

## **A History of Human Motivation Theories**

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Motivation is a topic of relevance in all areas of human endeavour. Defined by what “moves” people to action, motivation concerns both the energy and direction underlying actions. Yet how motivation has been understood has varied greatly over the short history of scientific psychology. In fact, more than in many other areas of psychology, in the field of human motivation there has been a clear evolution of ideas that has to a large extent been empirically driven. New theories have emerged to account for those limitations of their predecessors, allowing the field to become more sophisticated and explanatory with time.

In this chapter we trace this development of organizing ideas, their empirical dilemmas, and the emergence of new theories about what moves people to act. We begin with post-Darwinian speculations concerning instincts and drives as fundamental motivators of action. This scholarship was overtaken by the advent of behaviourism, which dominated motivational science for more than half a century. Behaviourist drive and operant theorists provided broad and sometimes competing explanatory frameworks, although both focused on external reinforcements and their effects on behaviour. Despite their empirical strengths, shortcomings in these theories spawned two streams of reactions that remain salient today. One is the “cognitive revolution,” a focus on the cognitive mediators such as expectancies and values that connect environments and behaviour. A second is a turn away from an exclusive focus on external sources of motivation to an understanding of internal sources such as intrinsic motivation and autonomous motives.

This history will be necessarily incomplete. For one thing, we will focus on big theories, rather than specific mechanisms, since mechanistic models of how motivation works are typically incorporated into larger theoretical frameworks. For example, there is much

understood about the feedback loops associated with hunger and appetite, mechanics that can be placed with more general drive theory frameworks. Second, there are many theories of motivation that are popular, but not built around empirical data or experimental studies. Theories of motivation from sources such as Jungian psychology or some humanistic approaches will not be covered, as our focus is on the ideas shaping the empirical sciences of motivation. In addition, rich traditions in the study of individual differences such as achievement motivation (e.g. McClelland, 1973) and reinforcement sensitivity (Gray, 1971) will not be meaningfully covered. Finally, especially in the modern landscape of research, there are various active and competing theories of motivation, not all of which can be comprehensively treated. Rather our goal here is to outline the broad changes in the landscape of human motivation science over time, and their implications for practice, and society. We begin with the speculations of early pioneers in motivation about instinctual mechanisms, and then turn to theories of motivation based in: physiological drives; external reinforcements; cognitive mechanisms; and core psychological needs.

### **Early motivation theories**

**Darwin.** Perhaps a good beginning for this history of the science of human motivation is Darwin's (1872) speculations concerning emotions and motivations to act. Darwin argued that humans have evolved emotional reactions that lead to or energize actions that have been adaptive. Sexual arousal, fear, anger all have specific roles in activating activities such as reproduction, flight, or fight behaviours, respectively. In humans, vestiges of these instinctual reactions remain in facial expressions and bodily gestures, which often have a signal function to ward off or attract specific behaviours from others. In forwarding these ideas Darwin was locating the explanation of human motives in evolved instinctual reactions, providing a starting point for organismic thinking.

**McDougall's Instinct theory.** McDougall (1923) is perhaps best known for his theory of instinct-based motivations that extended Darwinian ideas into psychology. He argued that when a creature is aroused by a physical need, it becomes purposively motivated toward a goal. He defined *motivation* specifically as the psychological impetus that gives rise to action, and argued that motivation could be both measured and manipulated in scientific studies. He was a strong advocate of the idea that behaviours were goal oriented, even if individuals did not always consciously know the aim of a drive, a position that brought him into conflict with behaviourists.

**Woodworth: On instincts and interests.** Woodworth was another early motivation theorist who introduced what he labelled a *behaviour-primacy theory* (1918, 1958). He is also the person who moved the field away from the concept of instincts to that of *drives*, a concept he derived from observing new inventions in his time such as the automobile. As he stated: "I got it from mechanics.... The "drive" of a machine is the supply of energy that puts it in motion" (cf. Young, 1936, p. 71).

