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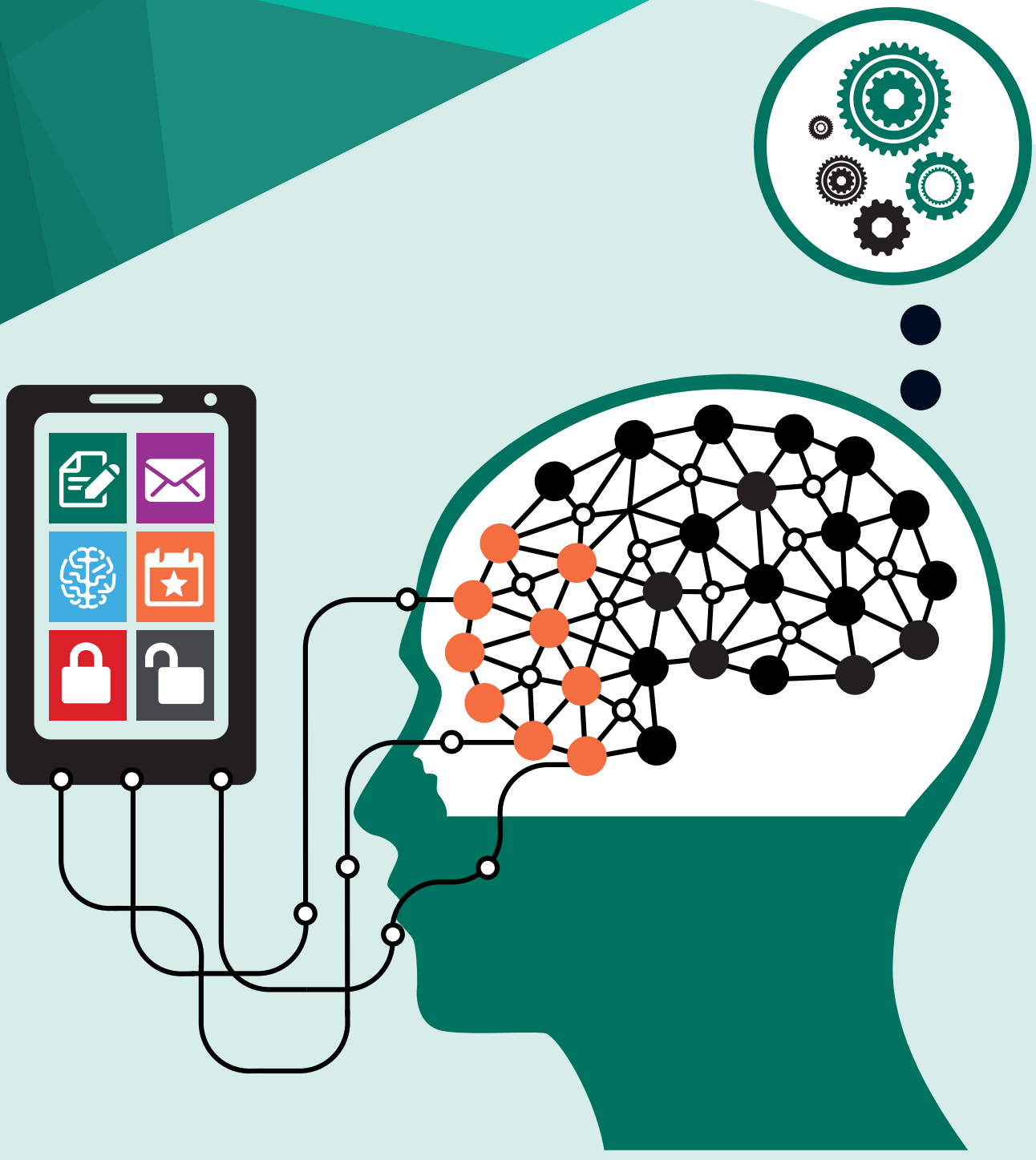
FROM DIGITAL AMNESIA TO THE AUGMENTED MIND



Executive summary

We are moving towards a world of digital synergy, where humans and their devices work in partnership; forging a bond that has the power to make people happier, healthier and smarter. Together with their devices, people can evolve, learn, remember, think and create more effectively. But as this relationship with technology evolves, the resulting 'connected minds' will open up new security vulnerabilities that need to be understood and prepared for.

In 2015, Kaspersky Lab commissioned Opinion Matters to uncover just how far this reliance on technology has come and the impact on peoples' daily lives.[i] The study, which questioned over 6,000 consumers, discovered a direct link between the availability of data at the click of a button and a failure to commit that data to memory. The research found that many people struggle to recall memories and simple information they entrust to their devices, including the phone numbers of partners and parents. Based on these findings Kaspersky Lab coined the term "Digital Amnesia" – the experience of forgetting information you trust a digital device to store and remember for you.

