17 Mismatch, Foragers

1. Wanting vs Liking

1.1 Conceptual distinction

- Liking
  - The hedonic pleasure you get from something.
  - Subjective: “How good does this feel?”
  - Momentary, sensory, often conscious.
  - In neuroscience: “hedonic impact.”
- Wanting
  - The motivational pull or urge to obtain or do something.
  - Subjective: “How strongly do I feel drawn to this?”
  - Can be unconscious or automatic; often cue-triggered.
  - In neuroscience: “incentive salience” (how attention-grabbing and desirable a cue feels).

Key point: Wanting and liking usually correlate, but they are distinct systems. They can come apart: - You can want without liking (e.g., compulsive drug use, doom-scrolling). - You can like without wanting (e.g., food tastes good but you’re full and don’t want more).

1.2 Brain mechanisms

“Wanting” system (incentive salience)

- Main neurotransmitter: dopamine.
- Main pathways:
  - Ventral tegmental area (VTA) → nucleus accumbens (NAc) → other limbic areas.
  - Projections to prefrontal cortex (PFC), amygdala, hippocampus.
- Functions:
  - Makes cues and outcomes attention-grabbing and motivationally important.
  - Drives approach behavior, “craving,” and cue-triggered urges.
- Evidence:
  - Increasing dopamine → stronger effort to get a reward, even if the pleasure doesn’t change.
  - Dopamine depletion → animals don’t work for rewards, even though they still show facial signs of pleasure when given them (so liking intact, wanting reduced).

“Liking” system (hedonic impact)

- Main neurochemicals: opioids, endocannabinoids, and related systems.

- Brain regions:
  - Hedonic “hotspots” in:
    - Nucleus accumbens shell
    - Ventral pallidum
    - Brainstem areas
  - Connected with orbitofrontal cortex and insula (conscious evaluation of pleasantness).
- Evidence:
  - Activating hedonic hotspots (e.g., with opioid agonists) → enhanced pleasure reactions (e.g., positive facial expressions to sweet tastes in animals).
  - Blocking these systems → reduced pleasure, even if animals still seek rewards (in some paradigms).

Summary:
- Dopamine circuits ≈ “go get it!” (wanting).
- Opioid/hedonic hotspots ≈ “this feels good” (liking).

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2. Drug Addiction: Wanting vs Liking in Action

2.1 How addiction develops (incentive-sensitization theory)

According to a leading theory (Robinson & Berridge):

1. Initial drug use
   - Drugs stimulate both:
     - Dopamine → strong wanting
     - Hedonic hotspots → intense liking (euphoria).
2. Repeated use
   - Wanting system becomes hypersensitive (“incentive sensitization”):
     - Dopamine circuits (VTA–NAc and related pathways) become overly responsive to drug-related cues.
     - Environmental cues (paraphernalia, places, people) acquire intense incentive salience → powerful cravings.
   - Liking often shows tolerance:
     - Hedonic response (pleasure) may decline with repeated use.
     - Many addicts report: “I don’t get high like I used to.”
3. Addiction stage
   - Pathologically high wanting, normal or reduced liking:
     - Strong urges and compulsions to use, triggered by cues or stress.
     - Users may say: “I don’t even like it anymore, but I can’t stop.”
   - Additional changes:
     - Down-regulation of dopamine receptors → everyday rewards feel flat.
     - Habit circuits (dorsal striatum) take over → automatic, ritualized use.
     - Prefrontal control (self-regulation, long-term planning) is weakened.

2.2 Divergence between wanting and liking in addiction

- Cravings (wanting) remain or increase, even when:

  - The subjective pleasure (liking) from the drug is small or gone.
  - The person clearly sees the negative long-term consequences (health, relationships, job).
- This is a clear example of:
  - Wanting vs liking coming apart.
  - An urge whose indulgence lowers long-term well-being (disease, social loss, loss of autonomy).

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3. Supernormal Stimuli

3.1 Definition and evolutionary idea

- A supernormal stimulus is:
  - An exaggerated or artificially enhanced version of a naturally occurring stimulus.
  - It triggers a stronger response than the natural stimulus it evolved to respond to.
- Origin (ethology: Tinbergen, Lorenz):
  - Animals evolved simple rules like: "respond strongly to X feature."
  - Humans can create exaggerated versions of X that outcompete the original natural signals.
- Key idea:
  - Our preferences evolved in ancestral environments.
  - Modern environments can hack these preferences by presenting hyper-intense cues that weren't present in evolution.

