

Appendix 1. Literature search strategy

The literature search was originally conducted for the information and retrieval module of the University of Chester MSc research Methods program. Searches were conducted in July 2007 and again in July 2008 and a few in-between on the key database Science Direct (which was found to be the key database in the original search).

The literature review aimed to evaluate the scope of published standard behaviour tests for horses and the degree to which reliability and validity of these tests as predictors of suitability/general behaviour tendencies/temperament have been established in the literature. The words reliability and validity were omitted from the search as not all authors have acknowledged these issues.

Literature Search Profile – adapted from Hart (2001).

Topic: The use of standardised behavioural tests to assess suitability for use in horses. As standardised behaviour tests may measure personality this needed to be included in the keyword search. The original search only included horses, but as research on horses was limited it was important to see whether such tests have been successful in predicting suitability in other species, especially dogs as these are another species which have service roles for humans..

Time Period: No time restrictions applied due to limited research in this field.
Country: Any – not sure which countries the work has been carried out in.
Language(s): Any literature in English language.

Concept planning table:

Words in blue indicate concepts and the words in red indicate the important synonyms used in the key word search. Words in black were used originally, but were not useful, so were later excluded from the key-word searches.

Concept planning table for the literature search on the use of standardised behavioural tests in predicting suitability for use in police horses.

Concept 1	Concept 2	Concept 3	Concept 4	Concept 5	Concept 6
Behaviour	Test(s)	assess	Personality	Horse(s)	Suitability
Behavioural	Assessment	Measure	Characteristics	Equine (s)	performance
Behavior	Experiment	Evaluate	Individual differences	Equid (s)	
Ethology	Trial	Appraise	Temperament	Mare	
Action	Measurement	Analyse	Subjectivity	Gelding	
Performance	Analysis	Explore	Disposition	Foal	
Reactivity	exploration	Determine	Emotions/ality	Yearling	
Reaction		Assay	Nature	Filly	
		Judge		Colt	
				Stallion	
				Animal(s)	
				dog (s)	
				canine (s)	

Research strategy

Reference books, books, journal articles, theses and dissertations, conferences and websites were searched, with the most important being journal articles as these contain the most recent, good quality information (Gash, 2000). To conduct an effective search the research topic was broken down into concepts and then further divided into synonyms. This produced a list of keywords which could be used to conduct a Boolean search (“AND”, “OR”, “NOT”) to broaden or narrow the exploration (Stebbins, 2006).

EndNote program was used to create a database of citations.

Books

Reference books and E Books

Reference books were used to find background information and to develop a list of key words that can be used to search the library catalogue, abstracts and indexes (Hart, 2001). Dictionaries, thesauruses and encyclopaedias were examined in the quick reference section of Chester University Library. The Rogets Thesaurus was used to produce a list of synonyms, which was expanded using Encarta and other online thesauruses. Dictionaries were searched for keywords and encyclopaedias for background on personality and temperament.

University of Chester catalogue

The University's electronic catalogue (OPAC - Online Public Access Catalogue), was used to identify useful books. Books were required to find key authors in the field, as the university only has a restricted selection of books about horses the key words searched were, horse OR equine which gave 72 results, with four relevant books containing behaviour tests. Stebbins (2006) suggests using the truncation symbol (*) to catch different word endings. This was used for behavi* and horse* and equi*, for the entire literature search, where this wildcard was supported by the database.

(Behavi*) OR (test OR assessment) AND (animal OR equi* OR horse* OR dog* OR cani*)

COPAC search

COPAC was searched next which allowed many catalogues to be searched at once. The keywords horse* OR equi* were searched which revealed 189 results, only two novel books of possible relevance, which turned out to be of no use.

Databases

Science Direct

Science Direct is an electronic database of journals. It is very useful for those interested in animal behaviour research as the University of Chester allows access to key journals such as - Applied Animal Behaviour Science, Animal Behaviour, Animal Welfare and New Scientist. An advanced search was conducted using keywords (equi* OR horse*) AND (personality OR temperament OR trait OR individual differences OR character). This revealed 118 results, of which 14 were useful for this topic. The terms (behavio* OR reactivity OR learning OR performance) AND (test OR assessment) and searched within the results for horse* OR equi* finding three more important journal articles.

In the secondary searches on science direct the terms (behave* AND test) AND (personality OR temperament OR indiv*). This equi* OR horse* were not included as background was required on other species and methodologies.

Ingenta and Psycinfo

Ingenta was searched using a combination of keywords. This revealed relevant results which had already found using Science Direct. Psycinfo, animal and personality were typed in, giving 1322 results. Horse was also added from the search history which refined the results to 16 references, a few were relevant but already known to me. As only duplications were found in the original search these databases were not used in secondary searches.

Web of Knowledge (Science)

An advanced search was conducted on web of science, terms were combined using Boolean operators and nested parentheses. The search only brought one new result. As a novel result was found, this database was used in secondary searches.

Scirus

Scirus is the most comprehensive science-specific search engine on the Internet (Elsevier, 2007). The keywords (horse* OR equi*) AND (personality OR temperament) and this produced many results; however there were only two useful results, which included an important journal and website. The keywords horse* OR equi* and then within these results for behavio* tests OR assessment but was unable to obtain any extra results.

Other database

Other databases which were not identified in the primary search were searched in the secondary search. These sources included Blackwell

Synergy, Cambridge journals online and Zetoc, which were not useful for this particular search.

