



Psychology offers activities for all ages, including the toddler-friendly PlaySpace.

American Psychological Association and Ontario Science Centre Psychology: Understanding Ourselves, Understanding Each Other

Gretchen Jennings, Chief of Education, Lemelson Center for the Study of Invention and Innovation, National Museum of American History

Background

The Psychology exhibition was created as the major public education initiative of the American Psychological Association (APA) in celebration of its centennial in 1992. The exhibition's development trajectory was unusually long by current standards. The project was initiated in 1984 when APA's Public Information Committee asked Caryl Marsh, a psychologist with over 20 years' experience in museum administration and exhibition development, to advise on a possible traveling exhibition about psychology. APA subsequently hired Dr. Marsh as the Project Director. Between 1984 and 1987 she developed an initial plan, sought and received funding, received a letter of support from the Association of Science- Technology Centers (ASTC), and looked for a museum partner. In 1987, the Ontario Science Centre (OSC) was selected as the main partner, and the exhibition was conceptualized, designed, and fabricated, opening as Mindworks at OSC in 1991.

Museum: American Psychological Association in partnership with Ontario Science Centre

Title: Psychology: Understanding Ourselves, Understanding Each Other

Date Opened: Mindworks, Ontario Science Centre, March 1991; Psychology: Understanding Ourselves, Understanding Each Other, Smithsonian Institution, May 1992; Psychology, It's More than You Think!, American Association for the Advancement of Science, September 1996

Time to Develop: 6 years (based on 1986 inception of idea to 1991 opening)

Budget: approximately \$4,000,000

Main Participants: APA: Caryl Marsh, Project Director; Gretchen Jennings, Educator and, later, Project Director; Baiba Lennard, Educator, OSC: Hooley McLaughlin, Senior Scientist; John Voskuil, Project Manager; Jerry Krause, Chief of Design, ASTC: Wendy Pollock, Advisor

Exhibition Description: The Psychology exhibition introduced to its science museum audience the concepts, tools, methods, and results of 100 years of psychological research.

There was a permanent exhibition (Mindworks) and two traveling versions of the exhibition. Psychology: Understanding Ourselves, Understanding Each Other (5,000 sq ft) and Psychology, It's More than You Think! (2,000 sq ft).

“The high quality of the Psychology exhibition was a result of a significant investment in educating exhibit developers and fostering engagement with numerous researchers; a commitment to prototyping and remedial design (and willingness to scrap things that didn't work); and a determined project leader who reminded others, as appropriate, to push the slow button”

—Wendy Pollock, Association of Science-Technology Centers

“Relevance, fun, insights into the topic, and a couple of ‘Oh, my God’ moments with take- your- breath-away impact, qualities that all good science exhibits should try to have.”

—Clifford Wagner, Clifford Wagner Science interactives

In 1992, a traveling version opened at the Smithsonian as Psychology: Understanding Ourselves, Understanding Each Other and began its four-year national tour through ASTC. A smaller traveling version of the exhibition was developed a few years later by APA and OSC. Entitled Psychology, It's More than You Think!, the smaller traveling exhibition toured widely and 's now housed at the Archives of the History of American Psychology in Akron, Ohio. The Psychology: Understanding Ourselves, Understanding Each Other exhibition is now owned by the Arizona Science Center in Phoenix. Mindworks continues to be on display at OSC.

Funding and Budget

APA received partial funding for the project from the National Science Foundation (NSF) (\$500,000); the W.T. Grant Foundation (\$200,000); the Sloan Foundation (\$100,000); the National Institutes of Health (\$100,000); and a small grant from Harvard University.

APA paid OSC \$849,680 (CN) for design, fabrication, and crating:
(All dollars in the section below are Canadian currency)

Design and fabrication of Mindworks permanent exhibition at OSC: **\$300,000**

Design and fabrication of Psychology: Understanding Ourselves, Understanding Each Other traveling exhibition: **\$379,080**

Crating, technical manual development, and installation of Psychology:
Understanding Ourselves,
Understanding Each Other at Smithsonian: **\$170,600**

\$4,000,000 (US) has often been quoted as the total cost of the exhibition if one includes both APA and OSC expenses in staff time, travel and communication costs, and advisor honoraria. The exhibition development involved three to four exhibit staff at APA from approximately 1986 to 1992. OSC had up to 20 staff working on the exhibition for several years prior to the exhibition opening in 1991. Dozens of psychology researchers and scholars were brought to OSC to consult on various aspects of the exhibition.

