That little voice in your head—if you have it—may be aligning your thoughts

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It's not uncommon these days to have some time alone with your

thoughts. But what does that sound like, if it sounds like anything at all?

Many people feel their thoughts take the form of an inner voice, a sort of conversation with themselves in their mind, according to a new questionnaire on inner voices developed by University of Wisconsin–Madison researchers. Others discover (often through the internet) this way of experiencing thoughts, and are thoroughly confused by the idea.

"It's much easier to see physical differences, that someone can jump higher than you, or run faster," says Gary Lupyan, a UW–Madison psychology professor who studies language and cognition. "But the masked differences—differences in how you perceive something or how you think about something—those are much harder to discover. You sort of have to have people comparing notes."

Variations in the way our minds conjure images and spoken words are a recurring topic for posts on Facebook and Reddit. Software engineer Blake Ross posted to Facebook in 2016 an essay about what he described as "as close to an honest-to-goodness revelation as I will ever live in the flesh. Here it is: You can visualize things in your mind."

Ross wrote that he could not. Not a specific thing like his father's face, or a generalized beach scene. Thousands of comments poured in.

When a Reddit user posted a video about the various ways people describe their thoughts, many commenters expressed confusion. "Sometimes I react to something and say it in my head instead of out loud, but this is not an all-day, everyday occurrence," wrote one commenter. "Do I think as patterns? I don't know what that means … I'm feeling baffled by all of this."

Previous questionnaires about inner voices have focused on different

questions: say, does an inner voice serve as a method of self-assessment or to provide motivation.

"What we're looking at is a propensity. How frequently do people report doing these things?" says Hettie Roebuck, a postdoctoral researcher in Lupyan's lab and coauthor of the Internal Representations Questionnaire, published with its first results this spring in the journal Behavioral Research Methods. "This idea of inner speech has not been studied much at all, and our measure provides it in the context of things like visual imagery and orthographic imagery (visualizing text)."

The propensity tilts toward voice-hearers.

Just 19% of the new questionnaire's 232 respondents (all adults) disagreed with the statement, "I hear words in my 'mind's ear' when I think." Sixteen percent disagreed with the statement, "I think about problems in my mind in the form of a conversation with myself."

And while questionnaire responses back up the anecdotal confusion in online discussions, they also contradict the way respondents imagine other people's internal lives.

"The people who tell us they don't really experience inner speech, they assume that others don't either. And someone who experiences a lot, they assume that others do as well," says Lupyan. "It's interesting, though, that there's no evidence of bimodality—that you either hear thoughts this way or you don't. People like categories and types, but the reality is people fall on a continuum from little to a lot.

The results were stable over time, with subjects scoring similar levels of inner voice activity in questionnaires administered months apart, and gave the researchers an opportunity to study its relationship with other aspects of their thinking.

In one experiment, participants were shown pictures of an object, followed by a word that either described the pictured object or not. All they had to do was tell researchers if the picture and the word matched. But there was a hitch. Sometimes mismatched pairs rhymed, like a picture of a tree followed by the word "key."

"The cool thing is, the people who say they verbalize their thoughts to a greater extent take much longer to answer if those pictures and words rhyme," Roebuck says. "Even though the words are never said out loud, they are slowed down by combinations like key and tree or bear and hair or snail and whale."

People whose questionnaire results show them leaning toward orthographic imagery—seeing words as they think—were tripped up by a different sort of relationship. They were slower to answer if the word for the picture they were shown and the actual word they saw look similar when they're both written out.

"Think about the words 'root' and 'foot' or 'comb' and 'bomb.' They sound different but they're spelled in very similar ways," Roebuck says. "So, the people who say they think more frequently by seeing words written down, they take longer to sort this out when there's visual similarity to the words—again, even though that picture they've seen has no text in it whatsoever."

It's evidence that the differences in visual and "audible" representations in their mind are connected to differences in the way they organize their thoughts.

"To the extent that someone is using language more in moment-to-moment cognition, language may also be aligning their mental spaces," Lupyan says.

Building a way to consistently describe personal differences in internal verbalization and visual or orthographic imagery can help researchers trying to study different modes of alignment.

"The people who score low on inner speech, there's a lot less known about what their experiences are like," says Lupyan. "People say things like, 'I think in ideas,' or, 'I think in concepts,' and it's not really clear what that is. Being able to identify these people opens up the possibility of better understanding of how they are thinking."

More information: Hettie Roebuck et al. The Internal Representations Questionnaire: Measuring modes of thinking, *Behavior Research Methods* (2020). DOI: 10.3758/s13428-020-01354-y

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