

**HANDBOOK OF
SELF-KNOWLEDGE**

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On (Not) Knowing and Feeling What We Want and Like

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Knowing what we like and want seems an integral part of our everyday experience. We feel intimately familiar with our preferences and motivations, and view them as stable aspects of our selves. Rational theories of preferences assume that our choice behavior is coherent—reflective of the utility we will gain from the outcome of our choice (Gilboa, 2009). The same is true of classic expectancy-value theories in psychology and attributional theories of motivation (Weiner, 2012). People, more or less, desire, choose, and pursue what they (expect to) like and reasonably expect to get.

However, these assumptions fall short of explaining many curious behaviors we observe in everyday life. For example, why do we put great effort into obtaining “rewards” that we do not really enjoy all that much at the end? (Writing a chapter comes to mind.) Why is a dieter compelled to eat that chocolate cake, even after sampling it and discovering that it is not very tasty? Why do we need others (e.g., therapists) to tell us what we like and desire? Why do we buy too much on an empty stomach? Why do we fail to predict how we will feel about the hot date the next morning?

In this chapter we review research showing that we can be unaware of some of the core processes that underlie our feelings, desires, and choices. These low-level biological processes enable useful, flexible, and quick behaviors. Yet because such processes are often subconscious, they can generate preferences, desires, and behaviors that are inconsistent, or even in direct conflict with our conscious beliefs. This conflict sometimes leads to seemingly irrational behaviors, as described earlier.

In this context, we discuss evidence for situations in which core liking and wanting can be manipulated at a subconscious level, causing situations such as wanting something one doesn't really like. We also present neuroscience research supporting the distinction between wanting and liking. In addition, we review different levels on

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which our conscious knowledge of what we want and like can diverge from unconscious processing. We go on to examine processes underlying separation of affective and motivational systems in humans. Finally, we discuss how our subconscious wanting and liking processes influence our predictions for future behavior.

Liking and Wanting

Our world is filled with attractive objects, whether they are tasty foods, desirable mates, beautiful paintings, exotic vacations, or prestigious chapter publications. People like these things, want these things, choose them, and work for them. Yet, surprisingly, research in neuroscience shows that our motivation for obtaining such rewards, and our actual enjoyment of them, are not necessarily coupled, and can be influenced separately.

Definitions of Wanting and Liking

Let us take a closer look at the concepts of wanting and liking. The terms *wanting* and *liking* have familiar meanings in everyday language—equivalent, more or less, to the terms *conscious desire* and *conscious pleasure*. Our use of these terms corresponds to the usage common in the biopsychology literature, where they have slightly different meanings that are grounded in modern approaches to motivation.

Historically, theories of motivation postulated that behavior toward valued stimuli was driven by desires—subjectively represented need states (Hull, 1951). For example, people drink to reduce the unpleasant desire for liquid (“feeling thirsty”), and they seek mating opportunities when they experience the state of sexual desire (“feeling horny”). In contrast, modern theories of motivation posit that hedonic behavior is also determined by the stimulus's incentive value: The stimulus directly promotes approach–avoidance motivation through changes in its perceived value (Toates, 1986). Motivational states, such as thirst or sexual needs, are still important, but they work by directly influencing affective and motivational responses to the relevant features of the stimulus. This influence can be observed in a phenomenon known as *allosibestia*—change in incentive value as a function of a relevant motivational state (Cabanac, 1971). For example, a functional value of, say, a hot drink depends on whether one just returned from the freezing cold or from a sauna. More interestingly, the very perception of how attractive and desirable something is depends on a motivational state. For example, people perceive the taste of water more favorably when they are thirsty (Rolls, Rolls, & Rowe, 1983). Interestingly, this need-based modulation of value does not require that the need (e.g., thirst) becomes conscious, suggesting that core motivational processes directly regulate perceptual salience and value. Similarly, sexual motivation can directly increase how attractive (appealing or interesting) a mate appears, without necessarily manifesting in a subjective experience of “horniness.” For example, ovulatory cycle shifts women's receptivity to sexual advances, and evaluation of different kinds of mates, without manifesting as a state of desire (e.g., Gangestad, Garver-Apgar, Simpson, & Cousins, 2007).