In Woodworth's view drives activate both innate and learned mechanisms within the organism that then steer actions. Many drives were seen as specific in their focus, although Woodworth also emphasized the organismic importance of behaviour that is connected simply to the 'pleasure of being a cause.' Woodworth argued that such spontaneous behaviour is part of our "native equipment to be active in a motor way, as well, indeed, as in the way of exploration" (1918, p. 50). He thus presaged the much later work of White (1959) in suggesting that much behaviour is directed toward having effects on one's environment, and further, that drive-based motives are better conceived of as often interrupting such activities, rather than being the drivers of them. Woodworth (1958) argued that without an exploratory tendency that is stronger than anxiety, animals (and people) would be paralyzed in new circumstances.

To Woodworth, phenomena such as curiosity, constructiveness, and self-assertion are their own ends, but they also provide satisfaction of other general motives. He also argued that motives such as pursuing a reward or avoiding a punishment may initiate behaviours, but “only when it is running on its own drive...can (it) run freely and effectively.” This notion corresponds to what Allport (1937) would later describe as *functional autonomy*.

### **The Behaviourist Movement**

The early work of thinkers such as McDougall, Woodworth and others was soon eclipsed by a movement that dominated much of 20<sup>th</sup> century motivational psychology, namely *behaviourism*. Behaviourists were in many ways non-motivational theorists—viewing behaviour as a function of external contingencies rather than internal instincts, drives, needs or desires. The focus is on external factors that are controlling behaviour rather than forces or mechanisms inside the “black box” of mind.

**John Watson**, schooled in functionalist thinking at the University of Chicago under John Dewey, argued in contradiction to his mentor that behaviour rather than mind was the true subject matter of scientific psychology. Explanations of behaviour, he argued, need not implicate consciousness, goals or motives (Watson, 1913). Instead, he advocated direct observation of behaviours emitted in response to the experimental manipulation of hypothesized causes. From this starting point, Watson argued that animals—humans and other species alike—adjust to their environments with habit mechanisms through which responses are linked to varied stimuli. This, of course, placed relatively little emphasis on the nature of drives or needs pertaining to, any specific species. In fact, Watson’s framework emphasized the plasticity of organisms, including humans.

The work of **Edward Thorndike** (1913) complemented that of Watson by specifying a means through which new habits can be acquired. Thorndike proposed the *law of effect*, asserting that if a given behaviour is followed by a *satisfier* the likelihood that the behaviour

will recur is enhanced (i.e., a habit will be strengthened). If the behaviour is instead followed by an “annoyer,” its likelihood should decrease.

Both Watson and Thorndike were critical of Dewey’s functionalist theory, and argued that in fact behaviourism, with its focus on stimulus events and observable behaviours, was the only true functionalism. Behaviour was understood as a direct function of external stimuli and the application of observable reinforcing events.

### **The emergence of Drive theory**

The work of **Clark Hull** was focused on the mechanisms underpinning this strengthening of behaviours through reinforcement. In other words Hull was interested in *why* some connections are made and habits formed, and not others. Specifically, Hull predicted the kinds of events that would be reinforcing were those that would reduce arousal brought about by drives. According to Hull (1943), these drives stem from four basic physiological needs: food, water, sex, and pain avoidance. These physiological needs give rise to drive states, and behaviours that have returned the organism to equilibrium—that is, that have reduced the drive state, are those that are reinforced.

Within Hull’s theory, the concept of *secondary reinforcement* explains much of the behaviour of organisms. Whereas anything that directly reduces one of the four drives is considered a primary reinforcer, an object or event that is paired with a drive reducer may itself take on reinforcing properties, becoming a secondary reinforcer. To be effective, a secondary reinforcer must periodically be re-paired with primary drive reduction; otherwise its capacity to reinforce will dissipate over time.

### **Operant Theory**

Operant psychology is not concerned with the nature of drives. Indeed, **B.F. Skinner** (e.g., Skinner, 1953), the originator of operant approaches, eschewed any interest in motives, drives, or other events “internal to the organism”. Instead his central focus was how rates of

responding change as a function of the external and observable consequences of the behaviour. Certain external consequences increase the rate of responding, and are considered *reinforcements*. Reinforcements may be positive (if their presence increases the probability of responding) or negative (if their removal increases the probability of a response). When a reinforcing event is terminated, the frequency of behaviour decreases, a process he referred to as *extinction*.

