Summary on Role of Social Media on Brain and Behaviour

(Study of Social Psychology W.R.T Social Media)

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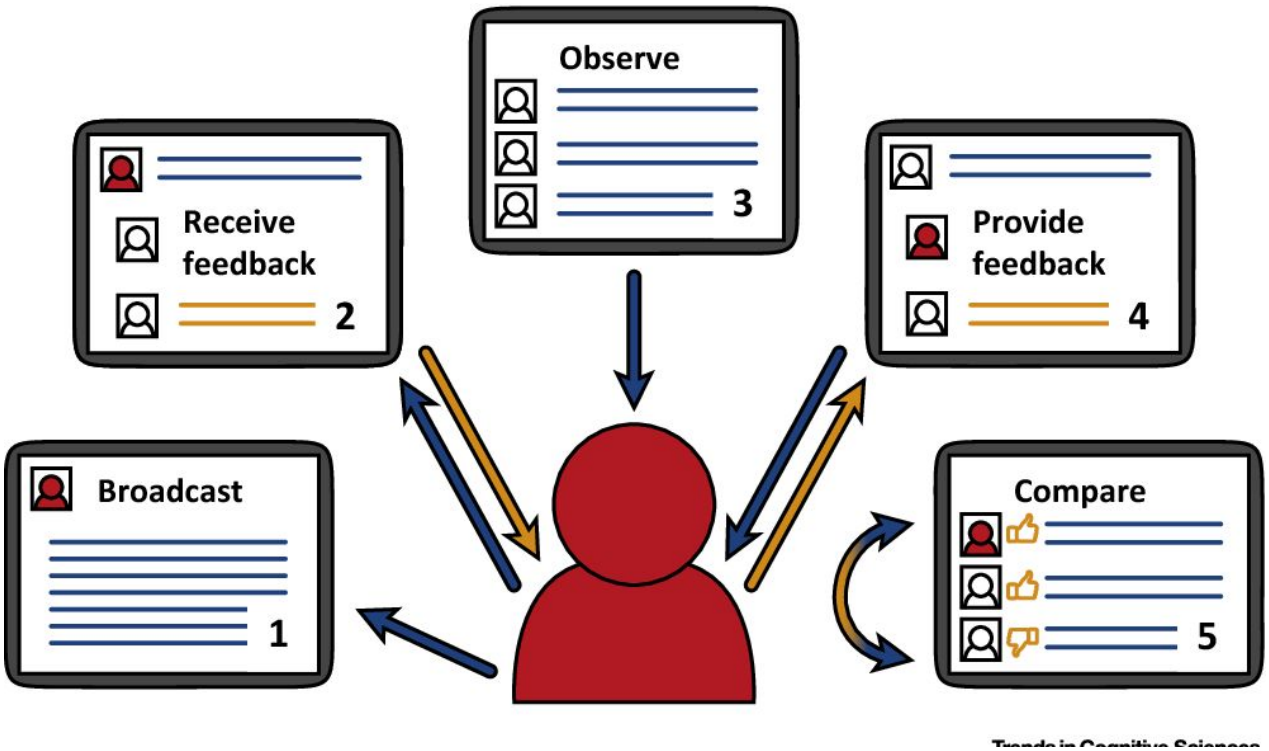
Table of Contents (Clickable Links)

Introduction to Social Media

An instance of Social Media is a platform wherein people satisfy their "fundamental social drives". The need to connect and maintain one's reputation have been the major social drives which in prehistoric times ensured survival and social media merely exploited these pre-existing social drives for its growth.

An Example of Online Social Media

FaceMash[1], the precursor of today's Facebook was a social media tool that lets users compare the pictures of two people and let them decide who is hotter. In this example, the users upload photos(Social Cognition) and judge who is hotter(Social Reward Processing). Then, the users check whether they are also hot by comparing with the hot person(Self-Referential Cognition).



[1] FaceMash. [Link]

Brain-Behaviour Mapping

From the previous example, we can understand that people exhibit certain behaviours when they use certain features of Social Media. The following table relates how different parts of the brain correspond to different behaviours.

