

Enhancing student engagement through magic

Gustav Kuhn

Reader in Psychology



MAGIC LAB
MIND ATTENTION & GENERAL ILLUSORY COGNITION

Goldsmiths
UNIVERSITY OF LONDON

Magical beliefs

- Belief formation
- Misinformation

Magic and Wellbeing

- Mental health intervention
- Emotional wellbeing



MAGIC LAB

MIND ATTENTION & GENERAL ILLUSORY COGNITION

Forcing Free will

- Nature of free will
- Behaviour modification
- Placebo machines

Misdirection and deception

- Perceptual limitations
- AI and technology – cyber security
- Public health

How do I use magic in my
teaching practice?

Incorporate magic tricks to engage students in my lectures

- Magic is fun and it grabs people's attention – puts people in a good mood!
- Provide rest bites and engage students – positive emotions
- Use performance/misdirection skills to control learning environment



Incorporate magic in curriculum and teaching material

- Uses magic to inspire curiosity – why am I being tricked?
- Helps illustrate abstract concepts



Magic and Wellbeing – Developed interventions that use magic to enhance student engagement and wellbeing

- Increase sense of mastery
- Increase self-esteem and learning community

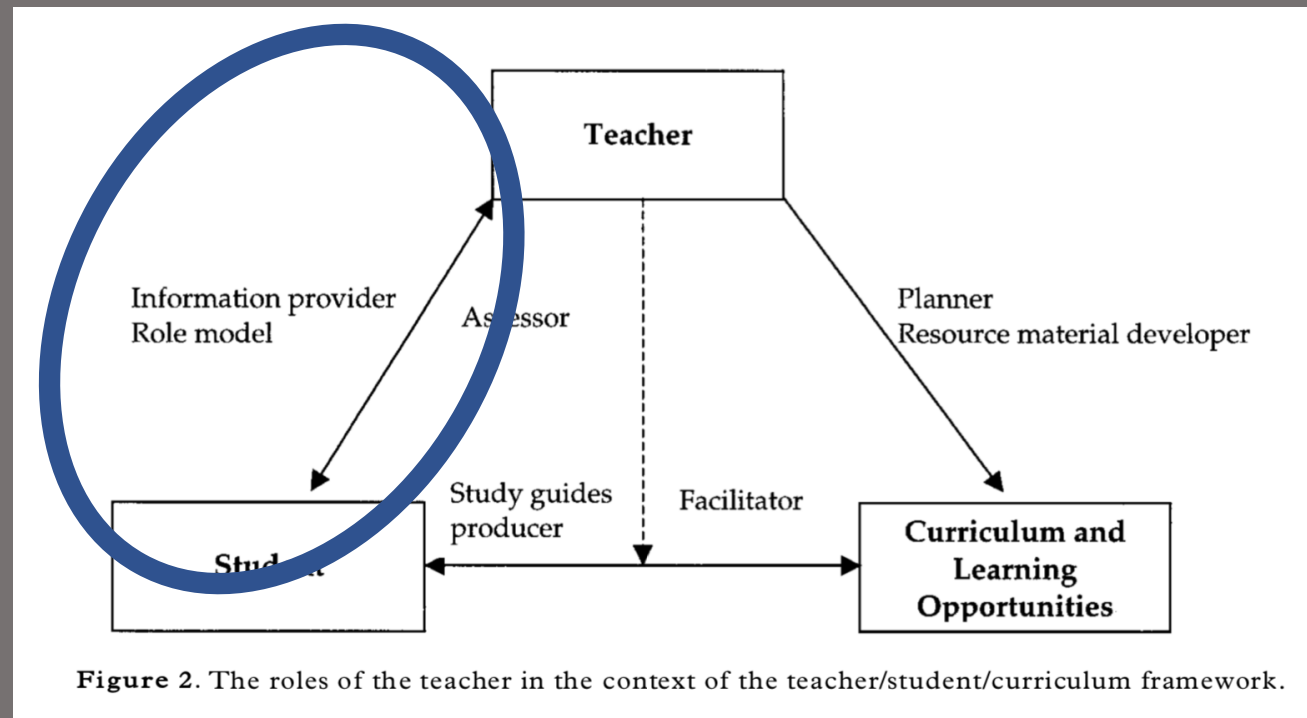


Lecture objective

1. How can magic tricks enhance learning?
2. How can learning to perform magic improve student engagement?
3. How can misdirection help us control the learning environment?

How can magic tricks enhance learning?

- How can we put some magic into our teaching?
 - Cohen & Jurkovic (1997) suggest “surprise, fun, and drama” (p. 68) as essential ingredients of inspiration linked to training.



Magic tricks can act as the basis for effective forms of educational interventions (Wiseman & Watt, 2020; Bagienski & Kuhn, 2019)