One particularly influential modern conceptualization of liking and wanting comes from the writing of two neuroscientists—Kent Berridge and Terry Robinson

(Berridge, 1996; Berridge & Robinson, 1995). They define *wanting* as the motivation to acquire the reward driven by the incentive value that the stimulus possesses. This incentive value, its magnet-like properties, determines how hard organisms will work to obtain this reward. *Liking*, on the other hand, is the hedonic pleasure experienced when actually receiving the reward (Berridge, 1996; Winkielman & Berridge, 2003).

The distinction between liking and wanting was originally made in studies on rats. One such study examined how damage to so-called "reward" pathways influences these two processes. Interestingly, when dopamine-releasing brain areas were lesioned, rats made no efforts to acquire food readily available to them, yet they still produced negative and positive taste reactions (Berridge, Venier, & Robinson, 1989). This study suggests that while these dopaminergic brain regions are necessary for motivated appetitive behavior (wanting), they have little or no influence on liking.

Researchers have begun to explore these processes in humans. One interesting approach explores responses to beautiful faces (Aharon et al., 2001). Heterosexual males viewed both male and female faces of either high or average attractiveness. Subjects rated both beautiful male and beautiful female faces as equally attractive, or pleasant to look at, presumably reflecting equal liking. However, subjects were willing to put significantly more effort via keypress in order to view attractive female faces for a longer duration than equally attractive male faces, presumably reflecting greater wanting for attractive females. In other words, heterosexual males might "like" attractive faces in general, hence rating them similarly, yet beautiful female faces represent a higher incentive for heterosexual males, and are therefore "wanted" more than male faces, which do not present any such incentives.

Dissociation of Wanting from Liking: The Incentive Salience Hypothesis

The example of beautiful faces illustrates that sometimes an object (e.g., a male face for heterosexual males) may be liked without being really wanted. This situation represents a mild form of liking-wanting dissociation. But can we find stronger examples? Furthermore, can such dissociations go in the opposite direction—wanting without liking? Recall the example of a dieter confronted with a piece of chocolate cake that she consumes but does not enjoy. There are many such cases where wanting appears to exceed liking, to the point that sometimes people crave and put serious effort to pursue things they don't savor to the same extent. An extreme case of this is addiction.

Drug addiction causes people to behave in ways that are detrimental to their health, work, and social relations. Furthermore, addicts spent all sort of resources supporting their habit. Nevertheless, one might consider addicts' behavior to be rational by assuming that for them drugs produce such an intense hedonic experience that it is "worth their effort" (e.g., Becker & Murphy, 1988). However, through processes of drug tolerance, the drug's effect on hedonic experiences lessens over time, and addicts experience less and less pleasure when taking them. So why would they continue to sacrifice other pleasures (family, career, relationships, health) and exert great effort to obtain a drug that is not actually causing them much pleasure? One explanation of this behavior is offered by incentive sensitization theory, which posits that

a combination of associative learning and neuronal sensitization processes enhance the incentive value of the drug and related cues (Berridge & Robinson, 1995; Robinson & Berridge, 1993). According to this theory, neural systems, especially within the dopaminergic pathway, that are specifically associated with wanting processes (e.g., assigning incentive value to stimuli) undergo sensitization through the repeated pairing of the drug with the positive hedonic responses. Over time, this sensitization produces an amplified response to the drug and drug-related cues, increasing their "motivational pull," wanting—hence, the behavioral effects observed in addicts. Curiously, the increase in desire for the drug does not influence liking of the drug, which actually may lessen over time (through parallel process of habituation).

