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Q.1.

Core liking:

"Objective hedonic reaction, measured behaviorally or neurally, whether or not accompanied by conscious pleasure" (473)

a. *Objective hedonic reaction*: Core liking is pleasant reactions to an *outside* stimuli. It is objective because in the absence of the stimuli, the reaction ceases to exist.

b. *measured behaviorally or neurally:* The reaction to the stimuli can be measured neurally and/ or by physiologically. For example, mice, orangutan and babies have similar "hedonic hotspot" and "hedonic coldspot". The hotspot increases the physiological reaction to a pleasant stimuli (sweet taste) and the coldspot decreases the physiological reaction to unpleasant stimuli (bitter taste). So, core liking seems to have this one-to-one relationship with specific neural "zones".

c. whether or not accompanied by conscious pleasure: Core liking does not always entail an awareness of the liking. For example, the authors note:

"when people introspect extensively about why they prefer a reward stimulus such as one fruitspread, painting, or car over another, they may often end up more confused about their underlying preferences than when they simply make snap judgments about the same choices" (463).

So, core human brain can generate core liking without the subjective awareness of it (i.e. subjective liking).

Subjective liking: is the "conscious experience or subjective feeling of niceness" (473). Subjective liking can only be confirmed by asking the individual.

- The paper talks how various ares of brain is involved in parallel when one experiences subjective liking. But scientists have not found one to-one relationship between any specific part/system of brain and subjective liking. This is different than core liking which has a direct connection to certain neural zones. Stimulating these neural zones changes the degree of core liking. But such zone has not been found for subjective liking.
- By definition, one is aware of subjective liking. On the contrary, core liking can be unconscious.

## Relation to Oswald's Paper:

Eq. 1: R(y) = r(h(y))

- h(y) is the actual function that maps income to happiness.
- r maps the happiness to reported happiness.
- h(y) maps the objective happiness one experiences because of income whereas r maps the subjective happiness one experiences because of income.
- Oswald's study shows that people report diminishing marginal utility for r. But he makes a
  point that diminishing MU for r does not necessarily imply diminishing MU for h. His evidence
  on actual height and reported height indicates that it is possible for h(y) to be linear and still r
  to be concave downwards.
- So, although a stimuli might have diminishing MU in terms of subjective liking, this does not imply diminishing MU in terms of the core liking generated by the stimuli.

## Implication for wanting and learning:

'Wanting' (with quotation marks) has a direct causal relationship with the mesolimbic brain system. So, triggering this system can cause one to want some stimuli although the stimuli might not provide core liking.

As Oswald's paper demonstrates, the subjective liking to a stimuli might not mirror the behavior of core liking to the same stimuli. For example, lets say a consumer derives diminishing Marginal subjective liking from a stimuli. So, as the stimuli he gets increases, he experiences lesser and lesser subjective liking towards that stimuli. This diminishing Marginal Subjective liking does not imply a decreasing Marginal core liking. In fact, the consumer might have an ever increasing marginal core liking; so, as the stimuli gets stronger and stronger, the consumer's core liking increases linearly. So although, the stimuli provides non-diminishing core liking, the consumer might perceive a diminishing subjective liking.

It seems that this is a natural check so that the organism would instead look for some other stimuli- we can see this as a basis for why (as Scitovsky emphasizes) organisms are look for novelty.

Neurotransmitter receivers get less and less insensitive with greater stimuli. So, consumers need to get greater stimuli to get to the previous core liking level. So, consumer may "want" the stimuli but may not have subjective wanting for it since, objective wanting mechanisms are separable from subjective wanting. Pavlovian learning helps the consumer associate the core liking to the stimuli. But because of the different natures of core and subjective liking, the consumer might get "addicted" to the stimuli- he "wants" the stimuli to satiate his core liking but he does not subjectively like it or want it.

Q.2.

Policy 1: Encourage sports, music and arts to fight against Drug addiction among students

Policymakers can encourage sports, music and arts (creative consumption goods with seemingly increasing returns) in areas with high drugs addiction rates to provide the youths a better alternative to drugs. Drugs are defensive consumption against the objective wants. The youths might not consciously want drugs; so by providing and encouraging them with these other creative consumption alternatives, the policymakers can help retain the students at school and prevent them from getting addicted to drugs.

Policy 2: Rotational jobs especially in service areas and factory

Policymakers could make jobs in service and factory sectors less monotonous by having rotational programs where the employees frequently rotate their roles. This could have an upfront fixed cost, but overtime it will help increase the welfare of workers as well as the industry. As workers get higher novelty, they are engaged and more satisfied. Satisfied workers in turn perform better and help the company as well as customers.