Super Powers for the Senses

It's an oft-repeated idea that blind people can compensate for their lack of sight with enhanced hearing or other abilities. The musical talents of Stevie Wonder and Ray Charles, both blinded at an early age, are cited as examples of blindness conferring an advantage in other areas. Then there's the superhero Daredevil, who is blind but uses his heightened remaining senses to fight crime.

It is commonly assumed that the improvement in the remaining senses is a result of learned behavior; in the absence of vision, blind people pay attention to auditory cues and learn how to use them more efficiently. But there is mounting evidence that people missing one sense don't just learn to use the others better. The brain adapts to the loss by giving itself a makeover. If one sense is lost, the areas of the brain normally devoted to handling that sensory information do not go unused — they get rewired and put to work processing other senses.

A new study provides evidence of this rewiring in the brains of deaf people. The study, published in *The Journal of Neuroscience*, shows people who are born deaf use areas of the brain typically devoted to processing sound to instead process touch and vision. Perhaps more interestingly, the researchers found this neural reorganization affects how deaf individuals perceive sensory stimuli, making them susceptible to a perceptual illusion that hearing people do not experience.

These new findings are part of the growing research on neuroplasticity, the ability of our brains to change with experience. A large body of evidence shows when the brain is deprived of input in one sensory modality, it is capable of reorganizing itself to support and augment other senses, a phenomenon known as cross-modal neuroplasticity.

This research will not produce a real-life Daredevil, but it is a reminder that our brains have some hidden superpowers.

"Super Senses" Group Assignment

Directions: *As a group, choose a sense (taste, touch, sound, smell, sight) and create a super hero who because of that lose of the sense, has developed greater abilities due to the process of Neural Plasticity. On a 8X10 paper, as a group design, draw, and color your superhero and on the back side of your picture describe the sense that your "hero" is lacking and how his/her brain has adapted (the senses that have intensified).*