Addicts are not necessarily aware of the discrepancies between the systems. An experiment by Lamb and colleagues (1991) beautifully illustrates this. In this experiment, recovering heroin addicts were given the opportunity to press a lever in order to receive an injection that contained varying doses of morphine or saline solution (a placebo). Subjects were later requested to rate the drug they received according to how much they liked it. Not surprisingly, subjects rated saline injections as worthless and quickly stopped working to receive these injections. In addition, high doses of morphine were rated as very pleasant, and addicts exerted a lot of effort in order to obtain them. Their responses to the low doses of morphine were much more intriguing. In these situations, addicts rated the injections just as worthless as those of saline solution, yet many of these addicts continued to exert the same effort (by pressing the lever) to receive the injections as they did for injections of high doses of morphine.

In addition to the dissociation between the wanting and liking system, the example of drug addiction also illustrates a somewhat counterintuitive point about motivation and the concept of "reward." Specifically, states, such as drug craving, hunger, and thirst are in some sense negative, as they are associated with deprivation and a disturbance of homeostasis. But they induce motivation through the attribution of positive value to the stimulus. The action based on this high incentive value alleviates this negative state and returns the body to homeostasis. Thus, the concept of reward encompasses both stimuli that alleviate a negative state and those that induce a positive one.

Separate Neural Systems for Wanting and Liking

As briefly indicated earlier, researchers were able to tease apart the underlying neural systems that correspond to the psychological constructs of liking and wanting. This was mostly achieved through studies conducted on rats and food rewards. The mesolimbic dopaminergic system has been identified as a candidate for a neural wanting system. This system includes various nuclei from the brainstem, all the way up to the frontal cortex, among which are the nucleus accumbens, amygdala, and the ventral pallidum (Berridge, 2007, 2009; Berridge & Robinson, 1998; Smith, Tindell, Aldridge, & Berridge, 2009). Lesions to these areas causes a decrease in wanting. An elevated level of activation in the wanting system can also be elicited through neurochemical manipulations (Wan & Peoples, 2008; Wyvell & Berridge, 2000).

Liking has been associated with opioid, endocannabinoid, and benzodiazepine/gamma-aminobutyric acid (GABA) neurotransmitter "hotspots" in the forebrain (Berridge, 2009; Mahler, Smith, & Berridge, 2007; Pecina, 2008). It is important

to note that though these systems are separable, they usually work together closely, ensuring that liking and wanting processes coherently support goals and needs in "normal" organisms.

Psychological Factors Involved in Dissociations of Liking and Wanting

As mentioned, the function of the wanting system is to attach incentive value to stimuli. This process usually occurs through conditioning with hedonically rewarding stimuli. However, conditional learning acts not only upon the actual reward but also on a variety of stimuli associated with receiving such a reward. This raises the possibility that conditioned cues can activate wanting, even when such conditioned stimuli are no longer predictive of the reward. For example, as a treat, American parents sometimes give their children and their friends a trip to McDonald's. Later in life, when the now-adult children see a McDonald's, they may feel strong urge to eat there, although they have no expectation of being socially rewarded for it, and if they actually do it, they may not enjoy it. Indeed, research has shown that a conditioned stimulus can activate the wanting system, even when it no longer predicts the reward (Berridge, 1996).

Goal obstruction can also intensify wanting, but not liking. Interestingly, this dissociation is related to individual differences in the intensity of affective responses (Beaver et al., 2006; Cohen et al., 2005; Litt, Khan, & Shiv, 2010). One study (Litt et al., 2010) examined how being "jilted" (i.e., being thwarted from obtaining a desired outcome) can increase desire to obtain the outcome (wanting), yet also decrease the pleasure received from that outcome (liking). In the experiment, subjects were offered a specific prize for winning a game. Those in the jilted condition "lost" the game, and therefore did not receive the prize. Subjects in this condition, who scored low on the Affect Intensity Measure (AIM) scale (Larsen & Diener, 1987), were willing to pay more in order to receive this prize, yet when they actually received this prize, they were more willing to exchange it for another, similar product than those who were not jilted. One explanation for this, according to the authors, could be that wanting and liking dissociations are more prone to happen at low affect intensity, as opposed to high affect intensity. An intense reaction to a stimulus may cause wanting to go along with liking (e.g., a disgust reaction to food will severely decrease hunger reactions). On the other hand, less extreme changes in liking, such as those hypothesized to be experienced by subjects rating low on the AIM scale in the experiment, might not exert a strong enough influence on wanting processes, therefore enabling a dissociation to take place. However, further research on how these systems vary across individuals should be conducted in order to broaden our understanding of how they interact.

