System 3: Measuring the Consumer's Imagination

How the science of imagination connects new products, social research and branding

Leigh Caldwell
Lizzi Seear

Summary
Neuroscience and psychology have recently started to identify the mechanisms in the human brain that are responsible for our imagination. The imagination is a crucial aspect of how we all perceive and navigate the world. This creates a powerful opportunity to gain new insights into how consumers develop their assumptions about both new and existing products and categories, what they want from brands and why. This article discusses a new method for measuring how people imagine and includes four case studies showing how clients have measured consumer imagination to:

- Shape category perceptions and brand positioning;
- Measure performance of new food concepts;
- Change product perceptions through advertising;
- Impact the values and beliefs of an audience.

Measuring the imagination
An 11-year-old girl walks, in thin sandals, across pebbles baked hot by the afternoon sun. Shade is scarce here, but she can just make out a tree ahead where the road turns, passed the edge of a hill. Breakfast was six hours ago and her hunger competes for attention with a sandpaper-dry throat. Staring ahead towards the tree she stumbles, her toe kicking the sharp edge of a stone. A bird above calls out, not even mocking her but barely aware she exists. She doesn't even know if she is lost. She approaches the tree. Finally, she recognises this is the place her mother keeps a table, selling water, food and mobile phone cards. She starts to run…

Just a few words, but your mind can perform miracles with them. If you choose to, you can see it now: what the landscape looks like, what the girl is wearing, the expression on her face. Where is she? What does she look like? What are her feelings right now? You could conjure up a whole world inside your head: a world unique to you, but in its essence, shared with everyone else reading this paper. This capability to imagine is fundamentally human, and we use it all the time. It operates when we plan our future – tonight's meal or the retirement cottage in the countryside. It tells us how others might react to our decisions and what we could have done differently in the past. We deliberately engage it every time we read a book, turn on the TV or have a conversation. Sometimes our imagination ticks over unconsciously in the background, and often we call upon it deliberately to make a choice. It is at the heart of consumer decision-making, especially for new and intangible products. The imagination is an indispensable tool, and it lies behind much of the richness and pleasure of life.

Yet in market research, imagination makes only a rare guest appearance. Projective qualitative techniques might call on it, but surveys almost never do. Perhaps "imagine this…" feels too flighty, unpredictable or childlike for serious research. Or maybe as an industry we have not had the tools yet. However, just imagine if we did. What if we could tap into this dimension of the consumer's brain that is fundamental to how they perceive and buy our products? What if we could measure that detailed, colourful, intense world inside the heads of the people we make the products for, and use those insights

to give them more of the feelings they love? With the help of new discoveries in neuroscience, psychology and economics, we can.

Why we must understand the consumer's imagination

The girl's last few steps exhaust the energy that remains in her, but she reaches the shade of the tree. She recovers her breath as she slows to stand in front of the table. Imagine now that you are her. What would you reach for first? A bottle of water? A pastry? An orange? A bandage for your toe? Or your mother's arms?

The top 10 solutions provided by marketing research, according to the ESOMAR directory[1] are: brand research, customer satisfaction, usage and attitudes, tracking, new product development, public opinion, segmentation, concept testing, advertising and sensory research. With the exception of sensory research, all of these have an important place for the consumer's imagination – even if it is implicit and not directly measured.

Table 1

Brand research	Most evaluations of brand attitudes and opinions will indirectly call on the consumer to imagine new or hypothetical scenarios. Established brands can trigger a "System 1" reaction that does not require the imagination, but this only explains their history and not their potential future.
Customer satisfaction	Satisfaction influences customers when they consider whether to return to a company or product they have used before. They imagine their future experience based on the mental reward gained from past encounters.
Usage & attitudes	Unless usage is measured directly through in-household or digital observation, U&A surveys rely on the consumer's imagination of past or future usage to provide insight.
Tracking	Tracking of brand attitudes calls on the imagination to some extent; tracking of advertising exposures may rely purely on memory, but the imagination still controls whether we remember the ad at all.
New product development	Imagination is fundamental to NPD. Consumers must, by definition, rely on imagining what a product will be like if it does not exist yet.
Public opinion	Depending on which opinion is being sought, the consumer's imagination is likely to be activated by the question. Many statements, e.g. "Do you agree with the statement: 'The government is doing a good job'?" implicitly require the use of imagination to construct a picture of what the government is doing, a counter-factual view of what else it might be doing, and to compare the two.
Segmentation	Segmentations based purely on demographics and usage may not rely much on the imagination (except in recalling usage frequency), but segmentations on attitudes or psychographics will.
Concept testing	Like NPD, concepts can by definition only be evaluated within the consumer's imagination. Concept testing is one of the best opportunities for measuring imagination.

