

# The Study on Human-Computer Interaction Design Based on the Users' Subconscious Behavior

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**Abstract.** Human-computer interaction is human-centered. An excellent interaction design should focus on the study of user experience, which greatly comes from the consistence between design and human behavioral habit. However, users' behavioral habits often result from subconsciousness. Therefore, it is smart to utilize users' subconscious behavior to achieve design's intention and maximize the value of products' functions, which gradually becomes a new trend in this field.

## 1. Introduction

Living in such an era with information explosion every day, people are heavily dependent on the electronic products, such as mobile phone, electronic reader and computer. These electronics are changing what we think and what we do, and the interaction experience of users also promotes the technology development of these electronic products. Donald Norman assumes that a good design should serve as the communication between object and user, and optimize that conduit of communication in order to make the experience of using object pleasurable[1]. How to make people feel more comfortable to use them has been a challenge to every designer. The pleasant experience of interaction with these products always makes users love them. So, users' experience is the focus that an interaction designer is always on. The behaviors of users' interacting on the screen of the products have been paid close attention by designers, who often make good use of users' conscious behaviors to design the users interface and tell them how to finish their operation. Actually, users' perception can be harnessed to dig out underlying needs for product design. Especially in the field of human computer interaction, if the interaction designer is good at utilizing users' subconscious behavior, the intention of designers and users' thoughts will be connected with each other on the same page, like the fact that two objects with same frequency will cause a resonance effect, thus the design can be made most use of to achieve greatest values.

## 2. The influence of users' subconscious behavior on interaction design

### 2.1 Traits of Subconscious Behavior

The term "subconscious" was first raised by Sigmund Freud in 1893, who believed that it is between conscious and unconscious[2]. According to Wikipedia, in a strict psychology sense, it can be defined as "operating or existing outside of consciousness"[3]. Thus subconscious behavior is described as an acting or response in a subconscious state.

Joseph Murphy points out in his book "The power of your subconscious mind" that subconsciousness has enormous power and subconscious behavior is, usually, highly effective[4]. And Brian Tracy also says our subconscious mind is 30,000 times more powerful than our conscious mind[5].



It can not only store and retrieve data, namely pieces of memory, but also make sure that people can respond exactly in the way they are programmed.

Generally speaking, subconscious behavior happens with emotional information. Emotion exerts a huge influence on our subconsciousness, for subconscious mind is most likely to absorb emotional information. The more greatly mood fluctuates, the easier information is taken[6].

Subconscious mind is generally with weak memories and needs strong and repeating stimulations. Your subconscious mind is an unquestioning servant that works day and night to make your behavior fits a pattern consistent with your emotionalized thoughts, hopes, and desires[5].

Subconscious behavior is more susceptible to image stimuli. But it cannot tell whether the image is generated from people's real experience or from self-imagination. In other words, repeating the stimuli will lead to the final goal.

Subconscious memories cannot last very long, which means that it needs to be stimulated strongly or repeatedly. Only doing in this way can we activate the subconscious memory, namely habit. Habit is one of the most common forms of the subconsciousness.

Subconscious behavior, most of time, can be learned easily when people are relaxed because information is easier to be absorbed by subconscious mind in a relaxing state. Some scientific research shows that being relaxed and feeling well can contribute to make brain waves into Q-wave state, which is more convenient for the exchange between information and subconsciousness[7].

## *2.2 Subconscious Behavior in User Experience*

When users interact with so many products and service in the real world, those designs that harness subconscious behavior make great achievements. One of the best examples is "a fly in urinal". It is reported that all the urinals in Amsterdam's Schiphol Airport have a vivid image of a fly[8]. It turns out that men, due to their urinal behavior, cannot resist peeing on things, especially if they look as though they might wash away. When flies were introduced into the design of urinal at Schiphol Airport, spillage rates dropped 80 percent, says manager Aad Keiboom[9]. Apparently, the designer made good use of the fact that guys love to play with their urine stream and like to aim at targets so they will pee on the fly subconsciously when they see it in the urinal. It has been proved that this idea reduces the cleaning costs, meanwhile men won't feel a sense of resistance psychology in that such a behavior is like a habit or a pattern in their comfortable zone of subconscious mind, which works better than simple warning signs.