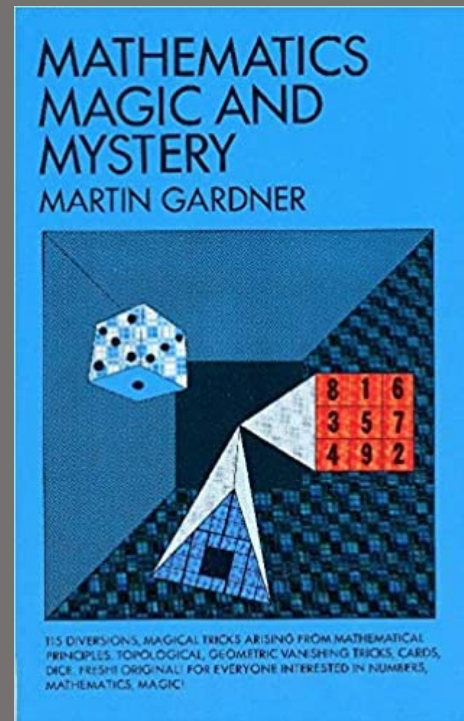
- **Cognitive and emotional level** - Magic tricks possess many of the attributes associated with desirable pedagogic interventions, potential to provoke a sense of curiosity, surprise and interest (Parris et al., 2009; Subbotsky, 2010; Rensink & Kuhn, 2015; Leddington, 2016)
- **Social level** – Magic involves several desirable attributes, including face-to-face interaction, clear communication and a sense of collaboration.
- **Practical level** - Magic appeals to both children and adults alike, and many tricks are economical to stage because they can be performed with everyday objects.
- **Easy to learn** - Unlike many arts-based activities (e.g. musical instrument, dance), many magic tricks can be learnt in a surprisingly short period of time and so quickly give a sense of progress and mastery.

Magic in Education

- Educational practitioners and performers have frequently used magic tricks to help boost learning and convey a range of pedagogical messages.
- In this approach the magician/educator does not necessarily reveal the secrets of illusions, but rather uses tricks to energize students, increase attention and communicate key information and ideas.

Where has magic been used?

- **Mathematics** – there are lots of maths based magic tricks that have been used to engage children and students with complex principles



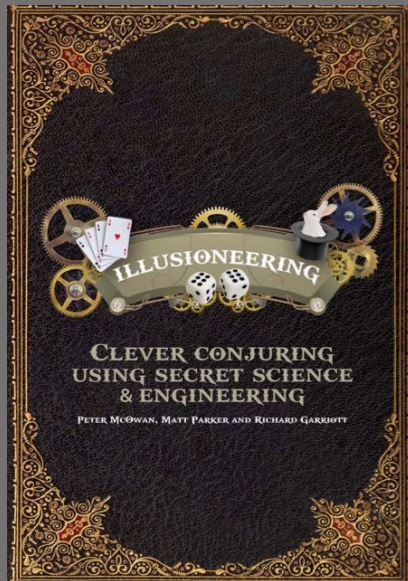
Maths example

1. Choose a random number
2. Multiply your number by 2
3. Add 10
4. Divide it by 2
5. Subtract the chosen number chosen from this number
6. What was your number?



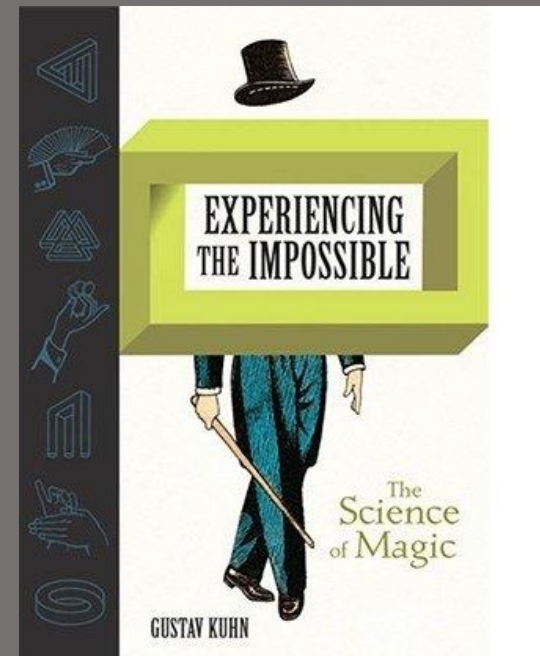
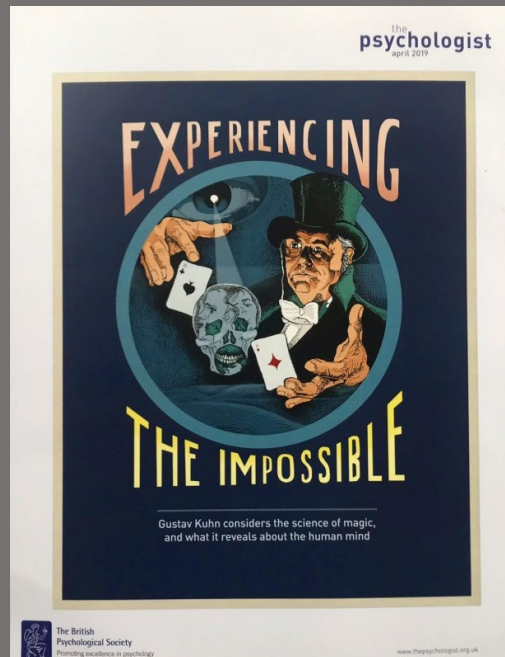
Where has magic been used?

- **Computing/Engineering/Chemistry/Physics** – Computer Science for Fun (Curzon, McOwan & Black, 2009)



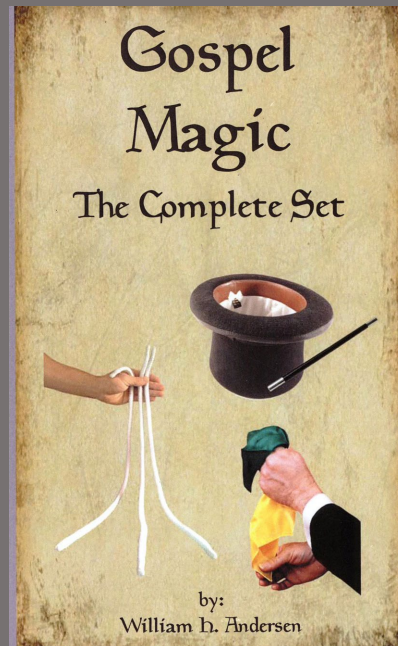
Where has magic been used?