[1]NB: numbers of companies found in searches differ from the numbers shown on the index page.

Advertising	Advertising that is tested in research nearly always has as its objective the activation of the customer's imagination – i.e. showing representations of the product or the experience of using it.
Sensory	Sensory research, insofar as it relies on immediate reactions to physical products, would not require the consumer to use their imagination.

Although it is possible to design a methodology in some of these areas that can bypass the consumer's imagination, researchers will miss out on potential insights if they ignore this rich source of knowledge. Qualitative researchers sometimes explore respondents' imagination via projective methods. These can provide good descriptive insights into how participants see the world and what futures they envisage. However, when it comes to quantitative measurement, most surveys duck the question.

Questionnaire designers are trained to remove sources of subjectivity and interpretation to reduce variation and bias in responses. This laudable goal increases comparability, but limits the insights that can be found. The reasoning is clear: simple direct questions about the imagination have been found to be unreliable for predicting behaviour. A question such as "How likely are you to use/buy this product?" will consistently result in over-claim. "In what circumstances might you use it?" is even worse. The fear of this bias has hampered our industry from even inquiring into the imagination. It stops many researchers from asking questions about the future; instead, they ask about past behaviour and try to extrapolate.

However, we know that consumers use their imagination while shopping and also while seeing marketing or media messages. They have no alternative. Whenever they see a new product on the shelf – whether they end up buying it or not – their imagination is the only tool available to evaluate what it might taste, smell or feel like. If an ad for a new product or retailer appears on the TV, or for a brand they have used and abandoned, the imagination is trying it on again even before the decision to buy it has started. The gap between the consumer's imagination and the surveys our industry uses is not due to the imagination's lack of importance, or because we have better ways of predicting their behaviour. It is down to this simple fact: we have had no good instrument for measuring it.

Many surveys resort to asking for recall of past choices instead of prediction of future behaviour. This is fine as long as you are happy to predict the past. If you want to understand what will happen next in your category, whether your market share will grow or shrink, or if your new concept will succeed, the consumer's imagination is the only place the answer can be found. We have to learn to measure it. We cannot ask customers to talk about their behaviour without giving them space to imagine the context where that behaviour occurs. We could not even think about the aforementioned girl's choice under the tree, without understanding the hours and feelings leading up to it. No consumer can answer questions, or even make choices in a conjoint or shelf choice task, without our help in recreating the experiences that govern their behaviour.

Before we can learn how to create that space and ask those questions, we must build a foundation: a practical, psychological model of how imagination works. This means asking an even more basic question: what is imagination?

What imagination is

For centuries, our best insights into the imagination have come not from science but from fiction. JM Barrie's Peter Pan tells us that if we lose our imagination, we lose the joy of life – and to listen to children and let them show us their worlds. Alice in Wonderland presents imagination as an escape, but also as a way to elevate who we are. Ursula Le Guin, the great science fiction author, says that "Imagination is the single most useful tool mankind possesses…a fundamental way of thinking, an indispensable means of becoming and remaining human" (2016: p3).

Psychologists have often been interested in the imagination. William James, who did more than anyone to establish psychology as a distinct field, defined “reproductive imagination” as the recall of images previously sensed, and “productive imagination” as the use of fantasy to create something new – arising from associative thought. His predecessor, Francis Galton, may have accidentally invented questionnaire design when he attempted to survey people about their imaginations:
"The inquiry…took the form of submitting a certain number of printed questions to a large number of persons. There is hardly any more difficult task than that of framing questions which are not likely to be misunderstood, which admit of easy reply, and which cover the ground of inquiry. I did my best in these respects, without forgetting the most important part of all: namely, to tempt my correspondents to write freely in fuller explanation of their replies…These separate letters have proved more instructive and interesting by far than the replies to the set questions", (1907: p57).

