CONSCIOUSNESS: IN YOUR OWN WORDS

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Abstract: Surprisingly little is known about how the general public understands consciousness, yet information on common intuitions is crucial to discussions and theories of consciousness. We asked 202 members of the general public, “In your own words, what is consciousness?” and analyzed the frequencies with which different perspectives on consciousness were represented. Almost all people (89%) described consciousness as fundamentally receptive – possessing, knowing, perceiving, being aware, or experiencing. In contrast, the perspective that consciousness is agentic (actively making decisions, driving output, or controlling behavior) appeared in only 33% of responses. Consciousness as a social phenomenon was represented by 24% of people. Consciousness as being awake or alert was mentioned by 19%. Consciousness as mystical, transcending the physical world, was mentioned by only 10%. Consciousness in relation to memory was mentioned by 6%. Consciousness as an inner voice or inner being – the homunculus view – was represented by 5%. Finally, only three people (1.5%) mentioned a specific, scholarly theory about consciousness, suggesting that we successfully sampled the opinions of the general public rather than capturing an academic construct. We found little difference between men and women, young and old, or US and non-US participants, except for one possible generation shift. Young, non-US participants were more likely to associate consciousness with moral decision-making. These findings show a snapshot of the public understanding of consciousness – a network of associated concepts, represented at varying strengths, such that some are more likely to emerge when people are asked an open-ended question about it.

INTRODUCTION

One can think of a word as signifying a connected network of concepts, some more heavily weighted and some less so. Finding that kind of multi-concept meaning of a word, as it is understood by the general public, can be a challenge. The word of interest in the present report is "consciousness," and the goal of the study is to gain some insight into the collection of concepts, and their relative frequencies, that people bring to mind when they think about the word. To those who study consciousness, getting a handle on the general public concept of consciousness is of the greatest importance. Many scholars suggest that a central scientific problem of consciousness, if not *the* central problem, is explaining how people develop the specific beliefs and certainties that they have about it [1-4]. If we are going to study the phenomenon of consciousness, then we had better know what most users of consciousness think it is. However, surprisingly little empirical work addresses that question.

Scholars and scientists have debated consciousness for decades, and at least two dozen major theories or philosophical perspectives are currently available [5,6]. Recent survey studies have investigated this range of opinion among experts [7,8]. The surveys have been valuable in assessing the popularity of specific approaches in the field of consciousness studies. However, the surveys do not address the specific question asked here. What does the word consciousness mean to the general public? Is it possible to assess the meaning of the word, as it is commonly used outside the ivory tower?

A few studies have tried to detail the views of the general public [9-11]. In particular, DiTomasso [11] created a "consciousness perception questionnaire" and used

a principle components analysis to derive several possible main dimensions along which beliefs about consciousness may vary. This work is extremely valuable but again does not answer the question of the present study. To explain why, consider asking people about a common word such as “dog.” One could put together a series of questions that probe people’s views. For example, one could ask, “Do you think dogs are dangerous?” “Do you think dogs are helpful to people?” “Are wolves dogs?” “Can the word ‘dog’ sometimes be used as a verb to indicate the act of persistent following?” These questions can assess people’s beliefs on a range of specific subtopics or dimensions. But by asking leading questions, you are also eliminating much of the answer. When people think about the concept of dog, how often do they really think about wolves, or rarer meanings of the word? What is the real connectional strength between these concepts and the central word? If you asked a hundred people the open-ended question, “What does ‘dog’ mean?” presumably almost everyone would describe the domestic dog and some associations they find important to that definition, whereas only a minority of people might mention wolves. That frequency data across a set of concepts would give a truer picture of the psychological, cognitive concept of dog. We might discover that fur, loyalty, emotional comfort, and barking play a larger role in that concept.

Just so, questionnaires that probe people’s beliefs surrounding consciousness can be of value in many respects, but in other respects mask crucial parts of the phenomenon. One might ask people a series of questions such as: is consciousness a product of the brain? Can science ever explain it? Is it real or an illusion? Is consciousness a passive observer, or does it make active decisions? Is it spiritual? Where in your body is it located? Can it survive the death of the body? The answers may be important in revealing

people's beliefs, but they lose what may be the most important information of all. When people are asked to think about the word consciousness, what concepts come to their minds, and in what frequencies? How often do people really describe consciousness as spiritual, or magical, or scientific, or neurological, without those words or concepts being prompted by the experimenter? In other words, what is the network of concepts and their connectional weights that compose the general public understanding of consciousness? As far as the authors are aware, no previous study has addressed this question.