To understand the implications of Digital Amnesia in a work context, a follow up study was undertaken among business professionals, with the results published in January, 2016.[ii] Among other things, the findings showed that by having to remember less of the detail (safe in the knowledge that this is digitally stored and accessible when needed), respondents felt they were more creative and productive in their roles.

So is Digital Amnesia necessarily a bad thing? And how else could it benefit everyday life, today and in the future? To look more deeply into the phenomenon, we worked with Arlington Research to survey 6,000 consumers, aged between 16 and 65, split equally between male and female across the UK, France, Germany, Italy, Spain and the Netherlands.

The results provide further evidence for the fact that Digital Amnesia allows people to outsource their memories to digital devices in way that enables them to achieve more and store information in ways that were never before possible.

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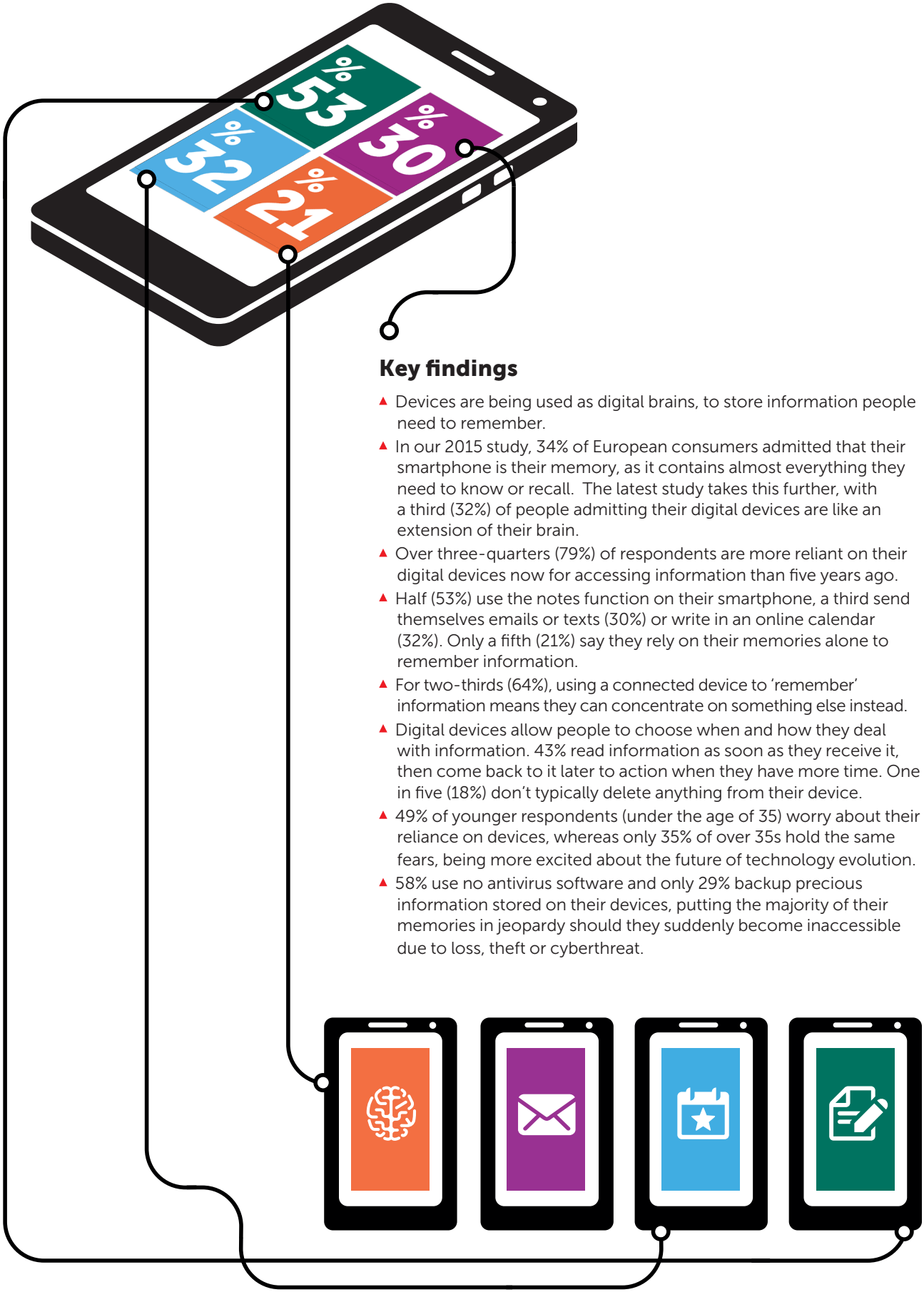


