



JOINT ATTENTION: THE POWER OF LOOKING TOGETHER

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YOUNG REVIEWERS:



ARIANA

AGE: 12



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SCIENCE

AGES: 11–13



SONIA

AGE: 12

In psychology, we often study how individuals pay attention, remember, and accomplish tasks on their own. But real life involves more than just individual experiences. People interact with others, share tasks, and collaborate. This article will focus on how people use joint attention and how it is studied in the lab. Joint attention is when one person “points out” something interesting like an approaching ice cream truck to another person (using their eyes or body gestures), and then both people pay attention to that same object. We will also explore how joint attention and working with others can enhance memory and improve how efficiently people complete tasks. By learning about joint attention and working together, we hope you will better understand how people interact with others and why these interactions are important.



VIR

AGE: 13



WILLIAM

AGE: 13

JOINT ATTENTION

When two or more people look at the same thing as a result of one person following the social cues, such as gaze, gestures, or verbal prompts, of another person.

ATTENTION

The process of focusing on specific information while ignoring other information.

SOCIAL CUES

The verbal (what we say and how we say it) or nonverbal (actions and expressions) messages used to communicate or guide interactions.

GAZE FOLLOWING

The tendency of individuals to shift their gaze in the direction of another person's gaze.

PAYING ATTENTION TOGETHER

Have you ever found yourself searching for a lost item with a friend, only for your friend to spot it first and point you in the right direction? Imagine you and your friend are looking for a lost mitten. That moment of looking at the mitten together, where one person follows the gaze of another to focus on the same object, is called **joint attention**, and it is a key part of how people learn and connect with others. Whether hunting for a lost item or working together on a project or even on a sports team, these shared moments play a big role in shaping how people pay **attention**, accomplish tasks, and remember things. For example, some researchers have found that people perform better when working together on a task than they do when working alone [1]. Other research even suggests people might remember things better when they believe another person is also looking at the same things as they are [2].

WHAT IS JOINT ATTENTION?

Joint attention involves three basic steps. First, one person initiates the interaction by directing their attention toward something, such as Tim spotting a rainbow and excitedly looking up at it (Figure 1A). Second, another person becomes aware of the first person's focus; for example, Iman sees Tim looking up at something in the sky (Figure 1B). Finally, the second person responds by following the first person's gaze to the object of interest—in this case, Iman shifts her attention to where Tim is looking and sees the rainbow as well (Figure 1C). Joint attention can also rely on other **social cues** besides gaze, such as gestures or words that help two people to focus on the same thing.

Because joint attention involves one person following the gaze of another, **gaze following** is considered to be an important part of human development. Research with babies has shown that the ability to follow another's gaze starts between 6 and 18 months old, and that gaze following is important in early language development because it helps to match words with physical objects [3]. By directing attention together toward an object, joint attention ensures that both the child and the adult are paying attention to the same thing, which enhances the child's learning experience. For example, when an adult points to a toy and verbally labels it by saying "toy", the child learns the word "toy" and associates the word with the object they are jointly attending to. Without the act of following someone's gaze, learning through observation (and language learning in general) would be much more challenging [3].

Figure 1

(A) The person in the image, Tim, sees a rainbow in the sky and looks up at it. The black dashed line represents Tim's gaze, which is directed at the rainbow. **(B)** The person on the left, Iman, notices that Tim is looking at something, which is represented by the black arrow. The black dashed line that represents Tim's gaze is still directed at the rainbow. **(C)** Iman follows Tim's gaze and looks up at the rainbow, too. The red dashed line represents Iman looking at the rainbow and the black dashed line shows Tim still looking at the rainbow.