We asked a single, simple question about consciousness, without biasing or leading the participants, and assessed the mixture and frequencies of concepts that people reported. We used the Prolific online platform to survey people around the world, and asked them, "In your own words, what is consciousness?" We found that every response could be characterized by a limited set of perspectives on consciousness, with most responses containing more than one perspective. In a psychological sense, the distribution of frequencies across these perspectives defines the word consciousness. For example, the perspective that consciousness is related to an intake of information was present in almost every answer; the perspective that consciousness actively makes decisions or controls actions was present in only a minority of answers; and religion and spirituality were almost entirely absent. Results like this do not reveal people's beliefs. We cannot infer, for example, that the general public is not religious. If prompted, they might have agreed with a spiritual account of consciousness. Instead, we can infer that religious concepts play a relatively unweighted role in the web of concepts that come to mind when people think about the word consciousness. The results give a clear snapshot of the intuitive meaning of the word. The data also allowed us to study whether the concept of

consciousness is markedly different among different demographic groups, such as men and women or old and young, or whether it is a more uniform, universally understood concept in today's global information world.

METHODS

We used the Prolific online recruiting platform [12] and the Qualtrix online survey platform to study 202 participants. We asked each person the single question, "In your own words, what is consciousness?" The survey capped the typed answers at 200 words. Each participant was paid $1.07 following the suggested rate provided by Prolific. All participants gave informed consent and all procedures were approved by the Princeton Institutional Review Board.

The Prolific platform recruits from a broad range of the general public, and allows for experimenters to make demographic restrictions on participants. We allowed only participants who were at least 18 years old. In the final sample, ages ranged from 18 to 70. We also requested a gender-balanced sample. Because the Prolific platform does not necessarily return the exact number of subjects requested, the final sample included 97 men, 101 women, and 4 who did not provide a gender. We initially aimed to study 100 people from the United States. The US, however, is sometimes considered to be an unusually religious country [13], which might impact how the general public describes consciousness. We therefore aimed for an additional 100 participants from outside the US, as a comparison group, from the (mainly Western) countries that Prolific serves. The final sample included 94 from the US and 108 from other countries including Canada, Mexico, South Africa, the United Kingdom, Portugal, France, Greece, Hungary, The

Czech Republic, Switzerland, Poland, Germany, Spain, Latvia, Austria, and Italy. Because we found few clear distinctions between demographic groups (see **RESULTS**), in most of the analyses the data are combined into one large, 202-person group. All responses are publicly available in a databank online [14].

RESULTS

General description.

Answers ranged from a succinct four words on the very short end ("Being awake and aware") to 200 words on the long end, with most around 50 words (average response length = 41 words). All responses were in English and were generally articulate and easy to understand. One possible approach to analyzing these responses might involve measuring the frequency of words to probe the frequency of referenced concepts. A word frequency analysis, however, proved to be unhelpful in this study. Its disadvantage was that it provided little insight into the conceptual meaning of the responses, and produced misleading results. For example, one might suppose that the word "think" is important to measure, insofar as thinking relates to consciousness. But without reading and interpreting the semantic content of each response, one might not realize how often the answers include superficial uses of the word such as, "I think that consciousness is…" For this reason, our analysis was based on a careful reading of the semantic content. We found that the 202 responses could be characterized by eight main conceptual framings or perspectives on consciousness, as well as several subcategories. (Table 1 shows the numbers of participants in each of the categories and subcategories.) Some responses

were limited to one perspective, but most combined several perspectives. Responses were typically rich and complex. Note that throughout the **RESULTS**, where we quote the answers of participants, the quotes are short excerpts to illustrate specific points, and are taken from longer, typically multifaceted answers.

Perspective 1: Scientific or scholarly theories (1.5%).