Websites

Google and Google Scholar

keywords from my concept map were used in a variety of combinations, with only the Boolean operator OR being required. Google automatically searches for the various versions of behaviour making truncation unnecessary. This search provided some useful WebPages, however it was important for me to screen the information found to be sure the information was supported by evidence. There was very little to be found from these sources.

Appendix 2. Evidence of ethical approval for the use of animal subjects in the study.



Appendix 3 – Informed consent for the use of police horses in this study.

University of Chester
Department of Biological Sciences
Informed Consent Form (for studies on animals)



Development of reliable behavioural tests of horses and their use in the assessment of equine personality and the selection of suitable police horses

Rachel Flentje, who is a student on the MSc Research Methods programme at the University of Chester, has requested the participation of the animals in my care in a research study at this institution. I have been informed that the purpose of the research is to examine whether a set of reliable behavioural tests are a valid tool in assessing the personality and suitability of use of police horses. If the tests prove to be valid they may be of use in selecting horses suitable for the job.

My animals' participation in this research will involve being put through a series of behavioural tests, to assess their reaction to a variety of environmental challenges which will include 3 minutes of isolation, a stranger approaching the horse, an unusual noise (shaker), an unusual object (lampshade), a fast moving stimulus (automatic umbrella), a pain test (pinch chest) and an unusual surface test (tarpaulin).

I have been advised that this research should not involve any pain, discomfort or distress. All procedures are in keeping with the normal husbandry practices of the animals. The horses may experience some short-term stress during the tests, which will be kept to a minimum by keeping tests short and using gentle handling.

I understand that the results of this research may be published but that my name will not be revealed at any time (unless you wish for your institution to be acknowledged). In order to keep my record confidential, all information will be stored as numbered codes in paper and computer files that will only be available to Rachel Flentje and Dr Emma Creighton (supervisor).

I have been informed that any questions I have concerning the research or my animals' participation, will be answered by

Researcher: Rachel Flentje
MSc Research Methods student
Department of Biological Sciences
University of Chester
Email: r.flentje@chester.ac.uk

Supervisor: Dr Emma Creighton
Senior lecturer: Animal Behaviour and
Department of Biological Sciences
University of Chester
Email: e.creighton@chester.ac.uk
Tel: 01244 375444 Ext 3046

I have read the above information. The nature, demands, risks and benefits of the project have been explained to me and I acknowledge and understand them. I agree to allow the animals in my care to participate in this research. However, I understand that I may withdraw my consent and participation at any time without objection from the investigators.

Name of owner/carer
Signature of owner/carer


STABLE MANAGER

Date 29/11/07

University of Chester
Department of Biological Sciences
Informed Consent Form (for studies on animals)



Development of reliable behavioural tests of horses and their use in the assessment of equine personality and the selection of suitable police horses

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Researcher: Rachel Flentje
MSc Research Methods student
Department of Biological Sciences
University of Chester
Email: r.flentje@chester.ac.uk

Supervisor: Dr Emma Creighton
Senior lecturer: Animal Behaviour and
Department of Biological Sciences
University of Chester
Email: e.creighton@chester.ac.uk
Tel: 01244 375444 Ext 3046

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Name of owner/carer

Signature of owner/carer

W Bailey Date 27/2/08

Appendix 4. Poster and abstract presented at the International Society for Equitation Science and the Universities Federation for Animal Welfare 2008.



Can standardised behaviour tests predict suitability for use in horses?

Rachel Flentje and Emma Creighton

Anthrozoology Unit, Chester Centre for Stress Research, University of Chester, UK

Aims: To determine a set of reliable behaviour tests based on those reported in literature
To test the validity of these as predictors of horses' suitability as riding school or police horses

INTRODUCTION

- Standardised behaviour tests may improve equine welfare by enabling selection of horses suitable for a particular role e.g. police and riding school horses (Seaman et al 2002, AABS 78:175-191).
- A range of environmental challenge tests can be found in the scientific literature with claims made about the test's ability to predict suitability for use.
- However, with notable exceptions, authors have failed to establish the reliability of the tests or the validity of their claims.
- Here we aim to test these claims.

• Subjective scales of the horses' reactions to situations relating to specific tasks within their roles were developed from interviews with knowledgeable instructors and yard managers.

• For riding school horses, 16 questions scored their suitability for use in flatwork, jumping, stable management, cross-country and road safety lessons.



• For police horses, 19 questions scored their suitability for local, box and night patrols, community events, public order challenges and coping with water.



METHODS AND RESULTS

RELIABILITY OF TESTS

- Was tested by repeated measures of N=33 riding horses tested twice at 3 week intervals and assessed with Kappa (K) or Weighted Kappa (Kw).
- **The majority of the tests were at best moderately reliable (K/Kw>0.41) with only reactivity tests showing good or better reliability (K/Kw>0.6-0.8):**

 *Response to a stranger approach* – ranging from horse moves away to horse moves towards human.

 *Response to an unexpected loud noise (10s)* – ranging from no observable reaction to startle, and no flee to horse flees at trot/canter.

 *Response to a sudden fast moving object with handler* – ranging from no observable reaction to startle, no flee to horse flees at trot/canter, and horse touches or doesn't touch umbrella.

 *Response to an unusual surface* – ranging from horse crosses to horse stopped between 2-3 horses lengths away.

 *Response to encouragement over an unusual surface* – ranging refused to move to no encouragement.