As noted, unlike drive theories such as those proposed by McDougall or Hull, Skinner's operant approach was in a principled way not concerned with the properties of what activates or reinforces organisms; instead it emphasized the functional effects of external events. This is not to say that certain types of events were not predictably reinforcing, even on first presentation to an organism, such as food, especially if the organism had been deprived. Yet other reinforcers seem to acquire their reinforcing value over time. Skinner referred to these as *conditioned reinforcers*, (akin to Hull's secondary reinforcers) suggesting that a stimulus that may take on reinforcement properties through being paired with an effective reinforcement. As a prime example Skinner once described how human behaviour can be readily controlled by that "universal generalized reinforcer, money" (p. 62), presumably because money has for most of us been so frequently been paired with other primary reinforcers. Because behaviours that recur were thought to be invariantly 'under the control of' reinforcement processes, research was focused on the most effective schedules of reinforcement for increasing and maintaining response rates over time.

Although in the operant view the organism's behaviour is largely controlled by external events, there was nonetheless an active component in this theory: the *operant*. As the term suggests, Skinner understood that organisms spontaneously "operate" on the environment. Yet operants were treated as essentially random outputs rather than systematic

events. These outputs were then essentially “selected” by the contingencies of reinforcement in the environment: Operants would theoretically not recur unless externally reinforced.

Given theories to come, it is worth highlighting that within Skinner’s behaviourism, animals (including humans) do not behave *in order to* get reinforcement; they emit behaviours that were reinforced in the past. This is a critical point, because the idea of doing something in order to obtain a reinforcement requires that cognitions and goals be given a causal role in the analysis of behaviour, an issue that distinguishes social cognitive and expectancy theories (e.g., Bandura & Walters, 1963; Rotter, 1954; Vroom, 1964) from operant theory.

**Operant theory and motivation.** Strictly speaking, there are *no* motivational concepts within operant theory, although in practice they are implicit within the approach. Reinforcers are simply defined as events that change the rate of responding, not as objects of goals, motives or needs. Similarly, formally there is no concept of *rewards* within operant theory, because the very idea of a reward carries mentalistic connotations of desirability.

In operant theory there are also no concepts for autonomous or intrinsic motivations. In part, this stems from the technical definition of *reinforcement*, which is operationally defined as external event that is separable and distinct from the behaviour itself (Skinner, 1953). Because reinforcements must by definition lie in the external environment, any notion of rewards that are inherent in behaviour is anathema (Deci & Ryan, 1985). The concept of intrinsic motivation, or spontaneous behaviours done for their own sake as Woodworth had imagined, is rendered in the operant view an obscure idea, referring to behaviours for which the contingencies of reinforcement have not yet been identified (Carton, 1996; Flora, 1990).

**Drive and operant theories.** There are important similarities and differences between the behaviourist drive and operant approaches. In both the concept of reinforcement is seen as essential for acquiring habits or recurring actions. Yet whereas in drive theory reinforcement

is defined in terms of drive reduction, in operant theory, reinforcement is defined only functionally, in terms of whether an external event alters the rate of responding. In this sense, Hull was concerned with the “nature” of the organism, whereas Skinner was, in principle, not. Further, both theories allow for initially neutral stimuli to become reinforcers. In Skinner’s theory, a conditioned reinforcer is defined functionally—an event that did not initially affect response rates acquires the characteristic of affecting response rates—whereas in Hull’s perspective, a secondary reinforcer is defined by having been paired with drive reduction. Finally, both of these frameworks guided substantial research programs that commonly highlighted an important fact: under specified circumstances, and with seemingly few exceptions, behaviours *can* be brought under the control of external reinforcements.

Well into the mid-20<sup>th</sup> century these two behaviourisms successfully framed motivation as being primarily, if not wholly, a function of external contingencies of reinforcement. However, all was not at ease within the sciences of motivation. Three movements emerged in reaction to this dominant behavioural view that challenged its explanatory power and set the stage for today’s motivational sciences. One was the *cognitive movement* within behaviourism resulting in social-cognitive motivation theories of today. Second was a movement away from physiological drives to *psychological needs* as motivating much human behaviour. Third was a renewed interest in *evolved mechanisms* that potentiate motives and structure social behaviours. We review each of these movements in turn, all of which pointed motivational researchers to look inside the “black box”.

