THE NEVER ENDING STORY

*The Cultural Evolution
of Narratives*

Part V...

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The Cultural Evolution of Narratives

By

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Fantasy

The Sea of Dreams

Elfin Sound

Kelpie Bay

Golden Strand

Ferlie Firth

The Weird Wood

Valley of Dragons

Blackadder Lake here Afanc broodeth

Bogles Corner

Rapunzel, her Tower

Here is the Never-Never Land

Here is Oberon's Palace

House of the Sorcerers

The Lake of the Oreads

Kobolds' Caves

Simels Mountain

This Greate Walle was builded of Stars by manie Elfin Emperours in Days Remote

Here are Snow White and Rose Red

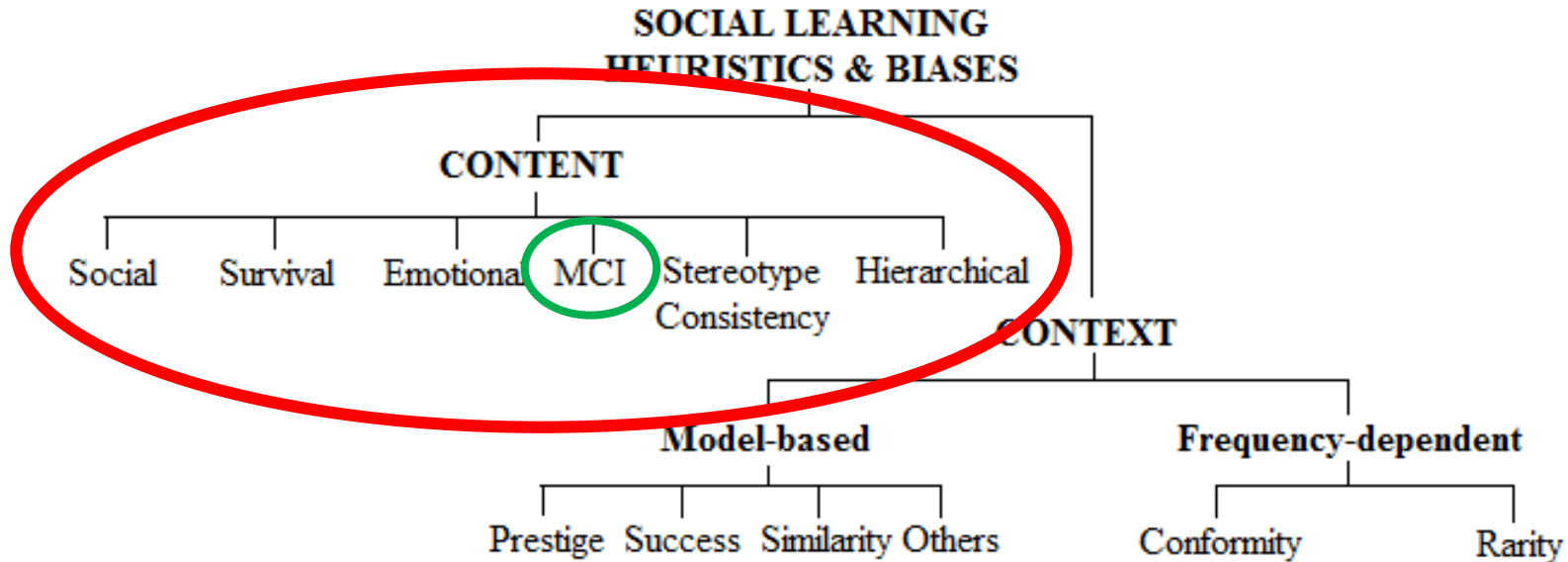The River of What Nymphs

This is Ulysses, his Shippe

Supernatural Tales

- Tales of the supernatural are highly successful culturally
- Fairy tales, ghost stories, myths and legends
- But why?

What are content biases?