VALIDITY OF TESTS AS PREDICTORS

- These reliable tests were compared with handlers' ratings of key aspects of (N=17) riding school and (N=24) police horse performance.

• Each horse was scored by two people to test for inter-observer reliability, and reliable items were summed to give a score for each task type.

• **There were no strong associations (Spearman's $r < 0.7$) between the horses' responses to the behaviour tests and their ratings of suitability for use.**

• **Four moderate correlations ($r > 0.4$) were found between police horse reactions to reactivity tests (loud noise and fast moving object) and ratings of their suitability of use.**

DISCUSSION

• These findings suggest that standardised behavioural tests are not strongly reliable and that:

- behavioural responses to standardised tests cannot be generalised to the wider challenges faced by these horses in their roles.

• standardised behaviour tests may simply be measuring the animals' past experience of similar situations.

• horses possibly habituated to the tests, it has been suggested that horses responses to a novel object (of the same colour) reduces over trials Christensen et al. 2009, AABS.

• however, reactivity tests may capture the sensitivity of the animals' autonomic responses, and this may be useful where reactivity is an important pre-cursor to training.

This research is R. Flentje's master's thesis <https://doi.org/10.1002/9781118511111.ch10>. Emma Creighton is funded by RAE (Capability Funding).

CONCLUSION: The findings from this study cannot support claims made for standardised behavioural tests to be valid predictors of a horse's suitability for use.

Can standardised behaviour tests predict suitability for use in horses?

Rachel Flentje and Emma Creighton

Anthrozoology Unit, Chester Centre for Stress Research, University of Chester, UK

Standardised behaviour tests have the potential to improve equine welfare by enabling the selection of horses suitable for a particular role. A range of tests are found in the scientific literature that make such claims. However, with notable exceptions, authors have failed to establish the reliability of their tests or the validity of their claims. This study aimed to determine a set of reliable behaviour tests based on those reported in literature; and to test the validity of these as predictors of horses' suitability as riding school or police horses. Reliability of response to novel object, social isolation and handling tests was established by tests repeated at three week intervals on 33 horses. The majority of the tests were at best moderately reliable (Weighted Kappa >0.41) with only reactivity showing good or better reliability (Weighted Kappa >0.6-0.8). These tests were included in the validity testing, which compared the horses' responses to the behavioural tests with the handlers' ratings of key aspects of riding school and police performance. These subjective scales of suitability were developed from interviews with instructors and yard managers. Bonferroni corrected correlations between the horses' behavioural responses to the tests and subjective ratings of their suitability for their use revealed no significant associations. These findings suggest that standardised behavioural tests are not strongly reliable and that either the tests used in this study did not serve as predictors of suitability for use, or that behavioural responses to standardised tests cannot be generalised to the wider challenges faced by these horses in their roles. Either way, the findings of this study cannot support claims made for these (or similar) tests to be valid predictors of a horse's suitability for use.

Appendix 5. Coding framework used to record the horses' behavioural reactions to the behaviour tests.

Behavioural variables and scores used to code the horses' responses to the behavioural tests

Name of test	Behavioural variable	Scoring
Social Isolation test (3 minutes)	Duration of time horses' nose is within 2 body lengths of door.	This was a continuous measure, in seconds.
	Duration of time of exploratory walking – nose below belly line, eyes, ears and head pointing towards floor.	This was a continuous measure, in seconds.
	Duration of time of alert walking – head above belly line, head not pointing towards floor.	This was a continuous measure, in seconds.
	Duration of time of trotting/cantering.	This was a continuous measure, in seconds.
	Duration of time spent exploring whilst standing.	This was a continuous measure, in seconds.
Stranger approach test (1 minute)	Horse's initial reaction to the human – reaction before human reaches horse.	1. Horse moves > 2 paces towards human 2. Horse stands still and turned towards human 3. Horse stands still and is turned away from human 4. Horse moves > 2 paces away from human
	Horse's interaction with handler.	1. Touches handler 2. Doesn't touch handler

	Amount of the time the horse spent in close proximity of the human.	This was a continuous measure, in seconds.
Unexpected noise test (10s)	Horse's postural expression, i.e. what its body did in relation to the noise	<ol style="list-style-type: none"> 1. Startle – body tenses, head raised, ears back, shifts body weight backwards 2. Orientate – ears, eyes and head point towards the noise 3. Freeze – no observable reaction
	The horse's flight reaction	<ol style="list-style-type: none"> 1. No flee <2 paces of walk 2. Flees > 2 paces of walk 3. Flees > 2 paces of trot/canter
Novel object test (1 minute)	Duration of time touching the object (if at all) – nose must be in contact with the object, pauses of <2 secs allowed.	This was a continuous measure, in seconds.
	Duration of time exploring object, pauses of exploration <2 secs allowed – nose below belly line, ears, eyes and head pointed towards object.	This was a continuous measure, in seconds.
	The latency of time for the horse to touch the lampshade.	<ol style="list-style-type: none"> 1. touches lampshade in first 10s 2. touches lampshade after 10s 3. doesn't touch lampshade
Umbrella test (1 minute)	Horse's postural expression, i.e. what its body did in relation to the umbrella	<ol style="list-style-type: none"> 1. Mild startle – head moves up and/or ears move back and/or tail swishes 2. Medium startle- body and/or neck tenses, head moves up and body weight shifts away 3. Severe startle – body tenses head moves up and horse moves away (any leg movement) 4. Freeze – no observable response