We were interested in assessing whether the sample responses represented a general public perspective or instead whether they represented an expert, scientific or academic perspective on the topic of consciousness. Only three respondents (1.5%) described a specific scholarly theory of consciousness. One rather accurately summarized the Attention Schema Theory of consciousness [15]. A second summarized a behaviorist perspective similar to the views of O'Reagan [16]. A third person, who described a spiritual perspective, disparaged the materialistic account of Dennett [1]. No other respondents referred to specific scientific or philosophical approaches. The "hard problem" [17] was not mentioned. The global workspace [18,19], higher order thought [20,21], integrated information [22], or the many other common theories in the literature were not represented. The survey seems to have captured the colloquial, general-population concept of consciousness, relatively uncontaminated by scholarly or scientific biases or debates, at least in any direct sense.

Not only were specific theories of consciousness rarely mentioned among the responses, but references to scientific or technical topics of any kind were rare. For example, the link between consciousness and selective attention is a major topic in the scientific study of consciousness and forms the backbone of several prominent theories

[15,19,23-25]. However, only one respondent mentioned the word attention, stating that consciousness functioned to help "allocate attention." A second participant described something resembling selective attention, writing, "Consciousness constantly changes depending on what is happening and what you are focusing on at that moment in time." No other participant used the word attention or the word focus, or described anything resembling selective attention, or suggested a connection between consciousness and attention.

Twelve participants (6%) referred in some manner to the brain or to neurons, though not necessarily in a scientifically meaningful way. For example, one respondent wrote, "Consciousness is not a process in the brain…" and another one wrote, "It is a feeling that comes with a sudden surge in the brain…" Given that the brain is considered, scientifically, to be the origin of consciousness, it is perhaps remarkable that only 12 of 202 people mentioned it or any part of it.

Three participants used a computer analogy to refer to consciousness as similar to an "operating system" or to "computer RAM." Given that computers have been the dominant technological analogy to the brain at least since Turing's publication in 1950 [26], it may be surprising that so few respondents referred to computers.

No other participants made any specific reference to scholarly theories of consciousness, to science, or to technology. We suggest that these low numbers are an encouraging indication that the survey reflects the real, general-population, intuitive understanding of consciousness, and not a scholarly or scientific construct.

Perspective 2: Consciousness is the ability to receive or possess mental content (89%).

Overwhelmingly the most common general perspective, expressed by 179 respondents (89%), was that consciousness is a receptive entity. It takes in, possesses, contains, receives, acquires, senses, knows, feels, experiences, or is aware of content. This concept is distinct from the concept, mentioned by 66 participants (33%), that consciousness is agentic – something that can actively cause a change, provide output, make decisions, or control behavior. A receptive consciousness and an agentic consciousness are not necessarily mutually exclusive, and the two categories overlapped among answers. For example, one participant wrote, "Consciousness is the basic and fundamental mental state in which the individual is aware of internal phenomena such as one's own thought processes, and external phenomena, and is able to react to them," thereby succinctly summarizing both a receptive and an agentic perspective. However, overall, the receptive perspective was overwhelmingly the most common definition of consciousness.

The large consciousness-as-receptive category itself contained a set of related, overlapping subcategories. One might call them "flavors" of the consciousness-as-receptive perspective.

Awareness. The single most common word used to describe consciousness was awareness, with 125 participants (62%) stating that to be conscious of something is to be aware of it. On the surface, people who used the word "aware" to explain consciousness seem to have replaced one label with another, thereby explaining nothing. We interpreted

the use of the word awareness, however, to be an example of defining consciousness as a receptive entity.

Self awareness. Some participants (90 or 46%) described consciousness as not only being aware, but specifically being aware of oneself, or having some mental window on oneself or some part of oneself. For example, one person wrote, "consciousness is the awareness of your own existence," and another wrote, "consciousness is to be aware of your thoughts."

The possession of knowledge or information. Another common suggestion (30 participants, or 15%) was that to be conscious is to have specific knowledge or information. For example, one participant wrote, "Consciousness is being aware that we are living beings with a finite time to exist," thereby suggesting that specific information about mortality is a prerequisite for consciousness. Another participant wrote that consciousness includes knowing "we are *Homo sapiens*, we live on Earth, we were born in X place."