- Cognitive disposition towards preferentially learning, recalling and transmitting certain types of information over others

- Disposition could have evolved as a useful function in our evolutionary past

- Shaped the way culture has been transmitted and has evolved

Minimally Counterintuitive (MCI) Bias

- Proposed by Boyer (1994)
- Intuitive assumptions of 'folk biology', 'folk physics', 'folk psychology'
- Concepts which violate assumptions are counterintuitive
- Balance between satisfying and violating expectations grants advantage in recall and transmission

Intuitive assumptions

Basic, intuitive theories about the world around us

Folk Biology

Like begets like

Grows and dies

Requires sustenance

Folk Physics

Solidity – Objects cannot occupy the same space

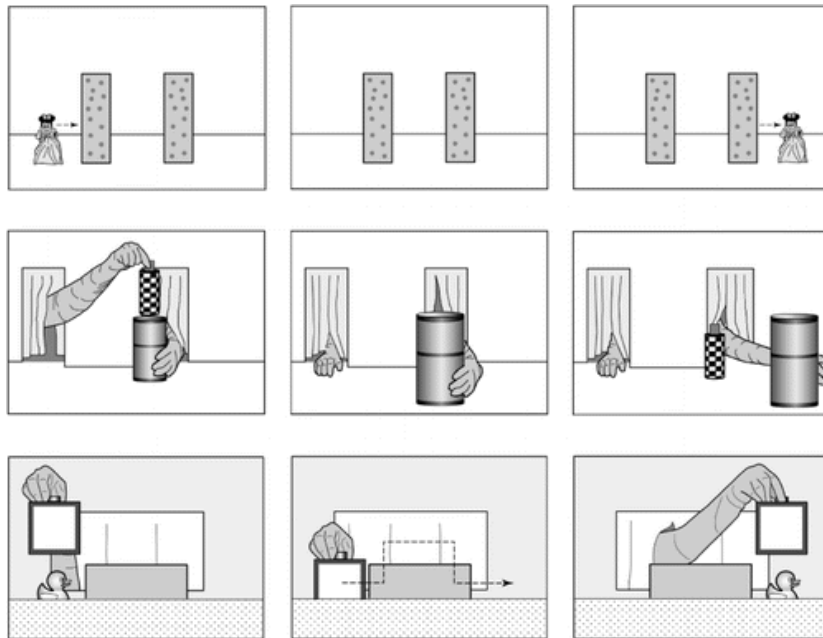*Continuity* – Objects exist continuously in space and time

Folk Psychology

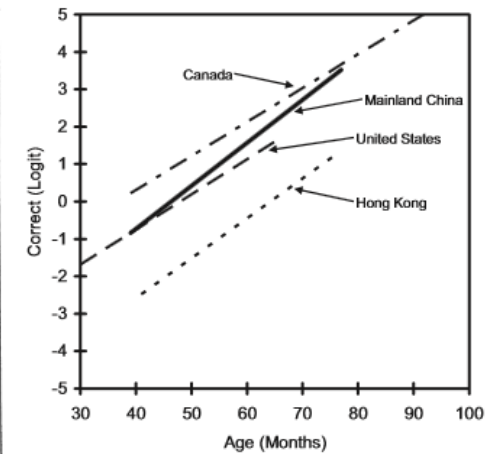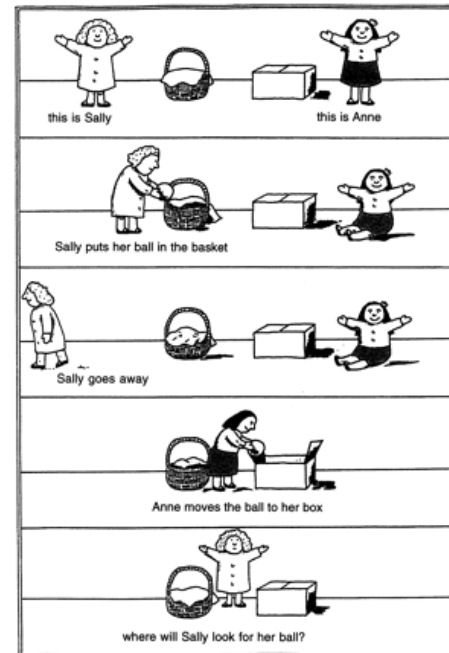Sentient being have goals, feelings, mental states etc.

We can only know what we've seen or experienced

Intuitive Assumptions

Core components of human psychology that form as part of natural development (3-4 years old)

Baillargeon, R. (1994). "How Do Infants Learn About the Physical World?". Current Directions in Psychological Science. 3 (5): 133–140

Liu, D., et al. (2008) Theory of mind development in Chinese children: A meta-analysis of false-belief understanding across cultures and languages. Developmental Psychology 44(2):523–31