What Do We Know about What We Like or Want?

Conscious Components of the Process in Humans

The majority of research on the biopsychological processing that underlies wanting and liking has been carried out on animals. A question thus arises as to what role consciousness plays in these processes. Are human beings aware of their "likes and wants," their causes, their separate nature, and that these processes might not

necessarily work together? Here we discuss evidence for unconscious liking and wanting by presenting research on (1) unconscious causes of hedonic states, (2) how hedonic states can themselves be unconscious, and (3) how people can be wrong about linking affective states and their causes.

Processing of Unconscious or Unattended Stimuli

We attend to a wide variety of stimuli throughout our everyday experiences, yet we are not always aware of the specific stimuli that elicit an affective response in us. Research on the influence of subliminal priming on mood and choice illustrates this point. In Zajonc's classic priming studies, subjects were requested to evaluate affectively ambiguous stimuli (such as Chinese ideographs). Unbeknownst to them, each stimulus was preceded by a subliminal presentation of either a happy or an angry face. Although they were not aware that they had seen these faces, subjects made affective judgments based on them—they preferred those stimuli preceded by happy faces more than those preceded by angry faces (Murphy & Zajonc, 1993).

Additional evidence for affective processing of stimuli that do not reach awareness is found in the remarkable case of affective blindsight. *Blindsight* is a phenomenon that occurs in people who are blind due to damage to their visual cortex. These people cannot see or describe anything presented visually to them, yet they are able to guess certain features of stimuli, such as angle or shape, above chance. Affective blindsight describes a similar phenomenon, in which cortically blind subjects were able to guess above chance whether a face presented to them was either happy or angry, although they claimed they were unable to see the face at all (de Gelder, Pourtois, van Raamsdonk, Vroomen, & Weiskrantz, 2001; Hamm et al., 2003).

These examples suggest that affective processing of stimuli may occur automatically and during early stages of perception, before people are consciously aware of the stimuli. It is therefore the case that we may at times be totally unaware of the cause of our affective responses. But what about the affective response itself?

Awareness of Affective Response

It is hard to imagine going through an emotional episode without being aware of it. Indeed, we are usually conscious of our emotions and our affective reactions to stimuli. However, hedonic processes may also be expressed in perception and behavior before they reach consciousness, or even without people ever becoming aware of them. This idea may initially sound paradoxical. After all, it suggests that there are emotions that are not being felt. However, note that the conscious analysis of emotional stimuli and the generation of conscious feelings are relatively slow and sometimes effortful processes. In contrast, much of the business of daily emotional responding to threats and dangers, as well as enticements and rewards, is done by quick, automatic affective responses. These unconscious processes might be predecessors of our more complex emotions that enable goal-directed behavior (Berridge, 1996; LeDoux, 1996).

Similar processes can be found in many animals in which conscious awareness is debatable. For example, decorticated rats can show both hedonic response to sweets and aversive response to bitter tastes (Berridge, 1996). Such reactions are also found

in anencephalic babies. These babies are born with a congenital disorder in which the neural tube fails to close, so that they are missing a large portion of the brain. Importantly, these babies are missing most of their cortex and are assumed to lack consciousness. Nevertheless, they show positive facial reactions to hedonic stimuli and negative facial reactions to aversive stimuli (Steiner, 1973).

As mentioned previously, circuitry involved in reward processing involves a complex system of projections that start at the brainstem and continue to the mesolimbic areas, as well as many parts of the cortex. Wanting and liking processes interact with perception at many levels of stimuli processing. Basic affective processing precedes attention, as well as other higher-level cognitive processes, as mentioned before, and can therefore occur at a subconscious level.

