



## ROTTERDAM SCHOOL OF MANAGEMENT, ERASMUS UNIVERSITY

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# Do we really understand the numbers we receive?

By **Christophe Lembregts**

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**Marketing and branding departments spend millions on research and focus groups to determine the best way to sell their products to consumers. Governments, organisations and the media are all heavily invested in bringing numbers across to ordinary people. And now, new research from RSM indicates that the way people process information about numbers might have an important role to play in how they evaluate choices.**

When it comes to the products we buy, how much does the information associated with those products influence our decisions? For instance, what lies behind the bold logos and branding of your favourite diet soft drink or low-fat/low sugar product? Often, it is the small-print list of ingredients and the grams of fat or sugar the product contains. But what if people have less understanding of these numbers than these companies assume? And what if the way companies presented numbers made a difference in how we evaluate their products?

If a typical soft drink's label describes the contents as having 55 grams of sugar, how many people can actually visualize that to really understand what it means? What if, instead, the label said "11 cubes of sugar"? What if the size of a mansion was described as 10 rooms instead of 600 square meters? And what if walking distance was described as four blocks instead of 400 metres? Many people would find this much easier to visualize and really see the indi-

vidual elements. This in turn would help them evaluate their choices in a more informed way.

A recent series of studies we conducted shows that people do process units of measurement differently, depending on their ability to process numbers in general. This has to do with a seemingly arbitrary component of quantitative information – the unit. It works like this: some people are better able to evaluate quantitative information if it is described with what are called *discretizing units*. A discretizing unit describes something in terms of a number of more easily understood elements.

## **Evolutionary link?**

Our studies demonstrate that using information like these discretizing units can actually increase perceived differences between quantities. In one study, for example, we described two experimental sessions to participants as 'two minutes versus 13 minutes of doing tasks.' However, when we described

these same two sessions as 'two tasks versus 13 tasks of one minute each,' study participants felt there to be a larger difference. In another study, participants were more likely to prefer a less sugary soft drink if sugar quantity was described in cubes rather than grams, as in the example given above.

Just why do people have an easier time evaluating quantitative information if it is presented in discretizing units? Well, we don't know for sure, but we speculate that it might have to do with an ancient evolutionary system that appears to be present from the moment we are born. Humans – and many other animals – seem to be equipped with a natural ability to evaluate the size of collections of visual elements. In other words, "five fingers" instead of "five". The use of discretizing units may tap into this ancient reference system, making quantitative information easier to evaluate.

## **One size doesn't fit all**

There are two important caveats to our findings. First, the ability to evaluate perceived differences in size through discretizing units seems to go down when people are presented with larger collections of elements. In other words, if somebody is asked to compare two versus 13 units, the discretizing effect is clear. The effect is far less pronounced if people are asked to compare 113 versus 125 units. This also ties into our theory that discretizing units are linked to our evolutionary history – animals and people become less sensitive to differences between large numbers.

Second, the effect of discretizing units is less important for certain peo-



ple. For instance, people who are very good at processing numbers show less of an impact. This makes perfect sense, because they can already and intuitively evaluate what the numerical values mean. Discretizing units also have less of an effect for people who are very knowledgeable about the field in which the information is offered. For example, people who are really into dieting probably know that 65 grams of sugar is quite a lot of sugar. Translating this into cubes will probably not change much.

However, in many areas in which the receiver of information may not be an expert, or for people who generally have difficulty processing numerical information, discretizing units seem to make an important difference.

*“What if the way companies presented numbers **made a difference** in how we evaluate their products?”*

### **Making every unit count**

The crossroads of marketing and consumer behaviour is partly defined by quantitative information. So what does the effect of discretizing units imply in this area? We’ve already seen how the example of listing sugar as “cubes” could affect the way companies market sugary products. Now let’s look at an ecological-based example: the way in ▶

# Do we really understand the numbers we receive? *(continued)*

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which car companies describe the fuel efficiency of their vehicles. This is an increasingly important differentiator as people choose between regular, hybrid or fully electric models.

What if car companies started to describe fuel economy information as 'one-litre jerrycans per 100 kilometres' instead of 'litres per 100 kilometres'? It is likely that people would be able to make a better-informed decision. What about the way in which ecological organisations inform the public about the dangers of climate change? Might people be more supportive of environmental causes if the amount of melting arctic ice were specified in terms of 'one-ton blocks of ice' instead of 'tons of ice'?

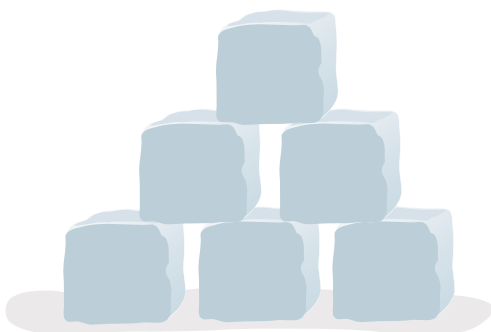
have important implications for companies, organisations and governments across the globe as they communicate their messages to the public – many of whom have difficulty processing numerical information. ■

**The paper *Making Each Unit Count: The Role of Discretizing Units in Quantity Expressions*, written by Christophe Lembregts and Bram Van den Bergh, was published in the *Journal of Consumer Research*, volume 45, Issue 5. DOI: <https://doi.org/10.1093/jcr/ucy036>**

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*"...using information like these discretizing units can actually increase perceived differences between quantities."*



## Further research

Clearly, our research into this is just the tip of the iceberg. We are also at the speculative stage in terms of real-world applicability – we are the first to admit that we conducted our studies in carefully controlled experimental situations. Therefore, we encourage others to investigate framing numerical information so that it is more intuitive for people – both in experimental situations and out in the field. After all, it could

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