Key findings

- Devices are being used as digital brains, to store information people need to remember.
- In our 2015 study, 34% of European consumers admitted that their smartphone is their memory, as it contains almost everything they need to know or recall. The latest study takes this further, with a third (32%) of people admitting their digital devices are like an extension of their brain.
- Over three-quarters (79%) of respondents are more reliant on their digital devices now for accessing information than five years ago.
- Half (53%) use the notes function on their smartphone, a third send themselves emails or texts (30%) or write in an online calendar (32%). Only a fifth (21%) say they rely on their memories alone to remember information.
- For two-thirds (64%), using a connected device to 'remember' information means they can concentrate on something else instead.
- Digital devices allow people to choose when and how they deal with information. 43% read information as soon as they receive it, then come back to it later to action when they have more time. One in five (18%) don't typically delete anything from their device.
- 49% of younger respondents (under the age of 35) worry about their reliance on devices, whereas only 35% of over 35s hold the same fears, being more excited about the future of technology evolution.
- 58% use no antivirus software and only 29% backup precious information stored on their devices, putting the majority of their memories in jeopardy should they suddenly become inaccessible due to loss, theft or cyberthreat.

Introduction

Connected technologies are transforming the way people live and work, as well as the way information is gathered, digested and remembered. In 2015, Kaspersky Lab published trailblazing research[i] that revealed the extent to which consumers are transferring the task of remembering information to their connected devices – even information as simple and essential as their children's phone numbers. This information is committed to digital devices on a daily basis and often without any protection measures in place to safeguard it.

Kaspersky Lab has named this phenomenon Digital Amnesia: the experience of forgetting information that you trust a digital device to store and remember for you.

Previous studies by cognitive neuroscientists and psychologists have stimulated a debate about the long-term effects of connected device usage. Scientists are starting to question the impact of always being connected to the internet's vast resources, and the ways in which the human brain adapts to this. Some discuss the new skills required for navigating the internet-enabled world,[iii] and others hint that using the internet helps boost brain power for middle-aged and older people.[iv] A report from Sparrow, Lui and Wegner even concludes that: *"The Internet has become a primary form of external or transactive memory, where information is stored collectively outside ourselves."*[v]

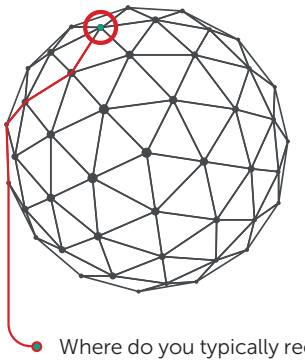
In this latest phase of research, Kaspersky Lab set out to understand how Digital Amnesia, and the process of outsourcing information to a digital device, is leading to an adaptation in the way the mind processes and uses information. And, if people are becoming increasingly reliant on their devices, what they are doing to protect them, and the memories they hold, from being lost or stolen?

Research methodology

To understand how Digital Amnesia is affecting the adaptation of the mind and memories, Kaspersky Lab commissioned Arlington Research to survey 6,000 consumers, aged between 16 and 65. These were split equally between male and female respondents, with 1,000 each from the UK, France, Germany, Italy, Spain and the Netherlands.

The research findings

The results confirm that connected devices have become a key part of life – they are the gateway to information that people need, allowing them to connect to others, and even reminding them what to do in day-to-day life by prompting them with instructions.