Understanding, thought, or deep processing of information. In contrast to consciousness as the mere possession of information, another common suggestion (69 participants, or 34%) depicted consciousness as taking in and then actively processing that information, such that understanding or complex inference can occur. Though not quite an agentic description of consciousness as something that enacts changes in the external world, it is a more dynamic description than consciousness as a passive collector or receiver. For example, one participant wrote, "it is the ability to use your brain's functions and analyze your surroundings," and another wrote that "one day as a child you are suddenly aware of your surroundings and begin to think critically." Note again how

the answers often combine more than one category, in this last case both awareness and thinking.

Sensory intake or perception. Some people (37 participants, 18%) associated consciousness specifically with sensory perception. For example, one participant described consciousness as perceiving how the place around you "looks, smells, or feels," and another said that "being aware of at least one sense is a bare minimum."

Subjective feeling or experience. Some people (33 participants, or 16%) suggested that to be conscious of something involves having a subjective feel or experience of that item. One participant wrote that consciousness is being capable of "truly experiencing," a second wrote that consciousness is "how we each individually experience and process the world around us," and a third somewhat pessimistic individual wrote that "consciousness is the ability to feel and experience pain." Another participant wrote, "you are aware, you feel, you see, most importantly you experience." The subjective experience category comes closest to the "hard problem" view that most modern philosophers take, in which consciousness is an inner feeling, the "what it is like" component, that accompanies some of the information processing in the brain [17,27]. In that view, consciousness is not merely possessing information or even deeply processing information, whether that information is about the surrounding world or about oneself. It is the feeling or subjective experience that can sometimes accompany it. This property is sometimes also called qualia, especially when applied to sensory experience. Given the centrality of this concept to the scholarly understanding of consciousness – given that subjective experience essentially defines consciousness in modern literature – it may be surprising that so few people (16%) explicitly mentioned it. However, it is possible that many of the

participants who gave the responses, “consciousness is awareness,” or, “consciousness is sensory perception,” were describing the property of subjective feeling or experience, but without the right words to say it explicitly.

Perspective 3: Consciousness is agency, or the ability to choose and control actions (33%).

As compared to the large majority of responses (89%) that described consciousness as receptive, a minority of responses (66 or 33%) described consciousness as agentic, or associated with a person’s ability to choose, decide, or act. One participant described consciousness as “the purposeful meaning to do something,” a second described it as “the internal being inside us that drives our physical activity day to day,” and a third wrote that consciousness “results in our responses and actions.” Most of those answers (57 or 28%) included both a receptive and an agentic description. Only 9 people (4%) described consciousness as something with an output but no input – as something that confers agency but without receptive properties. Based on these results, we suggest that while agency is a part of the general understanding of consciousness, it is not a central part that comes to people’s minds first. When given the freedom to describe consciousness in their own words, most participants (67%) left out any mention of agency.

Perspective 4: Consciousness is social (24%).

The idea that human consciousness may be related to social interaction has been suggested many times [25,28-32]. In so-called export theories, we use our own

consciousness as a base to attribute similar properties to others. In import theories, we learn to attribute mind states to others and then apply the same social cognition to ourselves. Perhaps attributing "mind essence" is simply an easy, efficient way to model the complexities of brain-controlled agents, whether ourselves or others [31]. In any case, consciousness might play a crucial role in human social interaction. This possible connection between consciousness and social interaction was represented among our survey participants (48 or 24%). The responses could be divided into two partly overlapping subcategories: responses that specifically mentioned interactions with other people (38 or 19%) and those that mentioned a moral dimension to consciousness (17 or 8%). Answers that mentioned morality were included in the social category because morality is fundamentally about behavior toward other people.

The responses that mentioned interactions with others were varied. For example, one participant wrote that consciousness is partly "being able to resonate with people from all walks of life." Another wrote that "consciousness is the realization that we are part of something so much greater, a deeper connection between all beings." Another wrote that consciousness is "being able to differentiate the self from other beings," which is a type of social judgement – a comparison and a way of defining the self through contrast with others.

One interesting answer took a political approach, stating that the topic of consciousness "is of course rooted in past and ongoing power dynamics – namely the ability to assign and decide who or what is or isn't conscious."

The most explicit depiction of consciousness as solely about relationships may be a succinct, nine-word answer, which stated that consciousness is "the ability to love and be loved without restriction."

