

# Memory in internet age: The dark tunnel of digital amnesia

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## ABSTRACT

*Digital Amnesia is a universal phenomenon. Our relationship and reliance on technology is adapting the way our brains cope and deal with information. Technology is not only changing our lives, it's also changing how we memorize and recall information. There was a time when people could rattle off phone numbers, birthdays, information about important historical events and interesting facts from their memory. But today, getting access to information is child's play, courtesy Google, with so much information available. People tend to transfer most of the memory functions to their smart phones, raising the spectre of digital amnesia or the Google effect. Both represent our tendency to forget information that can be easily found online or stored digitally. The purpose of this paper is to explain the phenomenon of digital amnesia in internet age 'coz, an over-reliance and dependency on using computers and search engines are weakening people's memories (according to study).*

**Keywords:** *Digital amnesia, Google effect, Kasper sky lab report, Test & techniques to improve memory.*

## I. INTRODUCTION



**Figure 1: Our forgetful evolution**

Internet (Google) has changed the way we gather information and it has vastly reduced the need for physical books and libraries. The same can be said about physical communication whose face changed dramatically with the advent of Face book or instant messaging apps. While everyone thought online shopping would simply be an alternative to physical shopping, it is now on the verge of being deemed the only way to shop. The list goes on, and the digital versions of our once entirely physical lives are stored in a remarkable device called the 'smart phone'. The only problem is, we've transferred most of our brain's memory responsibilities over to our phones and that's worth worrying about.

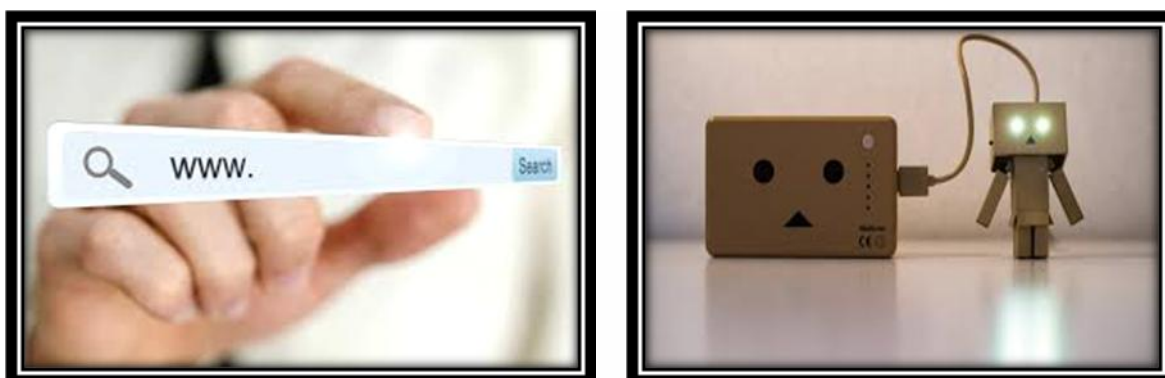
**Objective of the study** – To establish the level of awareness about the phenomenon of digital amnesia.

**Approach of the study** – This paper based on secondary sources such as web links and Kasper Sky lab reports.

**Value of the study** – Digital amnesia is an established and universal phenomenon. Which seems like the dark tunnel in internet age and it should not be taken lightly.

*This paper addresses some of key questions to explain this phenomenon -*

**A. What is Digital amnesia or The Google effect?**



**Figure 2: Shown Google effect and Digital amnesia**

*The Google effect* is our tendency to forget information that we know how to find online.

*Digital amnesia* is our tendency to forget information that we've stored on a digital device.

Both of these phenomena are similar, in that we forget, either intentionally or unintentionally, information that is available to us digitally. The main reason for this is that we are generally better at remembering where information is stored and how to retrieve it, than we are at remembering the information itself.

### **B. Why understanding these effects is important?**

There is nothing wrong with intentionally forgetting things that we know our devices can remember for us. We have so many things to remember, that an external memory-storage unit is of great help. Password managers are a good example of this, since they allow us to reliably remember a large number of strong, unique passwords, something that we would otherwise struggle to do effectively.

However, relying on devices to remember for us can be an issue if we need to remember the information directly. One study, for example, found that while using the internet allows us to quickly discover new information, our ability to recall this information is worse than when we discover it through other sources, such as books. While this isn't a problem in cases where we just need to know where to find the information, it can be an issue in cases where we need to remember the information ourselves, such as:

- Information that we need to have readily available when we don't have access to digital storage or to a search engine.
- Information that is crucial to remember since we cannot afford to rely only on a digital backup.
- Information that we want to internalize and remember in the long-term.

Therefore, the important thing is to be aware of the Google effect and digital amnesia, and to have them under our control. That is, the decision to forget certain pieces of information because we know we can retrieve them digitally is one that we should be making consciously and selectively.