- **Psychology** – Magic provides tools to highlight psychological limitations (Kuhn, 2019)



Where has magic been used?

- **Philosophy** - Magic used to highlight complex ideas (Neale & Burger, 1995)



Where has magic been used?

- **Mathematics** – there are lots of maths based magic tricks that have been used to engage children and students with complex principles
- **Computing** – Computer Science for Fun (Curzon, McOwan & Black, 2009)
- **Psychology** – Magic provides tools to highlight psychological limitations (Kuhn, 2019)
- **Philosophy** - Magic used to highlight complex ideas (Neale & Burger, 1995)
- **Physics** – Magic violates laws of physics and inspired wonder (Prichard, 2018; Lin et al. 2017)

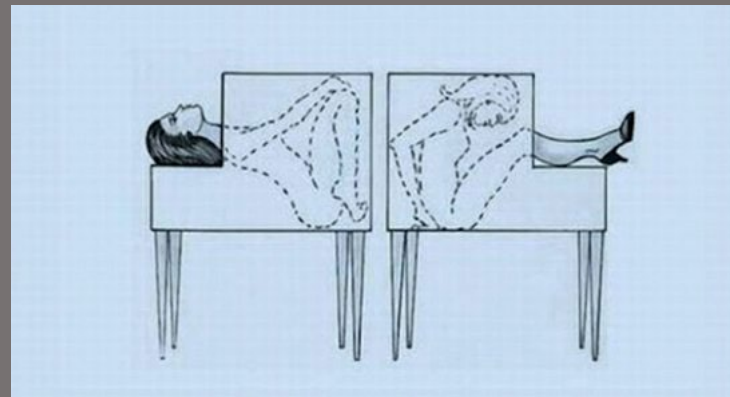
Magic and creativity (Subbotsky, Hysted, & Jones, 2010)

- Primary school children watched Harry Potter video clips that either contained magic or no magic – Children who watched magical content scored higher on creativity tests than those watching non-magical content.



Can magical illusions facilitate learning?

- Moss, Irons & Boland (2017) conducted an online study in which adult participants watched different videos before completing a lecture on Neuroscience
 - video of a magic trick (a gory version of the classic sawing in half trick) and were not told the secret of the illusion
 - magic video but were told the secret,
 - video of a circus act
 - didn't see any video.



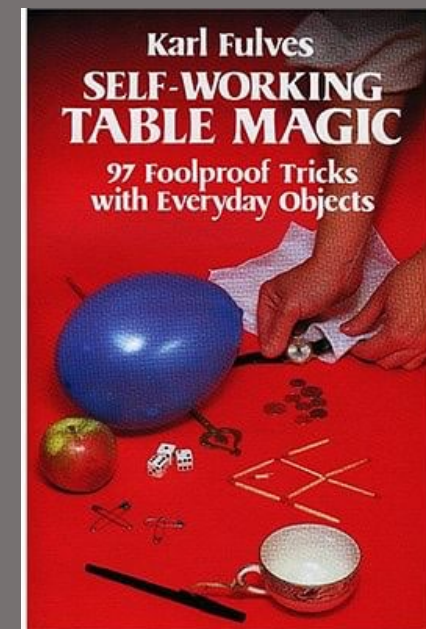
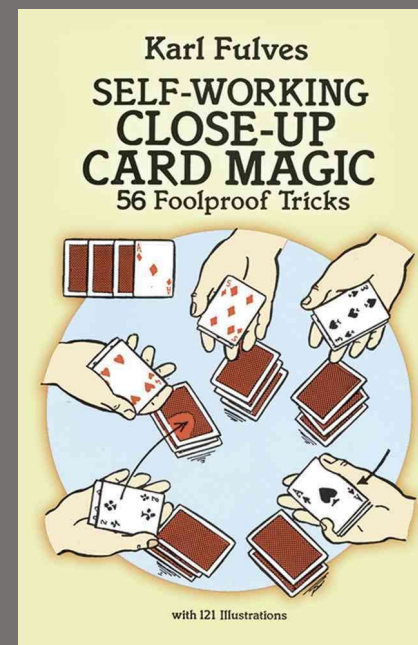
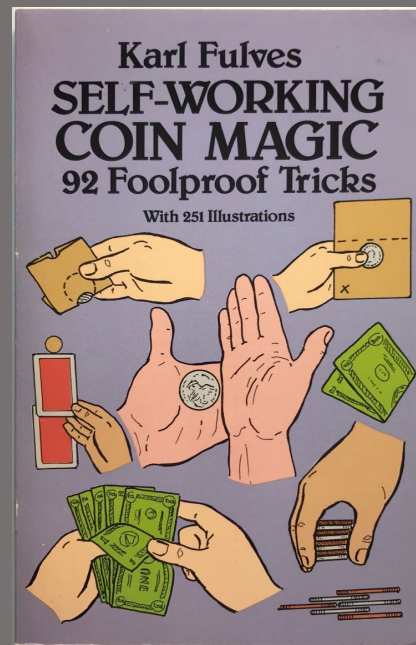
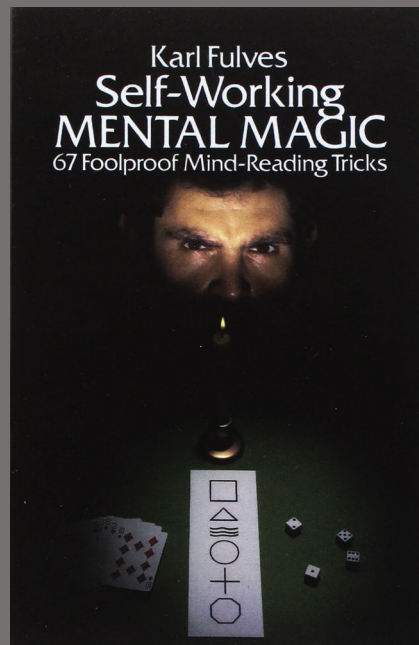
What did they find?