Intriguing evidence for this are studies in which people are guided in their behavior by subliminal stimuli, yet do not seem to be aware of any change in their affective experience. Winkielman, Berridge, and Wilbarger (2005) conducted several studies in which subjects were presented happy, angry or sad faces subliminally, and were then requested to evaluate a novel beverage (Kool-Aid). They were requested not only to evaluate the drink but also to pour themselves as much as they wanted and drink it. The amount poured and consumed was monitored, as well as participants' initial state of thirst. Thirsty participants not only rated drinks preceded by happy faces as more appealing than those preceded by sad or angry faces but they also poured and consumed more of the beverage in these conditions. However, when requested to rate their conscious feelings toward the drinks, participants showed no difference in ratings following the differently valenced faces.

Importantly, this failure to access the underlying affective change is not due to inattention to the internal state. In fact, even when subjects are explicitly forewarned that their affect may vary as a function of a facial prime, they still fail to report changes in subjective feelings (Winkielman, Zajonc, & Schwarz, 1997). Participants also cannot access such changes in subjective feelings even when they are motivated to do so and are explicitly told that "listening to feelings" might help them succeed in a task, such as detecting the valence of subliminally presented faces (Bornemann, Winkielman, & van der Meer, in press). Critically, these failures of introspection are not due to the weakness of affective responses. In several studies, we found robust congruent facial electromyographical (EMG) responses, such as frowning in response to subliminally presented angry faces (e.g., Bornemann et al., in press). We also found emotion-congruent modulation of the postauricular startle response to the same emotional faces (Starr, Linn, & Winkielman, 2007). These findings clearly indicate the presence of an affective response on a physiological level, even if the response is not present on the phenomenological level.

Overall, these and other studies suggest that unconscious affective processes may influence our behavior. In the case of the Kool-Aid study, these effects were mostly short-lived, yet they generated a sizable difference in behavior between conditions. Interestingly, both wanting and liking were influenced by affective stimuli (i.e., ratings of taste and amount of consumption were increased for positive stimuli and decreased for negative stimuli). This suggests that both liking and wanting processes can take place without awareness.

Finally, it is worth emphasizing the limits of the notion of unconscious liking and wanting. Conceptually, it makes sense for the affective and motivational systems

not only to be able to run unconsciously but also to produce conscious output, in the sense of feeling and desires. After all, consciousness allows us to go beyond simple, habitual reactions and design novel, complex, context-sensitive forms of responding (Winkielman & Schooler, 2011). Consciousness also allows control. The organism can stop undesirable responses and promote the desirable ones, deciding how and when to respond. Conscious access to feelings and desires also plays a communicative and motivational function. Thus, conscious feelings give internal feedback about how well the organism is doing with the current pursuits, telling it to maintain or change its path. More importantly, being aware of one's emotion and being able to communicate this to others seems crucial for basic social coordination. Thus, pangs of guilt propel us to make amends, whereas green eyes of jealousy alert us to trespasses of our mates (Frank, 1998). Consistent with these ideas, there are many reports in the emotion literature where "it all hangs together"—emotion is conscious and coheres with its physiological representation (e.g., Mauss, Levenson, McCarter, Wilhelm, & Gross, 2005).

Awareness of the Causal Relationship between Stimuli and Feelings

One of the central elements of any affective experience is an awareness of the object that brought it about (Clore & Huntsinger, 2009). We rarely feel "just happy"; we typically feel happy about something, and because of something. Yet the process by which we infer objects and causes of emotions is not flawless. As mentioned earlier, we might be unaware of emotionally relevant stimuli—"blaming" Kool-Aid for a negative reaction to an unconscious angry face. But even in situations in which we are fully aware of the surrounding stimuli, we might not manage to select correctly the stimulus that brought about our emotional reaction (Nisbett & Wilson, 1977). The classic demonstration comes from Dutton and Aron's study (1974). Males approached by a female interviewer while on a fear-inducing suspension bridge were more likely to call the interviewer to ask her out than those who crossed a more stable "control bridge." This "excitation transfer" presumably reflects a mistaken "use" of one's own arousal as information about the value or importance of the stimulus (Storbeck & Clore, 2008). Note, though, that it is often unclear at which level such transfer processes occur. For example, in the classic suspension bridge situation the "arousal transfer" could reflect a strategic inferential attributional process ("I am aroused. It must be her who caused it: I am in love"), in accordance with two-factor theory of emotions (Schachter & Singer, 1962). But this could also reflect a simple "incentive assignment" process by which the female research assistant actually looked "hotter" when subjects were aroused.