Who among us has not been glad we asked an open-ended question when our single-coded question did not produce the desired results? In any case, it turns out that imagination has been a crucial topic of surveys for literally hundreds of years. Sadly, we have forgotten this; perhaps because we have moved onto more abstract topics and away from the visual imagery that James explored.

Jean-Paul Sartre, although not best known as a psychologist, published The Psychology of the Imagination in 1940, arguing that "Thought…is defined by meaning and intentionality", (p60). In his view, the imagination is "the whole of consciousness", and without it we could merely react to stimuli (p270). More recently, empirical psychologists and neuroscientists have used brain scanning to look at what happens when we imagine. Imagining an experience stimulates 90% of the same brain regions as actually having that experience (Ganis et al, 2004). We have similar emotional reactions to imagined outcomes as we do to real ones (though usually they are less intense). The field known as mental simulation, studies how our minds can run through past, future or completely made-up events to see what happens. Therapists have even taught injured patients to imagine playing sports, as a way of training their bodies to recover – even without any physical activity taking place. Three themes emerge from all this work:

1. The imagination does not need to be visual – it can be conceptual, verbal, auditory, kinaesthetic or olfactory. However, visual imagination is probably the most common – it is no accident that the root of the word is “image”.
2. Imagination is highly practical for rehearsing, practising and planning real actions, and not just a “flight of fancy”.
3. Imagination's most likely evolutionary function is to enable us to plan our future actions better.

Through this work, we have learned a lot about the uses of the imagination, but to measure it we need to know the mechanism by which it works. To do this we turn to the science of causal modelling. Psychologists Steve Sloman and David Lagnado (2015) tell us that the world is represented in our minds by a set of cause-and-effect relationships. We learn that A causes B, and B causes C (and presumably therefore, A causes C). This is an extension of well-known work in behavioural psychology: that organisms can learn conditioned stimuli. That A predicts B (Pavlov (AAAS 1906): a bell ringing predicts food appearing; Skinner (1948): pushing a lever causes food to arrive). Prediction is a more general phenomenon than causation, but they are conceptually similar and in the model I propose here, they are merged in a relationship called implication. "A implies B" can mean that "A causes B", or "A usually comes before B", or "B is a characteristic of objects with property A". They all have the same outcome: whenever you see, think of, or possess A, you can expect B to follow along soon.

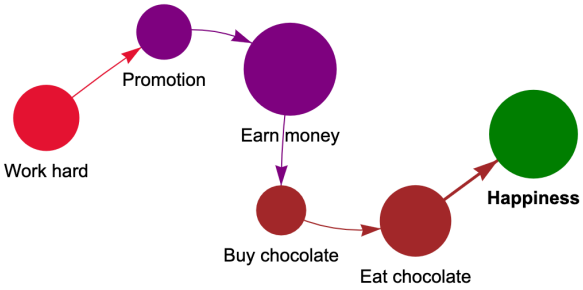
The imagination map

This girl, whom we have started to understand a little, has her own picture of the world in her head. Undoubtedly it contains more than we can ask about right now; solving her thirst, hunger and loneliness is the first priority. But perhaps after that she will tell us what she dreams of. What, for her, is on the

other side of that bend? Where does she want to go in life and, once we have found out, can we offer her our help?

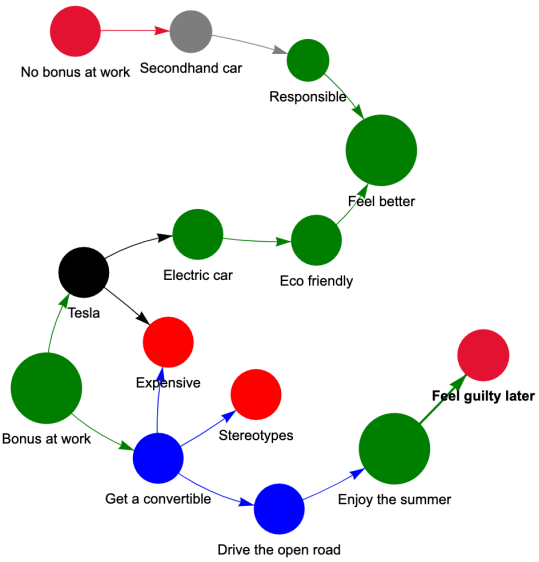
This theory tells us that the unconscious mind sees the world as a map connecting all the concepts and objects it knows about, and the relationships between them. Each task or problem we try to solve uses a different part of this imagination map. It might look like this:

Figure 1: The consumer's imagination: how can I get a reward via chocolate?