- Participants were more engaged with the neuroscience tutorial when they had **not** seen either the magic or circus videos.
- There were no differences across the conditions for memory of the tutorial's content.
- Watching the magic trick without discovering the secret may have distracted participants and interfered with their ability to focus on the tutorial.
- Most of the evidence evaluating the impact that magic has on learning shows that magic increases enjoyment of the session, but evidence with regards to actual learning rather mixed (Wiseman & Watt, 2020; Bagienski & Kuhn, 2019)

How can learning to perform magic help engagement?

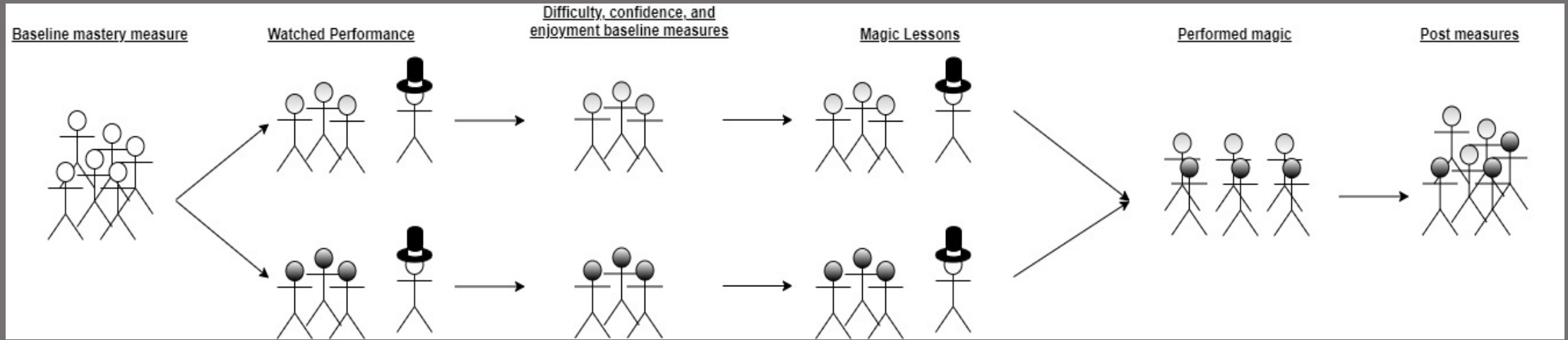
How can learning to perform magic help engagement?

- Magical allows us to do things that appear impossible – Unlike most other skills much of the capital lies in knowing how the trick is done.
- Once you know how the trick is done, you can potentially do something others think is impossible.



Time to learn some magic

Can learning to perform magic increase people's sense of mastery? (Bagienski, Goddard & Kuhn, under review)



Learning to perform the magic trick and performing it significantly improved people's sense of mastery (Pearlin Mastery Scale)

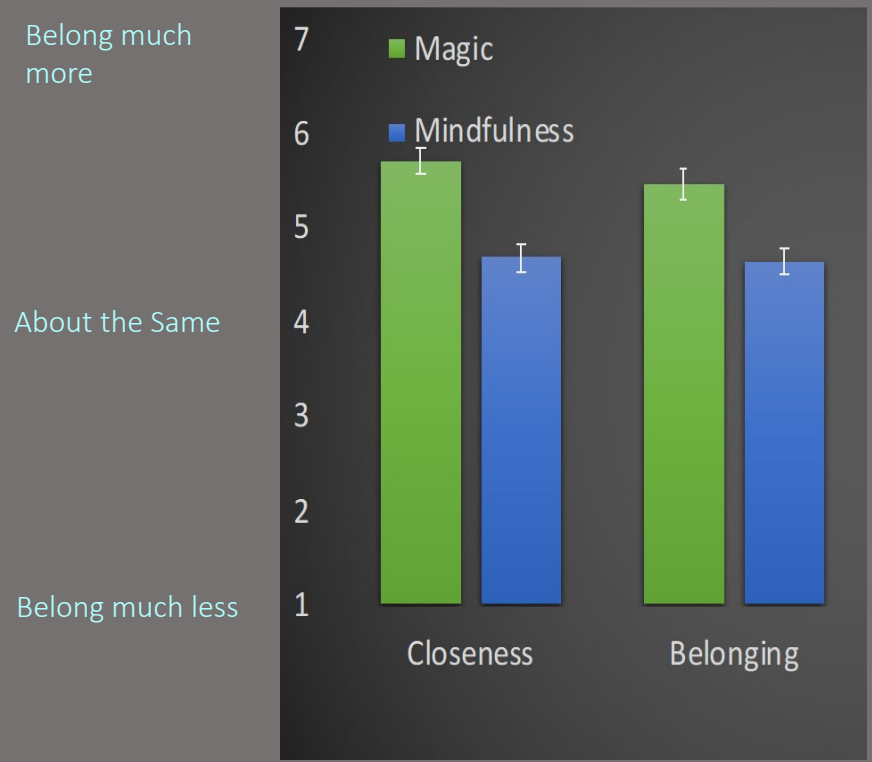
Impact of learning to perform magic on self-esteem and belonging student engagement (Bagiensi & Kuhn, under review)



