NEUROSCIENCE OF MOTIVATION AND ORGANIZATIONAL BEHAVIOR: PUTTING THE REINFORCEMENT SENSITIVITY THEORY (RST) TO WORK

Philip J. Corr, Neil McNaughton, Margaret R. Wilson, Ann Hutchison, Giles Burch and Arthur Poropat

ABSTRACT

Neuroscience research on human motivation in the workplace is still in its infancy. There is a large industrial and organizational (IO) psychology literature containing numerous theories of motivation, relating to prosocial and productive, and, less so, "darker" antisocial and counterproductive, behaviors. However, the development of a viable over-arching theoretical framework has proved elusive. In this chapter, we argue that basic neuropsychological systems related to approach, avoidance, and their conflict, may provide such a framework, one which we discuss in terms of the Reinforcement Sensitivity Theory (RST) of personality.

Recent Developments in Neuroscience Research on Human Motivation
Advances in Motivation and Achievement, Volume 19, 65–92

ISSN: 0749-7423/doi:10.1108/S0749-742320160000019010

We argue that workplace behaviors may be understood by reference to the motivational types that are formed from the combination of basic approach, avoidance, and conflict-related personalities. We offer suggestions for future research to explore workplace behaviors in terms of the wider literature on the neuroscience of motivation.

Keywords: Motivation; personality; RST; reinforcement sensitivity theory

Human motivation in the workplace has been a central theme in industrial and organizational (IO) psychology for, at least, the last one hundred years. This literature contains numerous theories that are used routinely to provide explanations for the systematic patterns of behavior observed – both prosocial/productive, and "darker" antisocial/counter-productive ones (Koopmans et al., 2011). As we shall see, motivation can be exerted in different directions and not always to meet organizational objectives. We are all familiar with "empty labor" (Paulsen, 2014) – organizational "misbehavior," that is, time spent in private activities (e.g., surfing the web, chatting on social media, and talking to colleagues on non-work-related matters) during paid working hours – and there is the darker side to organizational behavior in the form of bullying and back-stabbing (Furnham, 2015), and also "empire building". All impair organizational effectiveness, and the subjective well-being of employees.

What has been missing in this important applied literature is consideration of the neuroscience of workplace motivation. In this chapter, we attempt to fill this lacuna by showing how motivational types are formed from the combination of basic approach, avoidance, and conflict-related personalities. Although there is now much known about the basic neuroscience of these processes, there has been a reluctance to extend this knowledge to workplace motivation and behavior – this is largely the result of the traditional separation of these two fields of psychology. As authors who are variously specialized in basic neuroscience, motivation and personality psychology, occupational/organizational behavior, and clinical psychology, we are well-placed to tie together these hitherto disparate areas of research.

Motivational factors are clearly important contributors to individual and organizational performance. Much has been learnt during the past few decades about how contextual factors affect work performance, especially

with respect to managerial interventions (Steel & König, 2006) and social influences (Colquitt et al., 2013; Loi, Chan, & Lam, 2014). However, organizations and researchers have also been very interested in individual differences and their contributions to work performance, especially the role played by personality. Such has been the volume of research in this area that Barrick, Mount, and Judge (2001) called for a moratorium on empirical reviews of personality and performance, suggesting instead that researchers should focus on exploring explanations of the role of personality at work.

Unfortunately, the dominant model of personality assessment used in organizational research, the Big Five or Five-Factor Model (FFM), has restricted usefulness for explanatory purposes due to its largely atheoretical foundation (Poropat & Corr, 2015). For this reason, the aim of this chapter is to review the explanatory value of a general theory of personality-related human motivation derived from the wider neuroscience literature. We argue that this model may have the potential to split the general motivational work "drive" atom of individual employees into its constituent neuropsychological parts.

WORKPLACE INITIATIVES AND MOTIVATION

Developments in IO psychology theory have led to a reasonable understanding of how to motivate employees – through various initiatives, such as job design, incentive structure, well-being interventions, and objective-setting (Arnold et al., 2010). Despite early psychoanalytical interpretation of the unconscious motives of employees (Argyle, 1973), most organizational interventions are based on the bedrock of neo-classical economic assumptions, namely, behavior is "rational" – although, in individual cases, subject to constraints – and individuals are assumed to seek utility optimization reflecting their non-biased processing of information in the environment guided by a consistent set of preferences. According to this view, a change in, for example, incentives should shift the behavior of the rational agent (*homo economicus*) in the desired direction. Social exchange theory provides an example: employees are assumed to match their effort and contribution to the support provided by their employers and managers (Colquitt et al., 2013). In this way, IO behavior is seen to be flexible and responsive to initiatives designed to harmonize with organizational objectives. As a big-picture theory, there is much to commend this approach especially as applied to the *aggregate* behavior of groups.

Despite its notable virtues, this perspective singly side-steps two major problems. The first is the prevalence and significance of individual variations in how people react to initiatives, how they process information, and their specific preference structures in relation to work. For example, what counts as intrinsic or extrinsic factors of motivation, such as self-worth versus financial remuneration, depends on the individual rather than their context (Deci & Ryan, 2000). The second problem relates to evidence that, although behavior may be flexible, its underlying motivational structure and dynamics are not. According to this perspective, behavior is the *product* of personality characteristics (e.g., traits such as achievement striving, which are relatively stable) as well as situational factors (e.g., opportunities for advancement, which are not stable). The growing wealth of research demonstrating personality factors have greater influence on work and life outcomes than do social circumstances (Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007) attests that personality-linked differences in motivation are crucial for understanding work performance.

Ignoring individual differences in reactions to workplace initiatives demands excessive faith in the power of the behaviorist black-box approach which permits no causal role for pre-existing motivational dispositions. From that approach, where individual differences are seen to exist, they are the result of the selective shaping by a history of schedules of reinforcement, and with enough effort can be unshaped by different schedules. Whatever the truth in this belief, the neuroscience of motivation, and its related emotion and personality processes, suggests strongly that this approach has, at the very least, marked limitations. For reinforcement to work it must go through the brain and we know that there exist considerable individual differences in neural processing (Corr & McNaughton, 2012). In the workplace, as well as life more generally, people are motivated in different ways and to different extents (Nicholson, 2000). The previously cited research of Roberts et al. (2007) provides ample evidence that, at the higher level of omnibus general "drive," there is considerable variation, which is expressed in individual outcomes such as work performance and achievement.