Walkthrough

The 5,000-square-foot traveling version of the exhibition contained 40 components grouped into areas that loosely parallel some of the main subjects of psychological research:

Metaphors and Models for the Mind—An introductory component that explores historical analogies used to understand the mind—for example, Locke's blank slate or current comparisons of the mind to a computer.

Measuring the Invisible—A series of exhibits that allows visitors to participate, in a non-diagnostic manner, in various kinds of historical intelligence and personality tests.

Social Interactions—Visitors can engage in social

activities such as cooperation, competition, compliance, or the experience of personal space and learn how these interactions are studied by social psychologists.

Growing Up and Growing Older—This area includes PlaySpace, an enclosed space within the exhibition for children four and under and their adult companions, and activities that show how developmental psychologists study human behavior throughout the lifespan.

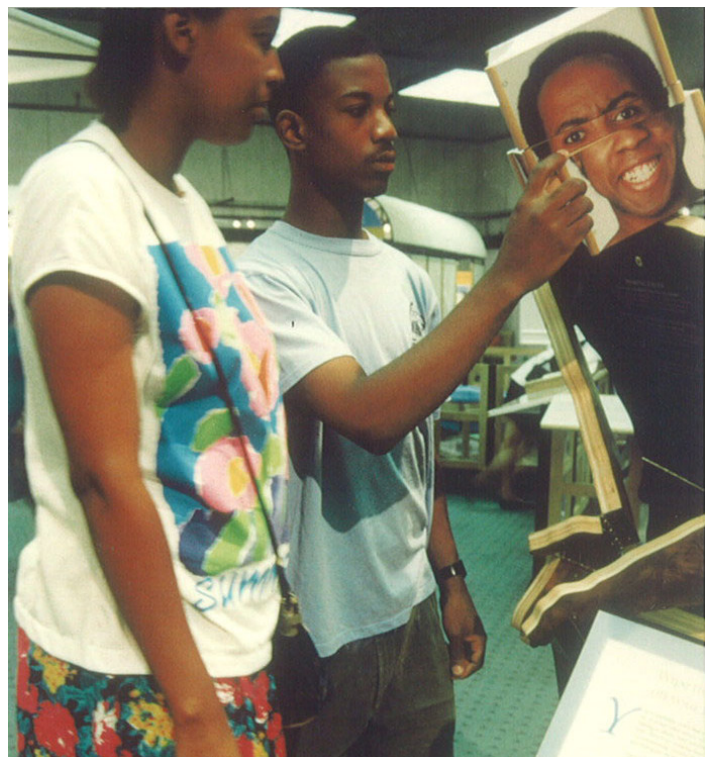
Discovery and Browsing Area—An enclosed space with 10 activity boxes where visitors can sit alone or in groups and explore how psychologists study the brain, memory, emotions, and issues such as prejudice and stereotyping. A small library, which includes a video monitor with a collection of tapes, is also available for use.

Feelings, Emotions, Mind/Body Interactions—Visitors can create different facial expressions of emotion by spinning the Rotating Faces and can explore research on the brain. Attending/Perceiving/Learning—Activities that help visitors look at processes like attention and learning. Language and Communication—Components that explore the work of scientists who study primate communication and human language.

Development Process and Challenges

Teams

The development of Psychology was a collaborative project of the APA and the OSC, with contributions by a number of other institutions. ASTC was the co-author of the original grant proposal to NSF, provided advice throughout the development process, and managed the exhibition tour. The Children's Museum of Boston prototyped and provided conceptual



In Rotating Faces, visitors can explore research on different facial expressions of emotion.

development of the PlaySpace area. The Exploratorium shared with APA a grant from the Sloan Foundation to develop exhibits relating to research in cognitive psychology. Each of the two main collaborators, APA and OSC, had its own team.

Probably the most important organizational dynamic for the development of this exhibition was the collaborative relationship between a professional association (APA) and a museum (OSC). This type of collaboration has its own built-in tensions and challenges, but APA and OSC were, ultimately, able to work through these challenges to create the exhibition.

