Psychology and UX

Applying Psychology to UX Design

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Psychology and UX

Our Human Brain

Top Section of Brain (Top View)

Side Section of Brain (Left Side View)

Left Brain   Right Brain

Cerebrum
(Thinking, learning, Memory
and voluntary movement)

Limbic System
(Emotions and impulses like
Sex, Anger, Pleasure and
General Survival.)

Cerebellum
(Balance and
Co-ordination)

Brain Stem
(Controls Digestion
and Breathing)

Cortex
(Its Thin and Wrinkly)

Spinal Cord
(All Nerves in body
connected to neurons
in brain through
spinal cord)

Left Brain
(Controls right side
of our body)

Right Brain
(Controls left side
of our body)

Psychology and UX

Applying Psychology to UX Design

Side Section of Brain

Cerebrum
(Cognition and
Motor Skills)

Limbic System
(Emotions - Sex, Anger,
Pleasure and General
Survival)

Cerebellum
(Balance and
Co-ordination)

Cerebrum and Limbic System

Cerebrum in our brain is used to control thinking,
learning and memory which is called cognition.

And voluntary movement which is called motor skills
like typing the keyboard/clicking the mouse while
using desktop or Gesture like tapping while using

What is Psychology?
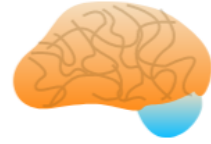
Psychology deals with human emotions, desire and experience, and is controlled by Limbic system, which is part of both brains(left brain and right brain).

The look of UI(designing and inviting interaction with UI elements) and feel(UX experience and aesthetic) of a app/ website can be influenced by psychology.

Takeaways

Have you ever had a rush while waiting for a important mail, or a OTP from bank/CC or playing PUBG game on mobile for hours and hours or feel agony while you have filled the online form but could not submit and throws an onscreen error?

The chemicals Dopamine, Oxytocin, Serotonin and Endorphins which is produced in our brain can influence Online Behavior.

https://www.linkedin.com/pulse/designing-ux-neuroscience-how-trigger-4-main-brain-make-gonzalez

What is User Experience?

The experience the user gets out of a product (Ex: App/ Website) while interacting with it. Is the app/website is useful, easy to use, delightful and helps the user to achieve their goals within the specified context.

Takeaways

User Experience is not User Interface. UI is part of UX.

