students, medical patients, and the public (Lomayesva et al., 2020; Prakash et al., 2017).

A general search of the term “horse podcasts” returns hundreds of horse-related podcasts on Spotify, a common listening platform (Spotify, 2023). Many of these are made up of trainers, veterinarians, or equine company representatives, serving as hosts, interviewing guests and discussing topics of various horse industry concerns. Some have multiple sponsorships while also offering listeners to buy additional services, products, or digital content memberships. Some podcasts are hosted by horse enthusiasts that just want to share their love of horses and the joy these animals bring into their lives. Other podcasts, such as the one used as the basis of the study in this paper, are hosted by researchers and/or academics and report on equine science topics that encompass all aspects of the horse world. The main objective is to improve equine welfare by sharing and discussing new or pertinent research.

In this study, we were interested in whether an edutainment equine-focused podcast could support equine managers to make changes to their equine’s management, and therefore be considered a useful tool in improving the welfare of companion equids. A podcast, ‘Conversations in Equine Science’, was used as a convenience sample and listeners invited were to respond to a survey exploring motivations behind any recent management changes to their equines.

Methodology and Results

Ethical approval for this study was granted by the Royal (Dick) School of Veterinary Studies' Human Ethical Review Committee, reference HERC_780_21.

Research Questions and Researcher Position

In this study, we were concerned with whether podcasts could support equine owners to make evidence-informed changes to the management of their equines. The podcast 'Conversations in Equine Science (CES)', as it is headed by authors Kate Acton and Nancy McLean, was used as a test case. Author Jill MacKay is independent of the podcast and was responsible for the collection and analysis of data. This research was not intended as impact evaluation with a quasi experimental design exploring direct measures of horse ownership construct. Instead, we aimed to offer a quantified preliminary analysis of a novel form of veterinary education to inform future research. It was not possible within the scope of the study to extend it to other equine science-related podcasts. The research questions were:

1) Who listens to CES and therefore what is its reach?

2) How frequently does CES prompt engagement with primary literature?

3) Does CES prompt listeners to change their equine management and how?

Survey Design

To explore the research questions, a survey instrument was designed to collect demographic data from listeners, to question them on management changes made to their equines, and to characterise what sources of data listeners use to base their management decisions on. Ratings of evidence were based on a 5-point Likert-Like scale with descriptive anchors due to the robustness of this question style (Dillman et al., 2009; Krosnick, 2018) from 'Extremely unimportant to consider' to 'Extremely important to consider', and invited participants to rate evidence such as scientific evidence, evidence from fellow yard owners, veterinarians, coaches and instructors, the owner's own evidence, and the experience of friends and family. There were free text responses where respondents could elaborate on why or why they had not made changes to management and leave any other comments regarding the podcast.

The survey was piloted on 5 equine owners who were not listeners of the podcast and following minor changes to response wording to facilitate understanding, the survey was made open from the 1st of October 2021 to the 1st of May 2022 and a link was made available on the podcast homepage for listeners to access. In this period, 54 respondents engaged with the survey and all respondents could be retained in the analysis. Participants had to be over the age of 18 to participate per the consent statement at the beginning of the survey. The survey was hosted on JISC Online Surveys.

Data Analysis

The quantitative data were analysed via R (R Team, 2021). To characterise demographic data the tidyverse package (Wickham et al, 2019) was used to apply summary statistics and the Likert package (Bryer & Speerschneider, 2016) was used to analyse Likert-like data. Where there was an interest in the relationship between demographic variables and other responses, a Chi-Squared test using the base R packages was used to characterise the associations. Free text data were imported

into NVivo 12 (NVivo, 2019) and read over by all authors. From this informed position, JM determined categories of interest within the comments based on the content of the research questions and JM's understanding of human behavioural change literature. The content analysis per Silverman's (2014) definition, therefore, comes from a constructionist epistemology (Charmaz, 2008).

Results

Who listens to an equine podcast?

The majority of listeners were female (93%), with listeners between the ages of 18 and 74. On average, listeners had 20.9 (+/- 13.0) years of experience with equines and the most frequently described themselves as horse owners (n = 21, 39%). The majority of respondents had completed a college or university degree either at undergrad or postgraduate levels (n = 35, 65%). A full breakdown of listener demographics is available in **Table 1**.

Table 1: *Breakdown of respondent age, years of experience managing equines, demographics, and education for 54 listeners of the Conversations in Equine Science podcast*.