Evaluation

Audience research was conducted throughout each phase of the Psychology exhibition development process. In the front-end phase, evaluators interviewed several hundred introductory psychology undergraduates; met with several classes of high school psychology students; and interviewed science center visitors to elicit their knowledge, misconceptions, interests, and attitudes about psychological research. Extensive prototyping of individual exhibit components was conducted for Mindworks during the formative phase of the project (1988-1991). The APA exhibition team observed and interviewed visitors after the opening of Mindworks and used this data both to improve the permanent exhibition and to inform the design of the traveling version (Psychology: Understanding Ourselves, Understanding Each Other). In 1995-96, APA developed and implemented a summative evaluation of Psychology: Understanding Ourselves, Understanding Each Other. Preliminary findings were that visitors stayed for a relatively long time in the exhibition (mean time 37 minutes), and read and engaged with over half of the exhibits. The exhibition did not seem to have much impact in terms of substantially changing visitors' views about psychology. This may have been because the visitors tended to be generally well educated, and many seemed to have some familiarity with psychology from their schooling.

Developing the Storyline

The aim of the Psychology exhibition was to introduce the concepts, tools, methods, and results of psychological research—to, in a sense, “demystify psychology.” The term “psychology” is often associated primarily with therapy and mental health concerns. While this is an important aspect of the discipline, it is not the whole story. Psychology researchers use the scientific method to examine a broad range of human life and behavior, from human development across the lifespan, to the brain, to ergonomics and human factors.

In developing the exhibition content, it was the special insight of original Project Director Caryl Marsh to insist on presenting research about everyday psychological processes, and to avoid jargon in label text—to say, for example, “thinking” rather than “cognition” and “feelings” or “emotions” rather than “affect.”

From this goal of relevance, our main message emerged:



Broken Squares was inspired by research on communication patterns among co-workers.

Psychologists study the things that people do every day. People think, remember, forget, feel, communicate, cooperate, disagree, plan for the future, grow Up. These are the things that interest research psychologists. We found, first through front-end studies, and then as we prototyped various components, that people are interested in these processes themselves.

We chose robust and reliable research on common human experiences. This meant that a component based on this research would, by and large, evoke a similar response from most visitors. Most of the exhibits followed this pattern:

Activity: The visitor is asked to do an activity that calls forth a psychological effect. An example is the exhibit Personal Space, where two visitors are asked to step on carpet circles that are increasingly close to each other. In the closest space, unless the two visitors are closely related to one other, they tend to pull away from each other, feeling some infringement on their personal space.

Reflection: The response to this activity is so automatic that people are hardly aware of why they have done it. But the experience is very powerful. The label asks what is happening and why. Often visitors laugh uncomfortably. Some walk away at this point.

Reading: Many visitors are motivated by this experience to read. Brief label text helps visitors understand the phenomenon of personal space, and why psychologists are interested in it.

A Facilitated Experience

An important format goal of this project was to create a traveling facilitated exhibition experience. The two enclosed spaces, PlaySpace and The Discovery/Browsing Area, required staffing in order to be open to the public. Museums that booked the exhibition had to agree contractually to this minimum level of staffing. APA provided a wide range of support for this staffing requirement by bringing the PlaySpace



The Discovery Area is one of several facilitated experiences in the exhibition.

manager at each site to train at The Boston Children's Museum, and by sending APA staff to each site to train gallery staff and volunteers. In addition, APA staff provided resource materials; worked with each museum to develop an advisory board of local psychologists who could talk with the press and assist with programming and publicity; worked with ASTC on the layout of the exhibition at each site; provided teacher training at most of the sites; and worked with the marketing and development staff at each museum to assure that one of the approved titles for the show was used, and that the marketing campaign reflected APA's goals for the exhibition.

Factors in the Creative Process

Organizational structures encouraged and incorporated contributions from a wide range of scholars, educators, and museum professionals. As part of the agreement with NSF, an APA/ASTC Advisory Committee was created in 1987. It consisted of three distinguished past APA presidents and three science museum directors. Wendy Pollock of ASTC and philosopher of science Stephan Toulmin rounded out the group. The committee met formally about once a year during the course of the project, and various members were consulted frequently on an informal basis.

In April 1989, APA and OSC organized a week of seminars and presentations by top psychologists representing research in a variety of areas: cognition, animal behavior, social interaction, child development, problem solving, perception, feelings, and emotions. This week inaugurated the joint exhibition project at OSC, with the presentations attended by all exhibition staff, as well as other museum staff. The exposure to cutting-edge research served to galvanize the

project. The stimulus offered by discussion and brainstorming with active scientists and scholars was continued throughout the project as APA supported the travel of psychologists to meet with OSC exhibit developers and researchers. In addition, OSC staff sought out highly esteemed academic psychologists from Canada and the United States to serve as overall advisers and content reviewers.