	The horse's flight reaction	<ol style="list-style-type: none"> 1. No flee < 2 paces of walk 2. Flees > 2 paces of walk 3. Flees > 2 paces of trot/canter
	Does horse touch umbrella	<ol style="list-style-type: none"> 1. Horse touches umbrella 2. Horse doesn't touch umbrella
Pinch test (10s)	Horse's postural expressions	<ol style="list-style-type: none"> 1. Signs of discomfort – ears back, head raised, tail swishes and horse moves away. 2. No signs of discomfort
	Horse's tendency to move away from pressure	<ol style="list-style-type: none"> 1. Horse doesn't move away 2. Horse moves away
Unusual surface test	Horse's initial reaction to the sheet	<ol style="list-style-type: none"> 1. Horse crossed sheet without a change in rhythm 2. Horse crossed sheet with change in rhythm 3. Horse stops when humans foot touches the sheet 4. Horse stopped between 1-2 horses lengths from sheet 5. Horse stopped greater than 2 horses lengths from sheet
Unusual surface encouragement test (30s)	Horse's reaction to encouragement	<ol style="list-style-type: none"> 1. None needed 2. Horse responded with forward movement across the sheet 3. Horse responded with forward movement of 1 pace or more without touching sheet 4. Horse responded with forward movement < 1 pace

Appendix 6

Test procedure for equine behaviour tests

Tests should be conducted by a person unfamiliar to the horse. The tests should be conducted in a fenced area familiar to the horse, which is out of sight of other horses. Prior to commencing the tests, it was important to have all the equipment in place and to ensure the video camera was charged. It was found that the most efficient way to conduct the tests was to complete them in two sections. Firstly to conduct all the tests which required the horses to be isolated, which included social isolation, stranger approach and shaker tests and then to conduct the tests which required handling of the horse which included the lampshade, umbrella, pinch and plastic sheet tests. This method saves time, as it avoids carrying equipment in and out of the ménage.

Stage one – social isolation tests

The equipment required for this test includes a video recorder and a percussion shaker.

- 1) Camera operator should be in a position concealed from the horse, with the camera view on wide to cover the area of the ménage.
- 2) The shaker should be placed outside the ménage, in preparation for the shaker test.
- 3) The horse is led into the ménage and brought around towards the closed door, the horse is then set loose and the horses' behaviour is recorded for **three minutes**.
- 4) After three minutes the human **unknown to the horse** re-enters the arena and walks steadily and purposefully up to the horse, not directly looking at it (making eye contact), with their arms by their sides. Once they are within **one metre** of the horse they stop and stand still for **one minute without any interaction** and the horses' reactions are recorded.
- 5) After one minute the handler catches the horse and leads it back to the door, the handler then releases the horse and quickly comes out of the ménage.
- 6) As soon as the handler leaves the ménage they rattle the shaker for **10 seconds** and then re-enter the arena and catch the horse. The handler should leave sufficient time for the horse to calm down, before taking the horse back to the stable.

This procedure should be repeated for all the horses before conducting the handling tests.

Stage two - Handling tests

The equipment required for this test includes a video camera, lampshade, umbrella and a plastic sheet.

1) Arena should be prepared by placing the lampshade in the near side corner of the ménage, near the camera and the plastic sheet placed lengthways down the far side of the ménage in the corner furthest away from the camera. The umbrella is carried by the handler e.g. in pocket, concealed from the horse

3) Camera operator is in the same position as before and start filming as soon as the horse enters the arena.

4) For all the tests the handler adopts a neutral position and should never rewarded, threatened or punished the horses.

4) Handler and horse enter the arena, horse is kept on a loose rope and the handler leads the horse **one metre** in front of the lampshade and stops for **one minute**.

5) After one minute the handler leads the horse away from the lampshade and moves into an area away from the equipment, the handler then lets the horse loose and takes 1 step away before opening the automatic umbrella, the handler then stands still for **one minute** allowing the horse time to touch the umbrella.

7) The handler then re-catches the horse and leads the horse into an area away from the equipment, near the camera and then pinches the horse on the chest, using the thumb and forefinger (no nails). The handler pinches for **10 seconds**, unless the horse moves away before this time.

8) The horse is then led to the left hand side of the arena and then towards the plastic sheet on a loose rope. There is **no interaction** between the horse and handler at this point, the handler keeps walking until the horse stops. The handler continues walking forward at the same pace until they reach the end of the lead rope.

9) At this point the **handler interacts** with the horse, giving encouragement by gentle voice encouragement and gently tugging on the rope, the test stops either when the horse crosses over the sheet or when the horse refuses to go any further. The horse **SHOULD NOT** be stressed with undue pressure.

This procedure should be repeated for all horses.

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Appendix 7
Suitability of use questionnaire: Police horses



Section 1 asks for details about the horse.

1.1. Name of horse?

1.2. Sex of horse? **Mare** **Gelding**

1.3. Age of horse?

1.4. How many years has this horse been working as a police horse?

1.5. How long have you known this horse?

1.6. What is your relationship to this horse e.g. officer, trainer etc?

Section 2 asks for details about the horses' behaviour in a variety of situations. Please rate how this horse would normally behave. Most of the questions ask you to rate the percentage of time the horse is Forward Straight and Calm (FSC) in a particular situation. **It is very important that you do not discuss your responses or the behaviour of the horses' with other people until the questionnaire has been returned. Please be as truthful as possible, there is no right or wrong answer.**

Please circle the percentage of time, or number (Q.2.19) which best describes how the horse would normally perform.