Or this:

Figure 2: Will getting a bonus at work ultimately make me happy?



When a person imagines something, their mind goes off on a journey through this map. The journey might have a clear goal – e.g. to solve a problem or need like "I'm hungry". Or it might be open-ended – when we daydream, speculate or worry about what the future might hold. Some of the concepts in this map are enjoyable to think about: chocolate, the person you have a crush on, or the idea of winning the lottery. When the imagination activates these concepts, your brain gets a reward. This is very similar to the "dopamine hit" we famously get from a “Like” on social media, or a new email arriving in the inbox. Moreover, just as we are motivated to keep refreshing the inbox or opening the Facebook app, our brain is motivated to keep on imagining, in the hope of winning more rewards.

Some of the things we can imagine are not positive or rewarding, but it is not yet known by psychologists whether the brain represents these simply by not generating any reward, or by a “pain hit”. The phenomenon of how people enjoy horror films suggests that perhaps we do experience a little pain, which is followed by a pleasant rush of endorphins as the brain recovers from its experience. When we use imagination to make choices, the brain goes hunting through this map to predict the consequences of each possibility. Choosing between bacon sandwich or yoghurt in the morning? Navigate the imagination graph to see which choice is more rewarding.

The rewards of the imagination are not just based on which one tastes better. They encompass the emotional feelings that might come from making a healthier choice, the sensations we imagine in our body after eating, and even the feeling that comes from handing over the money for the option we choose to buy. However, the rewards get smaller as you navigate further through the map towards those indirect effects: a reward that is ten steps away from now would have very little impact, while the almost-immediate rewards of flavour or a sugar rush receive a higher weighting.

Many behavioural science models of the mind include two distinct "systems" or types of mental process. System 1 includes intuitive processes that happen instantaneously and automatically, without conscious intervention or awareness. System 2 consists of deliberative processes where the consumer calculates logical answers based on rules or knowledge. Neither of these successfully describes the rich, creative, feelings-driven imaginative activity. A growing number of researchers (see for example Betty Adamou's recent book, Greg Stucky's, and my own work) see this as a distinct part of the mind: System 3. This model of the mind enables researchers to quantitatively understand how the processes of imagination influence consumer behaviour and to set out a framework for measuring them.

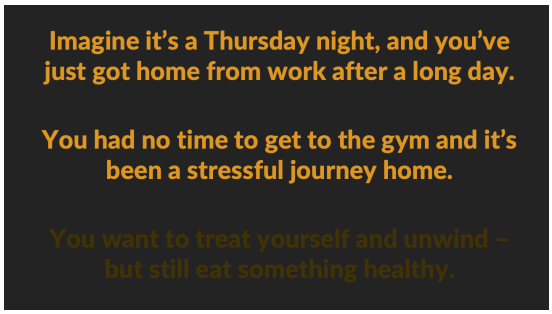
Measuring the imagination

If we watch, we can see what the girl chooses first. But if we talk to her, we can find out why. Perhaps then we can help design a better world for her to grow up in.

Gaining the ability to describe the imagination in specific terms also allows us to develop tools to measure it. Projective qualitative research is still a valuable way to explore what consumers imagine, but it makes few definite predictions. A quantitative metric will complement the insights from qualitative methods and allow businesses to make confident decisions. The map of the imagination shown above contains two components, each of which needs to be measured. First, the concepts or objects that the consumer can imagine: the nodes of the map. Second, the relationships between them: the edges. Fortunately, the nature of the model allows its structure to be measured using reliable, established implicit methods. Measurement has three stages:

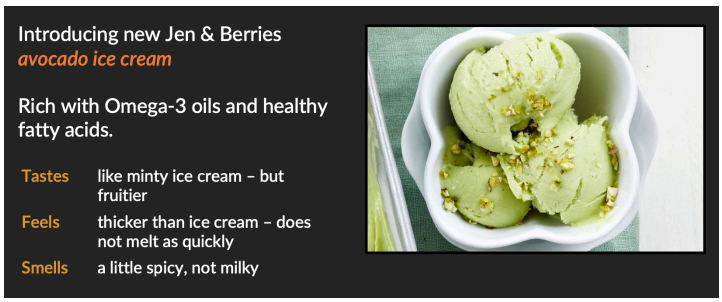
1. Priming the imagination
2. Measuring the implication map
3. Calculating reward

Figure 3 - Use language and images to evoke the customer's imagination. Open-end questions and animations can help deepen the effect.