In this chapter, we argue that the one-size-fits-all approach to understanding motivation in the workplace is not appropriate to account for observed realities, especially regarding the significant differences between people in personality, attitudes, and aspirations. We argue that general constructs, such as "drive," need to be broken down to their components parts in order to get a better grip of the underlying motivational dynamics of workplace behavior. To achieve this end, we rely upon the extant

literature on the neuroscience of motivation and personality – to consider the former necessarily entails the latter.

MOTIVATION, DRIVE, AND PERFORMANCE

Organizations of all kinds need top-performing employees in order to gain the best outcomes for clients, customers, owners, and so on. Among individual differences variables, cognitive ability is typically the strongest predictor of employee performance (Schmidt & Hunter, 1998), but personality has repeatedly been shown to be reliably associated with a wide range of job-related behaviors (Barrick & Mount, 1991; Burch & Anderson, 2008a, 2008b; Hurtz & Donovan, 2000).

The confirmation of the role of personality at work helped researchers address a long-standing gap in methods of assessing employees. Specifically, it has long been accepted that performance is a function of ability, motivation, and opportunity (Blumberg & Pringle, 1982). Ability is generally linked to intelligence and prior learning (training, experience, and education), while opportunity is dependent upon resources such as time, money, and equipment. These factors effectively represent the "can do" aspect of performance, whereas the "will do" aspect has often been investigated by considering contextual factors such as leadership and goal-setting interventions (Locke & Latham, 2002). The recognition of the role of personality in work performance has demonstrated that the "will do," or motivation component of performance, is also reliably associated with systematic individual differences.

Thus, researchers and practitioners need to both acknowledge and understand the role of personality in workplace motivation. Although all of the previously cited reviews of personality in the workplace used the FFM to organize their analyzes, this descriptive model of personality provides little guidance with respect to explaining how personality relates to motivation. To achieve adequate explanation, it is necessary to identify how stable and persistent individual differences in neuropsychological systems mediate behavioral reactions to workplace stimuli, such as the typically complex compounds such as managerial "instructions" and "initiatives" to which employees need to respond.

An important assumption of our approach is that, at the level of the individual, behavioral reactions cannot be just "read-off" from what is already known, or more usually assumed to be known, about the average effects of such motivating stimuli. An example of this would be that the

implementation of performance-management procedures might be rewarding for one person, but insulting to another. In thinking about these matters, we should remember Kluckhohn and Murray's (1950, p. 190) statement, "every man is in certain respects: (a) like all other men, (b) like some other men, and (c) like no other man." In this specific and other respects, personality differences are important because they reflect deeper motivational processes that drive behavior – indeed, as elaborated below, personality traits are often the collective expression of these subsets of processes.

Our claim is that people have a specific biological make-up: significant variation exists in the operating parameters of neuropsychological systems that result in specific levels of different forms of emotion and motivation that, in combination, produce what is observed in the workplace as general "drive" (Furnham, 1992). In addition, any viable explanation of motivation should consider, at the very least, three outcome components: (1) intensity; (2) direction; and (3) persistence of effort (Latham, 2007), or "sustainability." It is this higher order construct of drive that is proximally related to performance, both in terms of quality and quantity, and psychological sustainability. As such, drive can be related to resistance to disruption and frustration, and can be predicted by consideration of its component parts (e.g., a burst of creative high drive to initiate a new project may either be sustained by the reinforcement of intermediate steps of success or inhibited by frustration entailed during early planning stages).

Within this context, drive is a nonspecific general factor of motivation (rather like the concept of general arousal), and can influence both productive and counter-productive behaviors. In this sense, "drive" reflects the urge to express basic needs, composed of biological imperatives (e.g., social utility achieved through influence, affiliation, achievement, and reputation; and, avoidance of social loss through "face saving," control, and manipulation). A high level of drive can benefit or harm the organization, depending upon the alignment of individuals' and organizations' goals.

In putting forward these arguments, we are taking a *dispositional* approach to motivation. Although there are links between personality and motivation (Judge & Ilies, 2002), and attempts have been made to develop dispositional theories of employee motivation, there is no over-arching framework to explain why some people are more motivated than others, and in different ways. We agree with Locke (1991, p. 288): There is a "plethora of theories and paucity of frameworks." We believe that the challenge lies in the (structural) complexity of motivation as a construct.

ATTRACTORS AND REPULSORS IN THE WORKPLACE

The approach we outline is based on several tenets. Firstly, emotions (e.g., fear and hope) are central states activated by reinforcing stimuli (generally called "punishment" and "reward" but in the workplace commonly referred to as "discipline" and "incentives"); and, secondly, two major neuropsychological systems underpin the activation of these central states, one related to sensitivity/reactivity to "punishment" and another to "reward." We set these terms in quotes because they are in need of delineation and clarification, which we provide below. We also assume that, at least in part, individual differences, as expressed in personality traits (e.g., extraversion and neuroticism), reflect long-term stabilities in the operation of these state systems (for discussion of these relations, see Corr, DeYoung, & McNaughton, 2013).

Before developing this argument further, we note that there are a limited number of degrees of freedom of behavioral reactions, at least at the low level of explanation we explore in this chapter. Whether a simple stimulus or complex organizational initiative, there are three possible forms: (a) avoidance, (b) approach, or (c) decision-behavior equivocation. In an important sense, all forms of behavior, which at the surface level can be complex and multifaceted, reduce to these three behavioral degrees of freedom. This conceptual simplicity should not be read as implying that they cannot account for the panoply of complex behaviors seen in the workplace. In much the same way that the operation of only three types of cones in the retina, which are maximally sensitive to different wavelengths of light, lead to the experience of a seemingly countless number of colors, so too with (relatively) simple neuropsychological systems and organizational behavior.