### **The Cognitive Movement in Motivation: Expectancies and Efficacy**

**Edward Chase Tolman** may perhaps be the most underrated theorist in the history of motivation. In the heyday of behaviourism, he not only recognized, but also compellingly showed how to operationalize the cognitive intervening variables of which behaviour is so



often a function. Tolman traversed in the idea that behaviour was goal-oriented and purposive, and its occurrence was effected by expectations of reinforcements. Tolman showed, for example, how rats, trained to efficiently run a maze, will run into a wall if it is suddenly shortened, betraying an “expectancy” and a “cognitive map” of their territory. Rats also demonstrated *latent learning* of their domains, which can be made evident once reinforcement calls forth specific goal-directed behaviours. In fact, for Tolman *learning* goes on all the time, even without specific reinforcement, whereas specific behaviours are elicited by reinforcements. Tolman thus introduced, and powerfully supported with ingenious experiments, the importance of cognitive mediators such as expectancy, as well as the distinction between learning and performance.

Tolman also importantly focused on *molar behaviour*—the sequence of organized actions leading to a goal object. He argued that a goal is not simply a mentalistic inference—it can be inferred by persistence, docility, selectivity and more generally the equifinality of animal behaviour (see Heckhausen 1991). His focus on molar behaviour has been widely emulated since.

Yet if there was to be a “cognitive revolution” within the field of behaviourism, it awaited the work of **Julian Rotter**. Rotter set off this revolution by asserting that it is the expectancy (E) of reinforcement that determines the probability of responding. One must believe behaviour can affect an outcome to be moved to act. Although Rotter agreed that reinforcement strengthens expectancies, he showed that changes in expectancy can alter probabilities of response independent of actual histories of reinforcement. Second Rotter emphasized that *reinforcement value* (RV) also matters. Indeed, both E and RV represented critical *cognitive mediators* between the environment and behavioural responses.

Rotter most famously created the construct of *internal locus of control* to describe the situation in which the individual expects a reliable connection between behaviour and

outcome. Factors adding to an internal locus of control would enhance motivation, and the likelihood of effort toward a goal. In contrast, an *external locus of control* is experienced when a person believes that he or she cannot affect outcomes. One's history of experiences with locus of control eventually lead to *generalized expectancies*, or trait like expressions of these expectancies that affect motivation more globally.

The strong negative impact of an external locus of control is also the phenomenon known as *learned helplessness*. Popularized by **Martin Seligman** (1975), learned helplessness is a motivational state of passivity and unresponsiveness. It results, as Seligman showed experimentally, from exposure to conditions in which outcomes (particularly aversive ones) are neither predictable nor controllable. Such conditions create a learned helplessness, leading to no motivation to act.

**Albert Bandura** significantly contributed to this cognitive revolution within behaviourism by establishing two fundamental points beyond Rotter. First, like Tolman before him he showed that learning was occurring even without direct reinforcement. Vicarious learning and modelling represented mechanisms for acquiring new behaviours beyond the direct reinforcement processes specified by Skinner.

Second, Bandura argued that there is an internal experience of efficacy that accompanies effective, reinforcement procuring, action. This feeling of *self-efficacy* takes on reinforcement properties of its own. Self-efficacy, the belief that an action can reliably affect an outcome, thus becomes a cornerstone of Bandura's (1996) social cognitive theory of motivation.

Bandura's social cognitive theory of behaviour, like Rotter's work, places expectancies at its core. Efficacy expectations refer to the extent to which an individual believes that she or he can achieve or attain a desired outcome in a situation. Greater efficacy

expectations influence the likelihood a person will enter that situation, and how persistent their efforts will be. Motivation is mediated by expectancies and efficacy beliefs.

It is important to note that within SCT motivation is a unitary construct; one has more or less motivation as a function of efficacy expectations. Also salient is that SCT is to a large degree an “empty” organism theory. Like the operant behaviourism from which it was spawned, modern social cognitive theory does not focus on or prioritise any specific contents of human nature or needs, with the exception of competence. Rather motivations are viewed as learned or acquired.

Today these assumptions of cognitive mediation reign not only in social cognitive theories, but also in expectancy-value theories (Vroom, 1964; Wigfield & Eccles, 2000). In a nutshell, expectancy-value theories identify two key factors that influence behavior: the degree to which individuals believe they will be successful if they try (expectancy), and the degree to which they perceive that there is a personal importance, value or intrinsic interest in doing the task (value). Expectancy beliefs can be both general (e.g. global self-concept) and task specific (Wigfield & Eccles, 2000). Studies in schools, for example, show that expectancy beliefs predict both engagement in learning activities and learning achievement (e.g. test scores and grades). Expectancy of success can even exceed past performance as a predictor of success.