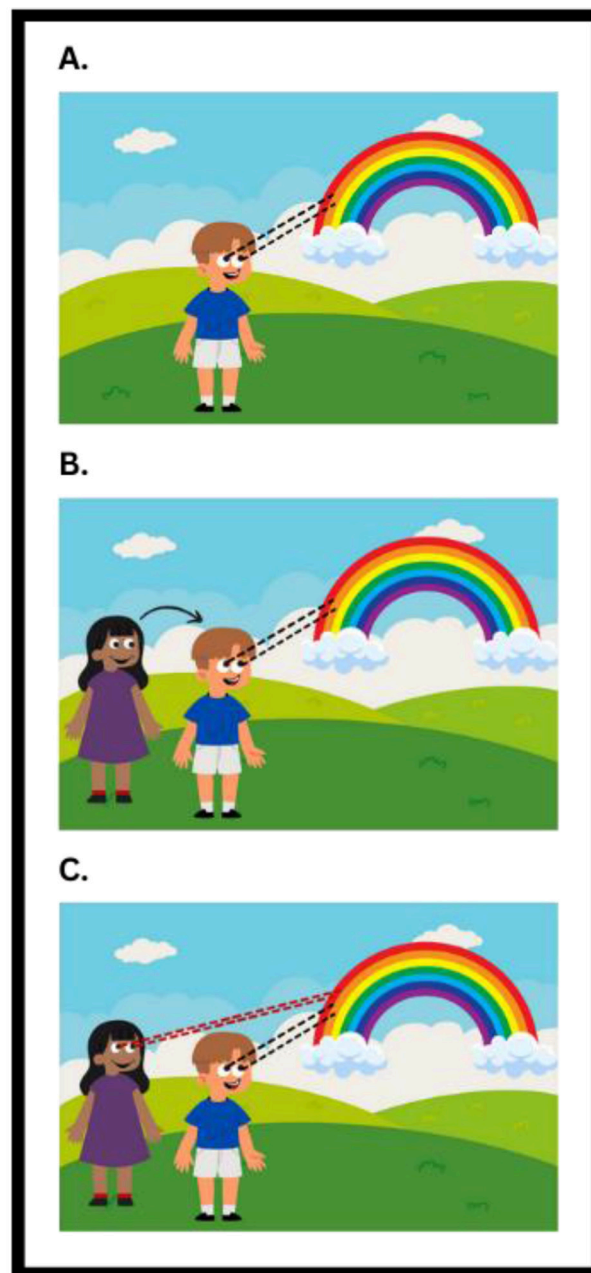


Figure 1

STUDYING JOINT ATTENTION

In the lab, researchers can study how people engage in joint attention while completing tasks together on a computer, like performing a **visual search task** [4]. In joint visual search tasks, researchers set up experiments where two people work side-by-side (but some studies have been online) to search for an item together on a computer screen, which is sometimes on the screen and sometimes missing [5]. Using tools like eye-tracking technology, which measures and records eye movements and gaze patterns, researchers can track where participants are looking and how they are sharing their attention. For

VISUAL SEARCH TASK

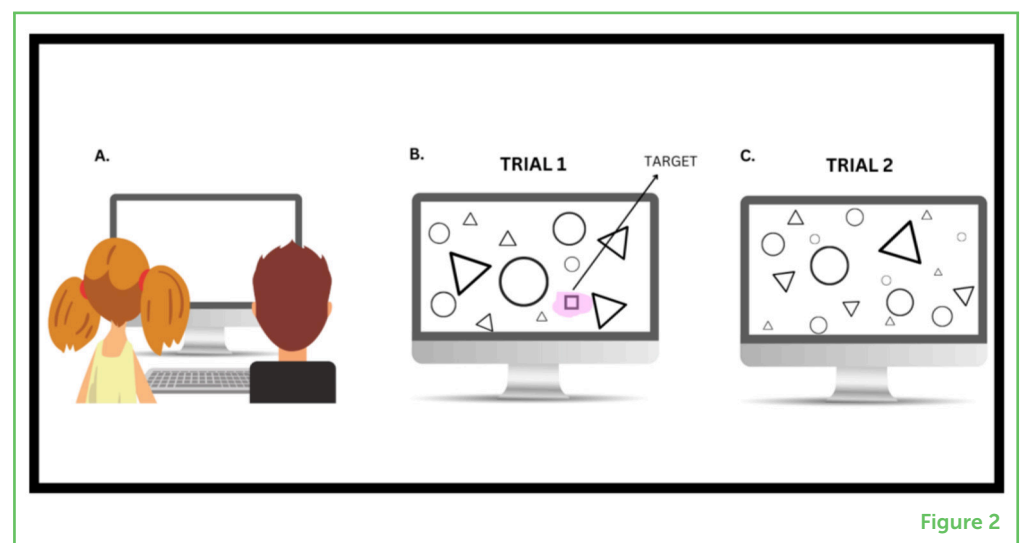
A task used to study attention that requires individuals to search for a target item among distracting items in a visual display.