Attractors and Repulsors as "Reward" and "Punishment"

In the most general terms, "reward" stimuli motivate approach behavior *toward* some desired end state, and "punishment" stimuli motivate avoidance/escape behavior *away* from some undesired end state (Gray, 1975). It is important at this point to define these operations in terms of the *perception* of the reacting individual and not what the experimenter, or manager, believes they are providing. Consequently, *evaluation* of stimuli is the first step to something being categorized as "rewarding" or "punishing"

(to avoid these ambiguous terms, we prefer to label them "attractors" and "repulsors," respectively; Corr & McNaughton, 2012): Attractors cue positive-approach behaviors; repulsors cue negative-avoidance behaviors. In this context, "negative-avoidance" is not necessarily undesirable – the outcome may be productive, such as not wasting further time on frustrating and, ultimately, non-productive tasks or people. The central role of perception in this understanding of cued behaviors leads to a performance-management problem because the same stimulus may be an attractor for one person, but a repulsor for another person, or ignored by a third person. In other words, motivational significance is not contained in the stimulus, but in the person's *reaction* to the stimulus.

In terms of attractors and repulsors, a number of complexities need to be faced. At the moment-to-moment state level, attractors and repulsors produce approach and avoidance motivational tendencies, respectively. However, attractors and repulsors subtract from each other to produce the final net product of motivation, and have different goal-gradients. Specifically, the gradient for repulsors is steeper than that for attractors. Mathematically formulated in Neil Miller's analysis of approach-avoidance conflict in the rat, much earlier Darwin had noted that we value blame much higher than praise. A parallel notion is now fashionable in behavioral economics in the concept of loss aversion, in which losses loom (by a factor of 2) larger than gains (Kahneman, 2012), especially when the potential loss is made salient. In psychology, bad feedback, emotions and news almost always outweigh the good (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). We dislike being criticized much more than we like being exalted, and this is an important factor of motivation in the workplace given the central role of feedback in contributing to performance (Kluger & DeNisi, 1996).

In addition to these two attractor and repulsor systems, there is another system of "avoidance": Over and above these subtractive effects, the (passive) *inhibition* and avoidance by approach-avoidance *conflict* is neurally and psychopharmacologically distinct from simple (active) avoidance (Gray, 1982; Gray & McNaughton, 2000): Although avoidance and inhibition can look very alike, their functional roles are quite different.

These subtractive and inhibitory effects provide the major theoretical rationale for assuming combined effects of motivationally salient stimuli in the workplace. They do add complexity, but also realism and theoretical, and it is to be expected practical, heft. This perspective draws attention to the motivational complexity of most workplace situations, and the theoretical challenges that confront any attempt to account for them.

The general form of our argument is consistent with trends in recent years to apply fundamental neuroscience ideas to human behavior in different spheres, for example, the neuroscience of economic decision-making (i.e., neuroeconomics; e.g., Politser, 2008). Here, we extend neuroscience ideas, specifically those related to motivation and emotion, to industrial-organizational (IO) motivation and behavior.

REINFORCEMENT SENSITIVITY THEORY (RST) AND DRIVE

A person's dispositional level of "drive" – as the super-ordinate construct that has received most attention in the IO literature – is an important determinant of type and level of performance in the workplace. The component parts of this drive may be explained by the *reinforcement sensitivity theory* (RST), which is a neuroscientific theory of motivation, emotion and learning, extended to personality psychology, by the neuropsychologist Gray (1982) and later developed by colleagues (Corr & McNaughton, 2012; Gray & McNaughton, 2000, McNaughton & Corr, 2004, 2008) – this is summarized in a collective work edited by Corr (2008a). RST seeks to provide an explanatory dispositional framework that is lacking in IO motivational research, allowing the combination of theories of workplace motivation with neuroscience. We present a few selected findings and arguments that demonstrate the potential RST holds for providing a holistic, dispositional explanation of workplace motivation.

Although other models of personality have seen greater use in organizational settings, they have typically been based on the atheoretical FFM summary of personality description. By contrast, RST is arguably the personality theory applied within the context of work (Furnham & Jackson, 2008) that has the most empirical support: in neuroscience especially, it is certainly the best articulated in terms of brain-behavioral systems. RST is built upon three postulates: (a) differences in specific brain structures underpin individual differences in sensitivity to perceived gain and loss; (b) these valuations lead to stimuli serving as attractors and repulsors; and (c) depending on the relationship between attractors/repulsors (i.e., strength and conflict potential), there is activation of three neuropsychological systems of approach, avoidance, and conflict resolution. Although debate continues around details of the theory, the broad dimensions of approach and avoidance are widely acknowledged as fundamentals in human behavior (Elliot, 1999).

Therefore, any viable account of workplace motivation needs to consider five processes: Two input systems for the valuation of stimuli/events (gain and loss) which define them as attractors/repulsors, and three output systems that regulate behavior (approach, avoidance, and conflict). Formally, "motivation" is the outcome of gain/loss valuation which, then, activates specific effector output systems: "Drive" is the net product of the interplay of these motivational forces – if this statement is true, then we should be able to understand the underlying psychological dynamics of "drive" by understanding each of these systems and how they function together.

Reinforcement Sensitivity Theory (RST): Systems

Stimuli, events, and the like, only exert motivation pulls and pushes once their significance has been evaluated – a statement seemingly of innocent content until we see the theoretical importance of it. Elsewhere, Corr and McNaughton (2012) have developed this theory to show how this is a precondition to understanding how neuropsychological output systems are activated. Observation of stimuli that act as attractors or repulsors bring three output systems into play: *Behavioral Approach System* (BAS), *Behavioral Inhibition System* (BIS), and *Freeze-Fight-Flight System* (FFFS) (Gray & McNaughton, 2000).

The *attractor* BAS responds to stimuli evaluated as rewarding (gain, including stimuli that signal the *relief* of non-punishment), and it initiates and controls all reward-seeking behavior. As such, the BAS is associated with anticipatory pleasure and hopeful anticipation. At dysfunctional levels, BAS-related traits (e.g., sensation seeking) map onto addictive behaviors (e.g., pathological gambling) and various varieties of high-risk and impulsive behavior. At normal levels of operation, this system reflects what we colloquially term "motivation" or "drive." In contrast, the *repulsor* FFFS responds to stimuli evaluated as punishing (loss; including stimuli that signal the *frustration* of non-reward); it is associated with distress, fear, and avoidance, and with a general moving away from approaching stimuli of all kinds. As we shall see, these two systems work together to produce *net* drive and level and quality of performance. In addition, to performance, these personality factors also relate to work-related health (van der Linden, Taris, Beckers, & Kindt, 2007), which we should expect also to impact upon performance.