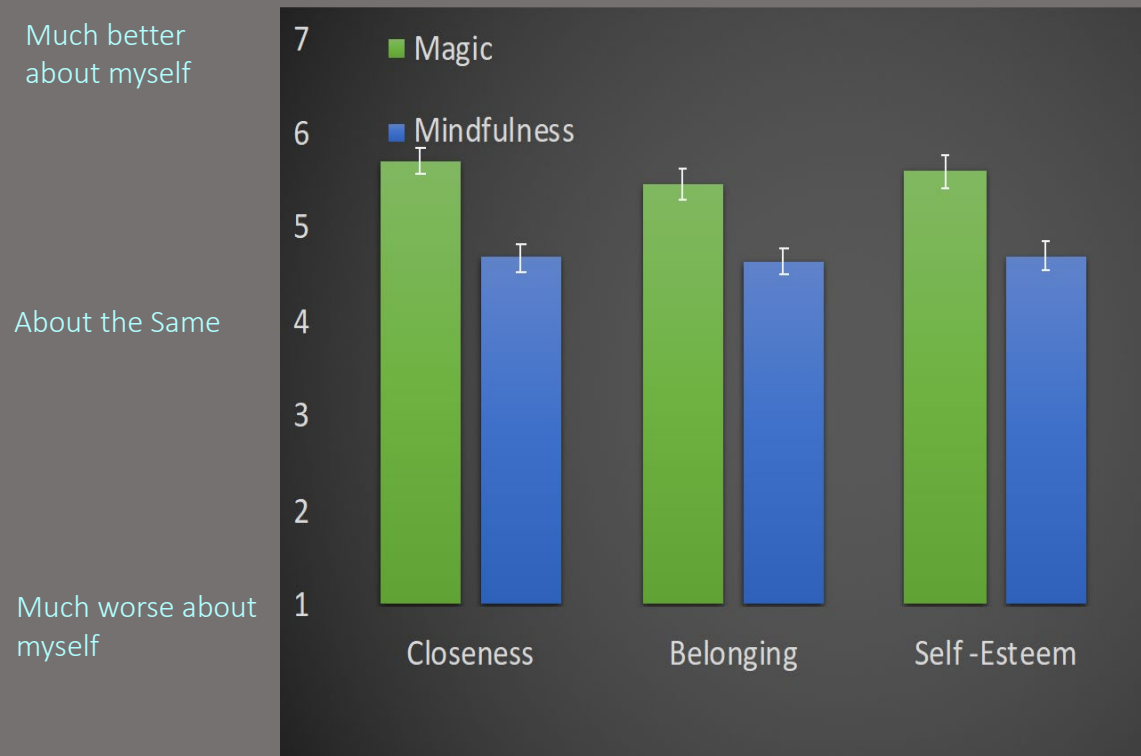
To what extent do you feel the workshops have affected how close you feel to other Goldsmiths Psychology students?



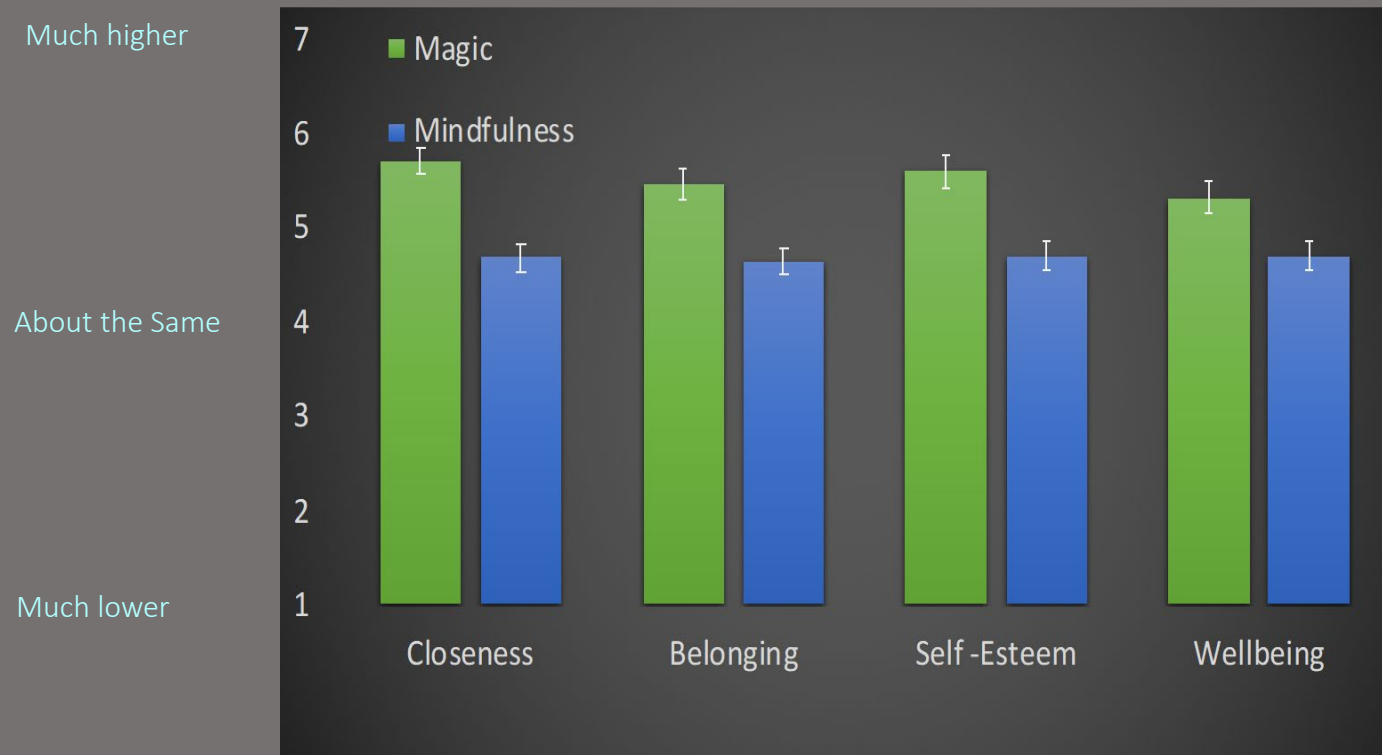
How do you feel the workshops affected your sense of belonging in Goldsmith Psychology?