Consciousness was explicitly described in moral terms by 17 participants (8%). It is possible that some of them confused the word "consciousness" with the word "conscience," such as the person who wrote that consciousness is a "moral inner voice." However, it does not seem likely that all of these respondents inadvertently swapped one word for the other. Their responses were typically multi-component, combining the moral perspective with other, more common perspectives on consciousness. For example, after describing consciousness as an awareness of the sensory world and of the self, one respondent then added that consciousness is also associated with "feeling strongly to do right by everyone." Another person described consciousness as a feeling that makes one "question or challenge the norms or beliefs of the society." A third person explicitly wrote that the word "conscience" belongs within the larger framework of one's consciousness. Sophisticated descriptions of this type suggest that participants were not simply confused between two similar sounding words, but were knowingly describing the construct of social consciousness as an extension of personal consciousness.

Perspective 5: Consciousness is wakefulness or alertness (19%).

Medically, consciousness is typically conceptualized as a scale from unconscious (asleep or coma) to fully alert. This approach avoids philosophical issues by treating consciousness as something like the setting on a power knob. It is the ability of an organism to be reactive. Because this approach to consciousness is simple,

straightforward, and also an accepted part of the English language, one might expect it to be a large part of the way people define consciousness in an open-ended survey. Yet it was clearly not the first idea that came to people's minds. In our sample, 38 people (19%) explicitly noted arousal levels as important in defining consciousness, with 34 mentioning being awake and 11 mentioning being alert. These terms were always used in conjunction with other ways to define consciousness, such as through awareness or agency – i.e., nobody defined consciousness solely in terms of arousal level. For example, one person wrote, "While I would generally characterize it as being awake and aware of your surroundings - on a deeper level I believe it is also being cognizant of one's self as an entity with thoughts, feelings, and decision making processes." Note, again, that responses were generally clearly written, understandable, and also complex. This last response is a good example of the complex web of concepts often mentioned in people's descriptions.

Perspective 6: Consciousness is mystical or spiritual (10%).

We expected a large representation of religious, spiritual, or magical descriptions of consciousness in the general population [4]. Yet only 20 participants (10%) described anything that could be interpreted as such. These responses were often difficult to interpret, and therefore the number of truly mystical descriptions may be smaller. For example, one participant wrote, "I do a lot of psychedelic mushrooms and even in all that, I still don't fully understand consciousness. …Maybe nothing exists beyond my own mind and this world, and even this very survey may just be an illusion of my own conscious creation." It is not clear if this response is truly a mystical description, but it

suggests that consciousness may transcend the apparent physical world. Another participant stated, “I believe consciousness can cross dimensions or even completely different worlds,” which appears to be a more overtly magical or non-physical account. A third participant stated, “consciousness may or may not be connected to the physical body,” thereby hinting at the possibility of non-physical spirit.

Religious belief was almost entirely absent from the survey answers. One participant noted that “some believe the source of consciousness is God,” thereby carefully avoiding endorsing the religious perspective while acknowledging its existence. That participant was the only one to mention God. Only two participants used the word “soul” and no response mentioned the possibility of an eternal soul or a consciousness that can survive after death. Only 7 people (3%) used the word spirit or spiritual.

An additional 11 people (5%) described consciousness as a life essence, or in some manner associated with the property of life. It is not clear if these people intended to describe anything magical or non-physical. We note them here because, historically, the concept of a life essence referred to a fundamentally magical energy that distinguishes living from nonliving things.

Panpsychism, the belief that all things are conscious, was not represented. No participants described it. One person suggested that the universe as a whole might be conscious. Two people suggested that plants have consciousness.

Nobody mentioned the belief that consciousness can move objects at a distance, or that a conscious mind can directly feel or make contact with another, or that consciousness can be seen as an aura emanating from a person.

It is of course possible that many participants held magical or spiritual beliefs, including the belief in consciousness as an eternal soul that eventually leaves the body. The present results show that when people were asked an open-ended question about consciousness, those beliefs tended not to come to mind first, and were usually left out of the descriptions.

Perspective 7: Consciousness is partly memory (6%).

It is a science fiction trope that to store a person's memory is to store that person's consciousness. But in our sample, not one person claimed that consciousness was entirely defined by memory. Those that mentioned memory (13 people or 6%), mentioned it as only one of many components of consciousness. For example, one person wrote that consciousness is "Awareness of your unique thoughts, memories, feelings, sensations, and environments." In contrast to those who mentioned memory, nine people (4%) described consciousness as a property of the "now," of being present in the moment, and therefore presumably not dependent on memory. For example, one person wrote that consciousness is being "mentally aware and present at the given moment," and another wrote, "consciousness is the NOW in YOU."