When stimuli are evaluated exclusively as either an attractor/rewarding or as repulsor/punishing, then the BAS and FFFS, respectively, take charge

of the behavioral machinery (and influence separate, but related, affective, and cognitive processes). However, in many situations, especially in the workplace, both the BAS and FFFS may be simultaneously activated and, in this situation, control of behavior will reflect the *subtraction* of one motivational impulse from the other – this produces *net* drive. However, in situations where no single behavioral output is sufficient to deal with the evaluation of perceived attractor/reward and repulsor/punishment – that is, where there is a *goal conflict* – then a third system is invoked, namely the BIS. Although the BIS can be activated by the presence of incompatible behaviors of similar strength (e.g., approach and active avoidance in the classic Miller approach-avoidance conflict situation), more generally the BIS is sensitive to conflict between *goals*, which can be abstract and not overtly behavior based.

Consequently, the task of the BIS is to detect and resolve goal conflicts. In doing this, it inhibits any pre-potent approach and avoidance behavior that the BAS or FFFS was about to carry out, but it allows them to continue with *cautious* behavior (involving risk-assessment) where the avoidance tendency is somewhat less than the approach tendency (Gray & McNaughton, 2000). BIS operation heightens risk-assessment, recruiting other processes that are experienced as rumination and worry. During this time, the FFFS activates, increasing negative affect and the negative valuation of conflicting stimuli, resulting in perceiving the world to be a more dangerous and threatening place.

The BIS activates a number of psychological processes of relevance to the workplace: Risk-assessment, checks for sources of threat, and inhibition of ongoing behavior. In normal operation, this is an adaptive process of caution, weighing up all the possibilities (Perkins & Corr, 2006). However in hyper-BIS individuals, its activation leads to a marked decrement in ongoing work performance, consisting of doubt, indecision, worry, and engagement of time-wasting "displacement activities" (e.g., gossip, or too-frequent checking of emails; or seeking reassurance and support from social media). These processes may be expected to exert extensive effects on the efficiency of workplace behavior but may also lead to the avoidance (e.g., by procrastination) of unpleasant tasks. Nonetheless, the processing of goal conflict by the BIS, although experienced as negative, can lead to adaptive solutions to existing "problems," especially in cognitively demanding tasks (Perkins & Corr, 2014) and, possibly even, creative ones where mulling over solutions is required (Perkins, Arnone, Smallwood, & Mobbs, 2015).

In summary, there are, at least, two "avoidance" systems, one for simple active avoidance/escape (FFFS), and one for goal conflict (passive

avoidance; BIS). FFFS and BIS often interact with the reward (BAS) system. These interactions can be subtractive (e.g., FFFS-BAS) or inhibitory (e.g., BIS-BAS), but may even be additive (e.g., FFFS-related flight to a place of safety would also entail the BAS in a unified action; see Boureau & Dayan, 2011), especially in their generation of arousal.

INTEGRATING RST WITH EMPLOYEE PERFORMANCE

Given the above analysis, a person's dispositional level of general workplace drive is a key characteristic that differentiates outstanding performers from under-performing ones, particularly in roles where a focus on results makes a substantial difference to organizational success, such as professional and senior management positions (however, to varying degrees, these arguments apply to all levels of employment).

Early evidence of the value of drive in managerial roles was provided by Kaplan (1991), who conducted a rigorous six-year qualitative study of 42 senior executives from Fortune 500 companies. Using "biographical action research," Kaplan conducted intensive interviews with participants and their peers, superiors, subordinates, friends, and family, to develop a grounded theory of executive performance. Kaplan identified a common trait that characterized top-performing executives, a factor termed "expansive character," which reflected a "deep unifying structure that encompasses the individual's nature", reflecting their "crowning purpose in life" (p. 50). This trait is defined as "considerable drive to achieve and advance that manifests itself in extreme persistence, energy, confidence and resourcefulness" (p. 58). Kaplan also suggests that expansive individuals are concerned with gaining mastery over the environment and having excessive ambition for accomplishment; and Kaplan goes on to suggest that "expansiveness" is a theory of motivation, arguing that it is overwhelmingly related to high productivity and performance.

A central aspect of Kaplan's arguments is the focus on drive and energy, so it is surprising that the drive-linked traits identified in RST, and related research, have been rarely examined with respect to leadership research. However, there is considerable leadership research examining related traits, as summarized by Hoffman, Woehr, Maldagen-Youngjohn, and Lyons (2011). In their meta-analysis, they found that one of the traits Kaplan identified, energy, was one of the strongest predictors of leader effectiveness ($r = .29$). As a trait, energy has logical links with BAS. On the other hand,

self-monitoring is a trait that exemplifies the behavioral control associated with BIS, and is also one of the strongest predictors of leader effectiveness ($r = .19$). So, although there is little direct evidence, there are strong hints that RST traits will be linked with leadership.

Aspects of Drive

In studies of leadership, drive is described in several different ways. One is as a need for power or social ascendancy (Bentz, 1985; Kaplan, 1991; Kotter, 1982), another is as achievement orientation (Bray, Campbell, & Grant, 1974; Kaplan, 1991; Kotter, 1982; Lombardo, Ruderman, & McCauley, 1988), and yet another way is as energy, effort, and activity levels (Hogan, Raskin, & Fazzini, 1990; Kirkpatrick & Locke, 1991; Locke, 1997). All of these approaches have in common that drive is about seeking the rewards of life – although the precise form that these rewards take differ between individuals.

In consideration of these ideas, RST suggests that a given level of drive may be motivated by different processes in different people. For example, in one person, the positive outcomes of high BAS sensitivity may be moderated by a strong FFFS (subtracting effect) or BIS (inhibiting effect). In a different person, a similarly low level of drive may be motivated by a lack of BAS drive, irrespective of the FFFS and BIS. In these various cases, different forms of initiatives would be needed to motivate performance because, although the level of manifest drive may be the same, their causal roots will be quite different (in the former case, the reduction of fear/anxiety, while in the latter case, more salient and stronger rewarding stimuli). The different combinations, and corresponding personality types, of FFFS, BAS, and BIS, are shown in Table 1 (and discussed further below). This is one of the major strengths of applying a theoretically based neuroscience model of motivation and personality within organizational psychology: It allows much more nuanced predictions about appropriate responses to individual performance issues than can be obtained by merely "reading off" summary descriptions obtained from models such as the FFM.