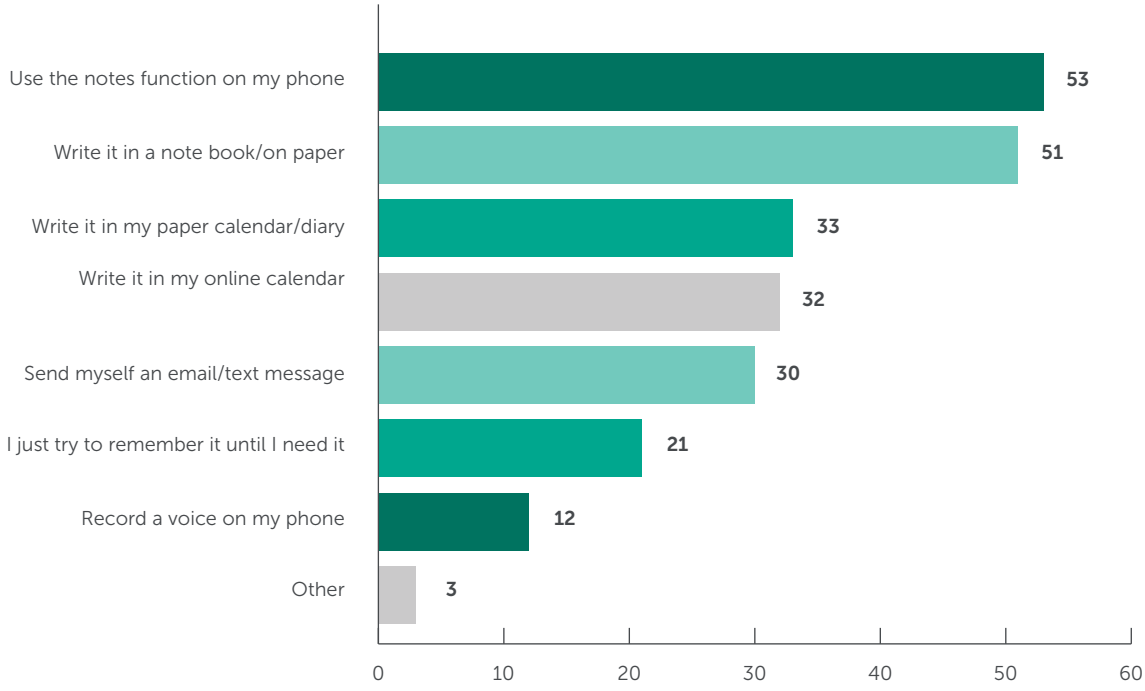


Where do you typically record/store information you need to remember?

*all figures shown are percentages

People are more likely to use digital devices than their own memory, to remember and store information

Digital devices offer consumers a convenient and reliable way of holding the information they need to remember. Indeed, the research reveals that over half of consumers (53%) typically use the notes function on their smartphone to record/store the information that they need to remember. Other popular digital methods of memory reinforcement include sending themselves emails or texts (30%), or writing on an online calendar (32%). This is compared to only a fifth of respondents (21%) who say they rely on their memories to remember information until they need it.

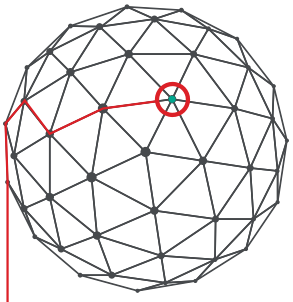


"Digital devices are the new flash drives of the mind; we are increasingly reliant on them to encode, store and retrieve information. In one sense, this is nothing new; people have always been reliant on external memory storage - from books to design to the minds of others. What's different now, however, is that digital technology has made external memory fast, easy and nearly infinite in capacity. Why bother to remember a phone number, address or even a memory, when our digital devices can do it so easily? In a very real sense, the digitalisation of memory means our thoughts can now be stolen"
Dr Paul Marsden, Research Psychologist at London College of Fashion.

People realise that there are multiple advantages to using digital devices to remember information for them. They are constantly connected, and can be carried everywhere.

The study found that over half of respondents (63%) agree their digital devices provide them with the ability to easily access and store information, and around half (49%) say their devices are always with them.

Yet if people are relying on digital devices to remember vital information for them, they also need to consider how best to protect those devices. Unlike the human brain, these devices can, after all, be lost, stolen or subject to malicious malware that can put precious memories at risk.



Reliance on digital devices is increasing

The study shows that consumers are using their digital devices as a memory or information repository. The majority use their connected devices more now than five years ago for accessing information (79%). And when they need to recall information, 65% turn to their phones to look something up. Three-quarters (77%) of consumers rely on their devices to take and store photos for them.

Yet these devices also help consumers to navigate their way through day-to-day life. They help people get from A to B (74%), communicate with friends and arrange social events (72%), and they hold the ability to access and manage finances (57%).

Reliance on these devices also raises questions about what would happen if the content accessed through them suddenly became inaccessible due to third-party malicious behaviour, loss or theft.

Last year the Digital Amnesia study discovered that just one-in-three consumers (35%) installed extra IT security, such as an anti-malware software solution, on their smartphone. This year's results show an increase in this figure, yet respondents are still more likely to focus on protecting their device's physical attributes than the precious information it holds. Over half (53%) of respondents have a protective case for their digital device but only 42% have antivirus software in place to prevent their device from falling victim to foul play.

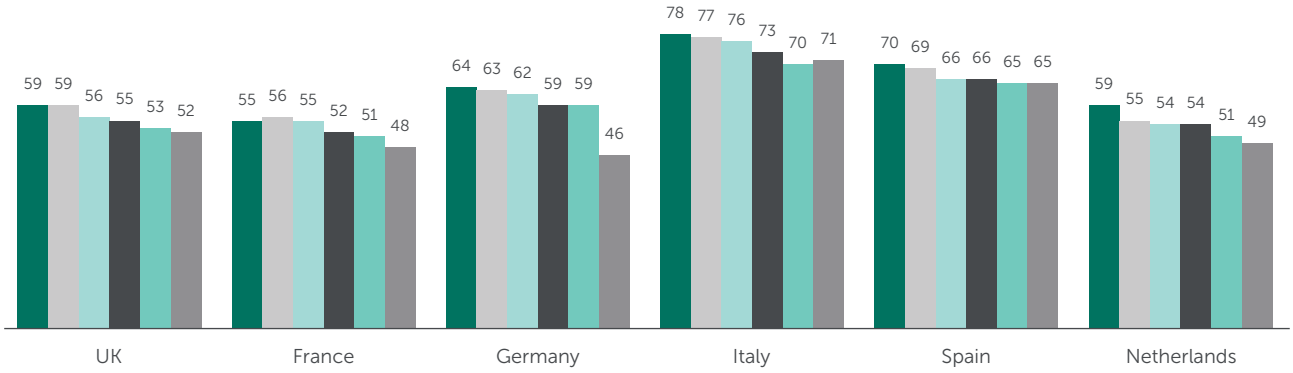
Do you think you rely on your smartphone or tablet more than five years ago in the following situations?