Perspective 8: Consciousness is an inner voice or inner being (5%).

Eleven people (5%) described consciousness as an inner voice, an inner being, and in one case, an inner "tiny brain," in what appears to be a similar perspective to some historical views of consciousness as an inner monologue or as a homunculus. For example, one participant (already quoted in the section on agency) described

consciousness as “the internal being inside us that drives our physical activity day to day,” and another described it as “the person in your mind that is always talking to you.”

Demographic analysis.

We divided the 202 participants into several demographic groupings: male versus female, young versus old, and US versus non-US. We did not have enough participants in individual, non-US countries to separately analyze each of them. Table 1 shows the demographic groups and their differing proportions of response categories. To test for statistically significant differences, a $\chi 2$ test was used and Bonferroni corrected for multiple comparisons (21 categories and subcategories).

Male versus female participants. No statistically significant differences were found between male and female respondents.

US versus non-US participants. One significant difference was found between US and non-US participants. Among US participants, none described consciousness as related to morality or an understanding of right and wrong. Among non-US participants, 17 described consciousness as related to morality. The difference was statistically significant (χ^2=17.57; uncorrected p=0.000028; Bonferroni corrected threshold for p<0.05 level of significance, given 21 comparisons, is p=0.0023). No other significant differences, or any differences even close to significance, were found between the US and non-US groups. In particular, contrary to our original expectation, we did not find a greater proportion of mystical descriptions in the US sample (10%) versus the non-US sample (10%).

Younger versus older participants. We divided the participants into two roughly equal groups: younger (18-26, N=96) and older (27-70, N=106). Among younger participants, 16 described consciousness as related to morality. Among older participants, one did. The difference between these proportions was statistically significant (χ^2=20.40; uncorrected $p<0.00001$; Bonferroni corrected threshold for $p<0.05$ level of significance, given 21 comparisons, is $p=0.0023$). No other significant differences were found between these two demographic groups. In a further analysis, we also divided the older group into two subgroups, ages 27-35 (N=60) and ages 36-70 (N=46), and found no significant differences between them.

Note that the US-versus-non-US comparison, combined with the younger-versus-older comparison, revealed that younger, non-US people were significantly more likely to describe consciousness as a moral force (of 67 people in that sub-demographic, 16 or 24% expressed this opinion), whereas the opinion was almost absent from every other demographic group (one 29-year-old, non-US participant expressed the same opinion).

In other respects, the demographic groups were remarkably similar. An open-ended question about the nature of consciousness resulted in a distinct pattern of strongly differing frequencies among a set of concepts, ranging from those represented at 89% to those represented at 1%, and the pattern was consistent across gender, age, and geography.

DISCUSSION

We asked people, “In your own words, what is consciousness?” and analyzed the properties that they spontaneously chose to include as important to their definitions. The

crucial findings concerned the frequencies with which different perspectives on consciousness were represented in the sample. Almost all people (89%) described consciousness as fundamentally receptive – as a process of taking in, possessing, knowing, understanding, perceiving, being aware, or experiencing. This overall attribute appears to form the primary definition of consciousness in the general public. All other perspectives on consciousness were reported by a minority of people. The most surprising result, to us, was the low frequency of these other perspectives. The second most commonly reported perspective, that consciousness is agentic – that it can actively make decisions or control behavior – appeared in only 33% of responses. Perspectives became less frequent from there. Consciousness as a social phenomenon was represented by 24% of people. Consciousness as being awake or alert was mentioned by 19% of people. Consciousness as mystical, transcending the physical world, a perspective that we had thought might apply to a high percentage of the general public, was instead mentioned by only 10% of people. Of those, none mentioned an immortal soul that survives death, and only one person mentioned any overtly religious concept. Consciousness in relation to memory was mentioned by 6% of people. Consciousness as an inner voice or inner being – one might call it the homunculus view – was represented by 5% of people. Finally, only three people (1.5%) mentioned any specific, current, scholarly theory about consciousness.