### **C. How can we identify the signs of digital amnesia?**

- Are you storing all your data on phone, laptop or other technological device?
- Are you spending an excessive amount of time with digital media instead of indulging in other activities?
- Are you socially alienated? Have you relied on online networking sites to communicate with others or this makes you awkward when you interact face to face?
- Are you observing an adverse impact on your work, in terms of forgetfulness, unfinished tasks, forgotten responsibilities, etc.?
- Are you unable to imagine a technology free zone i.e. a few hours of the day without the phone, laptop, tablet, a Wi-Fi connection or any other form of technology drives you up the wall?

## **II. RELATED WORK**

The Google effect is defined as our tendency to forget information that can be promptly **Googled**. It was first demonstrated by Betsy Sparrow, Jenny Liu and Daniel Wegner in a paper published (2011). The experiment was conducted in four parts, where the subjects were instructed to perform different tasks in each part. The results revealed that people were less likely to remember information that they believed was saved and could be accessed at any time.

Drawing a blank on information that we trust a digital device to store and remember for us is what Kaspersky report calls 'digital amnesia'(2015). The researchers define as forgetting information that we trust to digital devices to store and remember on our behalf, appears to be a problem for young and old alike, with 91.2 percent of respondents to a US survey indicating they “use the Internet as an online extension of their brain”. Many adults could not remember important phone numbers of family members and friends. The survey also showed that people are not doing much to protect their information online. Less than a third of the people surveyed put security precautions on their devices. What’s worse, our reliance on the all-seeing, all-knowing Internet is making us lazy too: approximately 50 percent of peoples surveyed said they would turn to the Internet before even trying to remember a particular fact, and more than one in four people are happy to instantly forget something gleaned from an online result as soon as they’ve made use of it.

“Past research has repeatedly demonstrated that actively recalling information is a very efficient way to create a permanent memory. In contrast, passively repeating information (eg. by repeatedly looking it up on the Internet) does not create a solid, lasting memory trace in the same way,” said Maria Wimber of the University of Birmingham in the UK. “Based on this research, it can be argued that the trend to look up information before even trying to recall it prevents the build-up of long-term memories, and thus makes us process information merely on a shallow, moment-to-moment basis.”

Quoting another study, Palsapure Shishir, said that it has been established that people who spend more time on clicking photographs, especially selfies, while traveling, don’t even remember the details about a tourist destination. “Despite all this study, our understanding of digital amnesia is at a very nascent stage, so much so that it cannot be categorised as a disorder yet. What we do understand is that it may extend to other areas of life as well by manifesting as forgetfulness or other such disorders,” he agreed that reliance on these devices has to be reduced, and people need to make efforts to remembering and exercising the brain.

Kaspersky, an international software security group, conducted another study to find out just how much we rely on devices to remember important information and what information we have forgotten as a result. The study was conducted online among 1,000 Americans in May 2015. It found that digital amnesia affects men and women of all age groups and that 91% of respondents use the Internet as an extension of the brain. This statistic shows just how much we overwhelmingly rely on the Internet. Other Interesting Stats-

- ➡ 67% of respondents could remember the phone number to the house they lived in at age 15
- ➡ 69% could remember their partner or spouse’s phone number
- ➡ 68% knew their parents’ phone number
- ➡ 44% couldn’t call their siblings
- ➡ 51% didn’t know a friend’s phone number
- ➡ 70% couldn’t reach a neighbor

There were many studies or surveys conducted by Kaspersky, another one study, examining the memory habits of 6,000 adults in the UK, France, Germany, Italy, Spain, Belgium, the Netherlands and Luxembourg, found more than a third would turn first to computers to recall information.

- Among adults surveyed in the UK, 45% could recall their home phone number from the age of 10,
- While 29% could remember their own children's phone numbers and 43% could remember their work number.

The ability to remember a partner's number was lower in the UK than anywhere else in the European survey.

- There were 51% in the UK who knew their partner's phone number, compared with almost 80% in Italy.

Kaspersky says that people have become accustomed to using computer devices as an "extension" of their own brain. It describes the rise of what it calls "digital amnesia", in which people are ready to forget important information in the belief that it can be immediately retrieved from a digital device.

The study highlights how, as well as storing factual information, there is a trend to keep personal memories in digital form. Photographs of important moments might only exist on a smart phone, with the risk of their loss if the device is lost or stolen.

### III. KASPERSKY LAB REPORT (INDIA)

Excess use of smart phones and internet can kill our memory, leading to so-called "digital amnesia," says a new survey. According to the survey conducted by global software security group Kaspersky Lab, titled 'Our Forgetful Evolution', the study conducted among 1000 Indians in June and July 2015 concludes that smart phone and internet addiction are causing digital amnesia. Answers to the many questions posed to people in the study reveal how humans seem to have transferred most of the brain's memory responsibilities over to phones that are synced with all their digital identities.

- 50 % of users treat the Internet as an extension of their brain. While
- 74 % use their smart phones to connect to the information highway. About
- 25 % respondents said they 'strongly agreed' that they just need to remember the source of the information.
- 47.8 % said they 'slightly agreed' with the statement. Likewise,
- 26.5 % respondents 'strongly agreed' that almost everything they need to recall or know is on their smart phone. While
- 37.80 % 'agreed slightly' with this.