Counterintuitive Concepts

- Adults also pay attention to (and enjoy) have our intuitions contradicted
- We like to engage with the impossible
- *Nb.* Counterintuitive ≠ bizarre (novel, strange but does not challenge intuitive assumptions)
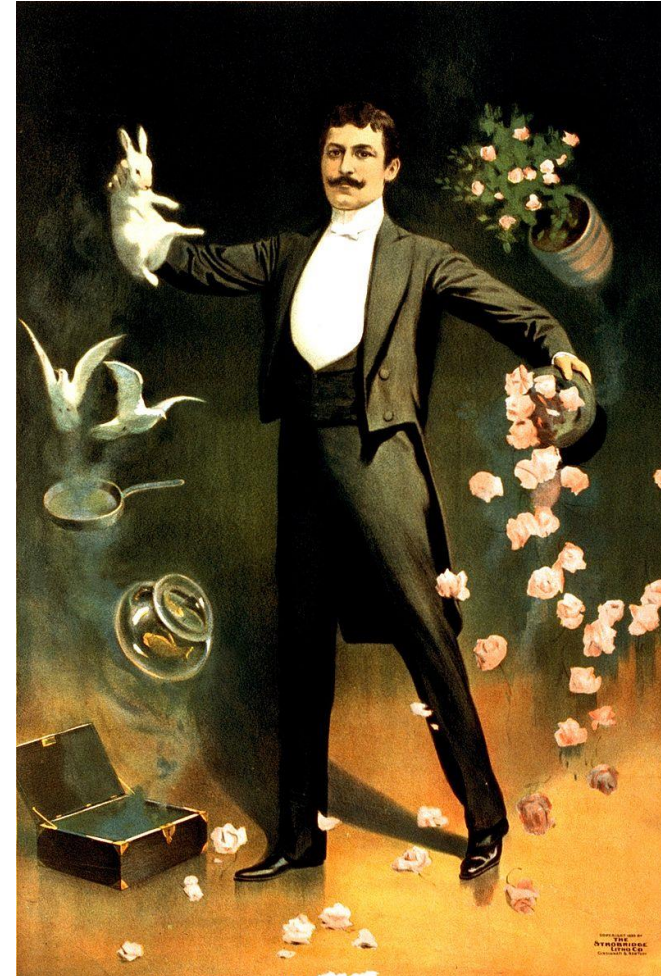
Counterintuitive Concepts

In fiction and myth our intuitive assumptions are contradicted all the time!
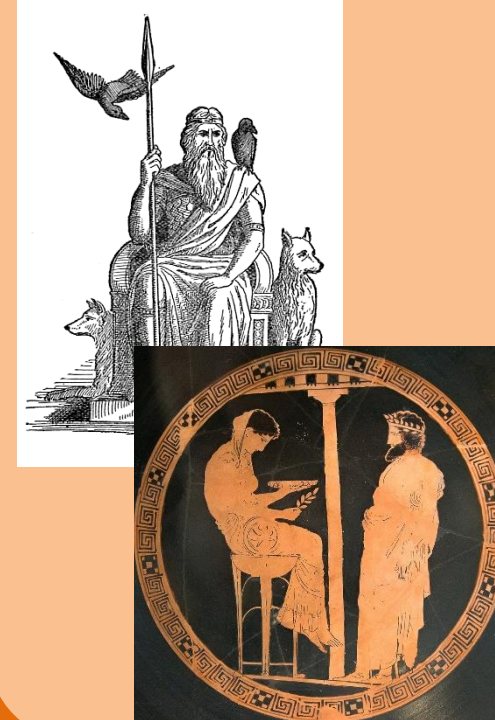

~~Folk Biology~~

~~Folk Physics~~

~~Folk Psychology~~

Degrees of Counterintuitiveness

Not all counterintuitive concepts are equal!
e.g. an invisible ladder vs an invisible, weightless ladder that can read minds and talk while being in two places at once.

Sweet spot between intuitive (comprehension) and counterintuitive (attention)