The best-known model that assumes strategic use of informational value of conscious affective states is the feelings-as-information hypothesis (Schwarz & Clore, 1983, 2007). The model suggests that when we are evaluating an ambiguous or complex object, we sometimes simplify the task into the question "How do I feel about it?" (Schwarz & Clore, 1988). This simplification can be considered a heuristic, enabling us to reach a conclusion in a quicker and more efficient manner than if we were to conduct a slow and effortful examination of all the relevant information. However, the heuristic can lead to errors and being mistaken about what one "likes

and wants," such as when feelings are not actually caused by what we are evaluating but by some irrelevant factor (e.g., weather). As a result, the person may end up with a series of mistaken beliefs of what he or she likes and wants.

Finally, it is important to note that the act of attribution itself may distort hedonic experience. In a study investigating the influence of such processes, subjects listened to musical excerpts from Stravinsky's *The Rite of Spring*, and evaluated their state of happiness either throughout the episode or only at the end. Those who were continuously monitoring their affective state rated their happiness below those who only evaluated it at the end of the musical piece (Schooler, Ariely, & Loewenstein, 2003). In short, by trying to understand why we like something, we may destroy the liking itself. We may also get ourselves confused and focus on the wrong reasons why we engaged in the experience in the first place (e.g., Wilson & Kraft, 1993).

Overall, these findings suggest that processes of affective attribution can be complex and prone to irrelevant influences, especially in cases where irrelevant ambiguous stimuli are made salient and the true causes of our affective states are unclear. In these situations, we might end up wanting and pursuing objects we actually have little interest in and do not necessarily like. Of course, it is a question of debate how often this is normally the case. After all, our affective states are typically informative and aid us in responding effectively to surrounding stimuli (Clout & Hunsinger, 2009). And, as with all heuristics, they tend to be reasonably matched to the environment (Gigerenzer, 2007). Finally, there is always a tricky possibility that misattribution processes can create real affects. For example, it is possible that participants in the Dutton and Aron (1974) study, after misattributing their arousal to attraction to the woman, genuinely liked her. Future research should explore when or whether misattributed feelings are any less "genuine" than correctly attributed ones.

Related Phenomena in Social Psychology: The Ability to Predict Future Wanting and Liking

Successful and happy life (or at least a reasonable marriage) requires the ability to know what we like and want now, and to foresee what we will want, like, and choose in the future. This problem can be expressed in decision-making parlance. Kahneman and Snell (1992) distinguish between decision utility, experienced utility, and predicted utility of outcomes. *Decision utility* refers to the value (or weight) that a specific outcome has in determining our actual decision. *Experienced utility* refers to the actual hedonic experience we receive from that outcome. Finally, *predicted utility* refers to our prediction for future experienced utility of that outcome. These easily map onto our concepts of wanting and liking: Decision utility corresponds to the incentive value of the outcome. Experienced utility refers to our hedonic experience. While we may assume that predicted utility matches experienced utility, there is abundant evidence that this is not the case—people are often inaccurate at predicting how they will feel, what they will want, and what they will choose (Gilbert & Wilson, 2007). Interestingly, some prediction errors reflect the dissociations between future liking and wanting. People make different predictions about how they will *feel* in a future situation, or future attitudes, and predictions about their future *behavior*, such as choice and preferences (Van Boven & Kane, 2006). This discrepancy is due to our

different assumptions regarding the dynamics of hedonic experience and preference behavior. Specifically, people are well aware that their feelings change (e.g., their mood today does not predict their mood a week from now). However, they usually assume that their actual preference behavior is fairly stable.