Behaviour Category	Parts of Brain Associated	Key Function
Social Cognition(Mentalizing)	Dorsomedial Prefrontal Cortex(DMPFC) Temporo Parietal junction(TPJ) Anterior Temporal lobe(ATL) Inferior Frontal Gyrus(IFG) Posterior Cingulate Cortex/Precuneus(PCC)	"Think what others would think of me" "Promotes Conforming to a Group"
Self-Referential Cognition	Medial Prefrontal Cortex(MPFC) Posterior Cingulate Cortex (PCC)	"The I thought" "To build reputation"
Social Reward Processing	Ventromedial Prefrontal Cortex(VMPFC) Ventral Striatum(VS) Ventra Tegmental Area(VTA)	"Receiving, Giving and Comparing Social Rewards" "Has both positive and negative Consequences"
Social Brain Network	Medial Prefrontal cortex(MPFC) Superior Temporal Sulcus(STS) Temporal Parietal Junction(TPJ)	"Social Interaction Network"
Other Networks	Fronto Parietal Attention Network(FPAN) Executive Function Network(EFN) Motor System(MS)	"Response to Stimulus and Decision Making"

The parts of the brain associated in both online and offline social engagement are the same. However they differ in which part of the brain each focuses on.

Online Vs Offline Social Engagement

The online social engagement can act as a proxy to the real-life “offline” social engagement for neuroscientific research due to the validity, volume, simplicity of the information collected in comparison to offline experimental sessions(whose data is contaminated due to demand based characteristics).

Data Privacy

On obtaining the necessary permissions from users(privacy rights involving all participants) involved, a researcher can just send API[2] calls to amass data. The data privacy includes the person who writes a post, the people who comment/react in it, the people who are tagged in. Some social media platforms also allow users to be anonymous to the world and yet use most features of the platform. Adolescents with high risk-taking attitudes exploit such features to establish communication with strangers who could cause potential harm.

Key Differences

However, a social environment provided by the social media platform cannot entirely mimic the real world. In an offline communication, people look at each-other’s faces real-time seeing micro-expressions and having a physical contact. The self-referential cognition of speaking about oneself reduces to 30% in offline mode of communication compared to a staggering 80% in online posts.

Factors that influence social behaviour.

Two Factors:

1. Genetic Influence(the chemical instructions that people inherit from their parental DNA)
2. Environmental Factors(all non-inherited factors)

Any behavioural trait has both these factors responsible and each factor has its own share of contribution.

[2] Application Programming Interface

Genetic Influence on Social Behaviour[3]

It is by-far assumed that genes cause behavioural traits but they merely influence them. The environment can influence the expression of genes and the reverse genes can influence the environment(social relationships), this is called the genotype-environment(GE) correlation. A GE correlation may be passive, active or evocative.

Environmental Factors

Social Norms

Social Norms are the expectations set on a group member based on the attributes/behaviour of the group[4]. Social Norms exist both in online and offline social engagements. A violation of social norms by a group member may lead to social ostracism.

Social Ostracism

Social Ostracism in social psychology is the act of excluding and ignoring select individuals from a group.[5] The Cyberall Paradigm showed that a neural response towards being rejected or being socially excluded would trigger a stronger activity in dorsal anterior cingulate cortex (ACC) in adolescents and young adults leading to anxiety, anger and depression. People experience social ostracism more in offline social engagements and an individual experiences at least one act of social ostracism in a day. However, an increased use of social media helps reverse it.

Normative Influence

Normative influence in social psychology means that people change their values, thoughts, and behaviour in order to be liked or accepted by others[6]. This mentalizing network tells the brain on how not to be the odd man out in a group. A person might experience a loss in self-esteem in order to conform to a group's standards.

[3] Genetic Influences on Social Behaviour
[4] Social Norm
[5] Social Ostracism
[6] Normative Influence

Reciprocity Norm

Reciprocity Norm in social psychology is a form of human interaction in which people reciprocate other's actions[7]. It can be understood as repaying one's gift or repaying one's misdeed as the saying goes, "If you scratch my back, I'll scratch yours".