To prime the imagination, researchers use language and images designed to evoke the future decision context that is being explored. These are presented carefully spaced out in time, over a 30 to 90 second period, allowing the respondent sufficient time and immersion to recreate the correct imaginative mind-set. Sometimes open-end questioning will be used to encourage respondents to recall to mind previous relevant experiences.

Figure 4: The starting point for the respondent's imaginative journey

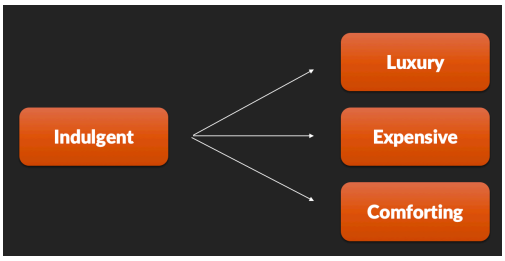


At the end of this process the respondent's imagination will be stimulated and active, and they are ready to pursue their goal – which may be a shopping mission, a consumption experience or something else.

Figure 5: Respondent indicates the words or images their imagination evokes

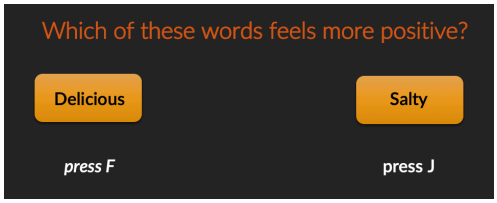
Then they are presented with a starting point for their journey through the imagination and a set of words or images that could potentially be stimulated by it. Think of this as choosing the fork in the road that feels most natural. Each choice is followed by a new fork, and over a period of several minutes, the respondent "wanders" through their own imagination, helping us to fill out a map of the territory.

Figure 6: ...then drills down further into each



These choices use implicit methods: time-limited, weighting the results by order of choice and response time. Respondents can pick from multiple words that might be evoked by the particular starting point: whether that is a brand or a secondary concept somewhere deep within the imagination map. Respondents can also add their own ideas to the map: if they think of something the survey has not asked them about, they have the opportunity to mention it.

Figure 7: Pairwise ranking to calculate reward level



Finally, the reward level of each node is measured in a time-limited ranking exercise with reaction time measurement. Respondents use fast pairwise comparison to say which word or image makes them feel more positive. This measures the System 1 response that is stimulated by each individual node in the map. System 3 can be seen as an assembly of many individual System 1 responses and this method is an established and reliable approach for System 1 measurement.

Figure 8: An imagination map for avocado ice cream

This method builds an individual imagination map for each respondent, showing how they imagine the category or the product being tested. It also generates a reward score for any product or brand. This score measures the appeal of the product or brand, based on how the customer's imagination responds unconsciously to it.

The insights this method produces

Measuring the imagination through System 3 has been used to tell clients:

- How customers form a consideration set in their category;
- Whether their brand beats competitors in appeal and likelihood to purchase;
- If a new concept would succeed in market and to which segments it would appeal most;
- Whether a brand endorsement or association will increase brand value;
- What trends are on the horizon in their industry.

In many cases, the most distinctive insight is not *what* will succeed, but *why*. For example, a retailer was able to discover not just where they ranked in brand equity against competitors, but which competitors are strongest on each brand attribute and which are more of a threat in the future. A food manufacturer learned not only which concepts scored well, but how to optimise them further and communicate their benefits in a way that resonates for key consumers. The most important kind of insight from the imagination, may be to give brands a clue to the future. Much of market research is good at measuring what happens today, but companies need to make decisions about investments, product launches and marketing campaigns for the next year - or indeed the next decade! The consumer's imagination is a good place to look for insight into how things will change.

Four classes of research question are typically answered by measuring the imagination with System 3. Starting from the strategic, clients may first want to map how a customer imagines the world - or their product category - then focus in to understand how they perceive individual products. Next, they may test ads or communications to change how the market imagines those products. Finally, there is an opportunity to reshape how consumers see the whole category, or change their worldview altogether.