BAS AND WORKPLACE BEHAVIOR

Deeper consideration provides an important example of the value of RST for analyzing workplace phenomena. A high level of drive and exploration

Table 1. Personality Types Derived from Combinations of BAS, FFFS, and BIS Factors in the Workplace.

BAS−			
FFFS−		FFFS+	
BIS−	BIS+	BIS−	BIS+
Low drive for reward; low punishment sensitivity; low goal conflict detection (low anxiety). Weakly driven to achieve results, without fear of failure, and with a lack of awareness for *how* the results are achieved.	Low drive for reward; low punishment sensitivity; high goal conflict detection (high anxiety). Weakly driven to achieve results, without fear of failure but with an adequate awareness for *how* the results are achieved.	Low drive for reward; high punishment sensitivity; low goal conflict detection (low anxiety). Weakly driven to achieve results but with a strong fear of failure and a lack of awareness for *how* the results are achieved.	Low drive for reward; high punishment sensitivity; high goal conflict detection (high anxiety). Weakly driven to achieve results, but a strong fear of failure, but with an adequate awareness for *how* the results are achieved.
"Apathetic"	*"Indecisive"*	*"Avoidant"*	*"Cautious"*
BAS+			
FFFS−		FFFS+	
BIS−	BIS+	BIS−	BIS+
High drive for reward; low punishment sensitivity; low goal conflict detection (low anxiety). Strongly driven to achieve results without fear of failure, but has a lack of awareness for *how* the results are achieved.	High drive for reward; low punishment sensitivity; high goal conflict detection (high anxiety). Strongly driven to achieve results without fear of failure, but with an adequate awareness for *how* the results are achieved.	High drive for reward; high punishment sensitivity; low goal conflict detection (low anxiety). Strongly driven to achieve results but with a strong fear of failure and lack of awareness for *how* the results are achieved	High drive for reward; high punishment sensitivity; high goal conflict detection (high anxiety). Strongly driven to achieve results with a strong fear of failure but with an adequate awareness for *how* the results are achieved
"Reckless"	*"Striving"*	*"Tentative"*	*"Volatile"*

Notes: Cognitive ability should be expected to modify the effects of these motivational types. For example, low and high cognitive ability should have different performance outcomes for the "striving" type. However, for other types (e.g., "Apathetic" and "Cautious") cognitive ability would probably not mitigate the deleterious motivational effects on performance. The type of occupation is important too, as some (e.g., artistic environments) may facilitate the creative energy of the "Volatile" type, although a considerable degree of social support, of a non-confrontational type, may be needed and would, by itself, impose a cost on organizational efficiency – although a "Volatile" genius may be worth nurturing. Also, see text.

in the workplace will be heavily influenced by the BAS and for this reason it would be worthwhile delineating it in a little more detail. First, there are good reasons to think that the BAS is multidimensional in nature (Carver & White, 1994; Corr, 2015), and this might give some clues to its influence on workplace motivation and performance.

Now, the primary function of the BAS is to move the person along the temporo-spatial gradient, from a *start state* (e.g., the idea of a new project), toward the *final biological reinforcer*. For example, completion of project goals and obtaining rewarding feedback acts as a reinforcer, as experienced by sales-people at the end of successful sales presentations, which may be why BAS-linked personality is associated with greater sales performance (Barrick et al., 2001). In this context, the successful presentation is the reinforcer at this point on the temporo-spatial gradient. To move along the temporo-spatial gradient to the final biological reinforcer, some form of "sub-goal scaffolding" is needed (Corr, 2008b). This process consists of: (a) identifying the final outcome (e.g., closing the sale); (b) planning behavior (e.g., preparing sales pitch); and (c) executing the plan (i.e., performing in the sales situation). Therefore, these *approach* behaviors lead to the final desired reinforcer-outcome (e.g., getting the contract) by entailing a series of sub-processes, some of which may oppose each other. Examples of potentially conflicting sub-processes include pressuring versus listening to the customer, and enacting the planned presentation versus responding to customer reactions and questions. Managing these conflicting sub-processes requires the oversight of the BIS. We have used a sales scenario to illustrate this process, but the separate steps apply to any form of goal-directed behavior.

Studies that have examined reinforcement sensitivity in this sphere have been rare, although this state of affairs is gradually changing. Some authors have discussed the subject (Furnham & Jackson, 2008; Hutchison, Burch, & Boxall, 2008; Jackson, 1999, 2001; Johnson, Change, Meyer, Lanaj, & Way, 2013; van der Linden et al., 2007), and Burch and Anderson (2008a, 2008b) have included Gray's FFFS, BIS, and BAS in a causal model of work-related behavior and performance. However, for the most part, these research efforts have only tackled parts of the overall picture and all have used the original two-factor model of RST (BIS/BAS; Gray, 1982), which has long been superseded by the more sophisticated theoretical account that delineates more fully the FFFS, BIS, and BAS (Corr & Cooper, 2016; Corr & McNaughton, 2012; Gray & McNaughton, 2000; for a summary, see Corr, 2015).

Especially encouraging of the utility of RST, and the need to consider some degree of complexity (e.g., the interplay of attractor and repulsor

systems), is Hutchison, Burch, and Boxall (2013) who reported that, in terms of senior executive performance, the optimal personality is a combination of high BAS *and* low BIS. This finding makes considerable sense in terms of the theoretical expectation of RST processes in the workplace. However, in this context, it needs to be noted that too low a level of the BIS should be expected to be deleterious because the individual would not be sensitive to goal conflict, which is often the necessary first step to resolving problems.

Goal Setting and Social-Cognitive Aspects of Motivation

In the IO literature, there has been considerable research analyzing the motivational factors and their impact upon performance, most notably goal-setting theory (Locke & Latham, 1990, 2002, 2004) and the social-cognitive theory of self-regulation (Bandura, 1991). It is not surprising, therefore, that existing attempts to look at workplace motivation from a dispositional perspective usually focus on one or the other of these main theories. Important examples are Dweck and colleagues' considerable work on goals and especially "goal-orientation" (Dweck & Elliott, 1983), and Judge and colleagues' work on the trait of "core self-evaluation" (Erez & Judge, 2001; Judge & Bono, 2001).

