

This document attempts to provide a “plain English” interpretation of the second-year research findings. It builds on knowledge of the pristine hunt detailed in the previous plain English document and details some of the gaps recognised from the research manuscript written up for year 1.

The research has been drafted for submission to the journal *Psychophysiology*, published by the Society for Psychophysiological Research. The research has also been partially publicised through interviews with Radio NZ and TVNZ, both accessible via links on www.theroar.org.nz

A psychological and physiological exploration

The objective was to explore the physiological phenomena that may influence the process of identifying a deer and deciding to shoot. A linked series of studies took place during 2017.

The first was a number of field trials - ‘real world’ hunts which took place at Makapua Station in Hawkes Bay, and at Balnagowen Hunting in North Shore. With the permission of the respective land owners, a total of five hunts were conducted, with physiological measures taken from the hunters. The trials provided us with a suite of physiological data along with some surveys which the hunters completed at the same time. These gave us a lot of confidence that a similar approach would work in a more controlled experimental environment. Whilst each real-world hunt provided us with a rich dataset, it is almost impossible to draw any generalisations from these field trials for the wider hunting community due to the very small sample and the fact that no two hunts are the same. More controlled experimentation was required!

In the second trial, we sought to establish a greater degree of control over the hunt and set up an experiment which took place during the 2017 Sika Show. It involved 60 hunters completing a series of surveys related to personality and self-control, liquid and food intake, and fatigue. The hunters then engaged in a 5-minute simulation of one of a number of hunting scenes during which they had the opportunity, using a replica bolt action rifle to shoot or not. During the simulated hunt, we took physiological recordings – like those taken in the field trials – along with monitoring where the hunters looked and whether there were any changes in the size of their pupils. Finally, we asked hunters to estimate the time spent in the hunting simulation.

What we found – and did not find – was very interesting and thought provoking. These findings included:

- Pupil dilation occurs when hunters spot their first deer. This is a sign of physiological arousal or excitement. We are also currently investigating whether this dilation influences the clarity of vision.

- Half of the participants went through a simulation in which there was an unknown animal that they had the opportunity to shoot – 4 hunters shot this animal within the first 20-25 seconds of seeing it. Their average age was 21.75 years with average experience of 8 years.
- In the last 10 seconds prior to shooting many hunters were in a heightened level of psychological arousal. This further increased 4 seconds prior to shooting.
- We did not find any convincing evidence for to support any relationship between personality type and failure-to-identify hunting incidents. However more extraverted hunters were more likely to discharge their firearm. We strongly emphasize that this observation does not necessarily mean that more extraverted hunters are less safe.
- There was also no indication that those hunters who had drank alcohol the night before, or who were dehydrated were more likely to shoot the unknown animal. However, those that had drank water recently and did fire their rifle were more likely to hit their target. So, it pays to keep hydrated.
- We also asked hunters to estimate the time it took from the moment they spotted their first stag until the end of the simulation or until the moment they discharged their firearm. We found that hunters overestimated their time by as much as 38%. So, when someone says “I observed my target for 2 full minutes”, there is every chance they were only watching their target for as little as 1 min 26 secs. To summarise, hunter’s sense of time slows down during those important moments of hunting. This observation is also consistent with other studies of the effects of physiological arousal.

What does all this information mean?

From this year’s research we have established that:

- hunting is fraught with physiological activity that the hunter has little or no control over. Whether you are on your first hunt or well-seasoned over many years, your brain, nervous system and general physiology responds automatically and unconsciously.
- Your ability to keep calm in those final moments is reduced dramatically, and there is little you can do about it. Your sense of time slows down so you can react too quickly to whatever you are observing.
- Your liquid intake and personality (specifically extraversion – *outgoing-ness*) may influence your hunting performance – specifically your accuracy and willingness to shoot – but not necessarily your risk of committing a failure-to-identify incident.
- Your age or experience does not meaningfully increase your risk of committing a failure-to-identify incident.

How can we use this information?

It all comes down to training and messages sent out to the hunting community. Along with the first year's research, we would recommend the following messages being used in training and communications:

1. Hunting is a dynamic activity – no two hunts are the same
2. Your decision-making can be easily upset at early stages of hunting before you even see your first stag, this could snowball into an FTI
3. If the hunter picks up false signs it is their experience and know-how that is their first line of defence (suggesting education and training quality is critical) against making a fatal mistake
4. The few final checks to make before committing to shooting should be a deliberate action (with no regard of the target running off), and not a quick confirmation
5. Hunters get excited at the first sight of a stag, causing their nervous system to go into overdrive – and there is nothing that you can do about it.
6. Part of this arousal is the dilation of the pupils, which occurs at the sight of a potential target. This could mean a hunter's visual acuity is reduced
7. If you are extraverted or outgoing this could influence the likelihood that a shot is taken or not
8. Levels of hydration affect your ability to achieve a well-placed and humane shot
9. Time slows down during those final moments before shooting
10. Your levels of excitement increase in the final seconds prior to shooting

I hope this helps! More research in 2018 to come.