Table 2

	Tactical	Strategic
Measuring	How do customers use imagination to evaluate my products?	How do customers use imagination to navigate my category/the world?
Changing	How can I make customers imagine my product differently?	How can I make customers imagine my category/the world differently?

The following cases show each of these four questions being answered.

Case study 1: Primark - How do customers imagine the category?

International fashion retailer Primark wanted to understand how its customers think about and satisfy their needs for clothing and footwear. Consumer Insights Lead Lizzi Seear realised that before they could get into detailed measures, such as a key drivers study or conjoint, it was first necessary to step back and understand more broadly: how do customers think about Primark? Which needs does it solve for them? What are their main goals and concerns? These answers could then provide material and hypotheses to take into further testing.

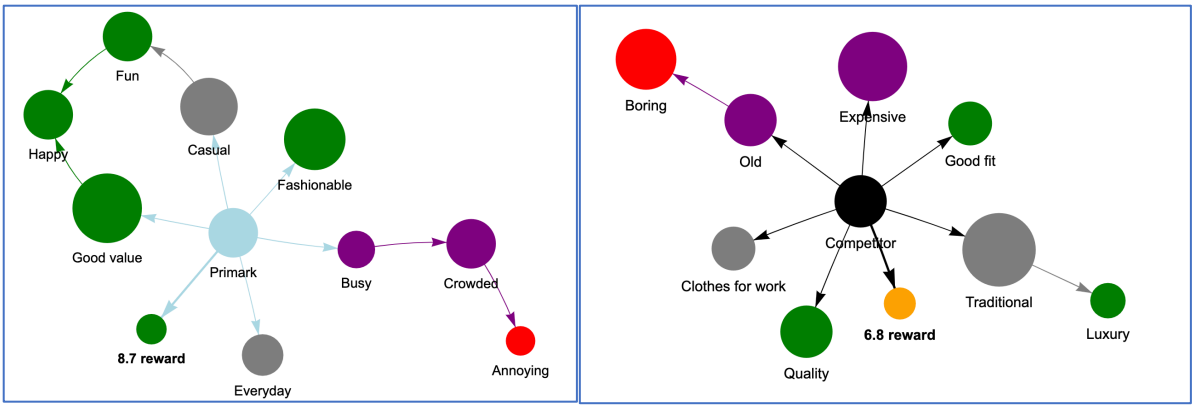
This question lives in the realm of the imagination. Customers use their imagination to identify their fashion needs: Do I want to look different? Can I visualise myself in a situation where I do not have the right clothes or shoes? With what kind of garment might fill that gap?

Simultaneously, they use imagination to find potential solutions. Which store has what I need? What will be the experience of going there? How much money will I have to spend? This matching process goes on in the customer's head, at different levels of consciousness, before they even leave the house.

On the high street, when different shops present themselves, more imaginative processes will be triggered. All of this happens inside System 3, on the shopper's mental map of the world. Therefore, we designed a survey to measure the structure of System 3 and how much mental reward each element would provide. The most rewarding emotional pathways through this map will be most likely to be used by the customer to make their choice.

We surveyed 800 members of Primark's UK community panel (frequent Primark shoppers) and 800 non-members from a third-party panel, in order to identify differences in motivations and likely behaviours between the two groups. Each respondent completed a multi-stage test, using the method described above, to measure their perceptions of Primark, a competitor brand and two shopping missions (such as "casual wear" or "everyday basics").
The analysis produced a visual mental map for Primark itself and for each competitor brand, allowing Seear to identify competitive strengths and weaknesses against each one. Simplified examples are shown below.

Figure 9: Simplified imagination maps for Primark and a competitor



The maps provide a score: how rewarding is each brand for the consumer and how rewarding is each part of the product or experience? For example, how rewarding is a well-staffed store compared to cheap prices? Which is more motivating for each customer group?

The maps allowed Primark to see that some of its potential negatives are in fact positives for its frequent customers: busy, hectic stores and long queues (within reason) indicate a popular, exciting experience. The outputs provided confirmation of some existing hypotheses about customer perceptions and sparked some new ones. The results allow Primark stakeholders to navigate around their customers' minds, identify unconscious perceptions hidden away and formulate new strategic opportunities. At the time of writing, the use of this insight within Primark is at an early stage, but Seear believes it offers at least the potential to be a unique source for discovering new trends and customer needs.

