Perception Deception exhibit description summary

Audio-language perception exhibits		
Perception Deception exhibit name and type	**Key topics**	**How the exhibit works**
Can you forget what you've heard? Multimedia	Different areas of your brain work together to process language and normal everyday sounds. Your brain also uses phonemic restoration to make sense of broken speech.	Listen to various audio files, which sound like synthesised beeps and squeaks or a normal speaking voice. When you hear the synthesised audio file again, your brain can't help but 'hear' the real words amongst the beeps and squeaks.
Can you fill in the speech gaps? Multimedia	If someone's speech is interrupted by loud noises, the brain can understand what is being said due to phonemic restoration.	Audio files of people talking have been edited so they have either gaps of silence, soft noise or loud noise. Surprisingly, most people find the speech files interrupted by loud noise easiest to understand.
Can you see what I'm saying? Multimedia	The McGurk Effect demonstrates how vision can sometimes influence how you understand language.	Watch a video of a person's mouth saying "ga-ga" with a synchronised audio track saying "ba-ba". People perceive that they hear "da-da" while they're watching the video, but they hear "ba-ba" when they close their eyes. A second video "pa-pa", "ta-ta" and "ka-ka" to show the effect.

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Is there a delay in what you say? Multimedia	The brain handles speech and language sounds differently to normal, everyday sounds.	As a visitor talks into a microphone, they hear their own voice being played back on time delay through a pair of headphones. As the time delay increases, it becomes more difficult to talk.
Can words be shaped? Multimedia	Sound symbolism or the sound of words can influence your perception of things.	Choose whether to name a spiky shape and rounded blob-shape 'Kiki' or 'Bouba', then compare your choice with other people's selections.
Can you make up a memory? Tabletop interactive exhibit needing two people	Our brain can invent details when we're trying to recall something from memory, including words.	One person memorises a list of words while the second person keeps score of how many words the first person could remember. Some people will mistakenly insist that they remember a particular word being on each list, due to the way their memory system works.
Can you sing kooky karaoke? Graphic panel challenge	Perception of language can be fooled when people hear the same songs, in the form of Mondegreens or misheard lyrics.	Read these song lyrics out loud. They may seem vaguely familiar, but not quite right. Try to work out the correct lyric, song and artist.

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Perception Deception exhibit description summary

Multisensory perception (audio-visual, tactile, proprioception)		
Perception Deception exhibit name and type	**Key topics**	**How the exhibit works**
Do you really see what you hear? Multimedia	Sometimes, what you hear can influence what you think you 'see'.	A rabbit flashes on the screen three times each test, while a different number of beeps are played for each test. When hearing five beeps, people perceive that the rabbit flashes more often, even though it only flashes three times.
Do your eyes make your body sway? Whole body interactive exhibit	Your sense of balance and proprioception is strongly influenced by what you see.	Stand (on one foot or two feet) up close to a swinging black and white striped board. Some people may begin to feel a little dizzy or their body will sway from side to side as they adjust their body's position to compensate for what they are seeing.
Can you toe the line? Whole body interactive exhibit	People rely on vertical visual cues and vestibular cues about their body's position in space. When these signals are mismatching or disrupted, people tend to feel disoriented.	Walk around looping patterns printed on the ground while looking through a pair of prism glasses. Some people will feel an odd sense of displacement, others will feel off-balance.

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Does swapping stereo fool your eyes? Tabletop interactive exhibit	Sometimes, one sense—hearing or vision—will dominate the other, particularly when trying to work out the timing and location of a sound.	Watch a circle of bells being struck while wearing a pair of headphones. The audio can be swapped between each earpiece, so the stereo sound conflicts with the vision of which bell is being struck.
Can temperature cause surprising sensations? Tabletop interactive exhibit	This thermal grill illusion demonstrates how safe temperatures can generate a stinging, sometimes painful sensation. This is only a perceptual illusion, and no injury can occur.	Visitors touch individual copper coils which have been heated to about 40°C, or cooled to about 19°C and they feel perfectly safe. In one section, coils at these same temperatures alternate hot-cold-hot-cold. Touching these mixed coils generates a tingling sensation or slight pain.
What do floaty arms feel like? Whole body interactive exhibit	This muscular after effect (also called the Kohnstamm effect) shows how your brain and muscles adjust to incoming sensory signals, then reset when a constant stimulus is removed.	Visitors push the back of their hands against two poles for about 20 seconds and walk out from between the poles. Most people feel as though their arms want to float upwards or are 'levitating', similar to the feeling experienced after putting down a heavy parcel.
Which shapes feel heavier? Tabletop interactive exhibit	Judgement of how heavy something feels can be influenced by what is seen, textures felt and how people prepare their muscles to lift something. One side of the exhibit demonstrates the size-weight illusion with one pair of	All shapes on this tabletop exhibit have the same mass, but their size or texture makes them feel slightly heavier or lighter for some people. One pair of shapes is rough and smooth and need to be lifted with a pincer grip. The second pair of shapes has one large and one

