

# 17 Liking Vs Wanting, Supernormal Stimuli

## 1. Wanting vs Liking: Concepts and Their Divergence

### Core Definitions

- Liking
  - The hedonic aspect: how pleasant or enjoyable an experience feels.
  - Involves pleasure, satisfaction, “feels good right now.”
  - Can be measured (in animals) by facial expressions and hedonic reactions to rewards.
- Wanting
  - The motivational aspect: the urge, drive, or inclination to obtain or do something.
  - Involves craving, goal-directed behavior, “feels compelling to pursue.”
  - You can strongly want something you do not (or will not) actually enjoy.

### Logical and Empirical Independence

- Conceptual point: It is logically possible to:
  - Want without liking (e.g., an urge to smoke even when it no longer feels good).
  - Like without wanting (e.g., enjoying music that you don't feel driven to seek out).
- False beliefs problem:
  - People often misbelieve what they enjoy:
    - \* Think they like doomscrolling / staying late at work / partying every night.
    - \* But report feeling drained, anxious, or empty afterwards.
  - So motivation (wanting) can be driven by habit, social pressure, or cues, not by actual enjoyment.

### Divergence from Well-Being and Values

- There are two important divergences:
  1. Wanting vs Liking (urge vs pleasure).
  2. Wanting vs Long-Term Well-Being / Values:
    - You can consistently want things that:
      - \* Make you less happy overall.
      - \* Undermine goals and values you care about (e.g., focus, relationships, integrity).
    - This connects to the idea that we may fail to “want what we want to want” (higher-order, reflective desires vs compulsive urges).

## 2. Neuroscience of Wanting vs Liking

### The “Wanting” System (Incentive Salience)

- Often called incentive salience:
  - Turns a cue or object into something that feels attractive, attention-grabbing, and worth pursuing.
- Main brain circuitry (simplified):
  - Ventral tegmental area (VTA) → nucleus accumbens (NAc) → prefrontal cortex, amygdala, and other limbic structures.
  - Dominantly uses dopamine.
- Key features:
  - Dopamine spikes when cues predict reward, not just when reward is consumed.
  - Sensitized by repeated drug use and certain behaviors (e.g., gambling), so cues trigger stronger and stronger wanting over time.

### The “Liking” System (Hedonic Hotspots)

- Involves hedonic hotspots: small areas where stimulation increases pleasure reactions.
- Key regions (in animals and humans):
  - Parts of the nucleus accumbens shell.
  - Ventral pallidum.
  - Related regions in orbitofrontal and insular cortex that encode how pleasant something feels.
- Neurochemistry:
  - Opioid, endocannabinoid, and GABA systems are especially important.
  - Manipulating these can increase or decrease the pleasure of a reward without changing how much it is pursued.

### Evidence They Are Distinct

- Animal studies:
  - Increasing dopamine → animals work harder for rewards (more wanting) but do not show more pleasure in facial expressions.
  - Stimulating opioid hotspots → more hedonic facial reactions to sweet tastes, even without big increases in effort to obtain them.
- Human evidence:
  - Patients with dopamine disruptions may lose motivation but still report normal enjoyment when something happens to them.
  - Addicted individuals often report intense craving (wanting) even when the substance is no longer especially pleasurable (liking reduced).

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## 3. Addiction as Misalignment of Wanting and Liking

### How Addiction Develops (Neuroscience Perspective)

- Repeated drug use (or similar behaviors like gambling):

- Sensitizes the dopamine-related wanting system.
- Makes drug-related cues (paraphernalia, locations, people) highly salient and triggering.
- Over time:
  - Wanting system: becomes hyper-reactive (strong craving triggered by cues).
  - Liking system: often undergoes tolerance:
    - \* Same dose produces less pleasure.
    - \* May even produce mostly relief from withdrawal or only mild positive feeling.