It is important to keep in mind what these results show and what they do not show. Consider the finding that only 33% of people described consciousness as agentic. Had we asked people explicitly, “Is consciousness an active agent that can make decisions and control behavior?” it is possible that most people would have said yes. The

point of the study was not to assess people's beliefs, a type of study that has already been done before [9-11]. Instead, our study assessed the relative likelihood of various concepts to come to mind and to be reported when people thought about consciousness. In that way, it assessed something more like the actual definition of the word as people intuitively understand it – the network of concepts related to consciousness, and the connectional weight of each concept to the overall idea of consciousness. The results show that the property of agency is surprisingly only weakly connected and thus rarely mentioned, and that the property of receptivity is dominant.

In the "hard problem" view that most modern philosophers take, consciousness is an inner feeling, the "what it is like" component, that accompanies some of the information processing in the brain [17,27]. In our sample, only 16% of participants explicitly described consciousness as an inner, subjective feeling or experience. Nobody used the term "hard problem" and nobody made an explicit, side-by-side comparison between merely containing or processing information versus experiencing it. However, unlike the property of agency, which is categorically clear and easy to put into words (participants either mentioned it or not), the property of subjective experience is subtle and much harder to pin down in words. It is possible that many of the participants who wrote about consciousness as awareness, or about consciousness as sensory perception, may have been trying to describe the property of subjective feeling or experience, but without the right words to convey it explicitly. The combination of those who said consciousness is awareness, consciousness is sensory perception, and consciousness is subjective feeling or experience, encompassed 74% of the sample. One could say that in the most liberal estimate, allowing the most latitude for the meanings of words, possibly

as many as 74% of participants expressed the view that consciousness is subjective experience, but that relatively few of them thought the concept was crucial enough to put it explicitly. That consciousness is a receptive process was explicitly noted by the majority of people; that consciousness is specifically the experience that sometimes accompanies internal processing was explicitly noted by a small minority.

Why not ask specific questions, to more precisely determine people's beliefs toward consciousness as a feeling or subjective experience? Asking specific questions about beliefs in consciousness is a valuable approach and has been used in previous studies [9-11]. However, the approach does come with a risk. To ask whether a person believes consciousness to be experience, one would first need to explain what is meant by experience. One would need to clarify that in one philosophical view, consciousness is the "what it is like" component or essence, and not the item being experienced. One would need to clarify that sensory information can be received and processed, decisions made and actions taken, all without any accompanying subjective experience, and that in this particular view, consciousness is the special property of experience itself. Having explained the concept in sufficient clarity to ask questions about it, one has potentially implanted the concept in the head of the interviewee, who might think, "That sounds like a clever idea; sure, I think it's relevant to consciousness." Now one is no longer probing what the general public thinks about consciousness, but what the general public might think after potentially new concepts and distinctions have been put into their heads, or at least artificially brought into the foreground of their thinking. The present study took the approach of assessing people's own, spontaneous ideas in response to an open-ended question.

One might expect self awareness or self knowledge to be a common definition. It was not. Although the majority of people described consciousness as some form of awareness, only a subset described it as including self awareness. Moreover, when mentioning the self, people tended to describe it as merely one of the many possible items that can be subject to awareness. Thus, again, the dominant concept was that consciousness is a receptive process, taking in, or possessing, or perceiving items, whether those items are elements of the external world or elements of the self.

In general, scientific perspectives on consciousness played almost no role in people's answers. Only 6% of people even mentioned the brain or neurons. At the same time, religious or spiritual views also played almost no role. Once again, we cannot infer that people generally do not care about the science, or do not believe in a spiritual view of consciousness. Instead, the results show that science and spirituality are only relatively weakly associated with the core concept of consciousness and therefore come to people's minds less frequently. These findings also give us some confidence that the study assessed the honest, intuitive views of the general public, and not pre-packaged views from science, philosophy, or religion.