How do you think the workshops affected the way you feel about yourself (i.e. self-esteem)?



How do you feel the workshops affected your general sense of wellbeing at Goldsmiths?



Last year magic was taught online



Conclusion 1

- Lots of potential to use magic to enhance student engagement and learning
- You don't have to be a magician to use magic
- Learning to perform magic allows us to engage students in the learning environment (mastery, self esteem, belonging, creativity)

Why do we need to engage students?

- **Unless students are engaged, they won't learn**
- **Boring lectures will reduce attendance - lack of engagement in learning**
- **We are judged based on our lectures - lecturing quality will have impact on student experience**

What I will do:

- **Provide tips and advice from my experience as a magician**
- **Experience rather than evidence based**
- **Focus on lecture delivery & engagement rather than broad pedagogical issues**
- **Focus on live lectures rather than zoom!**



What's the connection?

1. Misdirection involves systematic orchestrating people's awareness

- Use misdirection to enhance learning

2. Successful performers engage their audience

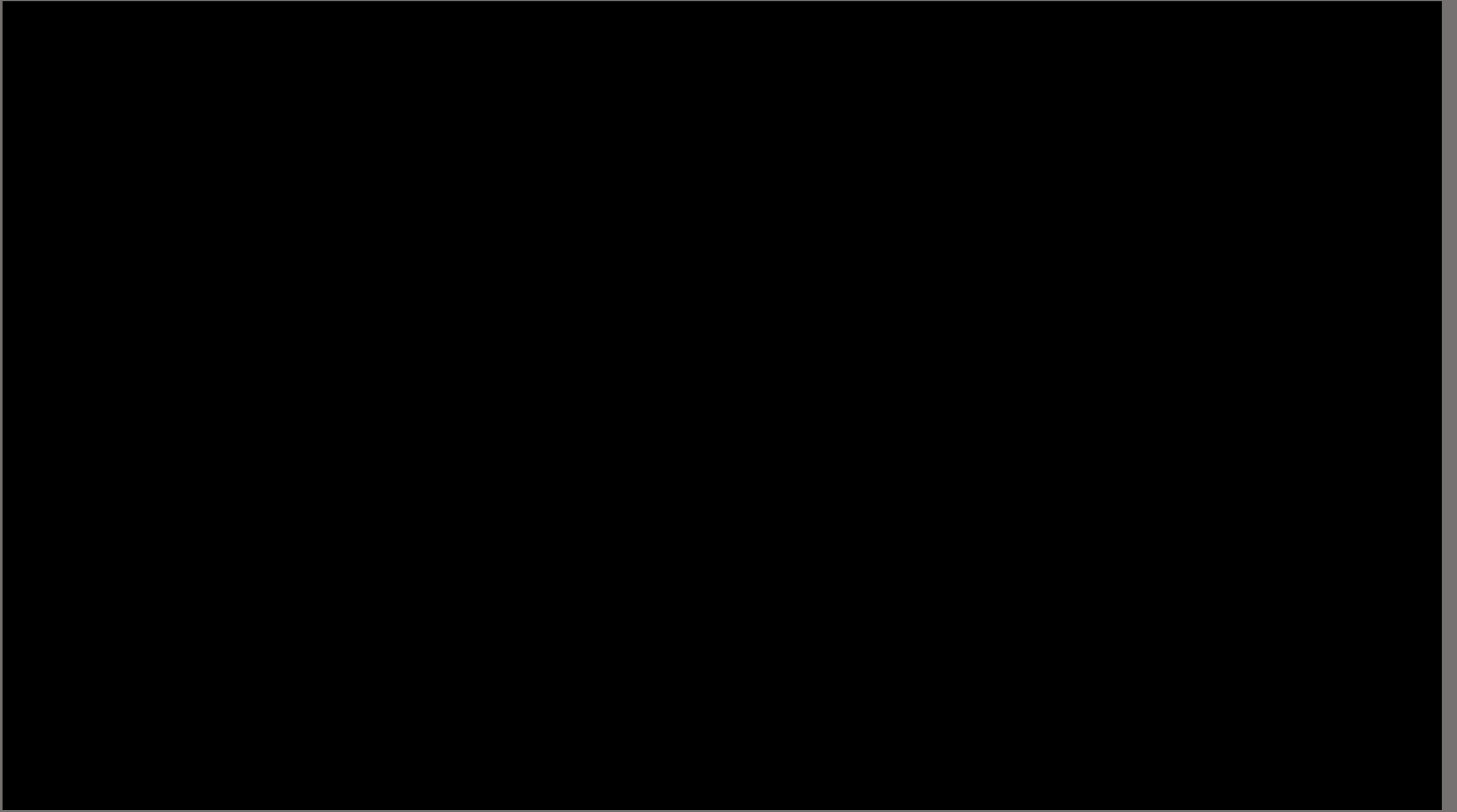
- Magicians perform in difficult contexts (people, locations) and must ensure audience is engaged

Why magic works?

