



## An Enrichment Program Designed and Led by:

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### General Description:

Students will engage in a series of exercises designed to reveal how magic tricks deceive the human mind—a compelling and fun way to learn about perception, attention, memory, assumptions, reasoning, and social cognition. As the mind is one of the most complex and elegant systems in the world, understanding how it works is valuable in itself. But studying how it can be deceived has practical value as well. As critical thinkers, we are better able to override many of our minds' fallacies. Students are expected to be active participants, learning and practicing magic tricks and engaging in discussions about how our minds fool us. One unit of UCSD college credit will be given for final group projects in which students invent a new variant on a magic trick. Instructors will conduct short pre- and post-tests to measure the camp's impact on participants' critical thinking.

### Logistics:

- **Program Duration:** 5 days, Monday–Friday of one week
- **Hours:** 1:00 p.m.–5:00 p.m.
- **Age Group:** 12–18 years

### Sample Schedule (subject to revision):

#### Monday: Introduction, Vision and Cognition

Time	Description
1:00–1:30 p.m.	Critical Thinking pretest, introduce participants
1:30–2:00 p.m.	Goals for the camp (theirs and ours)
2:00–3:00 p.m.	Magic tricks involving visual illusions; discuss assumptions; reveal tricks
3:00–3:15 p.m.	Break
3:15–4:15 p.m.	Basics of Vision: light, retina, fovea, neurons, V1, consciousness
4:15–5:00 p.m.	Practice tricks, experiment with factors, discuss

## Tuesday: Attention, Memory

Time	Description
1:00–2:00 p.m.	Magic tricks involving attention; discuss assumptions, reveal tricks
2:00–3:00 p.m.	Basics of Attention: exogenous, endogenous, tracking
3:00–3:15 p.m.	Break
3:15–4:00 p.m.	Practice tricks, experiment with factors, discuss
4:00–4:30 p.m.	Magic tricks involving memory by magician and/or by video
4:30–5:00 p.m.	Basics of memory: planting memories, revising memories, forgetting

## Wednesday: Expectations and Background Assumptions; Start Probability

Time	Description
1:00–2:00 p.m.	Three magic tricks involving expectations/assumptions
2:00–3:00 p.m.	Basics of epistemology: heuristics and biases
3:00–3:15 p.m.	Break
3:15–4:00 p.m.	Practice tricks, experiment with factors, discuss
4:00–4:30 p.m.	Magic trick involving priors/base rates; discuss assumptions; reveal trick
4:30–5:00 p.m.	Why extraordinary claims require extraordinary evidence

## Thursday: Misconceptions about Probability and Randomness

Time	Description
1:00–1:40 p.m.	Astrology demo
1:40–3:00 p.m.	Three magic tricks involving misconception about probability and randomness
3:00–3:15 p.m.	Break
3:15–4:00 p.m.	Practice cold reads; experiment with factors; discuss
4:00–5:00 p.m.	Lesson and Discussion: probability heuristics and biases

## Friday: Presentations, Closing

Time	Description
1:00–2:45 p.m.	Group Presentations: Perform trick; lead discussion of assumptions; reveal trick; explain cognitive principles
2:45–3:00 p.m.	Break
3:00–4:00 p.m.	Group Presentations: Perform trick; Lead discussion of assumptions; Reveal trick. Explain cognitive principles
4:00–4:30 p.m.	Summary, take-home messages
4:30–5:00 p.m.	Post-test; closing

**Other potential topics:** Illusions of Choice, Ventriloquism, Social Cues for Relevance

## **About Iris Oved:**

Dr. Oved, founder and executive director of The Paradox Center, has studied cognition from the perspectives of philosophy, psychology, and artificial intelligence for more than 15 years. Over the past two years, she has been creating and implementing programs for kids and teens (grades K-12) on the workings of the mind with the aim of improving students' skills in critical thinking, inquiry, discovery, creativity, self-awareness, discussion, and writing. She received her bachelor's degree in 2001 in interdisciplinary studies (philosophy, psychology, and symbolic systems) from the University of Arizona. She completed her Ph.D. in 2009 in philosophy with a cognitive science minor at Rutgers University, where she focused on the connection between perception and beliefs. She did a two-year postdoctoral fellowship at the University of Arizona's Cognitive Robotics Lab. Dr. Oved has taught more than 15 courses at the university and graduate levels. In the spring of 2012, she created and led an afterschool program on consciousness for middle-schoolers, resulting in a paper by two of the 12-year-olds being presented at an international conference and published in a professional Philosophy journal. To learn more about Dr. Oved and The Paradox Center, please visit [www.paradoxcenter.org](http://www.paradoxcenter.org).

## **About Tom Interval:**

Tom Interval is a San Diego-based professional magician who provides magic entertainment and training to private and corporate clients locally and nationally. A member of the Academy of Magical Arts (AMA), International Brotherhood of Magicians (IBM), and Society of American Magicians (SAM), he has captivated audiences at numerous venues in his hometown of Pittsburgh, San Diego, and along the East Coast, including Busch Gardens theme park in Williamsburg, Virginia. Mr. Interval, who has taught private and public magic lessons to children and adults since 1985, emphasizes the importance of combining showmanship with physical and psychological misdirection to create highly visual, interactive, mind-boggling magic performances. Since moving to San Diego, he has taken a keen interest in the mechanics of perception and cognitive neuroscience as it relates to magic and developed *Reading Magic*, a nonprofit, curriculum-based program designed to inspire children to read about a multitude of academic subjects while developing useful life skills learned through the study of magic. Mr. Interval has a BA in professional writing and has published instructional articles in international magic journals as well as worked in the field of marketing communications. To learn more about Tom Interval, please visit [www.intervalmagic.com](http://www.intervalmagic.com).