Ux is hidden behind the UI to user. The user can only feel the experience while interacting with a app/website.
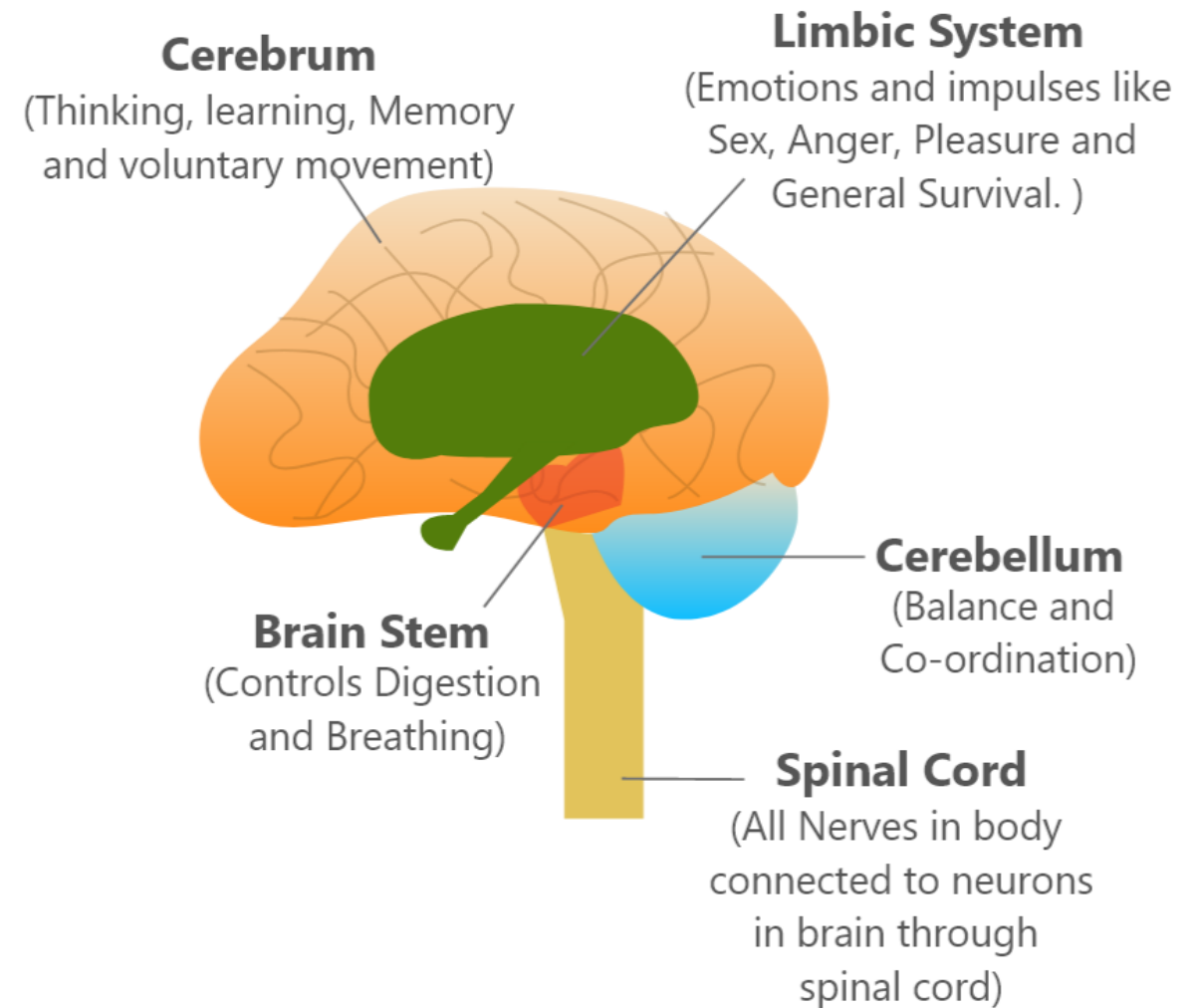
UI is what visible to the user and UI elements like text/image link, icon, forms and color invites interaction.

https://visual.ly/community/infographic/computers/disciplines-user-experience-design

Human Brain Development

▶ Human brain called Neurons, consisting cell bodies

▶ There are 100 billion Neurons.

▶ When a baby is born the brain have all the Neuron it needs. 100 billion neurons are waiting to be wired. Basic parts of brain is wired such as breathing, swallowing and sucking.

▶ Everyday the baby brain starts learning like a computer loading a new program. No memory or experience is present in the brain.

▶ Smell, sight, sound, touch and taste are the baby brains first programs. When there is a new experience a new connection is formed in the brain. That connection is stored as memory.

▶ Every second a baby makes two-million new connections (one cell to another cell), with every new experience.

▶ 100 billion neurons = 100 billion cells in the brain. If one cell is connected to 25000 other cells. That means 25000 x 100 Billion = 2.5 Million Billion connections are created

Limbic System include area of cortex and parts like limbic lobe, Thalamus, Amygdala, Hypothalamus and Pituitary gland, Sensory Cortex, Hippocampus, Olfactory Complex and Cingulate Cortex.

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(Thinking, learning, Memory and voluntary movement)

Limbic System
(Emotions and impulses like Sex, Anger, Pleasure and General Survival.)

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(All Nerves in body connected to neurons in brain through spinal cord)

How Experience is formed and stored as memory in brain?

- All the emotions happens in Limbic system, which is hardwired into parts of sensory system, especially smell.
- Electrical Signals called Nerve signals are passed from neuron to neuron by Neurotransmitters chemicals.

- The signals are carried by Neurotransmitters, transmitted through a process called Synapses. Neurons are not connected, they are separated. The space between the neurons is called synaptic cleft. The signal is passed between the synaptic cleft.
- When you experience a new smell, sight, taste, sound and touch, these experiences are transmitted through Neurotransmitters to brain in form of signals and stored in form of memory.
- When brain experiences (same smell, taste, sound ..) are repeated those connection are made stronger. Stronger connections converts into stronger memories. Also sometimes all the five senses works simultaneously to

Benefits of Psychology in User Experience design (UX).

