

control theory for psychology

The application of control theory principles offers a powerful lens through which to understand human behavior, motivation, and psychological well-being. This article delves into how control theory, a framework originating in engineering and cybernetics, can illuminate complex psychological phenomena, from goal pursuit and emotional regulation to interpersonal dynamics and therapeutic interventions. We will explore the core concepts of control theory, such as reference levels, error signals, and feedback loops, and demonstrate their relevance in various psychological domains. Understanding these mechanisms can provide profound insights into why we act the way we do and how we can achieve greater personal satisfaction and effectiveness.

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Understanding Control Theory for Psychology

At its heart, control theory is about understanding how systems maintain stability and achieve goals in the face of disturbances. Imagine a thermostat in your home; it constantly monitors the room temperature (the current state) and compares it to your desired temperature (the reference level). If there's a difference, it sends a signal to the heating or cooling system to correct the deviation. This elegant feedback mechanism is remarkably analogous to how humans manage their internal states and external behaviors. In psychology, this translates to understanding how individuals strive to maintain certain emotional states, achieve personal goals, and navigate their environment effectively.

This branch of psychology, sometimes referred to as psychological control theory or self-regulation theory, borrows heavily from the mathematical and engineering principles of cybernetics. It proposes that our actions are not random but are directed toward achieving and maintaining specific desired states or goals. When there's a discrepancy between our current state and our desired state, we experience an "error signal" that motivates us to take action to reduce that error. This continuous process of monitoring, comparing, and acting forms the bedrock of much of our psychological functioning, from simple actions like reaching for a cup of coffee to complex pursuits like building a career or nurturing a relationship.

The beauty of applying control theory to psychology lies in its explanatory power for a wide range of behaviors that might otherwise seem puzzling. Why do some people persevere through immense hardship to achieve a goal, while others give up easily? Why

do we experience distress when things are "not right," and how do we work to restore a sense of equilibrium? Control theory offers a systematic way to answer these questions by focusing on the underlying regulatory processes. It shifts our focus from just "what" people do to "how" and "why" they do it, emphasizing the continuous effort to control important variables in their lives.

Core Concepts of Control Theory Applied to Psychological Processes

The foundational elements of control theory provide a robust framework for dissecting psychological phenomena. These concepts, when translated into psychological terms, offer precise descriptions of how individuals regulate their internal and external worlds. They highlight the active, goal-directed nature of human behavior and the intricate feedback loops that guide our actions and emotions.

Reference Levels: The Psychological Set-Point

In control theory, a reference level, or set-point, is the desired state of a system. For example, the thermostat's desired temperature is its reference level. In psychology, reference levels represent our goals, aspirations, ideals, and even our emotional comfort zones. These can be conscious, like wanting to get an 'A' in a class, or subconscious, like maintaining a certain level of social connection or a specific mood. We have reference levels for nearly everything: how much sleep we ideally want, how much money we aim to earn, how respected we wish to be, or how calm we want to feel in a stressful situation. These reference levels are not static; they can be learned, modified, and even conflicting.

Perceived States: What We Actually Experience

The perceived state is the current condition of the system being controlled. In psychological terms, this is our subjective experience of reality – our actual current feelings, our observable behavior, our progress towards a goal, or the current state of our relationships. It's the temperature reading on the thermostat, or the actual temperature in the room. It's crucial to note that the perceived state is subjective; it's how we interpret our internal and external environment, which can be influenced by biases, past experiences, and current cognitive states. For instance, someone might perceive a minor social snub as a major rejection, or conversely, overlook significant personal shortcomings.

Error Signals: The Drive to Change

The discrepancy between the reference level and the perceived state generates an error

signal. This is the engine of motivation in control theory. If the perceived state deviates from the reference level, an error signal is produced, prompting action to reduce this difference. In psychology, this error signal is often experienced as discomfort, dissatisfaction, stress, anxiety, or a yearning for something different. If your reference level for comfort is to feel warm, and the perceived state is feeling cold, the 'coldness' generates an error signal that motivates you to put on a sweater or turn up the heat. Similarly, if your reference level for self-esteem is high, and your perceived state is feeling inadequate, that feeling of inadequacy is an error signal driving you to seek validation or change your behavior.

Action/Output: The Behavioral Response

The action or output is what the system does to reduce the error signal. In psychological control theory, this refers to our behaviors, thoughts, and emotional responses aimed at bringing the perceived state closer to the reference level. If you feel hungry (error signal, assuming your reference level is feeling full and satisfied), your action might be to find and eat food. If you're feeling anxious before a presentation (error signal, reference level is feeling calm and prepared), your actions might include practicing your speech, deep breathing exercises, or seeking reassurance. These actions are designed to modify the perceived state and ultimately reduce the error.

Feedback Loops: The Continuous Cycle of Control

Feedback loops are the essential mechanism by which control is maintained. There are typically two types: negative and positive. Negative feedback seeks to reduce or counteract deviation from the reference level, promoting stability. For example, if you're too hot (perceived state) relative to your desired comfort temperature (reference level), you'll take action to cool down, thus reducing the 'heat' error. Positive feedback, conversely, amplifies deviation, leading to instability or rapid change. In psychological terms, negative feedback is crucial for maintaining stable emotions, achieving goals, and regulating physiological processes. Positive feedback might be seen in escalating arguments or addictive behaviors where the initial action leads to further amplification of the undesirable state.