Another successful example adopts reverse subconscious thinking. New York City's came up with a new way to clean up its garbage-strewn, rat-infested subway stations: get rid of the trashcans in the train[10]. The vast majority of subway passengers are responsible and upstanding. When passengers find a trashcan in the train, they will subconsciously throw litter. But now without any trashcan around, they are more inclined to throw their waste out before entering the subway or simply hold on to it or carry their refuse out of the system instead of dropping it on the platform or tossing it on the tracks. The designer paid attention to people's habitual behavior and found out the reason. It is because of the subconscious behavior that people drop litter when they see a trashcan that the designer decided not to install trashcans in the trains in order to decrease the possibility that litter is carried into trains. In essence, the designer utilized human beings' subconscious acting to achieve the final goal.

## **3. The application of users' subconscious behavior in human-computer interaction design**

We've seen the power and effectiveness of subconscious behavior in daily life. For human-computer interaction, it's not difficult to imagine that its capacity will be unlimited! Some interaction design harness users' subconsciousness in a very smart way, which not only helps users operate them in the way they were intended but also let users follow their hearts.

## **4. Helping Bring about Users' Subconscious Behavior Based on Repeated Image Stimulation**

In most websites, it is easy for users to find icons of Facebook, Twitter, Instagram and LinkedIn placed on the side of a page. If users like the webpage's content or they want to share what they're looking at to the famous social network websites, clicking the icons can achieve the goals. Users are exposed to the

icon stimulation all the time, which helps them strengthen the memory of the operation and function behind the icons themselves and establish perception of icons in their subconscious minds. The strategy is effective. Almost everyone who surfs on the Internet a lot knows how to deal with the icons when they browse a website. When they want to share, they will subconsciously look for the icons to get share links, which not only saves the behavioral costs but also increases the user stickiness.

### **5. Taking Advantage of Users' Habitual Behavior under Subconscious Minds**

A typical example close to our life is iPhone red dot issue. When there is new message or unread message of an app, there will be a red dot on the right top of the app's icon. Only if users open the app or read the message then the annoying red dot will disappear (Of course users have the option to cancel this mechanism if they don't want). In fact, everyone truly has obsessive thoughts in their subconscious minds and people tend to force themselves to do something or make things perfect. For example, some must wipe the spot on the computer screen, mobile phone screen or window as soon as they find it or they will feel uncomfortable; others think stuff must be placed in a certain rule, like according to color family, size, angle, category and alphabet. It's incredible that people will usually feel a sense of mysterious joy in deep heart after they do those things subconsciously before they realize. Even if people now are aware of the psychology, they understand its reasonable existence and are not exclusive to it. Overall, many people are inclined to regard such mental tendency as normal and natural. Designers of iPhone leverage this psychology cleverly. The red dot, a proper trigger, seems to annoy users but makes them happy in reality, which persuades users successfully to read message without too much thinking. The result lives up to the intention of the design that makes users involved in every process and helps them avoid missing important messages. For those who have a stronger tendency to be a little picky or perfectionist, they will read the unread message in time in order to get the sense of peace and joy after getting rid of red dots; for those who are not so obsessive about this, they don't care much about red dots. So red dots will not annoy them at all and user experience gets guaranteed.

Similarly, there is a tendency that social network websites choose progress bar with percentage to show how much information users have filled into the information form. People tend to make the incomplete complete in their subconscious minds. They hope to finish the form to make the bar show one hundred percent, a complete form. Actually the progress bar with percentage is to remind people of finishing the form subconsciously. In addition to the basic information such as user name and email address, websites also want to get more useful information in the same way like user preferences that is used to improve user experience and interaction design based on this kind of users' behavior.

### **6. Adding Information into Users' Subconscious Minds When They Are Relaxed**

Google is an expert at this field. Google doodle is widely praised. Doodles are the fun, surprising, and sometimes, spontaneous changes that are made to the Google logo to celebrate holidays, anniversaries, and the lives of famous artists, pioneers, and scientists[11]. When users open the Google search engine, they will be attracted by the doodle which sometimes is in the form of game, or music or animation. It owns good interaction with users. They feel relaxed and enjoy the game, the sound or the motion design. During the relaxing process, users first become interested in the website and then rely upon it by osmosis and at last trust it. They associate Google with fun, trustworthiness, easily use and accessibility. Next time when they want to use a search engine, they are inclined to make Google as their first choice subconsciously!

These designs share one thing in common: They make users think it is themselves that make decisions and participate in every process of the product. Meanwhile, user experience is little affected and functions of the product (websites, apps, etc) play their parts.

### **7. Conclusion**

Excellent interaction design is always human-orientated. The full-considering design for people's feeling and behavior can make the jobs on the interface done easily. Especially, the good use of users' subconscious behavior can enhance users' loyalty to the product and improves users' experience.

Human computer interaction should attach importance to the needs of human beings. The reasonable human computer interaction aims for the liberation of human nature. It is needs of human beings that result in the development of computer technology.

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