- Some of the Neurotransmitters (chemicals) are Dopamine, Serotonin, Oxytocin and Endorphins. These chemicals influence the online behaviour while buying products online or browsing the internet.

- Some of the companies use conventions and design patterns in their website. For Ex: A new Checkout process is designed for e-commerce ABC.COM website. The same Checkout Process is used in XYZ.COM website. The user feels so ease in completing the checkout in XYZ.COM website, because the experience in ABC.COM which is registered in user's memory is repeated.

- Remember Conventions and Design patterns influence user behaviour because the experience repeated is registered in user's mind.

Neurotransmitter: Dopamine

▶ Dopamine is called reward, motivation and addiction/ pleasure chemical.

▶ Dopamine is released in Hypothalamus part of the Limbic System of Brain. The part called Ventral Tegmental area is were Dopamine is produced. The Nucleus accumbens releases the Dopamine whenever is needed.

▶ Dopamine is a monoamines neurotransmitter molecule.

▶ Dopamine in humans differentiate us from animals with survival instincts. The human evolution advancement success is attributed to Dopamine. It has motivated and created curiosity in our ancestors to search for better life and food.

▶ There would be no technology advancement without Dopamine chemical inside humans. The whole world is surrounded by chemicals. And human body is made up of chemicals. Human DNA consist of Amino acids, the building blocks of protein molecules.

User Experience advantage

▶ Increase in Dopamine happens when used in games, mobiles, tablets and desktops in form of mail, notifications or cashback as rewards to motivate the user to complete the task.

DESKTOP GAME REWARD DIALOG BOX FOR FINISHING THE LEVEL 1

YOU EARN 500 POINTS FOR COMPLETING LEVEL 1

⭐ 100   ⭐ 100   ⭐ 100   ⭐ 100   ⭐ 100

CLICK TO COLLECT POINTS

MOBILE OTP NOTIFICATION

AMAZON-Mobile Wallet   5:10PM
32566, is your One Time Password (OTP). please enter the OTP to complete the transaction and receive Rs 100 as cashback. Thanks.

MOBILE REWARD

AMAZON-Mobile Wallet   5:11PM
TRANSACTION COMPLETED.
RS. 100 Cashback. Enjoy Shopping.
Thanks for shopping with us.
Dec21 To Dec26 Festive Shopping.

AMAZON-Mobile Wallet   5:10PM
32566, is your One Time Password (OTP). please enter the OTP to complete the transaction and receive Rs 100 as cashback. Thanks.

Neurotransmitter: Serotonin

▶ Serotonin regulates human emotions stable, more energetic and more focused.

▶ Serotonin is released 95% in gut of digestive system. And, Serotonin is released 5% in brain inside the central nervous system.

▶ It creates positive emotions when the mind is stable and focused. Good or Bad Mood attributed to Serotonin Chemical in our barin.

User Experience advantage

▶ Serotonin makes the user have positive behaviour to complete a task with more focused mind and clamp down bad mood.

Desktop: Wizard Design Pattern

Step1: Select Address	Step2: Card Information	Step3: Authorize payment
Completed	In Progress	Yet to Complete

MOBILE: WIZARD PATTERN

Step1 of 3: Select Address

🙂 2 steps! to go, cool buddy

FirstName

LastName

Address

MOBILE: WIZARD PATTERN

Step2 of 3: Credit Card Info

🙂 1 step! to go, Yeah Cool

Credit Card Number

Expiry Date

CVV

Neurotransmitter: Oxytocin

▶ Oxytocin brings closeness to people, feel clam when you interact with people who you like and a hug or kiss releases more Oxytocin in your body.

▶ Oxytocin is released in the hypothalamus and secreted in the bloodstream by the pituitary gland.

▶ Amygdala which is heavily involved in memory and emotional aspects of your daily life activates frightening stimuli of fear or phobia. This increases the blood pressure or muscle contraction. The Oxytocin produced by hypothalamus moderates or clamp down the Amygdala activity.

▶ When two people see face to face or interact each other Oxytocin levels raise in their brain. So the raise in social apps like Facebook, Instagram or Twitter usage, were people post more images consisting of humans. When a celebrity is used as brand ambassador in a product, people who like him easily connect themselves with their personality. So, one of the reason lies in success of the product is human face being used

User Experience advantage

▶ To have Oxytocin released in the brain, big companies use photographs of human face in their products, app/website to have emotional connect with users using the product.