One specific example of our misperceptions regarding future feelings is the impact bias. We are aware that emotions and feelings tend to fluctuate, to the point that we sometimes overestimate this fluctuation (Wilson & Gilbert, 2003). Yet we are unaware that underlying psychological processes, such as dissonance reduction processes, sense-making processes, and others, are at work in order to enable us to recover to a relatively stable affective state after an emotional episode. These processes also underlie our inability to predict emotional effects of inaction, or "opting out." Andrade and Van Boven (2010) examined how participants predicted their reactions and their actual affective experience to the outcome of a gamble in which they chose not to participate. In this study, participants were presented with a gamble with a negative expected outcome, such that it was unappealing to almost all participants, and therefore most chose to reject the gamble. Participants underestimated their future reactions to both a forgone loss and a forgone gain, when compared to their ratings after the event. We underestimate in such situations the ease of making counterfactual comparisons, such that a forgone gain might cause us significant regret. It is easier for us to think about reactions to actions we take than to actions we don't take; therefore, we don't take these into account.

When predicting future choices and preferences, we are under the assumption that these are stable constructs that reflect our personality, and we therefore do not expect them to change by much over time and under various situations (Dunning, 2005; Quoidbach & Dunn, 2010). However, as detailed below, processes underlying preferences and motivation are susceptible to habituation and sensitization processes, as well as fluctuations in arousal states. This susceptibility may render our perceptions of future choices at odds with actual behavior in these situations.

Processes Underlying Misperceptions of Wanting and Liking

Several recent lines of research have looked specifically at one set of factors that can lead to a mismatch between how liking and wanting processes really work "under the hood"—the automatic operation of sensitization and habituation. Such processes take place at both a biophysiological and cognitive levels. Biopsychologically, as described in the section on the incentive sensitization theory, repeated exposure to a strong reward (e.g., drug) may paradoxically cause sensitization processes in the wanting system to the point that it is decoupled from liking (Berridge & Robinson, 1995). On the habituation side, recent research suggest that automatic processes of satiation work quickly and similarly across cognitive and affective stimuli: People quickly lose access to the affective meaning of a repeated stimulus, just as they lose accesses to a semantic meaning of an overexposed word (Irwin, Huber, & Winkielman, 2010). Importantly, there is evidence that these habituation processes can specifically influence our preferences, altering the incentive value of a stimulus without affecting the pleasure derived from it (Morewedge, Huh, & Vosgerau, 2010). One result of people's poor access and understanding of their own dynamics of sensitization and habituation is that they make suboptimal choices about interruption of experience in many

domains, some as common as television viewing (Nelson & Meyvis, 2008; Nelson, Meyvis, & Galak, 2009).

One of the most curious reasons for failures of self-prediction is a difficulty in imagining ourselves in future "hot" affective state while we are currently in a "cold state." Thus, when we are sated, calm, and unaroused, it is hard for us to imagine how we will feel and act when we are very hungry, upset, or sexually excited. Accordingly, we do not take into sufficient consideration how a change in these states will influence our future experience and behavior. Loewenstein (1996) states that our memory for visceral experience is qualitatively different for decision making and future predictions. The consideration of the liking and wanting system dynamics adds another dimension. As we discussed earlier, some situations and cues can cause the wanting system to become hyperactive, eliciting desires that do not necessarily correspond to liking. Thus, we may actually correctly predict how we will "feel" in a hot state but fail to predict what we will want.

Evidence for these gaps in experience can be seen in various studies that examine decision-making behavior under various states of visceral arousal, specifically sexual arousal. Knutson, Wimmer, Kuhnen, and Winkielman (2008) showed that male subjects switched from low-risk to high-risk gambles after viewing erotic pictures. This change was mediated by the activation of the nucleus accumbens, which, as mentioned, is a part of the wanting system. Importantly, subjects who under sexual arousal chose more risky choices knew that the frisky pictures were irrelevant to the task, and claimed afterwards that the pictures didn't influence their financial choices. Thus, they failed to appreciate how their visceral states changed their perception of the gamble.