Cognitive mediation is also the core element in work by **Carol Dweck** (2006) and colleagues on *mindsets*. According to this model, motivation is dependent on the belief or attribution that trying matters. Dweck describes an incremental or *growth mindset* in which the person believes that effort will impact performance. In contrast she describes an entity or *fixed mindset* in which one believes that abilities are predetermined, and one cannot change outcomes or one’s standing through effort. Based on this conceptualization, interventions

focus on changing or manipulating maladaptive mindsets, which are assumed to be malleable.

### **Inner sources of regulation: Intrinsic motivation and psychological needs**

We now turn to a second “response” to the behaviourist framework, namely the emergence of a focus on intrinsic motivation, and more generally the internal or inherent psychological needs that often drive human behaviour.

Ironically, it was behaviourist theories that gave rise to the first empirical studies of *intrinsic motivation*. In particular, researchers increasingly uncovered behaviours that were not well explained by reinforcement processes. For example, Nissen (1930) observed that rats would cross an electrified grid to get to a novel maze area. There was no clear explanation for this behaviour within the Hullian framework; the grid crossing would increase rather than reduce arousal, and the novel space had not been previously paired with reinforcements. Subsequently, Butler (1953) showed that rhesus monkeys would learn discrimination problems simply for the opportunity to visually explore the environment, without any other drive-related reinforcement. Montgomery (1955) afforded drive-sated rats a choice between exploring a maze area or returning to their nest. They showed a preference for exploration, even though it had not been paired with primary reinforcement and presumably “cost” energy. Harlow (1953b) reviewed experiments that rhesus monkeys would solve discrimination tasks for the sole reward of being able to manipulate novel objects. He noted that this “manipulation drive” was highly resistant to extinction. These and other studies were pointing to spontaneous activities that did not seem to be a direct function of external reinforcements.

**Harry Harlow** (1950) is, in fact, the first scientist to use the term *intrinsic motivation*. He did so in the title of a report: “Learning and satiation of response in

intrinsically motivated complex puzzle performance by monkeys”, in the *Journal of Comparative Psychology*. Here Harlow reported on observations of how primates’ exploratory behaviours often persisted without reinforcement, and did not show the typical properties of drive reduction.

**Drive-theory accounts.** As researchers such as Harlow suggested that orthodox drive and operant theories could not explain curiosity and exploratory behaviours, others attempted to provide accounts of such behaviours that required minimal or no change to the basic theory. One account held that novel stimuli are anxiety provoking, and because anxiety is painful, exploratory behaviours reduce such pain and reinforce thus behaviours (Brown, 1961). Yet the most obvious response to anxiety provoking novelty would be to avoid it. Moreover, fear inductions were found to generally reduce tendencies to explore (Montgomery, 1955), whereas, as Harlow (1953b) reported, animals facing novel stimuli typically display excitement rather than fear. Thus, it seems that anxiety reduction does not provide a very satisfactory account of exploration,

Other drive-theory accounts of exploration used the concept of secondary reinforcement. Here the idea was that exploring novel spaces can lead to primary drive reduction (e.g., food is found), and thus exploration takes on secondary-reinforcing properties. But this does not explain the fact that animals exhibit persistent curiosity and exploratory urges soon after birth, before meaningful chances to be paired with drive reduction. Further, as Butler (1953) demonstrated, exploratory or curiosity behaviours show high resistance to extinction, and appear to function more like primary reinforcers.

A final attempt at explaining, within the confines of drive theory, exploratory-type behaviour, was *drive naming*. Candidates included an *exploratory drive* (Montgomery, 1952), a *visual-exploration drive* (Butler, 1953), and a *manipulation drive* (Harlow, 1953b), and a *boredom avoidance drive* (Isaac, 1962). But the problem with these approaches, other than

their ad hoc nature and lack of parsimony, was that positing new drives such as these would require a major change in the definition of drive. These new “drives” are not based in tissue deficits like Hull’s physiological drives, and do not necessarily energize behaviours that result in any known drive reduction. As Hebb (1961) summarized it, “Emphasis on biological needs seems to limit animal motivation too narrowly” (p. 179).