3.2 Non-human animal examples (at least three)

1. Herring gull chicks
   - Natural stimulus: parent's beak with a small red spot → chick pecks there to get food.
   - Supernormal stimulus: a long stick with multiple big red stripes.
   - Result: chicks peck more vigorously and more often at the artificial stick than at the real parent's beak.
2. Male stickleback fish
   - Natural stimulus: rival males with a red underside.
   - Supernormal stimulus: a simple model (block of wood) with an intensely bright red belly.
   - Result: males attack the exaggerated red model more fiercely than real rivals with normal coloration.
3. Oystercatchers and eggs
   - Natural stimulus: bird's own egg (medium size, normal speckling).
   - Supernormal stimulus: an artificial large egg, same pattern but much bigger.
   - Result: the bird tries to incubate the oversized model egg in preference to its own real eggs.

(Other examples often discussed: butterflies attracted more to fake "super-flower" patterns; birds preferring fake mates with ultra-long tails, etc.)

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4. Human Supernormal Stimuli

General pattern: - Modern technologies and products exaggerate cues our brains evolved to respond to: - Sweetness, fat, salt → food. - Sexual cues → sex and reproduction. - Novelty, social approval, status → social media, gambling, games. - They can produce: - Excessive wanting (cravings, compulsive use). - Diminished or plateauing liking. - Long-term harms to health, relationships, and attention.

Below are at least two human cases to know in detail:

4.1 Hyper-palatable processed food

Why it's a supernormal stimulus

- Ancestral environment:
  - Sugar, fat, and salt were scarce and usually accompanied by fiber, micronutrients, and effort (foraging, hunting).
- Modern food engineering:
  - Creates highly concentrated combinations of sugar, fat, and salt, often with intense flavors and soft textures.
  - These exceed anything in the ancestral diet.
- Result:
  - They are more stimulating to our evolved taste and reward systems than natural foods like fruit or lean meat.

Neuroscience / wanting vs liking

- Processed foods trigger strong dopamine release in reward circuits (NAc, VTA).
- Over time:
  - Cue-triggered wanting: advertisements, smells, packaging, certain locations (e.g., couch + TV) become powerful triggers for eating.
  - Liking may decrease (sensory-specific satiety, tolerance), but:
    - People still crave and overconsume, often beyond the point of enjoyment.

Long-term well-being

- Short-term:
  - Pleasant taste (liking) and strong approach behavior (wanting).
- Long-term:
  - Obesity, diabetes, cardiovascular disease.
  - Reduced energy, mobility, self-esteem.
- This is plausibly:
  - A supernormal stimulus (exaggerated food cues).
  - A wanting vs liking divergence:
    - People often say they are drawn to such food even when they know it doesn't really make them feel better and has negative health effects.

4.2 Social media and the attention economy

Why it's a supernormal stimulus

- Evolved tendencies:
  - Sensitivity to social approval, reputation, belonging, novelty, and threats.
- Design of platforms (from Odell's reading and tech ethics work):
  - Notification badges (often red, numbered):
    - Exploit fear of missing out and a desire to "clear" tasks.
  - Intermittent variable rewards:
    - Likes, comments, and notifications arrive on unpredictable schedules.
    - This pattern is known to strongly condition behavior (similar to slot machines).
  - Emotionally charged content:
    - Outrage, fear, and hysteria spread quickly and keep people engaged.
  - Persuasive design techniques:
    - Curiosity, urgency, social comparison, moral appeal, guilt, etc.
- These cues exaggerate:
  - The intensity, frequency, and availability of social signals far beyond what our ancestors experienced.