## Phenomenology of Addiction

- Strong craving without strong pleasure:
  - People say things like:
    - \* “I don’t even enjoy it anymore; I just feel I need it.”
    - \* “I hate what this is doing to my life, but I can’t stop.”
- Key misalignment:
  - Wanting >> Liking.
  - Wanting also diverges from long-term well-being and the person’s own values.

## Examples Beyond Drugs

- Gambling:
    - Slot machines and online betting use intermittent variable rewards:
      - \* Unpredictable payoffs strongly activate dopamine-based wanting.
      - \* People often chase losses and feel compelled to keep playing, even when:
        - The experience is stressful and not particularly fun.
        - Financial and relational damage is obvious.
  - Junk food:
    - Highly processed foods are engineered for strong reward signals (sugar–fat–salt combinations).
    - People may crave them intensely, but:
      - \* Report feeling sluggish, guilty, or physically unwell afterwards.
      - \* Long-term health (and often self-respect or body image) is harmed.
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## 4. Supernormal Stimuli in Non-Human Animals

### Definition

- A supernormal stimulus is:
  - An artificial or exaggerated version of a natural stimulus.
  - It triggers stronger responses than the natural stimulus the animal evolved to respond to.
- Why it works:
  - Evolution tuned animals to respond to simple cues (e.g., bright color, size, sound).
  - When these cues are amplified unnaturally, the animal’s response system can be hijacked.

## Examples in Animals (At Least Three)

1. Birds and Exaggerated Eggs
  - Some birds prefer to sit on larger, more brightly colored fake eggs:
    - E.g., oversized, more speckled eggs can be more attractive than their own real eggs.
  - The cue “bigger and more patterned” activates parental instincts more strongly than the actual optimal egg.
2. Male Insects (e.g., Jewel Beetles) and Bottles
  - Male jewel beetles have been observed trying to mate with brown, dimpled beer bottles:
    - The bottles exaggerate features of the female’s shell (color, texture).
  - The bottle becomes more sexually attractive than real females: a classic supernormal stimulus.
3. Stickleback Fish and Red Bellies
  - Male sticklebacks attack rivals that show a red belly.
  - They will respond more ferociously to artificial models with exaggeratedly bright red than to real males.
  - The color cue alone—when amplified—evokes maximal aggression.
4. Cuckoo Chicks’ Gaping Mouths (Another Example)
  - Parasitic cuckoo chicks have oversized, very brightly colored gapes.
  - Host parents feed them more frequently than they would feed their own chicks.
  - The exaggerated “feed me” signal functions as a supernormal stimulus for parental feeding behavior.

## Do Supernormal Stimuli Create Wanting/Liking Divergences in Animals?

- Animals are typically driven by evolved “wanting” systems:
  - They will work harder or devote more care to the supernormal stimulus (e.g., giant egg).
- We have limited evidence about their subjective pleasure (liking).
- But from a functional point of view:
  - The response is maladaptive: they invest effort in artificial objects that do not improve fitness.
  - There is at least a divergence between motivation and long-term biological “good” (survival/reproduction).

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## 5. Possible Supernormal Stimuli in Humans

Human technologies often amplify evolved cues (sweetness, novelty, social approval, sexual signals), producing supernormal stimuli for our brains.

### 5.1 Processed Junk Food

- Why it’s supernormal:
  - Our ancestors encountered scarce, natural sources of sugar and fat.
  - Modern engineered foods combine:
    - \* Very high sugar.
    - \* High fat.

- \* Exact textures and flavors tuned to maximize palatability.
- This exaggerates the cues “high energy, safe food” that our reward systems track.
- Neural impact:
  - Strong activation of dopamine-based wanting and hedonic hotspots (especially at first).
  - Over time:
    - \* Tolerance can reduce liking.
    - \* Cues (brands, smells, packaging) still trigger strong wanting.
- Wanting vs Liking?
  - Many people:
    - \* Crave certain snacks even when they say they don’t really enjoy them anymore; it’s just a habit or quick fix.
    - \* Keep eating past the point of enjoyment.
  - Clear risk of wanting > liking.
- Long-term well-being / value conflict:
  - Health costs: obesity, diabetes, heart disease.
  - Psychological costs: guilt, low self-esteem, feeling out of control.
  - People often reflectively value:
    - \* Health, energy, self-control, longevity.
  - But momentary wanting drives behavior in ways that undermine these values.