= *Minimally Counterintuitive Concepts* (e.g. Barrett et al. 2009)
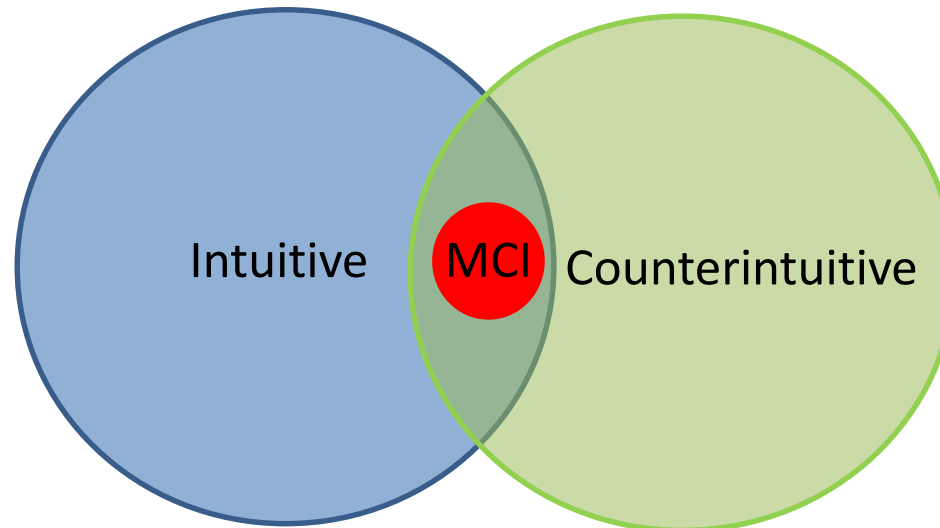
MCI Content Bias

- Supported by a studies using transmission chains and recall experiments

- Analyses Native American folktales; Grimms fairy tales etc.

- Some suggest a cognitively optimal number of counterintuitive elements:
  - 1-2 (Barrett, Burdett and Porter 2009)
 - 2-3 (Norenzayan, Atran, Faulkner & Schaller 2006)

Norenzayan et al (2006)

Memory experiment – Intuitive, MCI, equal, Maximally CI
Recall best for lists which were minimally counterintuitive

Table 1
Selected examples of intuitive statements (INT) and their minimally counterintuitive (MCI) counterparts, in a counterbalanced design

INT	MCI
1. Closing door	Thirsty door
Thirsty cat	Closing cat
2. Four-legged table	Confused table
Confused student	Four-legged student
3. Drying coat	Mischievous coat
Mischievous comment	Drying comment
4. Clenched fist	Impatient fist
Impatient man	Clenched man
5. Sleeping dog	Contrived dog
Contrived parable	Sleeping parable

Memory Degradation
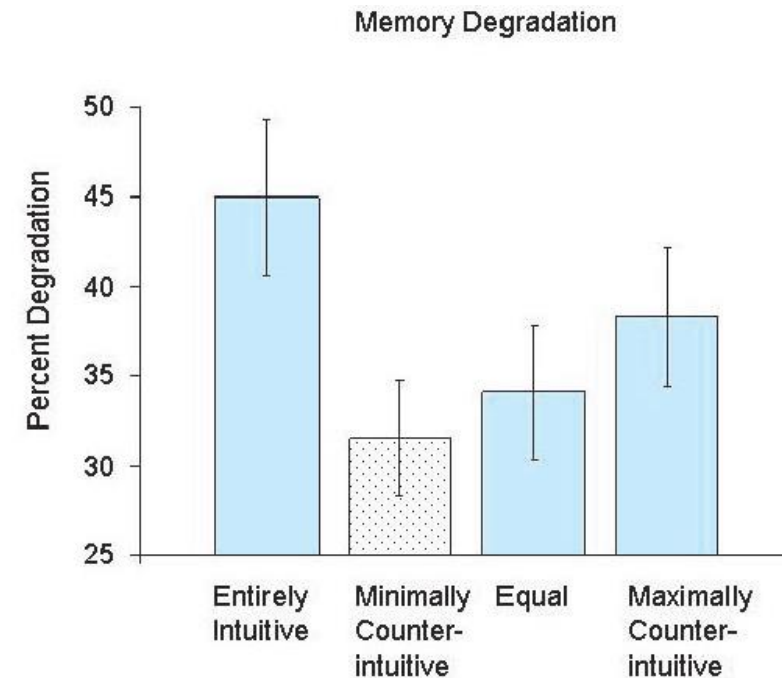
Barrett & Nyhof (2001): The Alien Museum

Table 1

Selected items from Experiment 2 representing all three item types and all three levels

Intentional Agent

Counterintuitive — "a being that can see of hear things no matter where they are. For example, it could make out the letters on a page in a book hundreds of miles away and the line of sight is completely obstructed."

Bizarre — "a being that can see or hear things that are far away. For example, it could make out the letters on a page in a book if it is as much as 50 feet away, provided the line of sight is not obstructed."

Common — "a being that can see or hear things that are not too far away. For example, it could make out the letters on a page in a book if it is no more than eight feet away, provided the line of sight is not obstructed."

Living Thing

Counterintuitive — "a species that will never die of natural causes and cannot be killed. No matter what physical damage is inflicted it will survive and repair itself."