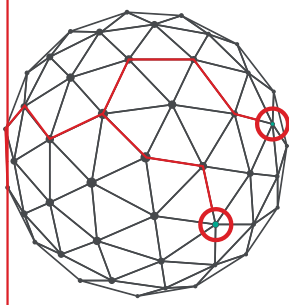
*all figures shown are percentages

The security implications of this reliance on digital devices are of even more importance considering that consumers expect to increasingly depend on digital devices in the future. Particularly in Italy and Spain, where over 65% of consumers expect to become more reliant in the next five years, compared to Germany, where between 46% and 64% of consumers expect this to be the case.

Expectation of increased reliance on smartphone/tablet five years from now in each situation.

*all figures shown are percentages



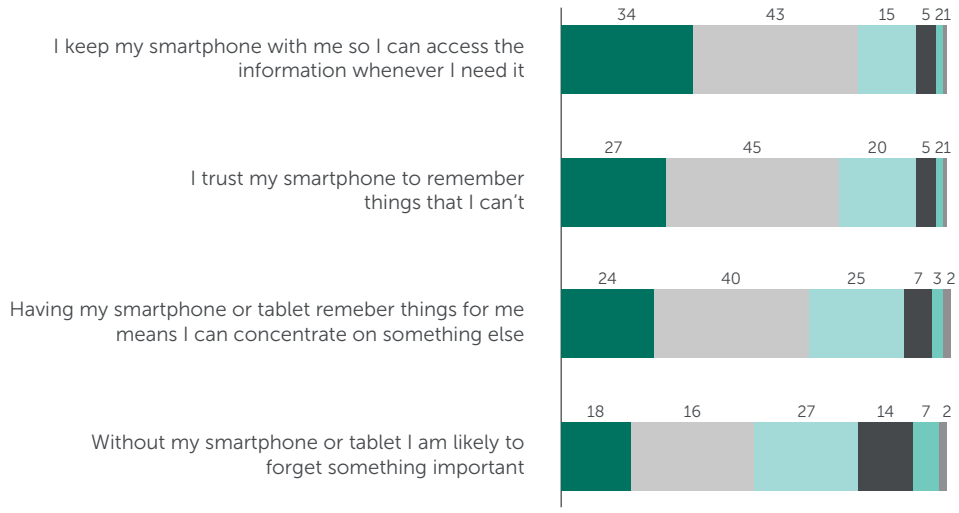


Surpassing brain-capacity

The study shows a tendency for people to use their smartphones, tablets, PCs and other connected devices as a storage repository for information, extending their memories with the additional capacity these devices offer, and freeing people from the burden of needing to remember.

To what extent do you agree or disagree with the following statement?

*all figures shown are percentages



"What appears to be happening in our digitalised lives is that we're using our memory differently. In a nutshell, we seem to be remembering less information, but remembering more about how to find information. Instead of remembering who did what and when - something that Google does more admirably than us - we remember how to query Google to find out who did what and when. In other words, the digitalisation of memory means we're becoming increasingly proficient in the valuable skill of navigating the ever-expanding info-sphere. Beyond this, the digitalisation of memory may have a decluttering effect on our minds, freeing us up to understand the 'how' and the 'why', instead of only the 'what'," **explains Dr Marsden.**

A third (32%) of consumers in the study admitted that their digital devices act as an extension of their brain or memory and a third (30%) even say that their digital devices are more reliable than their own memory. Half (52%) trust their smartphone to remember the things they cannot.

Digital Amnesia is making it possible for consumers to free up valuable mind space, allowing them to achieve and think more creatively and go about day–to–day life with knowledge at their fingertips, but without being hampered by it. For two–thirds (64%), using digital devices to store information means that they can concentrate on something else instead.

Using these digital information repositories allows consumers to cope with the vast amounts of information they receive, at a time that suits them, without going into information overload.

Extending memory life and information security

Because devices are always available they allow people to easily store, filter and select the information they need, when they need it. Memories can be conveniently filed, saved and managed in ways that have never before been possible, or so instant.

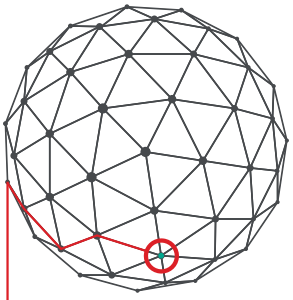
Digital devices provide the power to choose what is remembered by the human brain and how information is dealt with, evolving information-handling habits.