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## 5.2 Social Media and the Attention Economy

- Why it’s supernormal:
  - Our brains evolved for:
    - \* Occasional social feedback and gossip in small groups.
    - \* Infrequent, meaningful signals of status and acceptance.
  - Social media platforms provide:
    - \* Continuous likes, comments, notifications, “stories,” infinite scroll.
    - \* Constant novelty and emotional salience (outrage, fear, admiration).
  - These are amplified social and informational cues → a supernormal stimulus for attention and social validation.
- Persuasive design features (examples):
  - Notification badges (often red):
    - \* Grab attention; signal urgency; feel like a to-do list that must be cleared.
  - Intermittent variable rewards:
    - \* You don’t know when you’ll see a particularly interesting post or get a like.
    - \* This unpredictability is extremely effective at driving repeated checking.
  - Endless feeds:
    - \* No natural stopping point; you can always scroll more, so wanting is never allowed to “complete.”
- Neural impact:
  - Each check can deliver:
    - \* Small dopamine hits from novelty and perceived social approval.
  - Over time:
    - \* Cues (phone buzz, boredom, emotional discomfort) automatically trigger the urge to check.

- \* This urge can become habitual, even compulsive.
  - Wanting vs Liking?
    - Many report:
      - \* Repeatedly checking apps even when the experience feels anxious, draining, or empty.
      - \* Feeling worse after long sessions (jealousy, outrage, fatigue).
    - Yet they can't easily resist the urge to check again.
    - Strong evidence of:
      - \* Wanting (urge to check, scroll, refresh) > Liking (actual enjoyment).
  - Long-term well-being / value conflict:
    - Short-term:
      - \* Distraction from tasks they care about.
      - \* Elevated stress and anxiety from constant outrage-driven news and comparison.
    - Long-term:
      - \* Time fragmentation and loss of deep focus; harder to think clearly or creatively.
      - \* Undermines self-regulation and reflection, making it harder to:
        - Decide what kind of life you want.
        - “Want what you want to want” in a stable, reflective way.
    - Even if people value:
      - \* Attention to real relationships, meaningful work, and civic engagement,
      - \* Their daily behavior can be dominated by algorithmically shaped micro-urges instead.
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### 5.3 Gambling and “Gamified” Digital Rewards

- Why it's supernormal:
  - Humans evolved to respond strongly to rare, uncertain rewards (e.g., hunting success).
  - Modern gambling:
    - \* Perfectly engineers unpredictable payoff schedules (slot machines, online betting).
    - \* Adds lights, sounds, near-miss experiences, and easy electronic payment.
  - Many games and apps copy these mechanisms:
    - \* Loot boxes, daily rewards, streaks in games or apps.
- Neural impact:
  - Intermittent variable reward schedules are known to:
    - \* Produce especially strong and persistent dopamine-driven wanting.
    - \* Make behavior resistant to extinction (hard to stop even when no longer fun or when losing).
- Wanting vs Liking?
  - Gamblers often:
    - \* Continue playing after enjoyment has faded, driven by compulsion and hope to “get even.”
    - \* Report that wins produce less and less thrill, but the urge to chase remains.
  - Many gamers:
    - \* Keep logging in to maintain streaks or get loot, even when the game no longer feels intrinsically fun.
- Long-term well-being / value conflict:

- Financial harm, relationship strain, time loss.
  - Guilt and shame; feeling one's life is not under one's own control.
  - Conflict with values like responsibility, honesty, care for family, meaningful use of time.
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#### 5.4 Pornography and Hyper-Stimulating Sexual Content (Optional Example)