- Magicians use psychological tricks to hijack your brain, which allows them to manipulate your conscious experience. What and how you perceive and remember things.
- Magic works because you are oblivious to these cognitive limitations
- Our intuitions about how much we see and remember are wrong

Misdirection



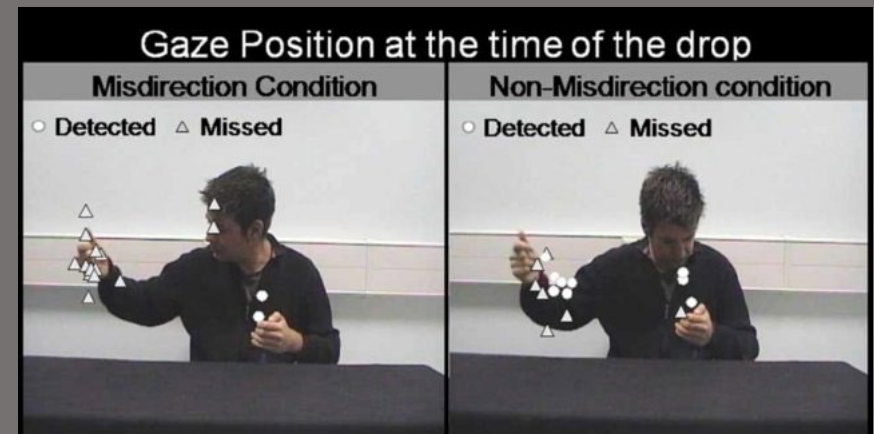


Misdirection – Implications for Learning

- Unless you attend to something you simply won't see it
- Misdirection techniques can be used to guide attention towards learning
- We process far less information than we intuitively think
- Misdirection/Direction of attention only works if audience is engaged

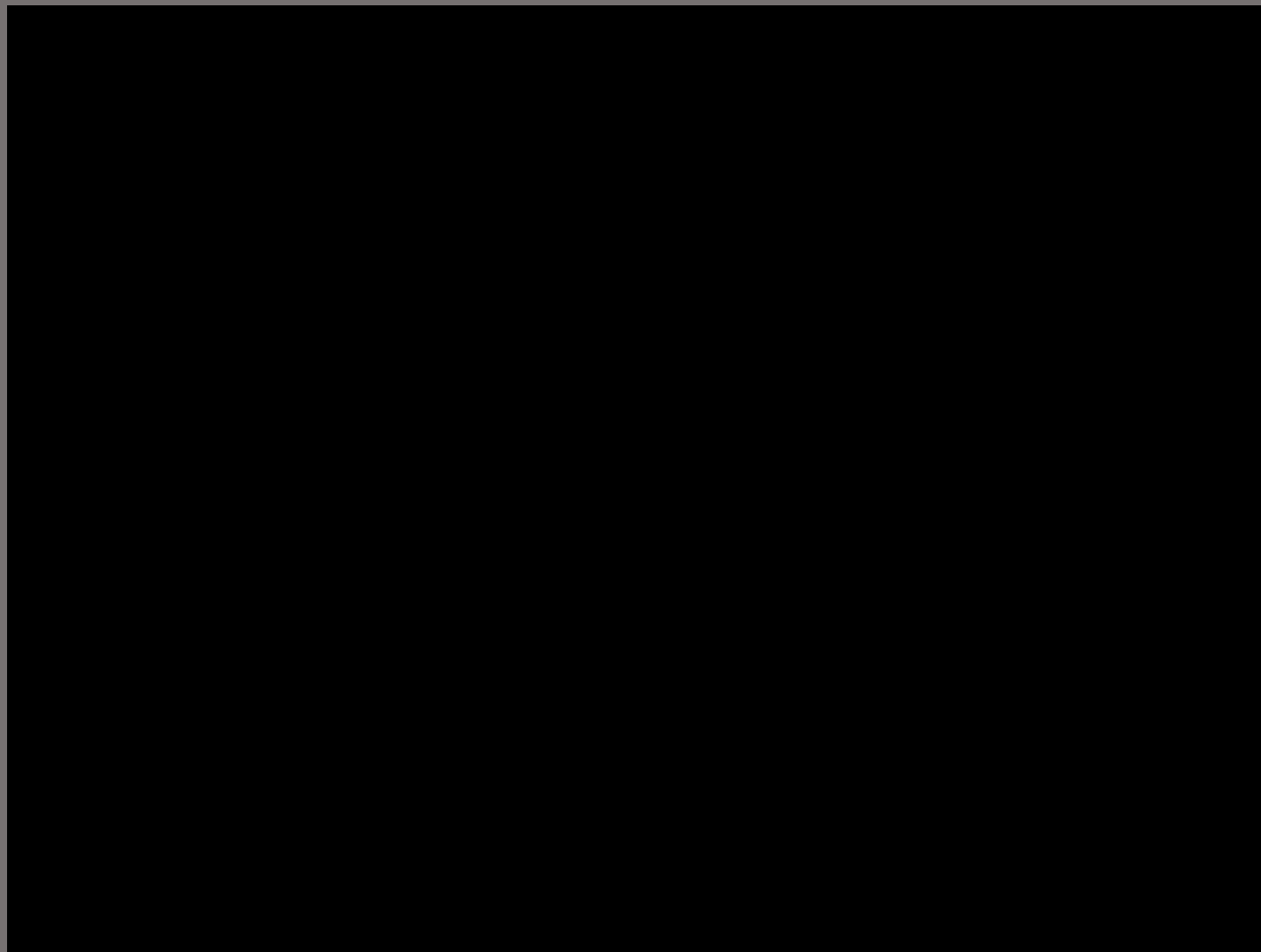
Misdirecting – Engaging attention

- The importance of gaze
 - Establish eye contact with everyone!
 - Tamariz gaze web
 - Asking someone a question
- Reading from computer – lack of contact
 - Pre-read during group exercises
 - Strategic placement of computer
 - Use a clicker
 - Read from screen – share experience



Engagement & Crowd Control

Street magic – Jim Cellini



Engaging attention

- Ensure everyone can hear you! Always use microphone



Some lessons from magic

- The importance of authority
 - Nobody wants to see a novice (*People rate magic tricks performed by world-class magicians as more impressive!*)
 - Who would you like to learn from?