### **An Alternative: White’s Effectance Motivation**

After a decade of controversial research on exploration, curiosity, and play, **Robert White** (1959) contributed a seminal paper that argued that accounts of such behaviours based on the physiological needs (or drives) were not compelling, nor were accounts based on operant models. He suggested an alternative idea, namely that behaviours could be derived not only from physiological drives, but also from *innate psychological tendencies*. White summarized one of these tendencies under the concept of *competence*. Referring to the competence motive as *effectance motivation*, White suggested that it involves the feeling of satisfaction and pleasure in producing effects and developing capacities, and was manifest curiosity, play and exploration. White further suggested that such competence-promoting activity “satisfies an intrinsic need to deal with the environment” (1959, p. 318). He thus set the stage for an enormous amount of subsequent work not only on competence, but also other basic psychological needs (e.g., Deci & Ryan, 1985).

In this thesis, White was echoing themes voiced decades earlier by Groos (1898), Woodworth (1918), and others, but seemingly ignored in the behaviourist era, that being curious about, and exploring, one’s world is a natural motive. Although it has important developmental and adaptive consequences, this motivation is supported by experiences of interest and enjoyment—the inherent pleasure of engagement and proactivity—rather than by any instrumental goals or reinforcement consequences. This idea that the very *enjoyability* of

certain proactive, assimilative and relational tendencies can itself yield selective advantages, is one central to many modern perspectives (see Ryan & Deci, 2017).

White's (1959) ideas fell so far outside the boundaries of the behavioural theories that dominated psychology at that time that Hilgard (1987) dated the 'end of motivation as a field' to this paper. However, a different view is that, rather than extinguishing motivation theory, White was refocusing it on its proper object—namely, the active organism, liberally endowed with propensities to engage its environment. White's theory of effectance motivation represents the theoretical forerunner of theories of *intrinsic motivation* (e.g., Harter, 19xx; Elliot, 2002) as well as other psychological-needs based formulations of motivated phenomena (Deci & Rayn, 1985). The idea that actions emitted by organisms can be inclined by inherent satisfactions may have marked the end of the dominance of behaviourist theories of motivation, but it was the starting bell for a new era in the science of human motivation.

**Richard deCharms** (1968) extended White's theorizing on intrinsic motivation in his classic work *Personal Causation*. Here is agreed with White that persons who are intrinsically motivated feel efficacy and agency. Looking further at the concept of agency using the attributional terminology of Heider (1958), deCharms argued that a person who is intrinsically motivated has an *internal perceived locus of causality*. They see themselves as self-regulating--or causing their own actions. In contrast de Charms argued that any factor that detracted from this feeling of being an "origin," or led one to experience an *external perceived locus of causality* would undermine intrinsic motivation.

**Edward Deci** put the ideas of both White and de Charms to work in several experiments on intrinsic motivation in humans that changed the focus of motivational research. In series of experiments Deci (1971, 1972) showed that rewarding participants for doing something interesting led to an undermining of subsequent "free-choice" behaviour depending on how rewards were applied. If rewards (e.g., praise) signified increased a sense

of competence intrinsic motivation would be maintained. Yet when rewards signified external control, intrinsic motivation was undermined. Thus rewards affected intrinsic motivation as a function of how they were related to psychological needs for *autonomy* (perceived locus of causality) and *competence* (or effectance).

Important in this work was that Deci used a behavioural “free choice measure” that became a standard in the field (e.g., see Lepper & Greene, 1978). More importantly the studies showed how volitional motivation could be studied, manipulating not rewards and punishments, but rather conditions supporting or thwarting psychological needs like autonomy or competence. Subsequently **Deci and Ryan** (1985; Ryan & Deci, 2017) would develop *self-determination theory* (SDT) from these roots. Specifically SDT distinguishes various forms of motivation that vary in their relative autonomy, (or as de Charms described it, their perceived locus of causality). Some behaviours are externally controlled, others more willingly or autonomously done, impacting persistence and quality of performance. SDT further posits that people have basic psychological needs for autonomy (to be volitional), competence (to feel efficacy), and relatedness (sense of belonging). Supports for these three need satisfactions are associated with wellbeing and more autonomous forms of motivation, including enhanced intrinsic motivation. Experimental and controlled intervention studies have widely supported the importance of both autonomy and support for basic needs in enhancing motivation and performance.