Other low-frequency responses were also a surprise to us. For example, how can it be that in so much of the scientific world, attention and consciousness are inextricably linked [15,19,23-25], and yet in the general public, the two are almost never mentioned together? Only two participants mentioned any property resembling selective attention. We suggest the almost total lack of reference to attention in our sample probably reflects a difference between the scientific and colloquial definition of attention. Colloquially, consciousness encompasses a broad field of items, and attention targets a restricted,

chosen subset. You may be conscious of two people standing in front of you, while choosing to pay attention to one of them. In that sense, consciousness and attention are fundamentally different concepts. In psychology and especially in neuroscience, however, attention is not just the singular focus at the center of a field of processed items. It is a signal enhancement mechanism in the brain, especially in the cerebral cortex, that can apply to varying degrees to a range of signals. If you are conscious of many items, probably all of them are receiving at least some attentional enhancement. That enhancement allows for deeper processing. Without any attentional enhancement on an item, you are probably not conscious of it, a phenomenon known as inattentional blindness [24,33,34]. One of the lessons here may be that words can come to have different meanings in colloquial and scientific English.

Views on consciousness almost certainly change over time, and the present results suggest at least some recent evolution in the definition of the word. About a quarter of the young, non-US participants considered consciousness to have a moral dimension in addition to its other properties, informing people of right and wrong (16 of 67 people or 24%). That opinion was almost totally absent from all other subgroups (only one other person, a 29-year-old, non-US respondent, expressed the view). It is possible that younger, non-US participants were simply inexpert at English, and made a mistake. However, that issue is tricky and subtle. Language is defined by usage. English is an international language, and if a significant proportion of English speakers make a "mistake" and extend the meaning of a word to an additional concept, then, among that demographic, that is the meaning of the word. For whatever reason, the idea of consciousness is apparently shifting toward including moral concepts among a younger,

non-US population. Moreover, their complex answers suggest that the shift in meaning is not a simple matter of mistaking one word for another. Whatever the root cause, that subgroup has a slightly different statistical mix of concepts that come to mind when trying to define the word consciousness. It would be interesting to ask the question over many decades to track the changing cultural understanding of consciousness.

From our results, a relatively clear picture of what consciousness means to people emerges. Some properties that we expected be central to the public concept are instead peripheral. It is only weakly associated with decision and control, social interaction, wakefulness, and alertness. It is almost unassociated with memory, with the brain, with spiritualism, or with an inner voice. Instead, the core concept is overwhelmingly of consciousness as a personal receptive capacity, the ability to take in or possess mental content, that can apply to anything knowable whether elements of the surrounding world or elements of the self.

DATA AVAILABILITY

The data that support the findings of this study are available on Figshare at https://figshare.com/s/ba197308bbf2d82de219 [14].

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Category	All	US	Non-US	Male	Female	Younger 18-26	Older 27-70	Old1 27-35	Old2 35-70
Scholarly theories	3	2	1	3	0	1	2	0	2
Brain-related	12	7	5	5	7	5	7	4	3
Receptive or possessing	179	83	96	81	94	83	92	54	38
Aware	125	56	69	51	71	63	59	33	26
Self aware	90	43	47	42	46	44	44	24	20
Knowledge or information	30	12	18	17	11	13	15	7	8
Processing or thinking	69	32	37	31	35	34	32	21	11
Sensory perception	37	13	24	21	15	17	19	8	11
Feeling or experience	33	16	17	16	16	11	21	12	9
Agency	66	26	40	30	34	34	30	17	13
Social	48	15	33	28	18	29	17	10	7
Other people	38	15	23	21	15	19	17	10	7
Moral	17	0	17	11	6	16	1	1	0
Arousal	38	20	19	11	28	16	23	16	7
Awake	32	17	17	11	23	15	19	13	6
Alert	11	9	2	4	7	3	8	5	3
Mystical	20	9	11	11	8	10	9	5	4
Life essence	11	5	6	2	8	8	2	1	1
Memory	13	4	9	6	6	6	6	3	3
In the moment	9	6	3	4	5	2	7	4	3
Inner being	11	6	5	4	7	6	5	3	12
Total N	**202**	**94**	**108**	**97**	**101**	**96**	**102**	**60**	**42**

Table 1: Characteristics attributed to consciousness and their frequencies among survey responses. The categories are listed in their order of description in the main text. Those shown with an indentation are subcategories. The demographic divisions are: all participants; participants from the United States; participants from outside the United States; Male; Female; Younger (18 to 26 years old); Older (27 to 70); Old1 (27 to 35); Old 2 (36 to 70). The bottom row shows the total number of participants within each demographic group.