Question	N Respondents	Percentage (%)
How would you describe your gender identity?		
Female	50	92.6
Male	4	7.4
What is your highest level of formal education?		
Completed a college or university degree (e.g. Bachelors, Honours, etc.	23	42.6
Completed a postgraduate qualification (e.g. MSc, PhD, PGDIP)	12	22.2
Some college or university education	10	18.5
Completed high school or secondary school	9	16.7

How would you describe your involvement in the equine industry?				
Horse owner			21	38.9
Rider			10	18.5
Service provider (vet, physiotherapist, farrier, etc.)			6	11.1
Other			5	9.3
Owner of an equine related business.			4	7.4
Barn/farm/racetrack employee			3	5.6
Barn owner			2	3.7
Horse lover/enthusiasts			2	3.7
Trainer			1	1.9
	Mean	Standard Deviation	Minimum	Maximum
Age	38.9	15.77	18	74
Years of Experience Managing Equines	20.9	13.05	3	55

Engagement with and perceptions of podcast and evidence

Most respondents engaged with the podcast at least once a week (59%) and considered that the podcast was mainly based on scientific evidence with some of the hosts' experience (82%). 78% of respondents had been prompted by an episode to read the paper referenced in that episode at least once. A summary of attitudes to the podcast are displayed in **Table 2**.There was no significant relationship between participants' highest level of formal education and frequency of referencing the paper in a Pearson's Chi-squared test ($\chi^2[6, n = 54] = 2.97$, $p = 0.812$, **Table 3**). 94% of respondents were likely to recommend the podcast to others.

Participants were asked how important it was to consider various forms of evidence when making a change to their horse's management or training (**Figure 1**). Interestingly, the experience of veterinarians and scientific evidence were considered the most important forms of evidence (93%

238 and 91% respectively) whereas the experience of a coach or instructor, those on the yard, and the

239 respondent's friends and family were generally considered least important.

240

241 **Table 2**: *Respondent (n = 54) perspectives on evidence in edutainment podcast 'Conversations in*

242 *Equine Science (CES)'*

Question	n	Percentage (%)
How often do you, on average, listen to CES		
At least once a week	27	50.0
Several times a month but less than weekly	14	25.9
Less often than once a month	6	11.1
Several times a week	5	9.3
At least once a month	2	3.7
How would describe the podcast's approach to scientific evidence versus the hosts' experience?		
The podcast is wholly based on scientific evidence	0	0
The podcast is mainly based on scientific evidence with some of the hosts' experience	44	81.5
The podcast is split between scientific evidence and the hosts' experience	9	16.7
The podcast is mainly based on the hosts' experience and some scientific evidence	1	1.9
The podcast is wholly based on the hosts' experience	0	0
Has any CES episode prompted you to read the paper referenced in the episode?		
Yes, more than once	27	50.0
Yes, at least once	15	27.8
No, never	12	22.2

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Table 3: *Association between participants (n = 54) primary source seeking behaviour and levels of education in a χ^2 test ($\chi2[6, n = 54] = 2.97, p = 0.812$)*

	Level of education completed (n)			
Has any CES episode prompted you to read the paper referenced in the episode?	High school or secondary school	Some college or university	Completed college or university degree	Completed a postgraduate qualification
Yes, more than once	1	3	6	2
Yes, at least once	3	1	7	4
No, never	5	6	10	6

Figure 1: *Listener ratings of the importance of considering various forms of evidence when making choices regarding equine management, respondents are 54 listeners of the Conversations in Equine Science podcast.*

Changes to equine management

74% of respondents (n = 40) had made a change to the management or training principles prompted by an episode of CES. Of these, the majority (55%) had done so based on a joint discussion of the podcast and their reading of the evidence (**Figure 2**). The vast majority (98%, n = 39) were happy with the change they had made, with the remaining respondent 'partly' happy with the change they had made. Of those who did not make a change (n=14), 29% did not currently manage their own horses, and 57% were happy with their horses' management. One respondent was interested in making changes but felt they had to research further.

Figure 2: *Respondents' process for making changes to an aspect of equine management and/or training after listening to Conversations in Equine Science Podcast*

Listener free-text data

Out of 54 respondents, 23 left free text explanations on the changes they implemented and the reasons why. The researcher-identified themes within the data were the social context surrounding making informed changes to equine management (16 references), the listener utilizing multiple sources of evidence to make changes (3 references) and the financial implications of management change (1 reference).