TARGET

An object, person, or region of space that is focused on (using attention).

Figure 2

(A) Alice and Bob sit side-by-side in front of the computer for the task. (B) In Trial 1, they look for the target amongst the distractors. In this example, the square is the target (highlighted in this figure, but not during the real task). (C) In Trial 2, they look for the same target—but in this trial the target square is not there.



With more online interactions happening today, it is important to understand whether online interactions with others affect people's attention. One group of researchers asked participants to complete a visual search task (similar to the one shown in Figure 2) on their home computers, with a pretend partner [5]. The researchers looked at two main things. First, they studied whether just being told they were cooperating or competing with another person was enough to change a participant's performance. Second, they examined whether people need to see a picture or interact with their pretend partner first, for changes in performance to be seen. The results showed that people were more accurate when they thought they were working together with a partner, but faster when they thought they were competing with that partner. Interestingly, it did not matter how realistic the pretend partner's image was. This study shows how even subtle social cues, even in virtual settings, can influence how people pay attention and work together, which is important in today's increasingly digital world.

DOES JOINT ATTENTION HELP PEOPLE PERFORM BETTER?

When completing tasks or solving problems, it is often said that two heads are better than one, which means that collaboration (or working together) is better than working alone. But what does “better” mean? In one study, researchers asked pairs of participants to complete a visual search task alone and then together [1]. They found that when the participants worked together, they were faster and more accurate at finding the target, which researchers suggest is “better” performance (Figure 3).

Figure 3

The y-axis represents how fast the participants accomplished the visual search task (taller bars mean slower response times). The x-axis gives fictional data: the two left bars represent how fast two different people were when searching alone; the third bar shows how fast two people were when searching together without dividing up the task; and the last bar shows how fast two people were when searching together by dividing up the task. You can see that the task was completed the fastest when people were working together and divided the task, and it was the slowest when people were working alone.