Other theories of motivation were also spawned by concepts of intrinsic motivation and various psychological needs and motives. For example, Csikzentmihalyi (1975) introduced the concept of *flow* to describe the state of optimal challenge during intrinsically motivated activities. In their *sociometer theory*, Leary and Baumeister (1995) posited a need for self-esteem, which serves as the internal barometer of a fundamental need for belonging.



Elliot developed a theory of mastery and performance goals premised on the *need for competence* (Elliot, 2002).

Inner causes no longer being taboo, a central focus of today's theories of motivation is on *self-regulation*—people's capacity to internally regulate motivation, alongside the perennial interest in vulnerabilities to external control. Rather than motivations being “driven” by spontaneous instincts, or “caused” by environmental events, the focus is instead on how organisms organize and direct their energies, as well as protect themselves against external controls and influences. This focus on self regulation includes a focus by **Roy Baumeister** and colleagues on *ego-depletion* (see review by Muraven, 2012), and how effortful demands on the self deplete resources needed to regulate motivations and impulse. It includes work by **Julius Kuhl** and colleagues, who developed *Personality Systems Interaction* theory to focus on integrated self-regulation and factors that deplete or disrupt it (e.g., see Kuhl, Quirin & Koole, 2015). And certainly our own work on self determination theory (Ryan & Deci, 2017) is primarily concerned with both regulation of behavior by the self, and the environmental supports that requires.

In sum, decades of careful experiments under the framework of behaviourism had shown that well-managed contingencies of reinforcement could control much behaviour. Yet, this research focus on external sources of control had ignored other “naturally occurring” sources of motivation. Even though external reinforcement *can* control behaviour, this does not mean that all behaviours *are* controlled by external reinforcement (McCall, 1977). Many motivations may come not from past reward histories, but rather from internal propensities toward competence, growth, and assimilation. Thus this second “response” to behaviourism's shortcomings led to concern with these internal sources of motivation—initially intrinsic motivation for play and exploration, and subsequently other basic psychological needs and propensities of individuals such as striving for belonging, esteem, or autonomy. Today a

focus not exclusively on environmental control, but on regulation by the self of motivation, is predominant.

### **Evolutionary Psychology and the Foundations of Motivation**

A third critical response to behaviourism's explanatory weaknesses was the emergence, albeit slowly, of an evolutionary psychology. Stemming largely from predominate behaviouristic and social learning assumptions, the idea that organisms were largely black boxes that could be made to do almost anything was so popular that it was labelled the "standard social science model" (SSSM) by evolutionary psychologists **Tooby and Cosmedies** (1993) who championed this field. Yet it has been clear for a long time that there were strong constraints on this plasticity.

The first exceptions to the "blank slate" view of organisms that were identified were mainly activities that ran against the grain of instinctual behaviours (e.g., see Breland & Breland, 1961; Garcia & Koelling, 1966). Yet these *instinctual drifts* were generally considered to be anomalies of neural wiring within behaviourist circles, rather than a central theoretical problem (Schwartz & Lacey, 1982). But such phenomena nonetheless pointed to the idea that there were evolved, and species specific, propensities to perceive and to react that are not so plastic.

Also well known were the challenges of **Noam Chomsky** (xxxx) to the blank slate view of learning posited by operant theory. Language behaviours, it appeared, could not be acquired and generated simply through the processes of reinforcement. Native equipment and propensities were required.

There were also species-specific universalities. In the 1970s, **Paul Ekman** (xxxxx) assembled evidence that humans universally share at least five basic emotions: fear, sadness, happiness, anger, and disgust. He and other motivation and emotion theorists (e.g., Izard, 1977) further argued that social emotions, such as shame, pride, and retributive sentiments,

evolved to motivate social behaviours that were adaptive within small groups. Others argued for an evolved sensitivity of self-esteem, to provide an estimate of one's status and motivate social bonding (Leary & Baumeister, 1995).