- Why it's supernormal:
    - Human sexual systems evolved for:
      - \* Real partners in limited social environments.
    - Online pornography:
      - \* Offers infinite novelty (many different partners, acts, and intensities).
      - \* Highly visual, curated, and exaggerated: idealized bodies, simplified scripts.
    - This greatly amplifies sexual cues beyond what was ancestrally typical.
  - Neural impact:
    - Strong activation of reward circuits with repeated use, especially with novelty chasing.
  - Wanting vs Liking?
    - Some report:
      - \* Habitual or compulsive use that persists even when they feel numb or dissatisfied.
      - \* Escalation to more extreme content to get the same arousal (tolerance).
    - Again, craving can persist or strengthen while enjoyment either stagnates or declines.
  - Long-term well-being / value conflict:
    - Impact on relationships, sexual functioning, and expectations.
    - Conflict with personal moral or religious values.
    - Time and attention diverted from deeper intimacy and other life projects.
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### 6. Supernormal Stimuli, Wanting vs Liking, and Diminished Well-Being

#### General Patterns

1. Supernormal stimuli exaggerate key cues:
  - Food: sweetness, fat, calorie density.
  - Social media: social approval, novelty, emotional intensity.
  - Gambling/gamified systems: unpredictable rewards and near-misses.
  - Sexual content: exaggerated attractiveness and variety.
2. They disproportionately activate the “wanting” system:
  - Dopamine-based circuits respond strongly to:
    - Novelty.
    - Unpredictable rewards.
    - Intense sensory and social cues.
3. Over time, liking often fails to keep up:
  - Tolerance or numbness (need more for same pleasure).
  - Boredom, guilt, or emptiness.
  - Yet cues still trigger powerful urges.

## Are These Cases of Wanting Without Liking?

- Often they are at least:
  - Partial divergences:
    - \* People may still like them somewhat, but not nearly as much as they want them.
  - In some cases:
    - \* Strong urges persist even when self-reported pleasure is minimal or negative (classic addiction-like pattern).

## Impact on Long-Term Well-Being and Values

- Short-term vs long-term:
  - Short-term: tiny, frequent hits of shallow reward.
  - Long-term: reduced ability to:
    - \* Focus attention.
    - \* Engage in deep, meaningful activities.
    - \* Maintain health, relationships, finances.
- Conflict with values:
  - Many people reflectively value:
    - \* Meaningful work, genuine relationships, civic responsibility, creativity.
  - Supernormal stimuli can:
    - \* “Eat up” the attention and energy needed for these.
    - \* Make it harder to even form or sustain higher-order values due to constant distraction.
- This links the neuroscience with ethics and the philosophy of happiness:
  - The structure of our brains makes us vulnerable to:
    - \* Wanting things that:
      - We don’t truly like.
      - Do not help us live the lives we most deeply want.
  - Recognizing this gap is crucial for:
    - \* Personal self-regulation.
    - \* Evaluating technologies and environments that deliberately exploit these vulnerabilities.

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## Summary for Exam

- Wanting vs Liking:
  - Distinct concepts and neural systems (dopamine vs hedonic hotspots).
  - Can and often do diverge in humans.
- Addiction:
  - Prototype case of wanting  $\gg$  liking.
  - Driven by sensitized wanting systems and tolerance in liking.
- Supernormal stimuli (animals):
  - Exaggerated artificial stimuli (giant eggs, beer-bottle “mates,” bright red fish models, cuckoo gapes) trigger stronger-than-normal instinctive responses.
- Supernormal stimuli (humans):

- Processed foods, social media, gambling/gamified rewards, and (arguably) pornography.
- They often create:
  - \* Strong urges to indulge.
  - \* Outcomes that reduce long-term well-being and conflict with our deeper values.
- They are prime candidates for divergences between wanting, liking, and living well.