2.1. When confined by a large crowd of people how well does this horse cope?

Remains FSC when large crowds	100% of the time	90% of the time	80% of the time	70% of the time	60% of the time
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2.2. How well does this horse cope with static street furniture (SSF) e.g. bins and post-boxes?

Remains FSC when passing SSF	100% of the time	90% of the time	80% of the time	70% of the time	60% of the time
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2.3. How does this horse cope with non-static street furniture (NSSF) e.g. flags, bags blowing, revolving shop signs etc?

Remains FSC when passing NSSF	100% of the time	90% of the time	80% of the time	70% of the time	60% of the time
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2.4. How does this horse respond to heavy traffic?

Remains FSC in heavy traffic	100% of the time	90% of the time	80% of the time	70% of the time	60% of the time
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2.5. How does this horse respond to road works (including machinery)?

Remains FSC when passing road works	100% of the time	90% of the time	80% of the time	70% of the time	60% of the time
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2.6. When on patrol how does this horse cope when in close proximity of other horses?

Is tolerant towards other horses	100% of the time	90% of the time	80% of the time	70% of the time	60% of the time
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2.7. When on patrol, how does it react to being separated from other horses?

Will easily separate from other horses	100% of the time	90% of the time	80% of the time	70% of the time	60% Of the time
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2.8. How does this horse respond to being petted by unfamiliar people?

Is tolerant towards being petted	100% of the time	90% of the time	80% of the time	70% of the time	60% of the time
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2.9. How does this horse respond to being loaded into a box/trailer?

Is FSC loading into a box	100% of the time	90% of the time	80% of the time	70% of the time	60% of the time
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2.10. How does this horse unload from the box/trailer?

Is FSC coming out of a box	100% of the time	90% of the time	80% of the time	70% of the time	60% of the time
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2.11. How does horse react towards other horses in the box/trailer?

Is tolerant towards other horses in box	100% of the time	90% of the time	80% of the time	70% of the time	60% of the time
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2.12. How does this horse respond towards oncoming traffic?

Is FSC in oncoming traffic	100% of the time	90% of the time	80% of the time	70% of the time	60% of the time
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2.13. How does this horse respond to traffic approaching from behind?

Is FSC with traffic from behind	100% of the time	90% of the time	80% of the time	70% of the time	60% of the time
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2.14. How does this horse cope with patrolling at night?

Is FSC during night patrol	100% of the time	90% of the time	80% of the time	70% of the time	60% of the time
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2.15. How does this horse cope with a sudden loud noise e.g. thunder, revving engine?

Is FSC on hearing a sudden noise	100% of the time	90% of the time	80% of the time	70% of the time	60% of the time
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2.16. How does this horse respond to crossing water e.g. puddles when out on patrol?

Remains FSC going through water	100% of the time	90% of the time	80% of the time	70% of the time	60% of the time
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2.17. How does this horse respond when splashed with water by passing vehicles?

Remains FSC when splashed with water	100% of the time	90% of the time	80% of the time	70% of the time	60% of the time
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2.18. How does this horse respond to running water e.g. streams, water running down the road?

Remains FSC near running water	100% of the time	90% of the time	80% of the time	70% of the time	60% of the time
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2.19. How suitable is this horse as a ‘schoolmaster’, i.e. calm and appropriate for training students?

Is suitable for beginners	1	2	3	4	5	Is unsuitable for beginners
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Please return the questionnaire with any comments to the yard manager as soon as possible
for my collection

Please feel free to contact us at any point with any comments or questions

THANKYOU FOR YOUR TIME

Appendix 8. Evidence of ethical approval for the use of human subjects in the study



University of
Chester

*Centre for Exercise and
Nutrition Science*

Reader and Research Co-ordinator

Dr Stephen Fallows

BSc, PhD

Direct Line 01244 513407

Fax 01244 511310

s.fallows@chester.ac.uk

Rachel Flentje
34 Ryle Street
Macclesfield
Cheshire
SK11 8AX

28th January 2008

Dear Rachel

Study title: Development of reliable behavioural tests of horses, and their use in assessment of: (i) equine personality; and (ii) the selection of suitable police horses

FREC reference: 189/07/RF/CPHR

Version number: 2

Thank you for sending the above-named application to the Faculty of Applied and Health Sciences' Research Ethics Committee for review. The application has been considered on behalf of the Committee by Mike Morris as Lead Reviewer and reported to the Faculty's Research Ethics Committee.

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form and supporting documentation.

This approval is given provided that you comply with the conditions set out in the attached document. You are advised to study the conditions carefully.

The final list of documents reviewed and approved by the Committee is as follows:

Document	Version	Date
Application Form	1	November 2007
Participant Information Sheet	1	November 2007
Validated questionnaire	1	November 2007
Non-validated questionnaire	1	November 2007
Letter of invitation to participants	1	December 2007
Application to Dept. Biological Sciences REC	1	November 2007
Letter from Dept. Biological Sciences giving approval	1	January 2008
Consent letter from Merseyside Mounted Unit	-	January 2008

Please note, however, that until the Committee receives written consent to approach the Manchester Mounted Police Unit, your research must only be conducted with the Merseyside Mounted Police Unit. As soon as you have written approval from Manchester, please forward it to Jess Hitchcock.

With the Committee's best wishes for the success of this project.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Fallows', written over a horizontal line.