FACE-ISM IS ONE OF THE PRINCIPLE USED TO CONNECT WITH USERS

MOBILE: MODEL FACE, WTRAVEL.COM
(Holiday booking site)

MOBILE: MODEL FULL VIEW, WTRAVEL.COM
(Holiday booking site)
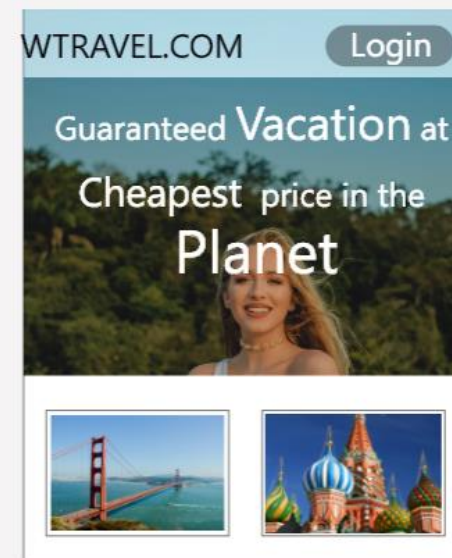
In the above example, the model face is displayed in the branding of the photo. Our eye try too look at her face and our brain thinks about her personality and intellectual properties. But it does not raise our Oxytocin Levels.
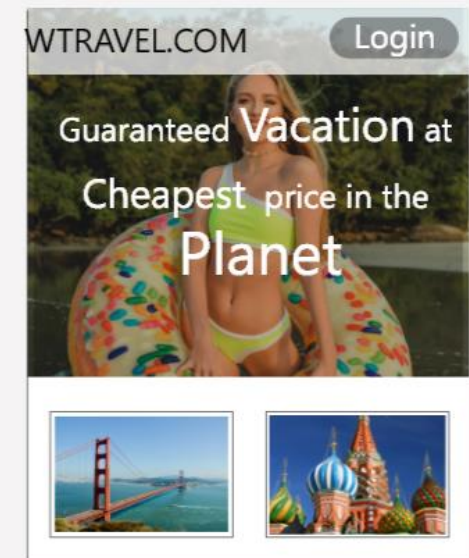
In the above example, the model face and body is displayed in the branding of the photo. Now our eye looks at her physical and sensual attributes. Oxytocin releases in our body.

Neurotransmitter: Endorphins

▶ Endorphins regulates the human body when exposed to stress and pain. It also plays a role in pleasure.

▶ Endorphins are formed in the pituitary gland and other parts of the brain

▶ Vigorous exercise releases more Endorphins

▶ Watch comedy movies, listen to favourite music and laughing more often to raise your endorphins.

User Experience advantage

▶ When there is a sense of completion or feeling of euphoria when a task is about to finish, Endorphins is released.

Desktop: Wizard Design Pattern

Step1: Select Address	Step2: Card Information	Step3: Authorize payment
Completed	Completed	Completed

Transsaction Successful. Hooray! you have successfully checked out the product

Do Neurotransmitters work together? - The answer is Yes.

▶ Before I show you a sample, imagine yourself how you can design your UX so that all the Neurotransmitters work together. Please refer previous slides for reference. I have attached the presentation in pdf format to download. Please download it.

Do Neurotransmitters work together? - The answer is Yes.

▶ Before I show you a sample, imagine yourself how you can design your UX so that all the Neurotransmitters work together. Please

Desktop: A couple books vacation for their trip to Hawaii. Wizard Design Pattern used in Holiday Booking Site for booking accommodation.

Step1: Select Address Completed   Step2: Card Information Completed   Step3: Authorize payment Completed

Hooray! Transaction Successful. You have successfully booked your vacation to Hawaii. Bill has been mailed to you.

Your Bill for Hotel Accommodation in Hotel Honeymoon Hawaii.

5 day package (5 nights + Airport Pickup and Drop)	$3500
Hawaii municipal Tax (5%)	$175
Coupon Discount Applied(10%)	- $367.50
Total	$3132.50

Offer Unlocked

COUPON CODE: YE784JDE9 is mailed to you
You have received 500 Credit points that equals to $100 as Cashback in your Visa Credit Wallet. You can use the above coupon code to book your next vacation using wtravel.com.