	shapes, the other side of the exhibit demonstrates a texture-weight illusion with a separate pair of shapes.	small shape, which are lifted at the same time in the palms.
Can wire feel like velvet? Tabletop interactive exhibit	The Velvet Hand Illusion (VHI) is a tactile illusion where a hard wire strand feels like a velvety, oily or jelly-like sensation.	Visitors gently rub their hands over strands of wire to generate the Velvet Hand Illusion (VHI).
Do any lines feel longer or shorter? Tabletop interactive exhibit	This exhibit is a tactile variation of the well-known Müller-Lyer visual illusion. As well as looking different, the lines feel as different for some vision impaired people and for people who can see.	Visitors close their eyes and feel rather than look at six raised Müller-Lyer lines which are all the same length but have arrowheads or other lines on each end.
Do you feel a phantom hand? Tabletop interactive exhibit needing two people	Mismatching visual and touch signals may confuse your brain, so it creates an unsettling feeling of whether a hand you see in a mirror is part of your body (or not), similar to phantom limb research experiments.	One person places their hands on either side of a mirror (palms facing upwards) and watches their hand's reflection in the mirror. A second person strokes the first person's palms in an alternating pattern, which may confuse the first person about what they are seeing and feeling.

Perception Deception exhibit description summary

Visual perception		
Perception Deception exhibit name and type	**Key topics**	**How the exhibit works**
Does brightness change how you see speed? Multimedia	When something is strongly contrasted against its surroundings, it will appear to move faster. This illusion was discovered by Dr Stuart Anstis, University of California.	Blue and yellow squares on the screen appear to glide along together or 'step' along like a pair of walking feet depending on whether the background is grey, or striped.
Are you observant? Multimedia	Our brains cannot handle the large volume of visual signals that we encounter every day. The brain copes by subconsciously choosing what to focus on which can result in change blindness.	Watch a video of Professor Richard Wiseman perform a colour changing card trick. Most people think that the trick is a little obvious due to the way the footage is edited, but at the end of the video, Professor Wiseman reveals what you missed seeing before your eyes.
Can you saturate your eyes? Multimedia	Receptors lining the retinas become saturated after staring at something. When the picture changes, the brain perceives an 'after image' which fades as the eye's receptors readjust.	Stare at a 'strangely-coloured' photograph, then look at a black and white photograph of the same image. The black and white image appears to be a correctly-coloured 'normal' image due to the after image effect.

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Which way do they turn? Multimedia	Perceptual rivalry can allow your brain to interpret something in different ways. This exhibit is based on work by Professor Jack Pettigrew, University of Queensland.	Dots shaped into nine hollow spheres are animated so they seem to move on the screen. Some people perceive the spheres to change direction either all at the same time, or in opposing directions.
Does the red spot shrink or change colour? Multimedia	When borders around a shape are fuzzy, instead of defined, receptors cannot be refreshed with new information, so they become fatigued. Your visual system 'fills in' the gaps with surrounding textures and views.	Focus on the centre of a fuzzy red spot on a green screen. It takes a little time, but most people see the red spot shrink and turn green (like its surroundings), or develop a yellow halo.
Do you see the same yellow? Tabletop exhibit	Individuals see colours differently due to genetic differences and trichromacy, which is the technique humans use to see colours even though we can only detect three wavelengths of light. This is different from colour blindness,	Choose the 'yellowish' ping pong ball in the circle that most closely matches the yellow ping pong ball in the middle. (No two yellow balls are exactly the same and people will argue about the best matching pair!)
Can you see to infinity? Tabletop exhibit	The visual cortex can be fooled that it is looking into a tunnel, based on past experience and visual signals mimicking a tunnel.	The structure in this exhibit is about as deep as a frypan, but it appears to be a tunnel burrowing into the ground. The structure is made from a normal mirror and a one-way mirror, with a row of LEDs sandwiched between the two mirrors.

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Can you wipe away a friend's face? Tabletop interactive exhibit needing two people	Our brains 'fill in' blind spots, preferring to pay attention to movement rather than faces and can merge two very different views due to binocular rivalry. This exhibit is based on the Cheshire Cat exhibit by *The Exploratorium*, San Francisco, USA.	This exhibit needs two people and a lot of patience! It may not work for everyone. One person places their nose against the edge of a mirror, so one eye sees the reflection of their moving hand against a white wall and their other eye sees a second person's face. The first person may get the illusion that they are slowly erasing parts of the second person's face, leaving eyes or a smiling mouth floating in mid-air.
Does the grey ring grow darker? Tabletop interactive exhibit	To make something look brighter, place it next to something that is darker. This Koffka Ring demonstrates brightness contrast, how the visual system seeks out boundaries and lateral inhibition between retinal receptors.	A light grey ring is printed across two separate panels. When one half panel slides upwards (so the grey ring splits in half), half of the ring seems to grow darker because it is placed next to a different shade of grey.
Which row of chess pieces is darker? Tabletop interactive exhibit	Your brain processes layers of information when you're trying to gauge how light or dark something may be. This chess piece illusion was originally developed by Professor Bart Anderson.	Two rows of chess pieces are printed on a panel. One row of pieces in white 'fog' appears darker than a second row of chess pieces in black 'fog'. Moving a plain grey panel across the rows of chess pieces shows that they are actually the same shades of marbled grey.