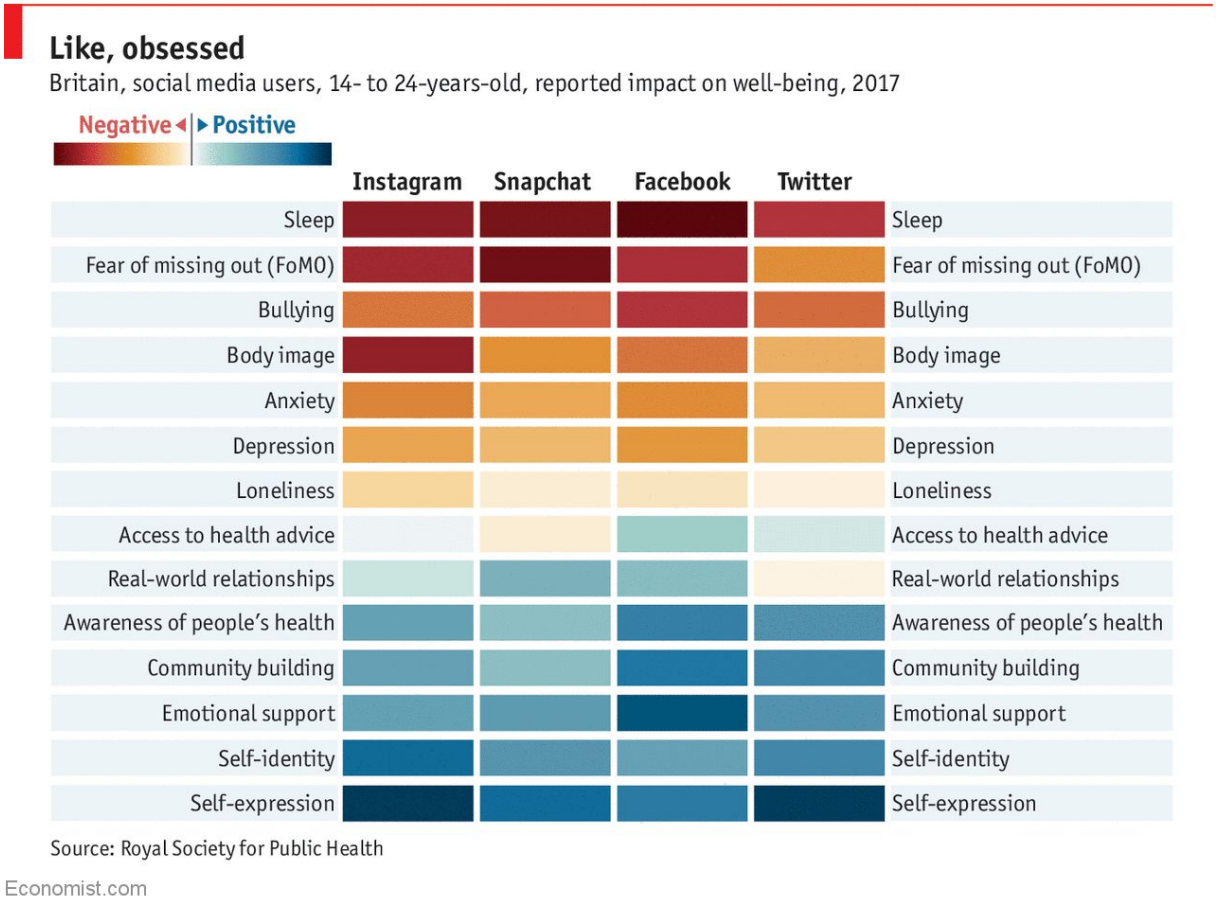
Social Media Stereotyping

The bikini model example illustrated that the online peer influence changed the adolescent girls perception to conform towards the group. From the Blakemore and Mills' suggestion, the adolescent girls started believing that the ideal woman should be thin.

Impact of Social Media on Young Adults and Adolescents

Adolescents and young adults are more susceptible to cyberbullying, peer influence and sexting which makes the online social media a treacherous world.[8] Following image shows the impact adolescents and young adults have on using social media.

[7] Reciprocity Norm
[8] Link



Social Media Can Also Influence Prosocial Development

In online social media, it is similar to #followforfollow in Instagram. Similarly, It is also considered a rule of thumb, that if you like a persons photo, he or she might like yours. This is a Reciprocal Altruism.[9]

There has been an increasing trend to have an Instagram cool ratio (#followers > #following). This is associated with the regions of brain for social reward processing since it shows that you are trusted and well received by the community. The social brain network associated with prosocial development with activities such as charity received more number of likes.

[9] Reciprocal Altruism in Instagram

Conclusion

In a nutshell, Social Media influences one's brain and behaviour: both in a positive and a negative way.

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