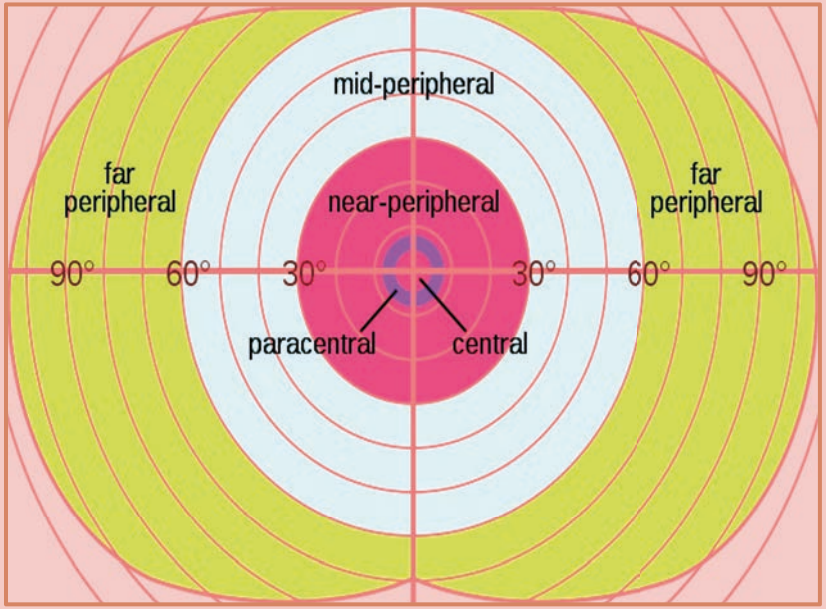
What affects our peripheral vision??

By The Ellen WIlkinson School For Girls

What is peripheral vision?



Define Peripheral vision

- Peripheral vision is our ability to see out through the corner of our eyes without having to turn your head.
- It refers to our ability to see objects outside of our direct line of sight
- Peripheral vision normally occurs when we look at something away from the center of our gaze.

Two different types of vision

Without realising, you go on with your day to day life with two main types of visions: Central and.. Peripheral of course!

Central Vision:

Central Vision is the ability to see things that are directly in front of you very clearly- if corrective lenses are used when needed. Central vision is what you see in the center of your visual field. It is the most important part of your vision

Peripheral Vision:

Peripheral Vision is what we can see from the corner of our eyes. This means that we are able to see things outside of our direct line of vision without having to turn our head.

What causes peripheral vision loss?

When someone experiences a loss of their peripheral vision, it is sometimes referred to as "tunnel vision." To get a better idea of what is going on in an eye with peripheral vision loss, we must look to the two types of cells in the retina that respond to light:

Cones:

Most of the cones are located in the centre of the retina (macula) and is what allows us to see details and colours.

Rods:

These are in charge of our peripheral and night vision. They are located throughout the rest of the retina.

When someone has an eye condition that impacts the rods function, it could lead to the loss of their peripheral vision- even if their cones are still fully operational

Signs of loss of peripheral vision loss:

Loss of peripheral vision can happen gradually, to the point where a person doesn't notice the onset—or suddenly, in which case it can be alarming and scary. Though in some cases , people may not notice any signs that they're living with a limited view. But in other cases, there are a variety of signs that are hard to miss, including:

- ★ Tripping
- ★ Having trouble walking in the dark
- ★ Difficulty Driving
- ★ Reading much slower than usual
- ★ Shimmers of light followed by tunnel vision lasting 10-20 minutes

Our Experiment - What affects our peripheral vision?

Variables:

Independent Variables:

★ Vision (whether you wear glasses or not)

Dependent Variables:

★ Peripheral Vision (measured in degrees)

Control variables:

★ The Equipment Used

Hypothesis

What do YOU think will affect peripheral vision?

We thought that someone who does not need glasses will have a better peripheral vision compared to someone who may need glasses.

Resources

- Coloured Card
- Scissors
- Ruler
- Protractor
- A Black Marker
- Masking Tape
- A Partner
- A Large Table

Assembly

1. Position yourself on the edge of a long table and mark a spot directly below your eye (on the table!!!) with tape and mark another spot around 60cm in front of the first marked spot- this will be your zero degrees.

2. Using your outstretched arm and a protractor to create a large-scale protractor, mark every 10° with tape.

3. After marking every 10°, position yourself over the 0° mark and stretch your arm with one finger up (preferably the thumb) and fix your gaze upon it

Now you may begin the experiment!!
:D

Procedure:

1. Have your partner sit at the table in the same spot as you used to mark the protractor. Looking at your partner from across the table, make sure their head is aligned with the “zero degree” point.

2. Test their right eye first. Have them extend both arms forward, fists clenched with thumbs up. The left arm stays over the 0-degree mark, while the right arm swings beyond 90 degrees.

3. While your partner is staring straight ahead and can't see what you're doing, tape a randomly chosen test object (a coloured shape with a three-letter word in it) on the thumb adjacent to the eye being tested, oriented towards your partner's face.

4. Instruct your partner to maintain focus on a fixed point while slowly moving their right arm towards the stationary hand without moving their head, eyes or left thumb.

5. Ask the participant to remain aware of their peripheral vision and signal when they correctly discern the object’s motion, colour, shape and text.

6. Record the angles at which your partner correctly identifies the properties above. (It might be helpful for the person to briefly stop the motion of their arm at each point.)

Results

Based on whether someone needs glasses or not

student/glasses or no glasses	Degrees (°) when motion was detected	Degrees (°) when colour was noticed	Degrees (°) when shape was noticed	Degrees (°) when text was noticed
Person A Glasses Left eye	75	60	12	3
Person A Glasses Right eye	76	60	0	0
Person B No glasses Left eye	90	84	40	3
Person B No glasses Right eye	85	82	55	35

Results

Based on whether someone needs glasses or not

student/glasses or no glasses	Degrees (°) when motion was detected	Degrees (°) when colour was noticed	Degrees (°) when shape was noticed	Degrees (°) when text was noticed
Person C Glasses Left eye	75	68	39	0
Person C Glasses Right eye	73	70	41	0
Person D No glasses Left eye	90	62	57	18
Person D No glasses Right eye	81	61	42	0

Evaluation:

What Went Well:

- ★ We gathered data accurately
- ★ We gained successful results

Even Better If:

- ★ We needed to repeat the experiment with a wider variety of people
- ★ We should have repeated the experiment multiple times in an instance of an anomaly
- ★ We could find the mean for our data

Conclusion:
What can we infer from our results?

From our research, we found that people who do not need glasses have a better peripheral vision than those who may wear glasses. This may be due to the glasses not correcting all areas of the eye's vision which means it may be blurrier and harder for the people who wear glasses to see through their peripheral vision.

Thank You For Listening

We Hope You Enjoyed!

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