Goal-setting theory is one of the most powerful explanations of worker performance (Locke & Latham, 2002) and is based on the idea that goals guide behavior (performance) by directing attention. Core self-evaluation (CSE) is a personality cluster made up of locus of control, emotional stability, self-esteem, and generalized self-efficacy. Whereas goals guide worker efforts toward success, CSE plays a similar role to *expectancy* of success in integrated theories of motivation, such as that proposed by Steel and König (2006). Consistent with this approach, CSE has shown moderate power to predict job performance (Erez & Judge, 2001).

Despite the obvious parallels between goal-setting/CSE and RST, there have to date been only a few studies that have explored the link between these motivational constructs and personality factors. For example, both avoidance motivation and CSE are related to trait neuroticism, the broad personality dimension that reflects the degree to which a person experiences their environment as threatening and outside of their control (Hogan, Hogan, & Warrenfeltz, 2007). However, trait neuroticism also reflects both the FFFS and BIS of RST (it is a derivative factor of the dimension of punishment sensitivity; McNaughton & Corr, 2004). Neuroticism has been

found to be significantly related to "avoidance motivation" (Smits & Boeck, 2006), although as we have seen above in the context of RST, this is an ambiguous concept and entails the actions of both the FFFS and BIS. Similarly, neuroticism is a facet of the trait core self-evaluation, so there does appear to be a common linkage.

RST and Goal-Orientation

Although much of the work exploring goal-setting within organizations has focused upon the process by which goals have been communicated and adopted (Locke & Latham, 2002), goals have also been examined from an individual differences perspective. Specifically people vary with respect to the types of goals they tend to focus upon, which is typically referred to as their goal-orientation (Dweck & Elliott, 1983). Elliot and Thrash (2002) showed that performance goals can be divided into two categories: performance-approach goals, which focus on attaining competence; and performance avoidance goals, which focus on avoiding incompetence. As predicted by RST, they found that the BAS dimension is related to a tendency to set performance-approach goals, while the BIS dimension is related to a tendency to set performance (approach and avoidance) goals. In two cross-sectional studies, Poortvliet, Anseel, and Theuwis (2015) found that employees' work-related mastery-approach goals (i.e., the striving to improve one's performance at work) are positively related to work engagement; whereas, employees' work-related mastery-avoidance goals (i.e., the striving to avoid performing worse than one aspires to) were related to job detachment and fatigue. All of this suggests that there are links between the approach/avoidance dimensions, core self-evaluations and goal-orientation. (It should be noted that in these studies the "BIS" has not been differentiated into FFFS and BIS components proper, so "BIS" here must be interpreted as general punishment sensitivity; for a discussion of this matter, see Corr, 2015.)

Once the BAS has influenced a person's decision that they are capable of attaining a particular reward, it then facilitates, by recruiting necessary processes, the achievement of that reward. This process involves organizing cognitive resources, planning and initiating behavioral sequences that will enable the person to reach their goals, the "sub-goal scaffolding" discussed previously (Corr, 2008b). The continual, emotionally driven focus on rewards causes a person to set particularly difficult goals and persist in achieving them. Long-term views may be taken due to the drive to

achieve, hence the predisposition for a long-term learning goal-orientation as well as a shorter term performance-approach orientation (Elliot & Thrash, 2002).

In terms of Elliott and Thrash's (2002) findings that avoidance motivation is related to performance goal-orientation, it makes sense that punishment sensitivity would influence such a preference because of the potential for negative feedback if these goals are not achieved. Because of the focus on punishment, a person with strong FFFS sensitivity would be likely to set easier goals to avoid failure, which would in turn lead to lower performance. In particular, punishment-sensitive people may be susceptible to negative emotions in response to memories of previous failures and threats of future failures, potentially making them feel vulnerable, which would affect their feelings of control over the situation. However, a strong BIS may enable punishment-sensitive individuals to refocus by employing their self-regulatory skills leading to enhanced performance (cf. Kurzban, 2016).

There has been a recent surge of interest in the mediating processes between disposition and workplace performance. Much of this research has been conducted using personality traits as predictors, testing motivational mediators, such as self-efficacy, attributional style, or goal setting. The findings suggest that personality traits are, indeed, mediated by these sorts of constructs (Chen, Gully, Whiteman, & Kilcullen, 2000; Jackson, 2001; Locke & Latham, 2002). While some personality traits – mainly conscientiousness and neuroticism – have been shown to be related to work performance (Barrick & Mount, 1991; Hogan & Holland, 2003), the trait theories used in such research provide no explanation as to why. In addition, predictive validities are moderate, so there is plenty of scope for reinforcement sensitivity theory to improve on the validity provided by personality, and to provide a fuller explanation of the dispositional side to motivation.

Finally, RST can be used to explain the findings that disposition is related to job attitudes (Newton & Keenan, 1991) and to job satisfaction (Furnham, Petrides, Jackson, & Cotter, 2002), which in turn are related to performance (Judge, Thoresen, Bono, & Patton, 2001). RST helps to explain how it is that some people are naturally more satisfied than others in the job, due to predisposition to positive emotional reactions, and will therefore naturally have positive attitudes, and demonstrate resulting outcomes such as organizational citizenship behavior and organizational commitment. Once again, this all stems back to perception and the encoding of environmental stimuli in positive or negative ways. Consequently, RST provides an individual differences foundation for a range of diverse motivation-related theories, where these are treated as facets or contributing subfactors.