Work by **David Buss** (1994, 2016) applied evolutionary thinking to the behavioural psychology of mating strategies, and especially to gender differences in selection preferences and strategies for mate retention. Such gender differences, especially when universal, provide evidence of the relation of biological design to motives aims and goals. This work helped to establish the idea that evolution provides menus of strategies for different adaptive problems, and an elegant complexity of design especially in an area as central to adaptation as reproduction.

Yet evolutionary psychology pertains to motives and behaviors that are, on the surface, far from reproduction per se. Recent work on prosocial motivation and its placement within evolutionary thinking illustrates this (Ryan & Hawley, 2016). For a long time the focus was on selfish behaviour, largely because of its prima facie connection to survival. But in fact adaptation within group was more dependent on cooperation and helpfulness (Wright, xxxx). emphasised in the work of Wilson (xxxx) and others.

The notion of any specific human nature (e.g., Woodworth, 1918), or even no human nature (Skinner, 1953), has been revised to understand there are multiple human natures, facets of which are contingently activated. We inherit both a large set of tools for perceiving “what mattered” in the EEA, as well as propensities to react that are often environment specific. In addition, however, there is increased attention not only to automatic mechanisms, but also to the evolution of self-regulatory capacities, and the social conditions that foster them (Biglan, 2015).

In short, the evolutionary psychology represents another rich strand of work that in part grew in reaction to the more empty organism, or “SSSM” view of human motivation that

characterized both behaviourism and neo-behaviourisms. Perhaps only still in adolescence, and just beginning to grapple with complexities of adaptation, evolutionary psychology perspectives on ultimate foundations of our natures will be essential to the field of motivation given its needs for interdisciplinary consilience and explanatory breadth.

### **The space of contemporary theories: Into the black box**

As we have emphasized, the history of empirical motivation research was critically influenced by behaviourism, which dominated the field for more than a half-century. These behavioural approaches were rigorously theoretical as well as empirically testable. Moreover, because manipulating external contingencies of reinforcement can reliably affect motivation, experimental researchers used reinforcement schedules to catalyse and control motivation in the lab, whereas eliciting other types of motives is logistically more difficult.

Nonetheless, attempts to understand the full range of human motivations by manipulating external contingencies revealed phenomena that could *not* be satisfactorily explained within these also paradigms. We reviewed three strains of research that developed in direct response to specific weaknesses in behavioural theories: namely *social-cognitive* theories, which addressed the role of expectancies and value; *psychological need* theories, which addressed internal motives that initiate or guide actions, and *evolutionary psychology* perspectives, which place proximal motivations within a larger biological perspective. Each of these themes is alive and well in motivation research today, alongside other theories focused on cognitive mediators and fundamental motives.

Ironically, the focus of motivation studies today is perhaps directly opposite to the one B.F. Skinner had so long ago warned against. Whereas Skinner cautioned against the search for inner causes and inner mechanisms as a distraction from identifying the “antecedent causes in the environment” (1953 p.30) — the science of motivation is now intensely occupied with the “black box” of human motivation, both at the psychological and

neurological levels. Researchers want to know the mechanisms, both experiential and molecular, through which actions are selected and regulated.

There are good reasons why empirically minded motivation researchers are no longer afraid of the dark inside that black box. Insofar as rigorous methods help illuminate new phenomena, motivation research is today armed with new methods and tools shedding light on inner processes.

At the level of experience, today's researchers have access to methods that allow sensitive tracking of change in both behaviours and "inner states" over time. Multilevel modelling, experience and event sampling, and refined longitudinal methods contribute to understanding of the day-to-day co-variances in motivational processes and outcomes. At level of biology, new methods for assessing cardiovascular and neurological processes associated with motivation are beginning to form a "two-way street" of inquiry between motivational and neuropsychological research (Reeve & Woo, 2012). Here understanding of temporal changes in the areas of activation and arousal can help to map the mechanisms underlying motivation. Finally at the level of cultures the globalization of research allows for cross-cultural comparisons to unveil what is culturally specific and what is universal about both motivation processes and goal contents.

Interesting too is where the science seems to have settled with respect to the contrasting views that motivation is shaped from within or without. Rather than these polarized views of behavior as instinctual or as being controlled by the environment, Consilience--Methods must converge

The future of motivation theories

Neuropsychology and behavioural approaches—towards a two-way street

Cultural and societal influences

Refining measurements

## Refining interventions and practice with evidence based approaches

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