According to Dr Marsden,
"The way we use digital devices to filter incoming information and focus our attention is analogous to how the human memory works. Our short term 'working memory' - the memory we use to process information - can only process five to seven items at once, so human attention is highly selective, filtering out all but a few objects of consciousness. Digital devices perform a similar filtering function; protecting us from the onslaught of information by acting as a digital buffer."

Consumers are happy to neatly file away information on their devices, with 43% of respondents stating that they immediately read the information they receive via their digital device then react to it later when they have time. Almost one in five (18%) don't delete any information they receive via their device, and a quarter (25%) only delete things when they run out of storage and their device tells them to have a memory clear out.

But with this new dependence on devices for information storage, comes a danger. It may be becoming habitual to treat digital devices like a convenient extension of the brain, but if the appropriate security measures aren't in place, it could get people into trouble.

If they lost access to their smartphone, 56% of people surveyed would be concerned about losing photos and memories, two-fifths (40%) worry about their information falling into the wrong hands and some (11%) even admit they wouldn't be able to manage their lives without their device. There are clearly very serious implications for consumers, should they be locked out of the information on their devices, or should someone else access this information uninvited.



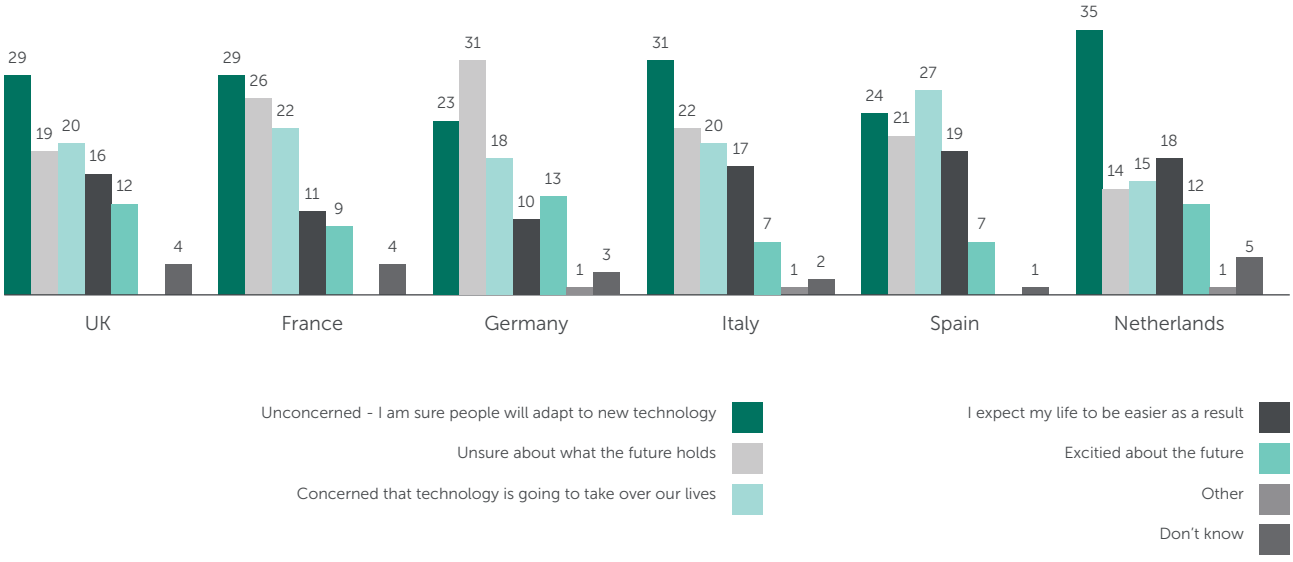
Some countries are better prepared for digital evolution than others

This evolution of how we deal with information brings with it new habits, ways of living and storing memories, and different ways of communicating with each other. It also brings fresh concerns.

One in five (20%) admit that they are concerned that technology is going to take over their lives. This rises to over a quarter (27%) in Spain, despite the fact that Spanish respondents were also most likely to feel that digital technologies will make their lives easier in the future (19%, compared an average 15% across all regions). Respondents in Germany were the most uncertain about the rate at which technology is advancing, with 31% admitting that they are unsure about what the future holds. The Netherlands, on the other hand, was the least concerned at 35%.

How do you feel about the rate at which communications technology is advancing?

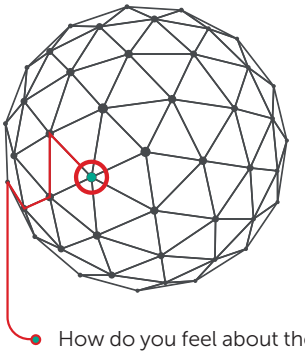
*all figures shown are percentages



A generation burdened by digital evolution

Perhaps surprisingly, it's the young who seem to be the most concerned about the impact of digital technologies. Over a quarter (27%) of 18–22 year olds fear that communications technology is going to take over their lives.