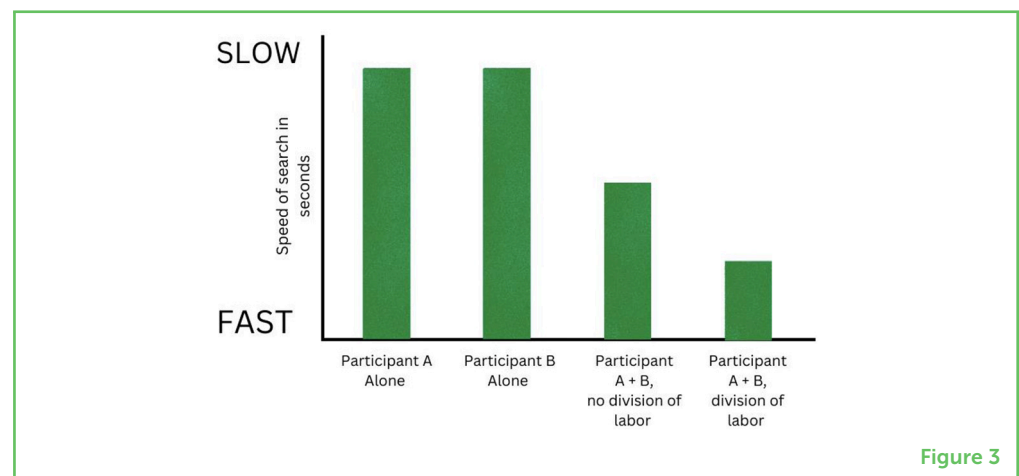


Figure 3

You might be wondering why two heads are better than one. Is it simply because you have another pair of eyes or because you split up the task? Well, the answer is both! Just having another pair of eyes can make a task easier and faster, so a group benefit can be found even if two people act independently during a task and do not talk about a strategy, like splitting up the search area [4]. For example, if you and your friend searched for your mitten independently, without dividing up where you looked, you would still find the mitten faster than you would if you were working alone. But most likely, you and your friend would not choose to search independently, but you would divide the space so you and your friend do not look in the same places. It could be something like this: “You look under the desk, and I will look in my backpack”. By dividing the labor, you are more likely to accomplish the task faster [4]. You will find the mitten faster if you and your friend plan where to search instead of both of you looking randomly. And you will definitely find the mitten faster than searching by yourself (Figure 3).

DOES JOINT ATTENTION HELP PEOPLE REMEMBER?

Researchers have found that people naturally pay attention to items that other people look at, and one potential reason could be that humans have learned over time that paying attention to what other

people are attending to can help us stay safe, communicate better with others, and navigate environments, all of which are important for survival [2]. These findings suggest that we might better *remember* the objects or locations we are jointly paying attention to.

To study whether people's memories change depending on whether they thought another person was looking at the same picture as they were, researchers asked participants to either remember pictures or look for a hidden X on the images [2]. Participants were told that their task, as well as their partner's task, might change, but they would always be looking at the same pictures. The experiment tested whether people would remember the pictures better if they thought their partner was doing the same task. The researchers found that when people believed another person was looking at the same image and doing the same task, they remembered the images better compared to when they thought the other person was doing a different task [2]. So, this study suggests that even when people *imagine* social cues, like just *thinking* someone else is looking at the same thing and doing the same task, joint attention can help people better remember those looked-at items.

WRAPPING UP

In conclusion, joint attention is an important aspect of human interaction that shapes how people work together and how they remember. Whether people are looking for something they have lost or working on a task with others, paying attention together makes them faster and more accurate, and helps them remember information better. Researchers have developed experimental techniques to study joint attention in the lab and they continue to improve those methods. By understanding the importance of joint attention and collaboration, all of us can better appreciate the value of our interactions.

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YOUNG REVIEWERS

ARIANA, AGE: 12

My name is Ariana. I am 12 years old and in seventh grade. Some things I enjoy are playing tennis, swimming, and reading.



INTERNATIONAL JOINT LABORATORY OF BEHAVIOR AND COGNITIVE SCIENCE, AGES: 11–13

Hi! We are a group of kids from the International Joint Laboratory of Behavior and Cognitive Science Youth Science Camp. We really like psychology and brain science. We love to think, explore, play sports, and make cool stuff!



SONIA, AGE: 12

Hi, I am Sonia! I am currently in 7th grade, and I like to read, draw, play sports, and hang out with friends. I think that neuroscience is really cool, and I love being involved in things that will help our community.





VIR, AGE: 13

Vir is a 7th grader with a serious love for science—especially neuroscience, pathology, and genetics. He is a research assistant at the Brainwave Learning Center (BLC), exploring the brain's mysteries. Outside the lab, Vir leads his school's math club, plays classical guitar solo and electric guitar in a jazz band, and squeezes in some tennis and piano. He is also all about making a difference in his community!



WILLIAM, AGE: 13

This is William, and I go to Synapse School. I am in the BLC and I like reading, surfing, cross country, and DnD!



JASMAN PARMAR

I recently graduated with a degree in psychology from the University of Alberta and now I am working toward becoming a counseling psychologist. I am passionate about learning the different ways humans pay attention to, perceive, and respond to their environments. I spend my time volunteering at various shelters and helping those in need. In my free time, I love to watch horror movies!



DANA A. HAYWARD

I am an assistant professor in the Psychology Department at the University of Alberta in Canada. In the Visual Attention and Social Processes (VASP) lab, we study whether attention changes based on *who* we are (personality), *where* we are (in a lab vs. real life situations; alone vs. in groups), and *what* we are paying attention to (symbols, people, games, rewards, etc.), and often use eye-tracking, motion-tracking, or brain imaging techniques. When I am not working, I love to read, play board games, and go on fun adventures with my family. *dana.hayward@ualberta.ca