Dr. Stephen Fallows
Chair, Faculty Research Ethics Committee

Enclosures: Standard conditions of approval

c.c.: Supervisor
FREC Representative

Ethics application

From: **Jess Hitchcock** (j.hitchcock@chester.ac.uk)

Sent: 04 February 2008 14:13:28

To: Rachel Flentje (rachelflentje@hotmail.com)

Cc: Stephen Fallows (s.fallows@chester.ac.uk)

Hi Rachel

I have now received the agreement from the Manchester Mounted Police department, so you may now approach these participants for your study. I will forward a copy of the agreement to Stephen Fallows for his information.

Thanks,
Jess

Letter of consent (re- employee participation)

Development of reliable behavioural tests of horses and their use in the
assessment of equine personality and the selection of suitable police horses

Rachel Flentje, who is a student on the MSc Research Methods programme at the University of Chester, has requested the participation of employees of this unit in a research study at this institution. I have been informed that the purpose of the research is to examine whether a set of reliable behavioural tests are a valid tool in assessing the personality and suitability of use of police horses. If the tests prove to be valid they may be of use in selecting horses suitable for the job.

The employees' participation in this research will involve the completion of questionnaires, one relating to the personality of the horse and the other to its suitability of use. Employees will also be provided with a participant information sheet, which explains the research to them and what their participation will involve. It is then up to the individual employees as to whether they choose to take part. Each questionnaire will take 5-10 minutes to complete.

I have been advised that this research requires employees who know a particular horse well to fill in the questionnaire. It will therefore be more straightforward for me or another member of staff, who knows the employees and horses well to distribute the questionnaire accordingly. It will be the researcher's responsibility to provide me with the questionnaires and to collect them after completion.

I understand that the results of this research may be published but that my name will **not** be revealed at any time (unless I wish for my institution to be acknowledged). In order to keep my record confidential, all information will be stored as numbered codes in paper and computer files that will only be available to Rachel Flentje and Dr Emma Creighton (supervisor).

I have been informed that any questions I have concerning the research or the employees' participation, will be answered by

Researcher: Rachel Flentje
MSc Research Methods student
Department of Biological Sciences
University of Chester
Email: r.flentje@chester.ac.uk

Supervisor: Dr Emma Creighton
Senior lecturer: Animal Behaviour and
Department of Biological Sciences
University of Chester
Email: e.creighton@chester.ac.uk
Tel: 01244 375444 Ext 3046

I have read the above information. The nature, demands, risks and benefits of the project have been explained to me and I acknowledge and understand them. I agree for the employees to participate in this research. It is however up to the employee themselves as to whether they wish to participate or not.

Name of yard manager
Signature of yard manager



Date 10.1.08



Appendix 10. covering letter

UNIVERSITY OF CHESTER EQUINE WELFARE RESEARCH Suitability of Use Questionnaire: Police Horses

Thank you for agreeing to participate in this research project and taking the time to answer this questionnaire. We are developing a tool which will allow us to assess job suitability in police horses by evaluating how a particular horse reacts in a variety of situations relating to police work.

We are requesting two people who know the horse well, (but preferably not the horse's regular mount), to complete this questionnaire for the same horse. We would prefer for two people to complete the questionnaire, but it is important that each person knows how the horse performs in all aspects of its work. If there are not two people who can do this, then it is ok for one person to complete the questionnaire.

It is VERY important that you do not discuss your responses to the questions, or your thoughts on the horse's behaviour with each other, or other people on the unit until both people have completed the questionnaire and sent it back to us.

The questionnaire asks you to rate the horses' behaviour in a variety of situations commonly encountered by police horses. Please answer the questions as truthfully and accurately as possible. As the questionnaire is still in its development stage, we would be grateful for any feedback about its format and content, such as whether you think questions and ratings are appropriate, whether it was easy to follow, or whether anything needs adding etc.

Your answers are completely anonymous and the information you give will be kept confidential. Your participation is entirely voluntary and you have the right to withdraw at any time from the survey.

Please feel free to contact the researcher with any queries or comments – alternatively, just add any feedback to the questionnaire and return it in the stamped addressed envelope provided.

Thank you so much for you time

Researcher: Rachel Flentje
MSc Research Methods student
Department of Biological Sciences
University of Chester
Email: rachelflentje@hotmail.com
Tel: 01625 433160

Supervisor: Dr Emma Creighton
Senior lecturer: Animal Behaviour and Welfare
Department of Biological Sciences
University of Chester
Email: e.creighton@chester.ac.uk
Tel: 01244 375444 Ext 3046

Appendix 11. Participation information sheet

Equine Welfare Research **Participant information sheet**

Assessment of the personality and suitability of use in police horses

You are being invited to take part in a research study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

Thank you for taking the time to read this.

What is the purpose of the study?

My name is Rachel Flentje and I am currently conducting a piece of research for Dr Emma Creighton, who is a senior lecturer and researcher at the University of Chester. One of her main interests is the assessment of horse 'personality' and for my MSc dissertation I will be conducting some research, which will look at the development of a set of behavioural tests to assess horses' personality and their suitability of use as police horses.

Behaviour tests are used to assess a horse's behavioural reaction to a variety of stimuli, such as a sudden noise or moving object. If the tests prove to be valid and reliable they may be of use in the selection of new horses or in deciding the best roles for those in training.