In keeping with Abraham et al's (2009) perspective on behavioural change, the social context of the decision-making was frequently referenced in respondent's consideration of their management changes. Participants would highlight the positive subjective experience of listening to conversations and how this helped them to parse information or come to new understandings.

I love the presentation of info, but I would love to see some more follow-up on the impact upon equine industries and cultural norms. – Respondent 8 (Is there anything else you would like to tell us about the podcast?)

The group talked about pressure, release (reward) and patterns. I never heard training principles explained like this. It has opened up a whole new world for me and my horses. – Respondent 51 (If you like you can elaborate more on your behavioural change)

I always enjoy the conversation. - Respondent 21 (Is there anything else you would like to tell us about the podcast?)

Some respondents were able to identify how they had passed information through their own social networks to impact greater behavioural change.

When jockeys use whips, it may increase the number of strides per minute but it decreases stride length. I do believe this can make a difference between a win or a second-place finish. I coach my jockeys to not overuse the whip. – Respondent 20 (If you like you can elaborate more on your behavioural change)

Helpful in communicating with my teenage daughter and her friends for having a science-based tool for reading their horses, rather than just an opinion on the horses' expressions. – Respondent 8 (If you like you can elaborate more on your behavioural change)

Respondents also discussed the range of sources they utilise to make decisions. Interestingly, this was typically referenced in terms of seeking out the primary literature or vague references to 'research'.

> *The research papers sometimes seem to be written in a foreign language. I'm glad Kate and Nancy discuss them, that helps me to understand the process better.* – Respondent 22 (Is there anything else you would like to tell us about the podcast?)

> *Changing boarding barns. I had been thinking about it and this episode, along with other research, confirmed my thoughts* – Respondent 39 (If you like you can elaborate more on your behavioural change)

> *I researched further into the topics to question if I'm doing the best by my horses. I am highly fascinated by equine-related science and recognise that even very small changes can affect these animals. There were some areas in these episodes that I decided I could implement in my daily practices.* – Respondent 46 (If you like you can elaborate more on your behavioural change)

While only one respondent highlighted the financial impacts of change-making behaviour, we felt this was an important aspect to highlight within the data. In this participant's case, they felt they had been 'throwing money down the drain' by excessive supplement use (Respondent 26). The impact of financial incentives is a debated aspect of behavioural change literature (Hoskins et al., 2019), but

we do know that financial barriers are often a barrier to change in equine management (Pritchard et al., 2018), so it is interesting to note that the financial saving was highlighted.

Discussion

In this study, we invited listeners to an equine-related edutainment podcast to describe any changes they had made to the management of their equines in order to better understand the role edutainment can play in the welfare of equines. Here we discuss the findings and limitations of this work.

Who listens to CES and what is its reach?

According to a recent survey by the Pew Research Center (2021), podcast audiences have been steadily increasing since 2008 (Auxier & Anderson, 2021). In addition to being popular, research has found that listening to information via podcast can result in greater levels of physiological arousal compared to reading text on a website (Turner-McGrievy et al., 2013). However, few studies have been conducted on science-based podcast listenership and, in particular, whether or not these podcasts have the ability to elicit change.

The CES demographics, as recorded by the hosting service Anchor, reflect a female listenership of 92.6%. A high female audience could be representative of the higher number of female horse owners, (Fenner et al., 2019) in a gender analysis of the human-horse dyad, reported on 1,233 survey respondents with 94% of these respondents identifying as female. According to a survey conducted by the American Horse Council in 2017, approximately 79% of horse owners in the United States are female (AHCF, 2017). In Europe, 74% of horse owners/riders are reportedly female (BETA, 2019) and in developing countries, 66% of working equid owners are women. While males are

considered less likely to respond to surveys, this has not borne true in meta-analyses of response bias (Wu et al., 2022). Podcast listenership varies by age, but research shows that it is most popular among people aged 18-44 years old (Edison Research, 2021). The majority of listeners in this study reported being between the ages of 18 and 74 years of age. According to the Edison Research InfiniteDial 2021 report, 52% of people aged 12-34 years old and 44% of people aged 35-54 years old, listen to podcasts monthly. Meanwhile, only 22% of people aged 55 years and older listen to podcasts monthly (Edison Research, 2021). The CES demographics reflect close to the same numbers with 90% of listeners being between the ages of 23 to 59 years of age. Of those, 25% are older, between the ages of 44 -59 years old (Spotify for Podcasters, 2023). Most respondents, 65% in this study, had completed a college or university degree either at undergrad or postgraduate levels. There have been various studies on the relationship between education level and podcast listening. A 2019 survey by Edison Research found that higher levels of education were positively associated with podcast listening. Additionally, some science podcasts may be geared towards individuals with more specialized knowledge or interests in scientific fields, which may appeal more to those with higher education levels. Overall, the sample in this study may be considered broadly representative of the listening population, although the population itself is a particular subset of equine owners.