Creative Abrasion

Jerry Hirshberg, founder of Nissan Design International, uses the term "creative abrasion" to describe a catalyst for creative work. He deliberately hires people with differing work styles and points of view and puts them together on projects. While the differences between the APA and OSC teams were not intentionally engineered, they presented both challenges and opportunities in the development process. In the end, the collaboration produced a product that neither party could have produced alone nor without the sparks generated by institutional and professional frictions.

While APA and OSC were essentially united in their overall goals, their internal cultures and modes of operation were extremely different. As the premier professional organization for psychologists in the United States, APA was very concerned with integrity of content. OSC was willing to partner with APA and shared its interest in communicating the content, but as a museum it also had the visitor experience at the top of its priorities.

An important and perhaps unique aspect of this collaboration was that each organization had staff who could "speak the language" of the other. The APA team consisted of people with museum experience (Marsh, Jennings, and Lennard). They were often able to translate the museum viewpoint to APA administration and members. At the Ontario Science Centre, Dr. Hooley McLaughlin served as Senior Scientist and coordinator of research for the project. A scientist with a doctorate in biology, Dr. McLaughlin had the respect of the psychology researchers who worked on the project and was able to represent the views of the scientists to museum administration and staff.

A specific example of creative abrasion at work can be found in the label text procedure developed by the two organizations. It required each partner to venture into territory that was unfamiliar and at times threatening, but it ultimately produced lively text that was also scientifically accurate. OSC researchers put a great deal of effort into studying the research literature. They wrote initial text, which was then polished and adapted by label writers. This text was sent to APA and then funneled to appropriate experts for review. Their comments were returned through APA to OSC. The process made this phase of development much longer than usual, and was frustrating to writers at OSC who usually did not have to grapple with input from reviewers.

At the same time, this review process met APA's need to oversee the intellectual integrity of the text. The process also required the research psychologists to think about how to make their work understandable to lay audiences. In the end, the label text was longer than was usual by OSC standards, but much shorter than most of the psychologists would have wished. Subsequent observation and evaluation confirm that visitors did (and continue to do) a great deal of reading in the exhibition, and, at the same time, behavioral researchers feel that the text reflects their work.

Playfulness and Risk Taking

Because OSC exhibit developers were looking at psychology from the outside in, they were able and willing to play around with the subject matter in order to make it accessible to a lay audience. The linking of Stanley Milgram's famous and sobering research on obedience with approaches used by Alan Funt on the television program *Candid Camera* led to the creation of the most compelling component in the exhibition: *Walk on the Black Squares*. A sign over a tiled walkway says, "Please walk on the black squares ONLY." At the end of the walkway, visitors are introduced to research on authority and compliance and are asked to think about why they obeyed (or did not obey) the sign. In the unpublished studies of the exhibition done at three sites on the tour, visitors most often remembered and commented on this exhibit, either positively or negatively.



Visitors test their comfort with each other at the Personal Space exhibit.

OSC Psychology developers frequently enhanced their book research with other types of media from popular culture, and the mixture of the two often produced exceptionally innovative exhibits. Who would have thought that Paul Ekman's meticulous research identifying each facial muscle involved in expressing emotions such as anger, joy, or sorrow would result in an exhibit as whimsical and engaging as *Rotating Faces*? In this exhibit, visitors can spin the top, middle, or bottom of a block on which faces have been screened to create many different facial expressions of emotion. The design concepts for this exhibit came from sources as diverse as a video demonstration of Ekman moving the various muscles in his face, to a bubble gum wrapper folded so that the head of a duck sits on the body of a dog with the feet of a horse.

Outcomes and Lessons Learned

The above represents a reflection on the development of Psychology from the vantage point of 15 years and through the prism of my current work at the Lemelson Center for the Study of Invention and Innovation. I believe that our collaboration resulted in a truly creative synergy. APA provided access to some of the finest scholars and scientific resources of the time, as well as a clear vision of what it wanted to communicate. OSC took this research and combined it with a playful and questioning spirit and enormous technical expertise. The result was an exhibition with innovative and engaging tactile, three-dimensional representations of behavioral scientific findings. In 1993, Psychology won an AAM Curators' Committee Award for the exhibition's "innovative translation of a subject into an exhibition format."

Creative activity often contains a mixture of play and expertise. Inventors and artists know their tools and materials well. While knowledge of one's craft can sometimes be stultifying, this expertise can also free one to question, to take risks, and to imagine—in other words, to play. Both APA and OSC took risks in taking on the Psychology project, but I think that most would agree that the results have made the risks worthwhile.

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