Ditro, Pizarro, Epstein, Jacobson, and MacDonald (2006) compared risk-taking behavior in subjects who were either under visceral influences, such as the smell of freshly baked cookies, or in a neutral state. In the first study, subjects were willing to engage in more risk to receive the cookies they smelled, and in the second study, after exposure to an erotic movie, subjects expressed greater likelihood in engaging in unprotected sex. Ariely and Loewenstein (2006) compared college-age males' sexual preferences and decisions in a state of heightened sexual arousal with a neutral state, and found that sexually aroused subjects were more willing to engage in morally questionable sexual behavior. Both these experiments further demonstrate that actual preferences during a "hot" state may differ greatly from our predictions in a neutral state, even to the point where we might find ourselves crossing our own moral boundaries.

Even young children (ages 3–5) show similar biases in prediction of future preferences, regardless of whether they fully grasp the meaning of "tomorrow" (Amanee & Meltzoff, 2006). Although a majority of children prefer pretzels to water, thirsty preschoolers preferred water to pretzels not only as their present choice but also for future encounters. This suggests that such "hot"–"cold" gaps are not necessarily accessible to regulation by higher-level cognitive processes that characteristically develop between the ages of 3 and 5.

In summary, these phenomena illustrate how underlying wanting and liking processes interact with our thoughts and expectations of our future behavior. Specifically, they demonstrate the instability of our preferences across various visceral

states, in that what we value in a "hot" state can vary greatly from what we value at a "cold" state. Critical to our biases in prediction is the fact that many of these processes are at least partly subconscious and inaccessible for decision making. Our limited understanding of how our affective system responds in various situations creates consistent biases in our predictions, rendering our actual behavior and experience at odds with our expectations.

Summary

It has been traditionally assumed that our preferences (liking) are stable, and that wanting naturally and coherently follows from liking. In addition, it has been assumed that liking and wanting are consciously experienced—internally sensed as pleasure and desire. Yet evidence from current research on affect and motivation challenges all these assumptions. Hedonic pleasure from reward (liking) and motivation for obtaining it (wanting) appear to be two different processes that can be dissociable in certain situations. Critically, both processes can sometimes operate on a subconscious level and are subject to a host of biological and cognitive manipulations that can "weaken" them without our knowledge.

The inaccessibility of our internal affective processes is linked to biases in affective forecasting, or how we make predictions of our own future emotional experience and behaviors. While these subconscious reward processes may lead us to make disadvantageous decisions in certain situations, they usually produce adaptive behavior. In addition, these affective processes do interact with conscious processes, so that we are not always completely in the dark as to our affective state. Nevertheless, awareness of our affective and motivational "blind spots" might enable us to understand our limits and live with that extra cookie we ate.

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CHAPTER 14

Partner Knowledge and Relationship Outcomes

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Individuals base some of life's most important decisions on the knowledge they have—or assume they have—about themselves, close others, and the world around them. Most of the chapters in this book address how knowledge about the self impacts a diverse array of important life outcomes. In this chapter, our primary focus is somewhat different. Instead of focusing on people's beliefs about their own traits, attitudes, and emotions, we focus on people's beliefs about the traits, attitudes, and emotions of their romantic partners, which eventually become part of the self, as well as their relationship beliefs, which help to define the self. We review how knowledge about one's current romantic relationship and especially one's romantic partner (e.g., what individuals believe their partner is thinking or feeling during important social interactions) is associated with significant relationship outcomes, such as how satisfied individuals are and whether their relationship is likely to endure. As we shall see, knowledge about partners and relationships exists at different levels, ranging from specific inferences about what one's romantic partner is thinking or feeling at specific moments during a critical discussion to more global assessments of a partner's defining traits and personal attributes. One of our primary goals is to explain how and why accurate versus inaccurate knowledge of the partner at different levels of measurement is related to important relationship outcomes.

The chapter has four sections. In the first section, we discuss how people typically acquire knowledge about their partners and relationships, focusing on the concepts of relationship awareness (Acitelli, 2002) and minding in relationships (Harvey & Omarzu, 1997, 1999). In the second section, we review what has been learned about the "knowing process," highlighting recent research on self-expansion processes in close relationships (Aron, Aron, & Norman, 2001). The third section examines the