**TIME CAPSULE**

# The woman behind the visual cliff

**Eleanor J. Gibson is best remembered for an iconic experiment, but her own story of flexibility in the face of gender discrimination may be an even more valuable psychology lesson.**

By Elissa N. Rodkey
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The images of the 1959 visual cliff experiment — the red-and-white checkered surface, the baby hesitating at the edge of a glass-topped drop-off, the beckoning mother — rank among psychology's most famous, familiar even to introductory psychology students. The fame of this classic experiment, which established that infants can perceive depth by the time they learn to crawl, has overshadowed the brilliant woman behind the experiment — Eleanor J. Gibson (1910–2002). But Gibson's life, including how she came to conduct the visual cliff experiment, is well worth remembering.

### Eleanor discovers two loves

Eleanor Jack (popularly known as Jackie) got her start in psychology in 1927 at Smith College, where she discovered experimental psychology and her husband-to-be, James Gibson. Eleanor and James met at a Smith graduation garden party where she, a junior, was assigned to serve punch and he, a young professor, was assigned to greet parents. A sudden rain caused them to seek shelter in the same area, which led to a ride home for Eleanor in James's ancient Model T. The car ride left grease on her best blue organdy dress, but the next day Eleanor dashed back to campus to change her fall course schedule to include James's advanced experimental psychology class before catching her train home for the summer.

Eleanor's love of psychology and James grew as she worked on her master's in psychology at Smith, with James as her adviser. In 1932, they married. After a few years teaching at Smith, Eleanor got a year's leave to pursue her doctorate at Yale's new interdisciplinary Institute of Human Relations, where she managed to cram all of her required coursework into one year. Gibson chose Yale due to her desire for a "super-scientific, strongly experimental atmosphere where I could work with animals," she later said. But when Gibson approached Robert Yerkes, hoping to work in his chimpanzee lab, Yerkes proclaimed, "I have no women in my laboratory."

Science and laboratory work in particular were seen as masculine pursuits, with the laboratory environment incompatible with femininity. Instead, there were several areas within psychology that, consistent with stereotypes of women (/topics/women-men/index.aspx) , were unofficially demarcated as "women's work," such as developmental and applied psychology. Women like Gibson, who had their hearts set on hard science, had to be extraordinarily gifted and stubborn to succeed.

The incident with Yerkes was the first of many occasions in which Gibson would experience gender barriers. Her response in this case was typical of her response to obstacles throughout her life: Rather than bemoaning the injustice of the situation, she sought creative alternatives that, while not ideal, would help her progress toward her goals. In this case, Gibson asked Clark Hull to supervise her dissertation topic on differentiation and thus was able to pursue a topic she found interesting, even though she had to mask her true functionalist views with behaviorist terminology to fit her work within Hull's research program. Gibson's strategy of flexibility in the face of obstacles meant that she often worked in areas that were not directly related to her most central interests. However, reflecting on her career, Gibson had a sanguine take on this strategy: "I did have a theme, a sort of direction, and opportunities, even very unlikely ones, can sometimes be bent to one's theme."

### Stumbling into the visual cliff

It was at Cornell University that Gibson's struggles to conduct research began in earnest. Like many schools at midcentury, Cornell had antinepotism rules that barred married couples from being hired by the same department. Since James Gibson received the offer from Cornell based on his groundbreaking perception research, this meant that Eleanor would work as an unpaid research associate at Cornell for 16 years. From 1949–1966, Gibson carried out her research by applying for government grants and partnering with Cornell faculty. The first of these endeavors was working as an assistant at the Behavior Farm, a laboratory of Cornell professor Howard Liddell, a staunch behaviorist engaged in the classical conditioning of goats using shock to induce experimental neurosis. Since goats were bred on the farm, Gibson also set up her own study of goat development and imprinting, but this research came to a premature end when she returned to the farm one weekend only to discover that some of her subjects had been given away as Easter presents.

Frustrated by this experience, Gibson began collaborating with Richard Walk, whose Cornell faculty status meant he had access to laboratory facilities. Together they conducted a series of experiments testing the effect of an enriched rearing environment on learning in rats. One experiment called for rats raised in the dark, and the invention of the visual cliff was the serendipitous result of Gibson's and Walk's attempt to get more use out of painstakingly dark-reared rats. To their surprise, the dark-reared rats avoided the glass-covered drop-off portion of the cliff, showing that they could perceive depth despite their lack of visual experience. Gibson and Walk found that a variety of species could discriminate depth by the time they could walk, and animals such as chicks and goats that walk at birth could immediately perceive depth.

Eventually, Gibson and Walk tested crawling babies on the cliff, using the presence of the babies' mothers to motivate the infants to crawl. Their findings were published in Scientific American and covered in the popular press, including a feature in Life magazine. It quickly became one of psychology's most famous experiments, its engaging photographs incorporated in numerous introductory textbooks.

### Accolades in later life

Over the course of Gibson's career, her research interests converged on perceptual learning. In 1969, she published "Principles of Perceptual Learning and Development," in which she argued for her differentiation theory of perceptual learning, in contrast to the dominant associationist theories. At the time of the book's publication, accurate methods for studying perceptual development in infants were a relatively recent development, so there was a limited body of relevant research. Gibson's review of the field and methodological suggestions in "Principles" thus served to galvanize the field and to define perceptual learning as a distinct research focus.

In 1966, Cornell finally recognized Gibson's accomplishments and made her a professor, complete with a lab where she could conduct the research she called for in "Principles." Although she was resistant to a feminist interpretation of her life, in 1977 in a talk called "A Lab of One's Own," Gibson acknowledged the profound effect her lack of a laboratory had had on her career. Following Virginia Woolf's "A Room of One's Own," Gibson connected her experience to those of women writers who lacked a quiet room in which to write: "Things have changed. Most of us have a desk now. But a woman who would be a scientist needs a lab, too, a lab of her own."

Reviewing the course of her career, Gibson showed how her various research projects were each in response to her lack of a lab: "Couldn't I just set out to work on the research of my choice? No, I couldn't. One needs a lab, and I didn't have one." Yet her strategy of flexibility and creativity in response to career obstacles proved a winning one; in her later life, she received many accolades for her work, including the National Medal of Science in 1992. She was only the fifth psychologist ever to receive the award. Gibson accepted the award, wryly noting that the medal "has a picture of a man, of course."

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*Elissa N. Rodkey is a psychology graduate student at York University. Katharine S. Milar, PhD, of Earlham College, is historical editor for "Time Capsule."*

*To see historic footage Dr. Eleanor Gibson and Dr. Richard Walk made about their visual cliff experiment, go to YouTube (http://www.youtube.com/watch?v=1VPaBcT1KdY) .*

## Suggested readings

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