PUTTING RST TO WORK

Individuals with a strong BAS possess a heightened approach drive (all else being equal) but this motivational propensity should be expected to be modulated by the activity of the FFFS and BIS. These interactions between the various components of RST, along with the personal specificity of what counts as an attractor or repulsor, mean that links between RST traits and organizationally relevant outcomes will be complex. With these caveats in mind, it should still be expected that the BAS will have an important main effect on workplace performance, with high BAS predicting high productivity and low BAS predicting low productivity: Without a reasonably strong BAS there would be no "will do" or impetus for action. Consistent with this, the aspect of the FFM that is most closely associated with BAS, namely extraversion, is reliably (if modestly) associated with work performance, especially in occupations in which performance reflects an individual's willingness to persist in the face of social resistance, such as that experienced by sales-people and managers (Barrick et al., 2001). We suggest that a person's general level of FFFS/repulsor motivation moderates the effects of BAS, sometimes in decisive ways (some positive, some negative). A healthy level of FFFS sensitivity should, indeed, temper high BAS, allowing more effective decision-making by highlighting the aversive outcomes of making a wrong decision. Here, it is interesting to note that Perkins and Corr (2006) found that, in a group of military personnel and business managers, neuroticism-related worry enhanced performance in the more cognitively able, arguably because they directed their risk-assessment toward job-related factors rather than self-focused worry. An excessively strong FFFS, in contrast, would increase simple avoidance motivation and escape from potential loss – a loss aversive disposition – or a defensive panicky type of action in other situations (where immediate decisions are needed). Indeed, excessive punishment (FFFS/BIS) sensitivity would paralyze a person's drive for results. Conversely, if punishment sensitivity is too low it could lead to a person's drive becoming uncontrolled and disinhibited: Yet another route to BAS-redirected reckless and capricious behavior.

Activation of the FFFS will generally subtract from BAS effects; if sufficiently intense, this will lead to a conflict activating the BIS resulting in cautious and indecisive action. Although in some organizational contexts this may well be adaptive behavior, its long-term activation should be expected to impair performance. Specifically, goal conflict in BIS theory includes conflict between two equally balanced, but incompatible, goals

and intriguingly, these goals can both be attractors (e.g., business strategies) which we should expect to impair performance, especially if the negative consequences of making the wrong decision is evaluated as a form of, saliently aversive, loss. Added to this intensity of these effects is the appraisal of these outcomes for employee's own status and standing in the organization. Consistent with this, individuals who are high on the BIS-related FFM dimension of neuroticism (the opposite end of which is commonly labeled as emotional stability), tend to have lower performance in all occupations (Barrick et al., 2001).

It is possible that if a person has extremely low BAS, their levels of FFFS and BIS make little difference, as they would have low drive in the first place and little biological capability to activate behavior. Even with a healthy FFFS/BIS, it is questionable whether the risk of disciplinary action (e.g., punishment) in the workplace could actually jolt a person into action if the BAS were underactive. Such action would serve only to inhibit behavior further, and perhaps lead to counter-productive behavior of an opposition and defiant kind.

This brief analysis can do little more than to illustrate the potential complexity of the relationships yet, as we have shown in Table 1 it is possible to tabulate the outcomes of low and high mixtures of the FFFS, BIS, and BAS. With these initial propositions in mind, we now turn to the available research for more concrete suggestions of how RST might provide a dispositional framework for workplace motivation.

When thinking about personality and motivational types in terms of combinations of the FFFS, BIS, and BAS, several factors spring to mind. The first is the nature of the environment. For example, in a highly supervised environment where close monitoring is possible, then even a low BAS level can be encouraged to work to a satisfactory standard – being "apathetic" and "indecisive" are characteristic ways of behaving (and feeling and thinking) when these types are left to their own devices – but they most certainly would not be self-starters and resourceful. However, in loosely constrained environments where there is a wide latitude of choice, then high (but not too high) BAS along with a non-crippling forms of FFFS and BIS activity are needed.

As mentioned elsewhere, cognitive ability is likely to be important, especially in non-manual professions, but even in such low skill occupations it is not unimportant. For example, the "striving" type may or may not achieve anything of substance if they their motivational "will do" is not coupled to a cognitive "can do." And much the same goes for the other personality/motivational types.

Therefore, when thinking about the quantity and quality of performance, knowing someone's personality/motivational type is not *sufficient*, but as we have argued throughout this chapter, it is *necessary*. In a reworking of Blumberg and Pringle's (1982) famous equation, it is possible to identify the role of the likely individual differences factors in more formal terms, as follows:

$$P = \text{MT} \times \text{cognitive ability} \times \text{environment} + e$$

where P is performance (quantity × quality), MT – motivation type, *Cognitive ability* is general intelligence and any specific forms of ability required of by the job, *Environment* is the situational factors that impact upon the employee (e.g., degree of supervision, but also incorporating Blumberg and Pringle's *opportunity*), e is the statistical error.

As the relationships between MT, cognitive ability, and environment are multiplicative functions, a low value of one of these components would significantly reduce P, irrespective of the value of the other components.

CODA: THE DARK SIDE OF WORKPLACE MOTIVATION

But all is not rosy in the organizational garden. Counter-productive, immoral/criminal, and seemingly paradoxical, workplace behaviors have attracted much less attention than their ubiquity and importance deserves. In wider psychology, there has been a resurgence of interest in the "dark side" of personality, often couched in terms of the triad of psychopathy, narcissism, and Machiavellianism (O'Boyle Jr, Forsyth, Banks, & McDaniel, 2012). These dark characters can be found strolling workplace corridors, irrespective of the quality of management – the psychopathic type, perhaps the most common of the dark personalities, has been referred to as "snakes in suits" (Babiak & Hare, 2007). Here though, we are concerned with more mundane forms of dark behavior that thrive in poorly managed environments. We argue that perplexing behaviors – by which is usually meant, behaviors that do not conform to normal theoretical understanding – are, in fact, just as explicable as more straight-forward productive behaviors of the type the yields to analysis along RST lines.

In particular, we contend that ineptly or neglectfully managed work environments that do not encourage positive motivation, and do not entail

appropriate sanctions designed to align worker behavior with organizational aims, will foster such dark behavior. In effect, a psychological vacuum is created that is filled with counter-productive behaviors that make people very busy, often destructively so, but achieving very little of any good (a human form of displacement activity, seen in other animals during times of stress). Such dark personality types will engage in personally BAS-satisfying, but organizationally speaking, counter-productive behaviors (e.g., establishing their own modes of work behaviors, placing obstacles in the way of others, gaining control over and manipulating them, as well as systems such as financial procedures and channels of communication and influence). However, these facilitative structures and cultures do not affect the amount of positive performance displayed by "dark" personalities (O'Boyle et al., 2012), which is consistent with the foregoing analysis in that such personalities are likely to relatively self-motivated, with high BAS in the first place.