Senor and Senora, Hawaii is waiting for you
Hotel Honeymoon Hawaii

Some facts about Limbic System (which controls human emotions)

Fact 1

Information based on conscious knowledge about environment is passed to and fro from Frontal Cortex to Limbic System which produce conscious feelings.

Fact 2

Thalamus is the first to receive all the information and passes to other parts in Limbic System. It more or less involves in all the activity while receiving the information.

Fact 3

Positive emotions is generated in Limbic system when Amygdala is deactivated by reducing the activity concerned with anxiety by Oxytocin produced by Hypothalamus

Frontal Cortex

Limbic System

Fact 6

Amygdala picks the emotional stimuli as threat or reward and activates the body to react.
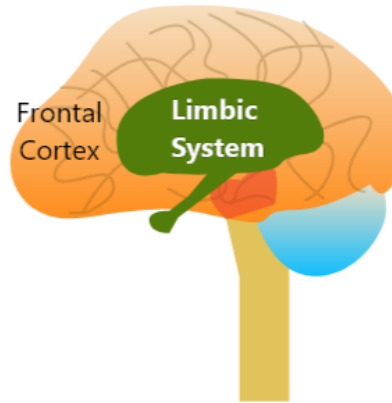
Fact 5

When info received in limbic system, Hippocampus Encode and Retrieves memories stored based on experience. It repeats the bad or good experience stored in memory.

Fact 4

Negative Emotions is generated more in right hemisphere than in left like, fear/phobia signals and processed by left hemisphere and activates Amygdala, which response to emotions like fear.

Takeaways

Understanding the four Neurotransmitters
[Dopamine, Serotonin, Oxytocin and Endorphins](#)
present in human brain can be used to our
advantage while designing User Experience for
any product.

If we understand more about human psychology while
designing products, the return on investment(ROI) is higher.

This is my first course in Psychology and UX. Suggestions are welcome. Please
mail me your questions bkdeepakraj@gmail.com.

I wish you to take the remaining Psychology and UX courses which will be

Books and Resources

100 Things Every Designer Needs to Know About People (Voices That Matter)

100 MORE Things Every Designer Needs to Know About People (Voices That Matter)

Universal Principles of Design, Revised and Updated: 125 Ways to Enhance Usability,
Influence Perception, Increase Appeal, Make Better Design Decisions, and Teach through
Design

Gestalt Principles. https://en.wikipedia.org/wiki/Gestalt_psychology.
https://www.interaction-design.org/literature/topics/gestalt-principles
The Non-Designer's Design Book - Even though name suggest Non-Designer, for UI/
Graphic Designers.
https://www.usertesting.com/blog/gestalt-principles/
https://uxmisfit.com/2019/04/23/ui-design-in-practice-gestalt-principles/

How to Implement **Jakob Nielsen Ten Heuristic Principles** based on Psychology. (Search
Internet - Higly recommended)
https://www.nngroup.com/articles/ten-usability-heuristics/

Other highly recommended book by UX Designers on the net.
Hooked: How to Build Habit-Forming Products.

Webs of Influence: The Psychology of Online Persuasion.

Psychology for Designers: How to apply psychology to web design and the design process.

Lot of Psychology Online UX courses - Ex: Udemy & Skillshare.

Last but least, https://uxtools.co/library - A huge collection of books for UX Designers.

Book - 100 Things Every Designer Needs to Know About People (Voices That Matter)

Book - 100 MORE Things Every Designer Needs to Know About People (Voices That Matter)

Book - Universal Principles of Design, Revised and Updated: 125 Ways to Enhance Usability, Influence Perception, Increase Appeal, Make Better Design Decisions, and Teach through Design

Gestalt Principles. https://en.wikipedia.org/wiki/Gestalt_psychology.
https://www.interaction-design.org/literature/topics/gestalt-principles
https://www.usertesting.com/blog/gestalt-principles/
https://uxmisfit.com/2019/04/23/ui-design-in-practice-gestalt-principles/
Book - The Non-Designer's Design Book - Even though name suggest Non-Designer, for UI/Graphic Designers

How to Implement **Jakob Nielsen Ten Heuristic Principles** based on Psychology. (Search Internet - Higly recommended)
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