**PRINCESS CARD ILLUSION**

**Station Script**

Description of the Illusion

The magician fans out five (5) “face” playing cards and shows them to the subject. The magician tells the subject: “**Select one of these cards and remember its value and suit, but do not tell me which card you chose. I will read your mind and remove the card.**” The magician shuffles the cards, pulls one out and places it in his pocket. He re-fans the remaining four cards and shows them to the subject. The subject views the cards and confirms the selected card was removed.

The key to the trick is the 1800 turn of the card stack. All of the cards are “double-pipped” with different suits on the bottom than the top. In essence, all the cards are changed with this maneuver but the change is unnoticed by the subject.

What Is Happening

Neuroscientists refer to this illusion as a classic “Top-down” illusion utilizing “**change blindness**” and “**cognitive suggestion**.” In other words, the higher level brain systems override the information coming up from the lower level senses and cause the subject to be fooled.

Change Blindness:

The face cards have rather **complex pictures** that would normally require a great amount of study to identify and remember each line and color on the picture card. This is unnecessary because the subject has already stored memories of each face card and can recall them. For example, the subject can recall a “King of Clubs” and can generally describe it without recalling each line, color and shape on the card. Because of the subject’s prior experience, it is sufficient for the subject to remember only the **“gist”** of the face card.

Our experience from playing cards tells us that it is irrelevant when a card is rotated 1800. All cards are designed to look identical because the “pipping” (i.e. the number or value and suit are rotated in the opposite corners of every card. So, to know the name of the card, one has to only look at its top left corner.

The illusion works because the subject fails to notice all the cards were changed before the second-showing. Not just the card selected by the subject.

Various “change blindness” studies have been done which show that **changes** in the visual field **are actually noted** in the lower level sensory pathways. Therefore, it is likely that when the fanned out cards are shown the second time to the subject, the subject’s **lower level visual systems do sense a change** in all the card values. But when this information is received at higher levels in the brain, the change signals are not present. Neuroscientists have identified areas in the temporal lobe of the brain which resolve conflicts. It is surmised that the visual experience of knowing that the stack of cards has not changed because the stack remained in the view of the subject, conflicts with the sensory signals reporting a visual change. If the person did not cognitively “see” the change, it is presumed that the “**change signals**” arising from the visual sensory system are **overridden** in this **conflict resolution center** in the brain.

Cognitive Suggestion:

The subject is instructed to focus on, and remember **only one** of the cards. The magician **suggests** that he will “read the subject’s mind” and make the selected card disappear. This suggestion sets up an expectation in the subject’s mind that the card selected by the subject will be removed.

Suggestions can play an important part in what we see and believe. Studies have shown that **oxytocin** (sometimes referred to as the “trust hormone”) levels rise in subjects’ brains when they are entertained by magicians. Neuroscientists believe that the affiliation between a magician and the subjects is affected by these changes in hormones such that the subject “wants” the magician to be successful in carrying out the illusion. If the magician is successful, the subject is “entertained” and actually receives an **increase in pleasure** (see Sleights of Mind, by Stephen L. Macknik & Susana Martinez-Conde, pp 211-214).

Unsuccessful Illusion

So, what happens if the illusion fails or the subject learns the “method?”

First, the subject creates a memory which includes double-pipped playing cards. The memory could also include the understanding that a 1800 turn of the card stack is important. Last, the higher level of trust generated by higher “trust hormone” levels could result in a decrease in pleasure. So, both the magician and the subject are “let down.”

This is one of the reasons magicians say that the first time an illusion is performed, it’s “magic.” If it is performed again, it becomes a “lesson” (for the magician and the subject)!