Bizarre — "a species that is does not die easily of natural causes and is hard to kill. If any of its principal parts are severed it will still live with the remaining parts."

Common — "a species that will die if it doesn't get enough nourishment or if it is severely damaged. If any of its principal parts are severed, it will surely die."
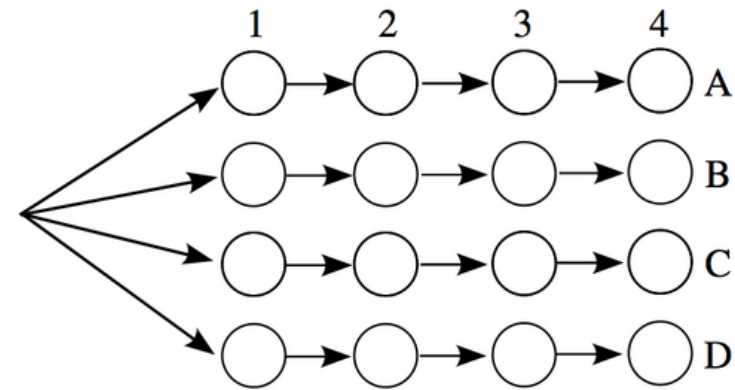
Physical Object

Counterintuitive — "an object that is completely invisible under any viewing conditions."

Bizarre — "an object that is difficult to see under normal lighting conditions even with the aid of a microscope."

Common — "an object that is easy to see under normal lighting conditions from within about 50 feet away."
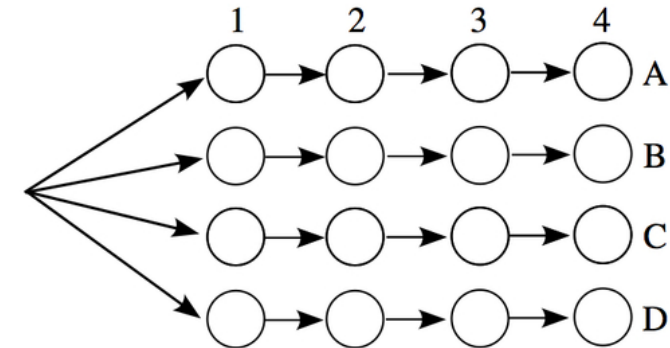
Barrett & Nyhof (2001): The Alien Museum

- CI items are better recalled than bizarre or intuitive items
- Effect is amplified by cultural transmission

Experiment 2 results: Mean number of items recalled per subject as being a given type, by ontology

	Biological	Physical	Psychological	Total
Generation 1				
Counterintuitive	1.39	1.22	1.28	3.98
Bizarre	1.17	0.83	1.22	3.22
Common	0.72	0.78	0.78	2.28
Total	3.28	2.83	3.82	9.39
Generation 3				
Counterintuitive	0.56	1.39	0.78	2.72
Bizarre	0.33	0.50	0.56	1.29
Common	0.28	0.39	0.22	0.89
Total	1.17	2.28	1.56	5.00

Barrett et al (2009) MCI folktales

Counterintuitive items coded in a cross-cultural set of folktales (n = 73)

Book title	Number of folktales	Region
Folk Tales from Chile	10	South America
Russian Folk Tales	12	East Eurasia
Magyar Folk Tales	11	Mediterranean
Lion and Jackal with other Native Folk Tales from South Africa	8	Sub-Saharan Africa
Chinese Myths and Legends	8	East Eurasia
The Lion's Whiskers: Tales from High Africa	8	Saharan Africa
Folk Tales of North America	8	North America
Folk Tales of the South Pacific	8	Pacific

Barrett et al (2009) MCI folktales

- Classified items into ontological categories with specific expectation sets (persons, animals, objects)
- CI score = sum of violations of expectations

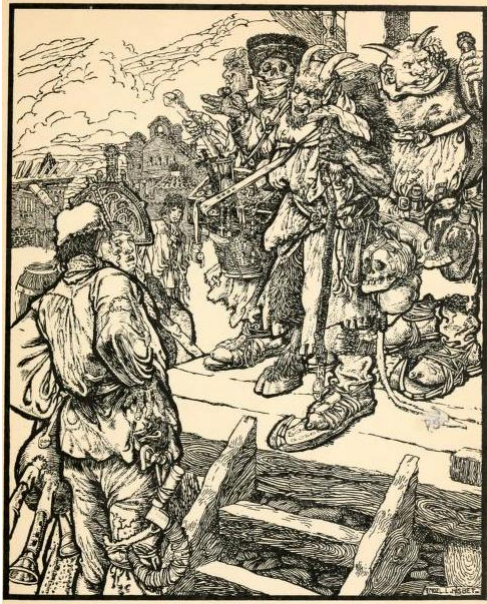|	Folk psychology	Folk biology	Folk physics
Persons	✔	✔	✔
Animals	✘	✔	✔
Objects	✘	✘	✔