It's the older generations that are excited by the opportunities provided by digital technologies, with almost one-third (35%) of 56–65 year olds feeling unconcerned, and excited, about the future.

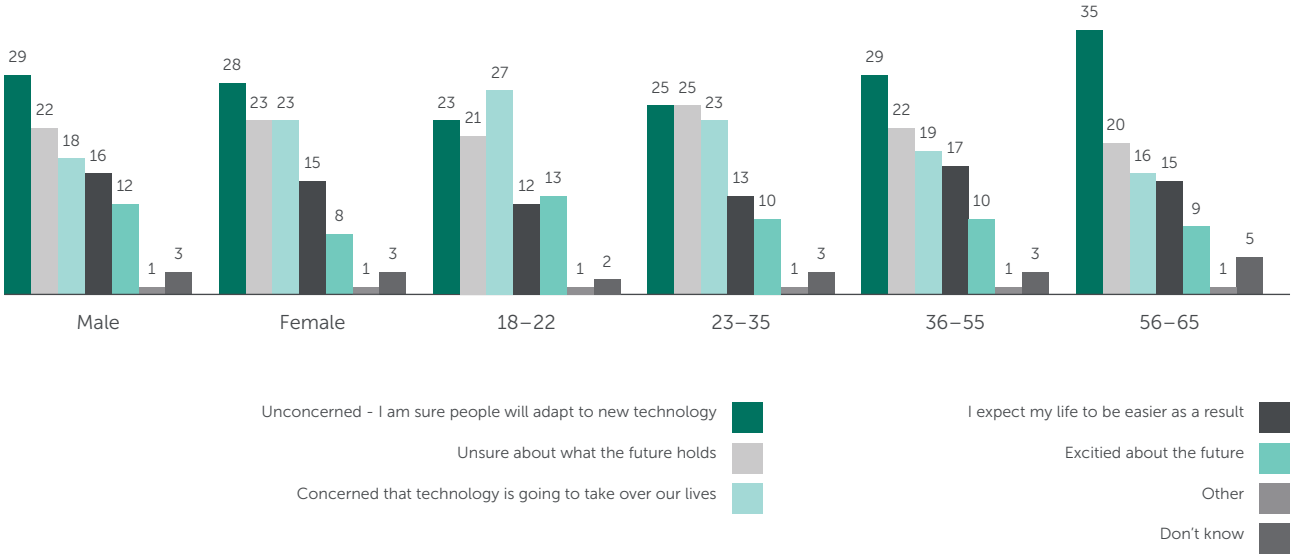


How do you feel about the rate at which communications technology is advancing?

*all figures shown are percentages

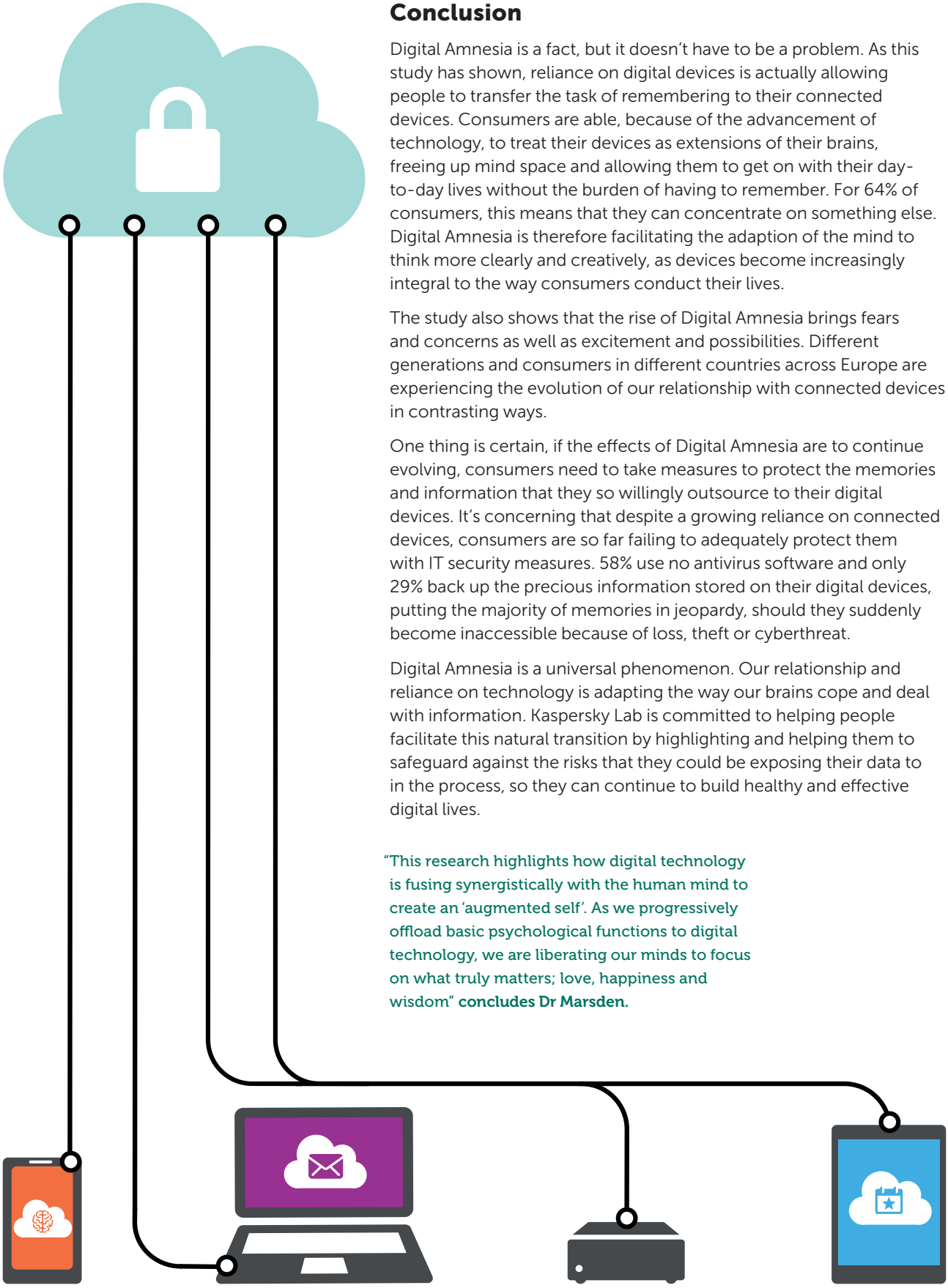
Young generations are the most device reliant group, with one in five (20%) 18–22 year olds admitting they would be devastated if they lost access to their device, agreeing they couldn't manage life without it, compared to one in ten (11%) consumers overall. An average of 49% of younger respondents worry about their reliance on devices, whereas an average of only 35% of the over 35s hold the same fears.