Case study 2: Global food manufacturer - How do customers imagine a product?

This manufacturer had noticed a drop-off in the predictive success of existing concept testing methods, and was looking for a new method with a better fit. We designed a System 3 test, based on the above methodology and tested a number of existing concepts in three countries as a benchmark for the metrics. The concepts being tested were new ones, unfamiliar to the target audience, so it became apparent that the real evaluation was taking place inside the consumer's imagination. When consumers imagine eating the product, their brain generates reward in proportion to how good it makes them feel – a strong predictor of purchase behaviour. A perfect opportunity to measure the activities of the imagination. The test results were found to be strong predictors of the measured in-market success of the concepts and the method has been added to the client's repertoire as one of their testing

approaches. For this purpose, we developed a scorecard-style out-put showing the key findings of the research (see Figure 10).

The key discovery of this research was that consumers are unreliable at evaluating a concept using "System 2" or rational methods, such as a purchase likelihood score. By using the imagination instead to mentally recreate the consumption experience, and measuring a deeper "System 3" picture of the response rather than a simple score, the respondents could accurately express their natural reaction to the product concept.

Figure 10: Scoreboards showing the imaginative performance of a concept in two markets

Case study 3: Kingsford Charcoal - Changing how customers imagine a product

Kingsford, the leading brand in its category, wanted to launch a new ad campaign targeting consumers at risk of defecting from the category. They had developed three creative options and wanted to understand which would be most motivating for the audience, and why. Traditional claimed measures – purchase likelihood and appeal – did not differentiate between the ads sufficiently, so we designed a method to measure what was happening inside the viewer's mind while they watched the ad and how they would behave afterwards. We divided the sample of 4,000 consumers into four cells: each cell either seeing a single test ad, or a control ad unrelated to the category. After seeing the ad, they participated in a System 3 imagination test to gather the images, words and associations evoked by the ad. Finally, they were offered a voucher code to buy charcoal online at a discount. We were able to measure the redemption rate of the voucher across cells to test which ad was more successful and compare this to the System 3 measure. As a result, we could find which images, emotions, beliefs and opinions were more predictive of ad success, to help the client design the ideal ad.

The key insight: customers wanted to imagine themselves in the company of a diverse group of friends, with the barbecue in the centre as the unifying factor. The client tailored the test ad accordingly and launched it a month later. Volumetric projections indicated that the optimised ad would bring $10-20 million in extra revenue to the client.

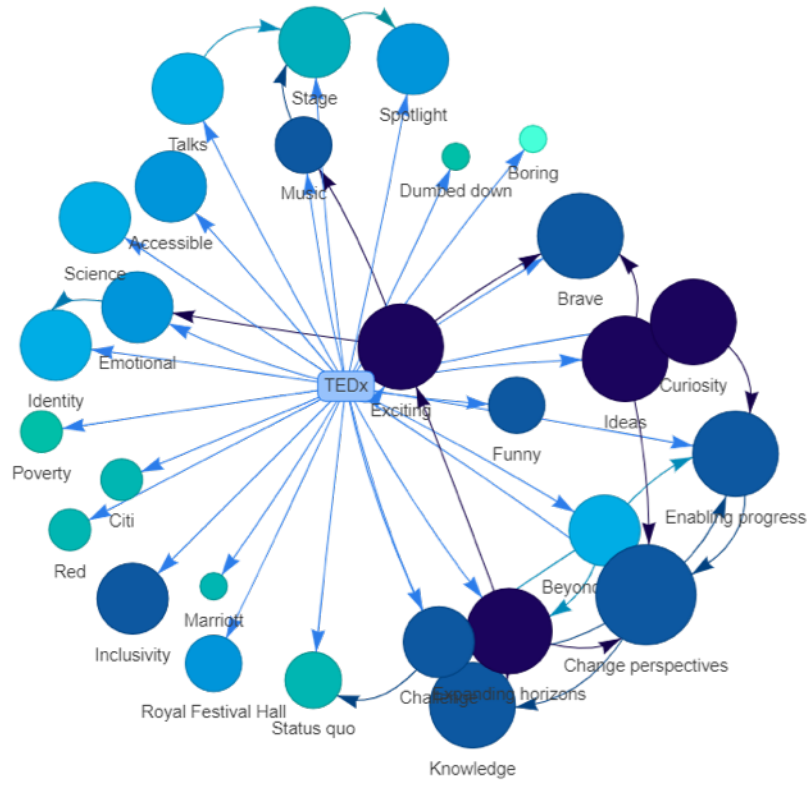
Case study 4: TEDxLondon - Changing how people imagine the world