Control Theory and Motivation: The Pursuit of Goals

Motivation, a central concept in psychology, finds a powerful explanation within the framework of control theory. It posits that our drive to act is fundamentally rooted in our efforts to control important variables in our lives and bring our perceived reality in line with our desired states, or reference levels. This perspective offers a dynamic and continuous view of motivation, rather than seeing it as a switch that is simply "on" or "off."

Goal Setting as Establishing Reference Levels

Setting a goal is, in essence, establishing a new or modifying an existing reference level. When you decide to lose weight, you are setting a new reference level for your body mass. When you aim to learn a new language, you are setting a reference level for your linguistic competence. These reference levels act as attractors, pulling our behavior towards them. The more clearly defined and important the reference level, the stronger the motivational pull.

The Role of Perceived Progress and Discrepancy

Our motivation is directly influenced by how we perceive our progress toward our goals. If we see ourselves making good progress, the error signal might be small, leading to sustained effort. However, if we perceive ourselves as far from our goal, or even moving away from it, the error signal can become quite large, potentially leading to increased motivation or, conversely, discouragement and resignation. For instance, a student who consistently receives good grades (small error) will likely remain motivated to continue studying. In contrast, a student struggling and receiving poor grades (large error) might become demotivated if they don't see a clear path to improvement.

Internal and External Control Systems

Control theory also helps differentiate between internal and external motivators. Internal motivation stems from fulfilling our own reference levels, such as the satisfaction of mastery or the joy of learning. External motivation arises from controlling variables related to external rewards or punishments, like earning money or avoiding criticism. While both can drive behavior, internal motivation is often associated with greater persistence and well-being, as the control system is self-sustaining. When our actions are driven solely by external factors, we can become dependent on those external controls, and our motivation can falter when they are removed.

Emotional Regulation Through Control Theory

One of the most profound applications of control theory in psychology is its ability to explain and guide emotional regulation. Our emotions are not simply random occurrences; they are often the result of our internal control systems working to maintain desired emotional states.

Emotional Reference Levels: The Desired Affective State

We all have reference levels for our emotions. We desire to feel happy, calm, content,

excited, and so on. We also have emotional states we wish to avoid, such as sadness, anger, anxiety, or fear. These desired emotional states serve as our emotional reference levels. For example, your reference level for a social gathering might be to feel engaged and relaxed, rather than anxious or bored.

Perceiving Emotional Deviations and Error Signals

When our current emotional state (perceived state) deviates from our desired emotional state (reference level), we experience an emotional error signal. Feeling sad when you want to feel happy generates an error signal that prompts you to try and alter your mood. Feeling anxious when you wish to feel calm is another example. These error signals are the raw data that alert us to a mismatch between our internal experience and our goals for that experience.

Actions for Emotional Re-regulation

The actions we take to manage our emotions are essentially control strategies designed to reduce these error signals. These can include a wide range of behaviors:

- Cognitive reappraisal: Changing how we think about a situation to alter our emotional response.
- Distraction: Shifting attention away from a distressing stimulus.
- Seeking social support: Engaging with others to regulate feelings.
- Engaging in enjoyable activities: Directly pursuing states that align with positive emotional reference levels.
- Mindfulness and meditation: Learning to observe emotions without immediate reactivity, thereby gaining more control.

The effectiveness of these strategies depends on how well they actually reduce the emotional error signal and bring our perceived emotional state closer to our desired state.

When Control Fails: Emotional Dysregulation

Emotional dysregulation can be understood as a failure in these control processes. This might occur due to poorly defined reference levels, an inability to accurately perceive one's emotional state, ineffective action strategies, or overwhelming external disturbances that the system cannot manage. For individuals with certain psychological conditions, their emotional control systems may be more sensitive, leading to exaggerated error signals and a persistent struggle to return to a stable emotional state.

Interpersonal Dynamics and Control Theory

Control theory offers a compelling perspective on how relationships function and the dynamics that play out between individuals. We are not isolated systems; our interactions are a complex interplay of multiple control loops.

Relationship Goals as Shared Reference Levels

In any relationship, individuals often establish shared reference levels, or goals, for the relationship itself. This might include levels of intimacy, trust, mutual respect, or shared activities. When one partner perceives that these shared reference levels are not being met, it generates an error signal that can lead to communication or behavioral adjustments.

Controlling Perceptions of Others

We also engage in efforts to control how others perceive us. We adjust our behavior, language, and presentation to elicit specific responses from others, aiming to maintain a desired social image or interpersonal reference level. For example, someone might act friendly and accommodating to maintain a reference level of being liked.

Attachment and Control

Attachment theory, which describes the bonds between individuals, can be viewed through a control theory lens. Our primary attachment figures become critical reference levels for safety and security. When we feel threatened or distressed, we seek proximity to our attachment figure (action) to restore a sense of safety (perceived state closer to reference level). Disruptions in these attachment relationships can be seen as significant failures in a fundamental control system.