Social Context of Behavioural Change

In the field of human behaviour, health and medicine, Kelly & Barker (2016) list six common errors in policymakers' attempts to change individual behaviours in relation to public health drives:

1. A belief that changes are 'common sense'.
2. A belief that individuals do not know the right 'message'.
3. A belief that knowledge and information drive individual behaviour,
4. A belief that people act entirely rationally.

5. A belief that people act irrationally.

6. A belief that it is possible to accurately predict behaviour.

Often the reason why individuals do not change practice is not because they have a knowledge deficit, but instead, there are social and psychological factors impacting choices and those factors are not always obvious.

Kelly & Barker highlight that traditional medical models often frame the doctor as the expert and the patient as ignorant of cases, but many times this is not the case, particularly where the patient has chronic care issues that they deal with daily (Kelly & Barker, 2016). It is fair to assume that a similar model of information flow exists from the veterinarian to the client in traditional veterinary relationships. Social support from peers is commonly found to be one of the few positive mediators of behavioural change in public health (Van Achterberg et al., 2011). CES attempts to introduce the listener to open-access research papers in a relaxed and conversational manner, providing social support to the acts of accessing and acting on information. This was a prevalent theme within the free text data. Notably, 78% of respondents had read the paper referenced in an episode at least once prompted by the episode. As there was no relationship between education level and the likelihood of seeking out the paper, this appears to be a global effect within the sample. Additionally, these were not readers who had reviewed the paper prior to the podcast episode, suggesting that this may have a considerable impact on the dissemination of veterinary research within these listeners. The majority of respondents reported that the experience of veterinarians and scientific evidence was considered the most important form of evidence, but they also valued their own experience highly. This returns to the social context surrounding behavioural change and the importance of recognizing the limitations in the information flow model of behavioural change.

Past research on livestock farmers in the UK has found that peer-reviewed research papers can be a trusted and useful source of information when they are accessible. Accessibility is challenged when the research is hard to find, and the scientific language within the papers makes them hard to understand. Finding the research can be difficult and time-consuming however. The language (poor communication format) can also be a barrier to reading the papers (Alarcon et al, 2014). Similarly, 93% of CES survey respondents felt that scientific peer-reviewed evidence was important to consider (Figure 1). CES facilitates access to the papers by linking directly to the source on the podcast homepage, and preferentially selecting open-access papers, removing time and financial barriers to access. The podcast hosts then aim to discuss the paper in such a way as to overcome scientific language barriers. In support of this interpretation, 74% of the survey respondents reportedly made management changes due to listening to an episode of CES. Of these 74%, 55% made changes due to a combination of hearing an episode and reading the research (Figure 2). Past studies on the Theory of Planned Behaviour (TPB) and the Theory of Reasoned Action (TRA) confirm these concepts apply to instances where farmers make changes in livestock management for better welfare of the animals and for public safety (Klein et al 2023; Ellis-Ivercen et al 2009).

When supporting owners to make changes, veterinary professionals must be aware of the range of information sources that owners draw from, and the role of social support. Edutainment such as podcasts could be a route to support owners to provide good equine welfare. There is an important caveat to this which will need to be considered in future work, however. It should be considered though that these social relationships may be considered 'parasocial', i.e., a relationship that is unidirectional and unequal in strength between a consumer of media and a media presenter (Giles, 2002). Parasocial relationships between podcast audiences and hosts have been found to contribute to good well-being in the audience (Pavelko & Myrick, 2020), and are conducive to animal welfare education (MacKay et al., 2018), but the impact of these relationships on both presenter and audience should be considered in future work.

The majority of respondents engaged with the CES podcast at least once a week (59%) and considered that the podcast was mainly based on scientific evidence with some of the hosts' experience filtered in (82%). This level of engagement could be closely linked to the accessibility of podcasts. As a communication tool, podcasts have become widely utilized and adopted in many science communication scenarios. They are no longer just seen as an amateur practice but as an important communication arena (Picardi & Regina, 2008). As stated earlier, audio as a medium is considered a less formal, more engaging way of communicating about science than written material and can be used to establish a more intimate connection with an audience (Merzagora, 2004).