As a result, memory is the first to be affected. Additionally, since digital communication has become incredibly high with websites such as Twitter, human minds can't possibly store so much of information without some help. ***"It is very important to limit the dependence on smart phones primarily because of its addictive properties. The mind is a muscle and if it's not used for the reasons it was made, it will become lazy. The smart phone addiction may lead to digital amnesia, which should not be taken lightly,"*** Altaf Halde, Managing Director (South Asia) at Kaspersky Lab said. It seems very clear that this is not just a topic of reliance but rather something more severe, an addiction. It's an addiction to the digital world that has managed to engulf us so strongly, that our own minds are beginning to work more like Google and less like a human being. Almost



50% of Indians aren't interested in remembering facts as much as they are interested in remembering the source for the facts (i.e. Google). The same can be said about the camera on a smart phone that is slowly beginning to do more work than our own eyes, when it comes to storing human experiences. On the whole we found that most of us nowadays do not think about recalling information using our memory and resort to search engines looking for quick answers.

#### 1V. TEST & TECHNIQUES TO IMPROVE MEMORY

There are some tactics to help keep our memory working to its best ability -

##### 1. Training our brain: Mnemonics –

- ❖ The process or technique of improving or developing the memory.
- ❖ The art or practice of improving or of aiding the memory.
- ❖ A system of rules to aid the memory.

A mnemonic is a tool to help remember facts or a large amount of information. It can be a song, rhyme, acronym, image, or a phrase to help remember a list of facts in a certain order. There are some examples –

- Example of the Order of Taxonomy: Kids Prefer Cheese Over Fried Green Spinach  
(Kingdom, Phylum, Class, Order, Family, Genus, Species)
- Examples of Acronym Mnemonics: ROY G. BIV for the Spectrum Colors  
(Red, Orange, Yellow, Green, Blue, Indigo, Violet)
- Example of spelling Mnemonics: for the word ARITHMETIC:  
(A Rat in the House May Eat the Ice Cream)

##### 2. Brain games –

Scientists believe that Brain games are also a brilliant way to keep our memory working well. Even incredibly simple things such as the Tray Game are very effective. This is where we put a number of objects on a tray, study them, then cover them with a cloth and write down all of the ones which we can remember. Sudoku, Chess meanwhile are great for our memory as it involves 'rehearsing' in our head where to put the numbers or objects. Finally, bingo is another highly recommended brain game for boosting our memory. These are helping to maintain the cognitive function of the brain, improving reaction time, heightening concentration, enhancing spatial awareness, helping to reduce stress, and more! So in this age where technology may be helping us out a little too much day-to-day, playing brain games such as chess, Sudoku and bingo is a great way to give our brain a workout and prevent it from succumbing to digital amnesia!

### 3. Stroop test –

A Stroop test is a very popular psychological test that everyone has taken at least once in their lifetime. A subject is shown a list of words written in different colors. However, to confuse the subject, the colored word on the screen is chosen to be the name of a color different from the color it is printed with, for instance, the word “red” written in green letters. The subjects are then asked to name the color, rather than the word. The Stroop test gives us a measure of the processing speed or reaction time of our conscious mind.

### V. CONCLUSION

“Digital devices are the new flash drives of the mind; we are increasingly reliant on them to encode, store and retrieve information. They provide the power to choose what is remembered by the human brain and how information is dealt with, evolving information-handling habits. 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; 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. Our brains clearly have a capacity limit in terms of how much information is accessible. Old memories do fade and will eventually be forgotten, or overwritten by more relevant memories if we don’t use (recall) them. Given these capacity limitations, one could argue that smart phones can enhance our memory, because they store information externally, and thereby free up capacity in long-term memory. This might be particularly true in the case of elderly people, who seem to be more vulnerable to distraction from irrelevant or outdated information stored in memory, making it more difficult for them to access the relevant information. As *Dr Maria Wimber, Lecturer, School of Psychology, University of Birmingham* said. As this study has shown, reliance on digital devices is actually allowing people to transfer the task of remembering to their connected devices. People 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. The study has also shown that the rise of Digital Amnesia brings fears and concerns as well as excitement and possibilities. Different generations and consumers in different countries 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, people need to take measures to protect the memories and information that they so willingly outsource to their digital devices. No one truly knows what this means for the future, we must take time to understand the long term implications for how we remember and how we protect those memories. “The problem with this kind of digital outsourcing of our memory is that it prevents us from learning how to remember, and it allows us to forget things more quickly.” Can our brains actually forget how to remember? Only time (and maybe our smart phones) will tell.

## VI. RECOMMENDATIONS

- Don't let technology become a source of stress.
- Don't replace real relationships with digital ones.
- Training brain with Mnemonics, brain games.
- Apply once Stroop test.
- Restrict smart phone usage to only essential, work-related activities and set a time limit.
- Fill your day with activities that don't require internet usage.
- Stimulate yourself for DIGITAL DETOX programme without FOMO (fear of missing out on social media).
- "Digital amnesia has not been recognized scientifically yet, but the fact is, if we use our mind less, our neurons (brain cells) will build fewer connections, stagnating the brain's development." So put a barrier between need and action.

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