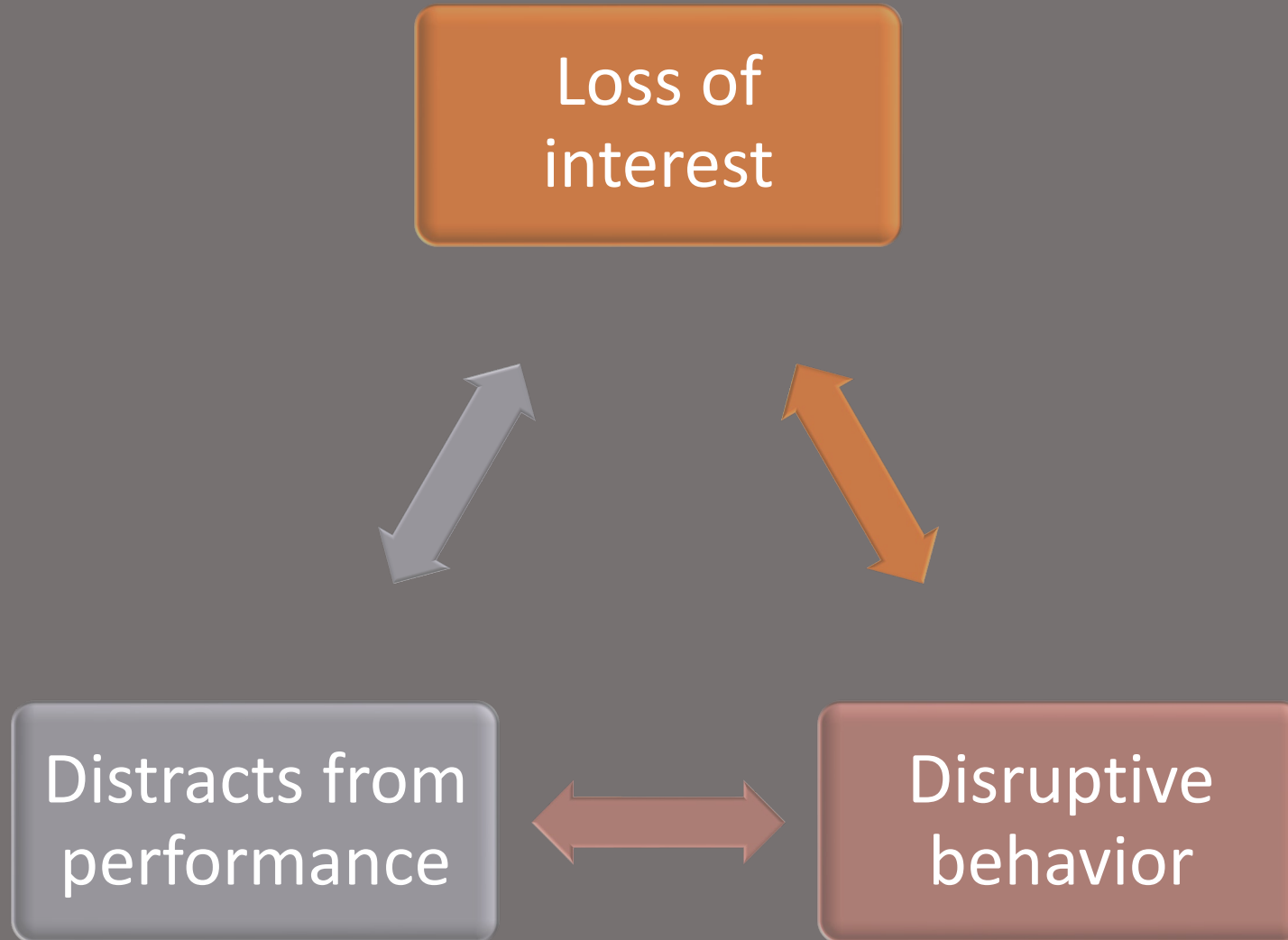


How can you establish your authority?

- Start with a strong opener! – Once you have established your authority, people are more likely to join you on your journey
- How do you start your lecture?
- Be professional
 - Be there in good time
 - Know your equipment (think about your props)
 - Learn to cover mistakes
 - Take safety precautions



The importance of engagement



Crowd control

Managing disruptive behavior

- Latecomers and other disruptors are publicly embarrassed
- Hecklers are put down with humor
- Take preventative measures! No need to disrupt (they like you, are engaged, interested...)



Prevent people from getting bored

- Most performance last 10 minutes
- Break up your lectures (every 10 minutes)
- Questions to the audience (pair discussion)



Choreography

- A simple/clear/ story will keep the audience engaged
- A clear narrative most important part of a performance
- What do you want to achieve with the lecture?
 - Provide a framework for future learning
 - Get students interested in topic



Be enthusiastic about your performance

- If you don't care, why should they?
- If you aren't interested fake it!



Conclusion

Magic can elicit a wide range of positive emotions that can help engage students in the learning environment

Lecture is a performance – The more engaged, the more likely students will learn