Are we Pavlo's Cybersecurity Dogs?

Ivan Pavlov, one of the great researchers of early psychology led to breakthroughs in human behavioral theory. A simple explanation of his breakthrough research is as follows:

1) An *unconditioned stimulus* leads to
2) An *unconditioned response*, add in a
3) *Neutral stimulus* to the *unconditioned stimuli,* that leads to a
4) *Conditioned response*, remove the
5) *Unconditioned stimuli* and use the *neutral stimuli that will* lead to
6) *Conditioned Response*

Many people refer to this research simply as Pavlov's dogs: the practical example

1) Offer the dog a treat *unconditioned stimuli.*
2) The dog begins to salivate *unconditioned response.*
3) Add a bell to the treat *neutral stimuli.*
4) Give a treat, ring bell together a *Conditioned response*.
5) Remove the treat, *unconditioned stimuli.*
7) The ring just the bell, *neutral stimuli,* the dogs begin to salivate, i.e., *Conditioned Response*.

Go to another room; the dog will come running and salivating, behavioral and physical factors.

The timing is also important in that the two, neutral stimuli and the unconditioned stimuli had to be close in time.

Pavlov did not undertake the research to view primitive responses in animals; it was the

Block access to routers, shut down routers, close or limit activity on networks *Unconditioned response.*

What if however, this is a False alarm, and Social engineering attacks begin occurring over the phone. The conditioning is that Logs alerts, alarms, lights only applies to Router vulnerability.

How would the following apply to a cybersecurity solution?

1) Awareness training, *unconditioned stimuli*
2) Employees in the organization learn about phishing attacks, *unconditioned response*; delete emails
3) Send examples of phishing in an email, *Neutral Stimuli*
4) *Conditioned* remove is to delete suspect emails
5) Remove the awareness training
6) People delete emails

What if however, this is a False alarm. People open to Ransomware attacks from Web sites. The *Conditioning* was from attacks in emails

The whole point for cybersecurity experts to understand is the concept of Conditioning. We, end users, the organization, we are wired, we are *Conditioned* to act a certain way – and then when that *unconditioned stimulus* occurs, we may not act appropriately

Think SWATTING

So, when you are developing and implementing cybersecurity solutions, remember others may be conditioned to act

broader range of adaptive learning in humans that was his main goal.

While Pavlov and others applied this research using food as a stimulus, and a lot of the research was focused on animals, others have applied this to people's behavior without food. Researchers have tested this stimuli-response conditioning with noise, blowers, timers. This conditioning has been categorized as delay, trace, simultaneous, second and higher order, and temporal conditioning

Do you have an internal clock that wakes you up every morning?

How would the following apply to a cybersecurity solution?

1) Event correlation alarms on routers *unconditioned stimuli.*
2) Block access to routers, shut down routers, close or limit activity on networks *Unconditioned response.*
3) Logs alerts, alarms, lights, etc. – *Neutral Stimuli*
4) Remove the event correlation alarms
5) Logs alerts, alarms, lights, etc. – *Neutral Stimuli*
6) Block access to routers, shut down routers, close or limit activity on networks *Unconditioned response.*

in certain ways you are not expecting, and those conditions *behaviors* can wreak havoc even on the best cyber defenses.

Now, looking back at Pavlov's experiment and assuming the dogs were salivating at the bell. In that case, we would be ***mistaken***. It wasn't the bell the dogs were excited about; it was the lab coats. As the researchers walked in, the dogs associated the coats with the treats, not the bells.

What this means is that even in conditioning, other stimuli could be interfering with our judgment. Just like the examples above, was it the alarms, bells, was it the awareness training, was it something else?

Remember:

Conditioning guides our behavior, and those we have to protect.

If you want to be a good cybersecurity expert, understand the conditioning effect.

Pavlov, I. P. (1927). Conditioned reflexes: an investigation of the physiological activity of the cerebral cortex. Oxford, England: Oxford Univ. Press.