Conflict and Miscommunication as Control Failures

Interpersonal conflict often arises when individuals have conflicting reference levels or when their attempts to control the relationship dynamic are misunderstood or countered by the other person. Miscommunication can be viewed as a breakdown in the feedback loop, where the intended output (message) is not accurately perceived by the recipient, leading to unexpected error signals and maladaptive responses.

Applications of Control Theory in Therapy

The principles of control theory have found significant traction in various therapeutic modalities, offering practical tools for clients to understand and manage their psychological challenges.

Cognitive Behavioral Therapy (CBT) and Self-Regulation

CBT, a highly effective form of psychotherapy, aligns remarkably well with control theory concepts. CBT focuses on identifying and modifying maladaptive thought patterns and behaviors that disrupt a client's ability to achieve desired outcomes (reference levels). Therapists help clients identify their "errors" – the discrepancies between how they want to feel or behave and how they actually are – and develop more effective strategies (actions) to reduce these errors. For example, someone experiencing social anxiety has a reference level of being comfortable in social situations but perceives themselves as awkward and fearful. CBT helps them identify the thoughts that create this fear and practice behaviors that move them closer to their desired state.

Dialectical Behavior Therapy (DBT) and Emotional Control

DBT, particularly useful for individuals with emotion dysregulation, explicitly teaches skills for managing intense emotions. These skills are, in essence, control strategies. Clients learn to identify their emotional reference levels, recognize the error signals of intense emotions, and employ distress tolerance, emotion regulation, and interpersonal effectiveness skills as actions to bring their emotional state back into a more manageable range. The focus is on accepting current emotional states while also working towards desired emotional regulation, a core principle of dialectical thinking and control.

Goal-Oriented Therapies

Many goal-oriented therapies draw implicitly or explicitly from control theory. The therapeutic process often involves helping clients define clear reference levels (goals) and then working collaboratively to identify obstacles (disturbances) and develop effective action plans to overcome them. The therapist acts as a facilitator, helping the client refine their control strategies and maintain motivation throughout the process.

Understanding Relapse Prevention

For conditions like addiction or eating disorders, control theory offers a robust model for

relapse prevention. Relapse can be seen as a failure of the control system to maintain the desired state (sobriety, healthy eating) in the face of strong disturbances (cravings, triggers, stress). Therapy can focus on strengthening the client's control strategies, developing better coping mechanisms, and re-establishing clear reference levels and robust feedback loops to prevent future deviations.

Ultimately, the application of control theory in therapy empowers individuals by providing them with a systematic understanding of their own psychological processes. It demystifies their struggles, reframes them as attempts at control gone awry, and offers concrete strategies for regaining a sense of agency and well-being. By understanding the mechanics of their internal control systems, individuals can become more adept at navigating life's challenges and achieving their desired states of being.

Frequently Asked Questions

Q: What is the fundamental difference between control theory and traditional psychological motivation theories?

A: Traditional psychological motivation theories often focus on drives, needs, and incentives. Control theory, however, views motivation as an ongoing process of error detection and reduction, where behavior is directed toward maintaining desired states or goals (reference levels) in the face of disturbances. It emphasizes the continuous feedback loop between perception and action.

Q: How can understanding control theory help an individual improve their self-discipline?

A: Self-discipline can be seen as the ability to effectively manage one's control systems. By understanding control theory, an individual can identify their specific reference levels (e.g., wanting to exercise regularly), accurately perceive their current state (e.g., feeling tired and unmotivated), recognize the error signal, and then implement effective action strategies (e.g., breaking down the exercise into smaller steps, finding an accountability partner) to reduce the error and achieve their goal.

Q: Can control theory explain why some people are more prone to anxiety than others?

A: Yes, control theory suggests that individuals prone to anxiety may have reference levels for emotional states that are very sensitive or difficult to achieve, or they may perceive deviations from these reference levels as more significant or threatening. Their error signals might be amplified, leading to a heightened sense of alarm and a struggle to return to a calm state, even with minor disturbances.

Q: What is the role of negative feedback in maintaining psychological stability according to control theory?

A: Negative feedback is crucial for psychological stability. It refers to the process where any deviation from a desired state (reference level) triggers actions that counteract that deviation, bringing the system back towards equilibrium. For example, if you feel lonely (deviation from your reference level of social connection), you might reach out to a friend to reduce that feeling.

Q: How does control theory apply to the concept of habit formation?

A: Habits can be viewed as automated control systems. Once formed, a habit is a learned, efficient strategy for achieving a specific reference level or managing a particular error signal. For instance, the habit of brushing your teeth before bed is a strategy to achieve the reference level of oral hygiene and avoid the error signal of feeling unpleasantly unclean. Breaking bad habits involves disrupting these existing control loops and establishing new ones.

Q: In what ways can understanding control theory help in relationships?

A: Understanding control theory in relationships helps recognize that individuals are constantly trying to manage their own internal states and influence their partner's behavior to meet relationship goals or reference levels. It can explain conflicts arising from differing reference levels, the importance of clear communication as a feedback mechanism, and how actions are often attempts to control the perceived state of the relationship.

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