To see whether any of the tests we have developed can be used to assess a horse's personality and suitability of use, we have developed two questionnaires. The first is aimed at measuring a horse's personality and the second aims to assess how good a horse is at its job. A written report will be produced at the end of the project. The findings from the study will be used to inform the equine industry, whether behavioural tests are any use at assessing a horse's personality and how good the horse is.

Why have I been chosen?

You have been chosen because you are familiar with this particular horse and will therefore be able to answer questions relating to how the horse responds to a variety of situations relating to its work and/or its personality.

Do I have to take part?

It is up to you to decide whether or not to take part. If you decide to take part you will be given this information sheet to keep. You will then be asked to complete a questionnaire which asks you to rate the horse's personality and/or a questionnaire which asks you to rate how the horse responds to a variety of situations relating to its work. By completing the questionnaire it will be

assumed that you have given your consent to take part in the study. If you decide to take part you are still free to withdraw during the completion of the questionnaire without giving a reason. However as the questionnaire is anonymous it will not be possible for you to withdraw once the questionnaire has been returned.

What will happen to me if I take part?

If you decide to take part, you will be given this information sheet to keep. You will then be asked to complete one or both of the questionnaires. Each questionnaire will take between 5-10 minutes to complete for a particular horse. You may be asked to complete more than one questionnaire, so that all the horses on the unit are covered. It is very important that you do not discuss your responses to the questions or the behaviour of the horses with anyone until you have returned the questionnaires. You are free to withdraw whilst completing the questionnaire, but as they are anonymous you will not be able to withdraw once you have returned the questionnaires. The questionnaires need to be handed back to the yard manager for my collection.

What are the possible disadvantages and risks of taking part?

There are no disadvantages or risks foreseen in taking part in the study.

What are the possible benefits of taking part?

As a member of staff of the mounted police unit, it is possible that you may welcome the opportunity to take part in the research and give your views on the horse's personality and job suitability. By taking part, you will be contributing to the development of a set of tests, which will hopefully be of use in the future to assess potential police horses.

What if something goes wrong?

If you wish to complain or have any concerns about any aspect of the way you have been approached or treated during the course of this study, please contact Sarah Andrew, Dean, Faculty of Applied and Health Sciences, University of Chester, Parkgate Road, Chester, CH1 4BJ, 01244 513055.

If you are harmed by taking part in this research project, there are no special compensation arrangements. If you are harmed due to someone's negligence (but not otherwise), then you may have grounds for legal action but you may have to pay for this.

Will my taking part in the study be kept confidential?

All information given by you is kept anonymous as we are interested in the collecting information about the horses. No personal questions are asked.

What will happen to the results of the research study?

The results will be written up into a report for the sponsor of the research and will also be part of an MSc dissertation. It is hoped that the findings may be used to provide a set of practical tests which could be used to select police horses.

Who is organising and funding the research?

The research which is for my MSc is being funded by Dr Emma Creighton, head of The Anthrozoology Unit at The University of Chester. Dr Creighton is also supervising my MSc along with Catherine Perry who is a senior researcher for The Centre for Public Health Research at the University of Chester.

Who may I contact for further information?

If you would like more information about the research before you decide whether or not you would be willing to take part, please contact:

Researcher: Rachel Flentje
MSc Research Methods student
Department of Biological Sciences
University of Chester
Email: r.flentje@chester.ac.uk

Supervisor: Dr Emma Creighton
Senior lecturer: Animal Behaviour and
Department of Biological Sciences
University of Chester
Email: e.creighton@chester.ac.uk
Tel: 01244 375444 Ext 3046

Thank you for your interest in this research.

Appendix 12. Project time table: * = critical deadline, text in yellow indicates important stages

Activity Description	Aug 07	Sep 07	Oct 07	Nov 07	Dec 07	Jan 08	Feb 08	Mar 08	Apr 08	May 08	Jun 08	July 08	Aug 08	Sep 08	Total time
Literature Search	35 hours														
Review literature search conducted in 2006/7 during modules	4														4
Conduct further literature search on key databases	5					3						3			11
Collate full articles of journals		6													6
Use Q/A method to analyse material		10													10
Search and review books		4													4
Research Design	31 hours														
Review existing methods (lots had been done on this in 2006)	5														5
Further develop behavioural tests		6													6
Seek permission from institution			1												1
obtain volunteers	1														1
Prepare ethical approval form human			11												11
Prepare ethical approval form animal			4												4
Ethical approval meeting human				*											
Hand in ethical approval form animal				*											
Ethical approval granted animal					*										
Ethical approval granted human						*									
Complete health and safety assessment				1	*										1
list equipment					2										2
Questionnaire design	18 hours														
Design/piloting did in 2006 as part of module															
Design participant information sheet			2	*											2
Distribute questionnaire at Merseyside						1									1
Distribute questionnaire to Manchester							1								1
Collect questionnaire from Merseyside							1								1
Collect questionnaire from Manchester							1								1

Analyse questionnaires							6	6							12
Carry out trials							28 hours								
Prepare equip							3								3
Test equipment							2								2
Trials on horses at Merseyside							15								15
Trials on horses at Manchester							8								8
Data Analysis									13 + 87 in 06						
Design measure (completed in 2006 by Dr Creighton and myself) some editing									2						2
Code videos of riding horses (Completed by myself in 2006, took 60hrs)															
Input onto SPSS (Completed by myself in 2006 took 12hrs)															
Analyse reliability (Completed by myself in 2006 took 25hrs)															
Analyse validity comparison of tests and questionnaire								5	6						11
Write it up										110 hours					
Introduction									6	8					14
Methods									6	8	8	7			29
Results										3		7	4		14
Discussion													16		16
Conclusion													1		1
Amendments													12	24	36
Conferences															
Prepare abstract												6			6
Prepare poster												3			3
UFAW conference												*			
ISES conference													*		
Total hours	15	20	18	1	2	23	17	13	18	19	8	23	93	24	286

Appendix 13. Rational for questions used in the suitability for use questionnaire

Section one asked for details about the horse, allowing each horse to be individually identified.