Barrett et al (2009) MCI folktales

- *Transfers* (import expectations from another category)
- *Breaches* (contradict expectations of category)
- *Breaches within breaches* (contradict contradictions)

Concept (public representation)	Coding	Counterintuitiveness score
A woman with jet black hair and eyes	HUMAN	0
A dead woman	HUMAN	0
A dead woman who comes back to life	HUMAN[b]	1
A dead woman who comes back to life only at night	(HUMAN[b])[u]	2
A dead woman who comes back to life and takes off her head only at night	HUMAN[(b+b)u]	3
A brown horse with four legs and a long tail	HORSE	0
A horse that talks	[M]HORSE	1
A talking tiger that gives birth to domestic cats	[M]TIGER[b]	2
An axe that can move on its own	[A]AXE	1
An invisible ladder	LADDER[p]	1

Breach → (arrow to "A dead woman who comes back to life")

Breach within breach → (arrow to "A dead woman who comes back to life only at night")

Transfer → (arrow to "A horse that talks")

Barrett et al (2009) MCI folktales

- Total of 116 CI items identified by team of independent coders
- 99% CI score 1-2
- Supports hypothesis of *minimal* counterintuitiveness (MCI)
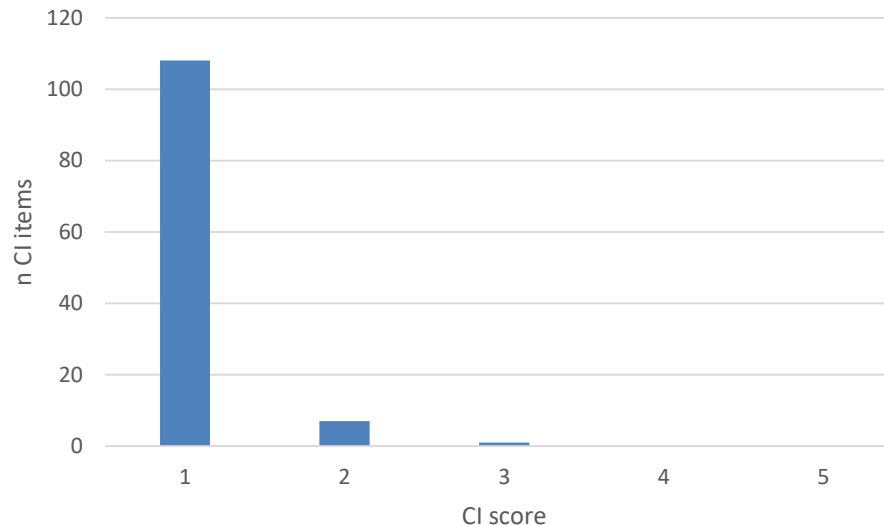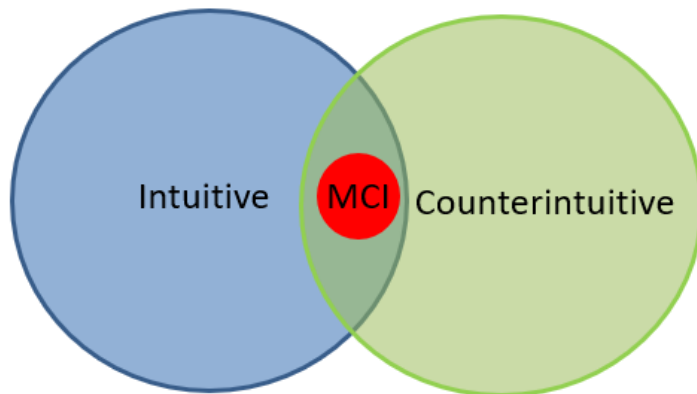
Evoking other biases

- 114 items involved transfer of folk psychology assumptions to non-humans e.g. a talking wolf

- Makes a social agent

- Also evokes social information bias

Conclusions

- Supernatural tales are prevalent
- MCI bias may explain the appeal of supernatural elements
- Counterintuitive = breaching intuitive assumptions
- Advantage of minority of counterintuitive elements within majority of intuitive elements
- Hence *minimally* counterintuitive