Older consumers are not only more excited about the future; the findings suggest they may also be better at coping with digital evolution. They sort and manage the information on their devices more effectively than younger generations, and take measures to secure their information, such as by using antivirus software, rather than just protecting the physical integrity of their device.



"One reason why over 35s may feel more excited about the opportunities presented by digital evolution is because they are 'digital immigrants' who have experienced the limitations of life in a pre-digital world. On the other hand, younger 'digital natives' have seen nothing other than the rapid pace of digital evolution. They expect digital miracles as the normal state of affairs and nothing to get too excited about. Younger digital natives have a broader and more critical understanding of digital technology, so any excitement may be tempered by an increased awareness of the risks as well as the opportunities," **suggests Dr Marsden.**

Overall, 42% admit to feeling concerned about their reliance on digital devices to help them store information. However, the older generation (56–65 year olds) is better at understanding what information is stored on their devices, and managing that information effectively. They are most likely to regularly cull information from their device (64%) with only 10% saying they don't tend to delete anything. For 18–22 year olds, only 39% regularly delete information with a quarter (26%) typically never deleting anything.



Conclusion

Digital Amnesia is a fact, but it doesn't have to be a problem. As this study has shown, reliance on digital devices is actually allowing people to transfer the task of remembering to their connected devices. Consumers are able, because of the advancement of technology, to treat their devices as extensions of their brains, freeing up mind space and allowing them to get on with their day-to-day lives without the burden of having to remember. For 64% of consumers, this means that they can concentrate on something else. Digital Amnesia is therefore facilitating the adaption of the mind to think more clearly and creatively, as devices become increasingly integral to the way consumers conduct their lives.

The study also shows that the rise of Digital Amnesia brings fears and concerns as well as excitement and possibilities. Different generations and consumers in different countries across Europe are experiencing the evolution of our relationship with connected devices in contrasting ways.

One thing is certain, if the effects of Digital Amnesia are to continue evolving, consumers need to take measures to protect the memories and information that they so willingly outsource to their digital devices. It's concerning that despite a growing reliance on connected devices, consumers are so far failing to adequately protect them with IT security measures. 58% use no antivirus software and only 29% back up the precious information stored on their digital devices, putting the majority of memories in jeopardy, should they suddenly become inaccessible because of loss, theft or cyberthreat.

Digital Amnesia is a universal phenomenon. Our relationship and reliance on technology is adapting the way our brains cope and deal with information. Kaspersky Lab is committed to helping people facilitate this natural transition by highlighting and helping them to safeguard against the risks that they could be exposing their data to in the process, so they can continue to build healthy and effective digital lives.

"This research highlights how digital technology is fusing synergistically with the human mind to create an 'augmented self'. As we progressively offload basic psychological functions to digital technology, we are liberating our minds to focus on what truly matters; love, happiness and wisdom" **concludes Dr Marsden.**

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