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Can you pick up the robot? Tabletop interactive exhibit	This exhibit uses two curved mirror surfaces or Mirage® technology to create a three-dimensional hologram or real image of the toy robot, floating in mid-air.	A toy robot seems to float in mid-air above an opening in the tabletop. The robot seems realistic enough to pick up, but is simply a mirage hologram.
What do you see in the mirror? Tabletop interactive exhibit	Two types of anamorphic images demonstrate how light reflects off different surfaces to make unrecognisable images appear more coherent.	Images on puzzle pieces appear smeared and unrecognisable. Place the puzzle pieces around a column-shaped or cone-shaped mirror. The reflection in each mirror reveals a more recognisable image.
Do you see bumps or dents? Tabletop interactive exhibit	Your brain analyses the position and darkness of shadows when you are trying to gauge the shape of something.	Two images are printed onto separate discs that can be spun around, so the images can be turned upside down and change whether they look like bumps that pop up or dents that press in.
Look through this Hyperscope Look through this Pseudoscope Two tabletop interactive exhibits and two moving tabletop shapes	The Hyperscope and Pseudoscope alter stereovision or depth perception by using mirrors to give the illusion that your eyes are positioned further apart (and in the case of the Pseudoscope, your eyes have swapped position).	Look at shapes or other people through the Hyperscope or the Pseudoscope and see strange stereovision/depth perception effects occur. These special 'scopes may not work for all visitors, but with patient use, some people will observe the effects.

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Do you see 3D? Tabletop interactive exhibit	Anaglyphic images demonstrate how two dimensional photographs become three dimensional images with depth.	Look at the anaglyphic photographs through different coloured lenses. Each lens allows a different part of the 2D anaglyph to pass through to each eye. This mimics how eyes which are normally in slightly different positions send signals to the brain that are translated as stereovision.
Are the long lines tilted or parallel? Tabletop interactive exhibit	The cause of the Zöllner line illusion is unclear, but some perception researchers believe it may be caused by size constancy effects.	Slide a panel with short, angled lines over a panel with long diagonal lines. The long diagonal lines will appear to tilt as though they are angled towards each other, due to the Zöllner illusion.
Watch the spinning disc and see things expand! Tabletop interactive exhibit	This motion after effect makes things seem to 'expand' or wobble even through they don't change size or actually move.	Stare into the centre of a spinning spiral for 30 seconds or so then look at a nearby toy, or a friend's face. They will appear to expand, twist or wobble due to the motion after effect.

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Perception Deception exhibit description summary

Social perception		
Perception Deception exhibit name and type	**Key topics**	**How the exhibit works**
Can you pick the gender? Multimedia	Many people tend to use their brain's right hemisphere when trying to judge the gender of another person's face (particularly the left side of their face).	Look at two seemingly identical faces and judge which face seems more 'feminine' or more 'masculine' before covering each side of their face to see them change.
Are you speedy or slow? Multimedia	Reaction times can be affected by priming techniques.	Complete two find-a-word puzzles on the touch screen. Words and images used for each puzzle may influence or 'prime' your performance in completing the word puzzles.
Which face is more likeable? Multimedia	We subconsciously read cues in other people's faces when we're deciding if someone else seems friendly or not.	Arrange five different photos of the same person with different facial expressions along a scale of 'more appealing' to 'less appealing'. See if friends or family arrange the faces in the same order as you.
Can you help me? Multimedia	Adults with slightly larger than usual eyes and mouths tend to look more child-like (or neotenous) and people may feel a stronger urge (at face value) to help them.	The screen shows a fictional person's job application with their photo attached. Some of the photos have been manipulated so their face looks more or less child-like and the exhibit tracks whether visitors are more inclined to help baby-faced job applicants.

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Can you be fooled? Multimedia	A magician can use social cues to fool our perception and perform a vanishing ball illusion.	A video show Dr Gustav Kuhn performing the vanishing ball illusion, by throwing a ball into the air and catching it, then suddenly on the third throw, the ball seems to disappear in mid-air.
Which face is 'normal'? Tabletop interactive exhibit	When a face is turned upside down (inverted), we seem to lose the ability to judge the face. This is called the Thomson or Thatcher illusion.	Three face photographs all appear to be normal when they are inverted (upside down). Two of the faces have been edited, so when these face discs are spun around, they look grotesque, with their eyes and/or mouth turned upside down.
Do people pay attention? Multimedia	This video (donated by Professor Daniel Simons and Daniel Levin) shows attentional blindness in a social situation.	Watch a video where an experimenter asks a passer-by for directions. A deliberate distraction allows the experimenter to be replaced by a different, second experimenter. The passer-by in the video doesn't realise that he is talking to a different person after the interruption!

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