Podcasts also offer the additional advantage over traditional radio of complete listener control, meaning that not only are listeners engaged, but they are also able to choose to listen when and where they please and replay segments of audio that they have missed or want to hear again. With 79% of people in the United States listening to podcasts on their smartphones (Edison Research, 2021), disseminating information has now become even more accessible.

As 74% of the respondents felt they had made a change to the management and/or training of their horse as a result of listening to the podcast (often alongside additional research), the podcast could be considered a reasonably effective behavioural change intervention. Many complex and multifactorial interventions show no impact on human behaviour (Baird et al., 2014; Blue et al., 2016), and while we are unable to say whether these changes were a) improvement to the welfare of the equine or b) maintained over time, the relatively low cost and simplicity of the edutainment approach are worth more extensive investigation in future research.

Study Limitations and Biases

There are several limitations to this study. First, the participants are entirely self-selecting from a limited pool of those listeners of the podcast. The study aims were not concealed from participants, and it is possible that listeners who do not make changes to their horses' management may not have responded. The respondents are also limited to a pool of listeners from one podcast only. However, this survey is not intended to be representative of all listeners, but instead to characterise how some listeners may use the podcast to change their behaviours and to establish whether it is possible for edutainment sources to be a potential route for animal welfare-related behavioural change. While we queried respondents on what changes they made and whether they were happy with their changes, we were not able to establish whether the changes were successful or in the best interests of the animal in this work. We encourage readers to consider this work highly preliminary but suggest that future work in the communication of equine veterinary medicine take note of the value that engaged equine owners place on scientific evidence, and consider what resources can be made available to combat accessibility challenges, be that facilitating discussion of papers through one-to-one interactions, given participant's ratings of their veterinary professional's opinion, or directing owners to appropriate edutainment sources. These results demonstrate an appetite for accessible scientific materials, and suggest that they may make a difference in equine management. Further work exploring the process of behavioural change in greater detail will support equine welfare. This area would greatly benefit from a greater variety of studies, including experimental trials to determine the extent, strength, and persistence of any behavioural change. This study may provide some justification for that work.

Conclusion

While more research is needed in this area of science podcasting to improve animal welfare, podcasts can be viewed as a form of (potentially parasocial) social support. Edutainment podcasts

may therefore act as a social mediator, supporting equine owners to make use of the evidence and enact change to the management and/or training of their equines. This can help them provide better care aimed at the ethological needs of the horse and make more informed decisions when it comes to their horse's health, training, and overall welfare. Science podcasts can help horse owners to be aware and understand the latest research trends and advancements in equine health, behaviour, and management. By listening to podcasts that cover topics related to horse care, owners can gain valuable knowledge that can help them better understand their horse's needs and behaviours. This could potentially help them provide better care by enabling them to make more informed decisions when it comes to their horse's welfare.

Declarations

Authorship: Author KA conceived of the study, supported study design, supported study execution, supported data analysis and interpretation, supported preparation of the manuscript and had final approval of the manuscript.

Author NM conceived of the study, supported study design, supported study execution, supported data analysis and interpretation, supported preparation of the manuscript and had final approval of the manuscript.

Author JRDM supported study design, supported study execution, led on data analysis and interpretation, supported manuscript preparation, and had final approval of the manuscript

Declarations of Interest: KA and NM are hosts of the CES podcast. JM has no affiliation to the podcast

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Ethical Animal Research: No animals were used in this research. Ethical approval for this study was granted by the Royal (Dick) School of Veterinary Studies' Human Ethical Review Committee, reference HERC_780_21.

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627 **Figure Headings**

628 **Figure 1**: *Listener ratings of the importance of considering various forms of evidence when making*
629 *choices regarding equine management, respondents are 54 listeners of the Conversations in Equine*
630 *Science podcast.*

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632

633 **Figure 2**: *Respondents' process for making changes to an aspect of equine management and/or*
634 *training after listening to Conversations in Equine Science Podcast*

635

636 **Table Headings**

637 **Table 1**: *Breakdown of respondent age, years of experience managing equines, demographics, and*
638 *education for 54 listeners of the Conversations in Equine Science podcast*.

639

640

641 **Table 2**: *Respondent (n = 54) perspectives on evidence in edutainment podcast 'Conversations in*
642 *Equine Science (CES)'*

643

644 **Table 3**: *Association between participants (n = 54) primary source seeking behaviour and levels of*
645 *education in a χ^2 test ($\chi 2[6, n = 54] = 2.97, p = 0.812$)*

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