Neuroscience / wanting vs liking

- Each new notification or scroll:
  - Potential dopamine hit in reward pathways when we anticipate or receive social approval or novel content.
  - Platforms are tuned to maximize engagement (i.e., wanting), not necessarily pleasure or understanding.
- Over time:
  - Many people develop compulsive checking:
    - Strong urge to open apps, especially when bored, anxious, or lonely.
    - Checking can feel almost automatic, triggered by cues (phone buzz, red badge).
  - Liking often declines:
    - People report feeling anxious, drained, angry, or empty after long sessions.
    - Yet they still feel a pull to keep checking ("just one more scroll").

Long-term well-being (connection to Odell)

- James Williams (via Odell):
  - The attention economy's distractions are not just "annoying" but can:
    - Keep us from living the lives we want to live.
    - Undermine our abilities for reflection and self-regulation.
    - Make it harder to "want what we want to want" (Frankfurt).
- Odell's worry:
  - People are "whipped into a permanent state of frenzy," constantly checking and posting.
  - Engagement is driven by fear, anger, and anxiety, not reflective thought.
  - Our attention becomes an instrument for others' profit, rather than our own values.
- So:
  - Social media can be seen as a supernormal stimulus for:
    - Social approval, novelty, and threat detection.
  - It often creates a wanting vs liking divergence:

        * We feel compelled to check and scroll (wanting).
        * We often do not actually like the experience or its effects on our mood and focus.
    - Long-term:
        * Fragmented attention, chronic stress, less solitude and deep thinking.
        * We might lose time for activities that genuinely support well-being (relationships, nature, meaningful work).

4.3 Pornography (optional third human example)

Why it's a supernormal stimulus

- Evolved sensitivity to:
    - Sexual cues, especially visual ones signaling fertility and availability.
- Modern internet pornography:
    - Offers highly exaggerated sexual cues (idealized bodies, endless novelty, extreme scenarios).
    - On-demand, unlimited, often more intense than real-life partners.

Wanting vs liking and well-being

- Pattern similar to addiction:
    - Cue-triggered wanting: strong urge to view porn when stressed, bored, or encountering certain triggers (time of day, device).
    - Over time, some report:
        * Escalating use and tolerance.
        * Diminished enjoyment of "normal" sexual experiences (liking may be blunted or shifted).
- Potential long-term issues:
    - Reduced satisfaction in real relationships.
    - Distorted expectations about sex.
    - Time loss and possible shame or conflict with personal values.

This is another plausible supernormal stimulus where strong wanting can coexist with mixed or declining liking and harm to long-term well-being.

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5. Summary Connections for the Exam

1. Wanting vs Liking
    - Wanting = dopamine-driven motivational pull (incentive salience).
    - Liking = hedonic pleasure, supported by opioid/endocannabinoid hotspots.
    - They are distinct and can diverge.
2. Drug addiction
    - Early: wanting and liking both high.
    - Later: sensitized wanting, tolerant or reduced liking.
    - Clear example of:
        - Strong urges whose indulgence harms long-term well-being.
        - Neural basis: sensitized dopamine circuits, weakened prefrontal control.

3. Supernormal stimuli
    - Artificially exaggerated stimuli that outcompete natural ones.
    - Non-human examples:
        - Herring gull chicks (red-striped stick).
        - Male sticklebacks (super-red model rival).
        - Oystercatchers (giant eggs).
    - Show how simple evolved rules can be hijacked.
4. Human supernormal stimuli
    - Processed foods:
        - Intensified sugar/fat/salt → strong wanting, health harms.
    - Social media/attention economy:
        - Exaggerated social cues, intermittent rewards, emotional content.
        - Strong wanting (compulsive checking), often low liking and reduced attention and well-being.
    - (Optionally) Pornography:
        - Exaggerated sexual cues and novelty.
        - Strong urges, possible decline in satisfaction with real sex.
5. Are they also wanting vs liking divergences?
    - Often yes:
        - We crave them (want) more than we actually enjoy them (like).
        - They draw time and energy away from activities that truly support happiness.
    - They often create situations where:
        - We indulge an urge now.
        - Long-term well-being (health, focus, relationships, autonomy) declines.

Knowing these distinctions, examples, and neural mechanisms will let you: - Define wanting vs liking clearly. - Explain addiction as a divergence of wanting from liking. - Define supernormal stimuli and give animal and human examples. - Discuss how human supernormal stimuli often involve excess wanting, limited liking, and long-term losses of value.