This high-profile conference has been running for several years with great success, but the organisers wanted to know more about the value they provided to their audience, in order to maximise impact, influence and achieve their strategic goals. They chose to use a System 3 method to understand the audience's needs, their response to both the event itself and their sponsor brands. We invited audience members, at different stages during the event, to visit a booth and enter an immersive environment in which their imagination would be stimulated and measured. We built a System 3 graph, which

TEDxLondon was able to use to understand their audience's desires, as well as to make a strong case for sponsors about the benefits they gained by association with the event.

Key insights for this client included: the event had boosted associations with Citi's brand message ("Enabling progress"), but this lived independently in the audience's imagination and was not linked to the sponsor's name. TEDxLondon was able to give Citi feedback about how to redesign the communication of next year's sponsorship to achieve the right impact. The event's strategic goals include changing how its audience sees the world around them. The System 3 graph helped them identify where they are succeeding and to design a strategy to influence the beliefs and values of a wider audience in the future.

Figure 11: Imagination map for the TEDxLondon audience



In summary: The deeper significance of the imagination

Neuroscience and psychology have combined to show us the importance of the imagination in decision-making as well as in everyday human life. They have also discovered how the brain uses the same imaginative component for other functions. One of the most important is empathy: the imagination tells us what life might feel like for other human beings. Imagination is our tool to put ourselves in another person's shoes: to conceive of what the girl - at the start of this paper - might have felt like under the baking sun, and the relief when she saw her mother. Empathy does not stop with real people: the imagination is engaged when we watch TV or read a novel and invest in the characters of the story. The reward that the brain generates for navigating the imagination graph is why people enjoy the experience of fictional media so much.

Imagination is also fundamental to the human ability to plan, conserve and work towards the future. When you choose not to squander all your money today because you need some for the end of the

month, or to give your 70-year-old self a better retirement, your imagination is doing the work to help you care about your future self. This is the same process by which the imagination determines what products we like: it wants to give you the best future it can, by choosing the objects that will make you happiest. This future orientation is perhaps the most common use that most of us put our imagination to. This is why we can learn so much about the future by examining how consumers imagine it. The imagination, and the System 3 brain system in which it lives, are our best chance to understand a fast-changing future.

A girl thanks her mother for water, food and love, and turns the corner. A new horizon, dazzling and beautiful, reveals itself. A future is ready for her. She takes a step.

References

American Association for the Advancement of Science. (1906). The scientific investigation of the psychical faculties or processes in the higher animals. *Science*, *24*(620), 613-619.

ESOMAR. (2019). 'ESOMAR Directory – the marketplace for business'. ESOMAR website. Available: https://directory.esomar.org/#research-solutions

Galton, F. (1907). Inquiries into human faculty and its development. London, England: JM Dent & Sons.

Ganis, G., Thompson, W. L., & Kosslyn, S. M. (2004). Brain areas underlying visual mental imagery and visual perception: an fMRI study. *Cognitive Brain Research*, *20*(2), 226-241.

Le Guin, U. K. (2016). *Words Are My Matter: Writings About Life and Books, 2000-2016, with a Journal of a Writer s Week*. Small Beer Press.

James, W. (n.d.) 'The principles of psychology'. Classics in the History of Psychology website. Available: https://psychclassics.yorku.ca/James/Principles/prin18.htm

Sartre, J. P. (1940). The Psychology of Imagination. New York: Philosophical Library

Skinner, B. F. (1948). 'Superstition' in the pigeon. *Journal of experimental psychology*, *38*(2), 168.

Sloman, S. A., & Lagnado, D. (2015). Causality in thought. *Annual review of psychology*, *66*, 223-247.

About the authors

Leigh Caldwell is Director at Irrational Agency, UK and the Netherlands
Lizzi Seear is Consumer Insights Lead at Primark, UK