Section two asked questions designed to capture the horse's performance relating to roles specific to police work. For the majority of the questions horses were rated on how forward straight and calm they remained in each situations (FSC). This rating was used unless otherwise stated

1) *Local Patrols* – questions designed to capture the horse's performance relating to this situation included;

- How well does this horse cope with static street furniture (SSF) e.g. bins and post boxes? (Question 2.2)
- How well does this horse cope with non static street furniture (NSSF) e.g. flags, bags blowing, revolving shop signs etc? (Questions 2.3).

Horses are flight animals (McGreevy, 1996) and it is therefore instinctive for a horse to run from a startling situation. On patrol a horse could be potentially startled, as it is likely to encounter both SSF and NSSF. These need to be negotiated in a controlled manner to avoid injury to both themselves and others.

- How does this horse respond to heavy traffic? (Question 2.4)
- How does this horse respond to road-works (including machinery)? (Question 2.5).

As part of its job, a police horse has to undertake city centre patrols and the traffic in these areas is likely to be very busy and noisy. The horse may also be faced with road-works and these can be daunting because of sudden movements and noises from machinery.

- How does this horse cope with a sudden loud noise e.g. thunder, revving engine, fire works? (Question 2.15).

When out on patrol, it is likely that a horse will experience a sudden loud unexpected noise, which both horse and rider are unprepared for. This could be a potentially dangerous situation, as a horse's instinct is likely to cause it to flee.

- How does this horse cope with oncoming traffic? (Question 2.12).
- How does this horse cope with traffic approaching from behind? (Questions 2.13).

On patrol, a horse can react differently towards oncoming traffic and traffic from behind, it was therefore appropriate to ask how the horses reacted in both situations.

- When on patrol how does this horse cope when in close proximity of other horses? (Question 2.6). Horses were rated on their tolerance towards other horses.

- When on patrol how does this horse react to being separated from other horses? (Question 2.7). Horses were rated on how easily they separated from other horses.

Horses usually go out in groups when on patrol and can often end up in close proximity to another horse. It is important for the safety of other horses, riders and members of the public that the horses do not try to kick or bite each other. A good horse therefore needs to be tolerant of other horses. It is also important that the rider is able to separate the horse from other horses on patrol. Horses are herd animals (McGreevy, 1996) and naturally would prefer to stay together.

2) *Box Patrol*

- How does this horse respond to being loaded into a box/trailer? (Question 2.9)
- How does this horse respond to being unloaded from a box/trailer? (Questions 2.10)

These questions were asked because as well as carrying out local patrols, horses also go out on box patrols. This requires them to be transported to distant locations. It is therefore important that the horses load easily into the boxes allowing them to reach their location quickly, and exit the box in a calm manner avoiding injury to people during that process.

- How does this horse react towards other horses in the box/trailer (Question 2.11)

Although separated in their horse box, the horses remain in close proximity and could still potentially bite one another, therefore horses must also be tolerant of other horses to avoid any injuries and undue stress.

3) *Night Patrol*

- How does this horse cope with patrolling at night? (Question 2.14)

Police horses also carry out night patrols. This is a totally different environment for the horses to cope with than the more usual day work as they have to deal with headlights from cars, streetlights and dimly lit areas. Some horses could be more suited to this task than others.

4) *Public order/riot training*

- When confined by a large crowd of people how well does this horse cope?
(Question 2.1).

This question was asked, because in riot situations police horses need to cope with large crowds of people, sometimes thousands. In such circumstances horses should ideally remain FSC to avoid members of the public becoming injured and allow the officer to control the crowds by accurate positioning of the horse.

- How does this horse cope with a sudden loud noise e.g. shouting, whistles?
(Question 2.15).

This question was used previously for local patrols, but this factor is also important in public order situations, where the environment is uncontrollable. Horses are likely to hear sudden loud noises such as shouting, football rattles etc, and again horses should remain in control.

5) *Community events/school visits*

- How does this horse respond to being petted by unfamiliar people? (Question 2.8)
Horses were rated on how tolerant they were towards being petted.

The police horses have a strong community policing role and take part in endeavors to increase public satisfaction in the police through community intervention such as visits to schools and youth groups (Merseyside police, n.d.). Horses need to be tolerant towards being touched by unfamiliar people.

6) *Training students*

- How suitable is this horse as a 'schoolmaster', i.e. calm and appropriate for training officers? (Question 2.19) Horses were rated on a scale from suitable for beginners to unsuitable for beginners.

Mounted police officers have a 16 week training course, in which they learn to ride the horses (Merseyside police, n.d.). Students are assigned to the quieter horses and certain horses are more suited to this role than others.

7) Water

- How does this horse respond to crossing water? Being splashed by water? And walking through/near running water?

It was necessary to ask these questions, because when out on patrol, there are many situations where a horse may have to travel through water. Even puddles can be a problem to some horses, but police horses must be willing to work in these situations to avoid endangering members of the community.