The point we wish to emphasize with regard to "dark motivation" is that high drive can be negatively as well as positively directed. Some people, especially those equipped with tough-mindedness, devious, Machiavellian, and an entitled, ways of thinking and feeling will engage in behaviors aimed at gaining, maintaining, or retaining their sense of perceived control: These motivated behaviors meet their own goals, and in this sense are purposively, BAS-mediated, directed. Seen in this theoretical light, such individuals are little different to other personality types in their need to achieve their BAS goals. They are, however, very different in terms of their route to achieving such reward. In terms of behavior modification though, aligning BAS-related behaviors with organizational aims – a worthy but often difficult trick to pull off – or by removing such people from positions of influence, are the two main ways to reduce their negative impact upon the organization and other employees.

CONCLUSIONS

Our discussion has highlighted a number of propositions, based on a fundamental neuroscientific theory of motivation and personality that have a direct and influential bearing on a person's innate level of drive and workplace performance. Specifically, we contend that the roles of the BIS, FFFS, and BAS are useful in understanding work motivation, providing novel insights that are unobtainable from more descriptive personality models. Further, our analysis shows that a basic neuroscience of

motivation can be extended to the work environment to provide a general framework of employee motivation, something that has been lacking in the industrial and organizational literature.

Specifically, we contend that, as main effects, the BAS predicts high performance and the FFFS low performance; however, we have seen that it is the *interplay* of these two processes, along the BIS, that determines actual (net) performance. We have also mentioned, but not elaborated upon, the modifying role of cognitive ability, higher levels of which have been shown to enhance the performance of more anxious (i.e., BIS-active) employees (e.g., Perkins & Corr, 2006 – for a discussion of the positive side of negative emotions, see Perkins & Corr, 2014). As presented in Table 1, specific combination of the FFFS, BAS, and BIS yield the personality-based motivational "types" found in the workplace. Here, it is important to note that unrestrained BAS is maladaptive (the "reckless" type in Table 1), especially in producing toxic, destructive leadership behaviors (Kaplan, 1991).

Table 1 shows type combinations based on relatively low and high trait values, but most people lie between these extremes so, in practice, the work-related motivation-performance picture will be less clearly crystallized than suggested here; however, the same psychological dynamics should be expected to apply. It may be speculated that it is at these average motivation values than typical workplace initiatives work best – those at the extreme ends of these distribution are, motivationally speaking, more set in their ways.

We acknowledge that, at this stage, our propositions are theoretically based and not a little speculative. However, the basic constructs we employ are widely accepted in psychology, especially the neuroscience of motivation and personality. We believe they open up a completely new side to motivational theory that calls for future testing. If our propositions were shown to be correct, psychometric tests of reward/gain and punishment/loss sensitivity could provide organizations with a good indication of which employees are most likely to demonstrate outstanding performance and also which employees could be the most driven to attain and succeed in key positions. However, as we also highlight, motivation disposition will interact with situational factors to determine behavior. Our ideas also call attention to the need to build work environments were high levels of motivation are directed to organizational objectives, and not to counterproductive behaviors.

If nothing else, the theoretical framework we have proposed provides a way of thinking about workplace behaviors and their bases in the neuroscience of motivation, and a set of testable predictions that go far

beyond the merely descriptive, correlational studies that currently dominate personality research within organizational settings.

REFERENCES

Argyle, M. (1973). *The social psychology of work*. London: Pelican.

Arnold, J., Randall, R., Patterson, F., Silvester, J., Robertson, I., Cooper, C., & Hartog, D. D. (2010). *Work psychology: Understanding human behaviour in the workplace*. Harlow: Pearson.

Babiak, P., & Hare, R. D. (2007). *Snakes in suits: When psychopaths go to work*. London: HarperBusiness.

Bandura, A. (1991). Social cognitive theory of self-regulation. Organizational Behavior *and Human Decision Processes*, *50*, 248–287.

Barrick, M. R., & Mount, M. K. (1991). The big five personality dimensions and job performance: A meta-analysis. *Personnel Psychology*, *44*, 1–26.

Barrick, M. R., Mount, M. K., & Judge, T. A. (2001). Personality and performance at the beginning of the new millennium: What do we know and where do we go next. *International Journal of Selection and Assessment*, *9*, 9–30.

Baumeister, R. F., Bratslavsky, E., Finkenauer, C., & Vohs, K. D. (2001). Bad is stronger than good. *Review of General Psychology*, *5*, 323–370.

Bentz, V. J. (1985). Research findings from personality assessment of executives. In H. J. Bernardin & D. A. Bownas (Eds.), *Personality assessment in organizations* (pp. 82–144). New York, NY: Praeger.

Blumberg, M., & Pringle, C. D. (1982). The missing opportunity in organizational research: Some implications for a theory of work performance. *Academy of Management Review*, *7*, 560–569.

Boureau, Y.-L., & Dayan, P. (2011). Opponency revisited: Competition and cooperation between dopamine and serotonin. *Neuropsychopharmacology*, *36*, 74–97.

Bray, D. W., Campbell, R. J., & Grant, D. L. (1974). *Formative years in business: A long-term AT&T study of managerial lives*. New York, NY: Wiley.

Burch, G. S. J., & Anderson, N. (2008a). Personality at work. In P. J. Corr & G. Matthews (Eds.), *The Cambridge handbook of personality psychology* (pp. 748–763). Cambridge: Cambridge University Press.

Burch, G. S. J., & Anderson, N. (2008b). Personality as a predictor of work-related behaviour and performance: Recent advances and directions for future research. In G. P. Hodgkinson & J. K. Ford (Eds.), *International review of industrial and organizational psychology* (Vol. 23, pp. 261–305). Chichester: Wiley.

Carver, C. S., & White, T. L. (1994). Behavioral inhibition, behavioral activation, and affective responses to impending reward and punishment: The BIS/BAS scales. *Journal of Personality and Social Psychology*, *67*, 319–333.

Chen, G., Gully, S. M., Whiteman, J.-A., & Kilcullen, R. N. (2000). Examination of relationships among trait-like individual differences, state-like individual differences, and learning performance. *Journal of Applied Psychology*, *85*, 835–847.

Colquitt, J. A., Scott, B. A., Rodell, J. B., Long, D. M., Zapata, C. P., Conlon, D. E., & Wesson, M. J. (2013). Justice at the millennium, a decade later: A meta-analytic test of

social exchange and affect-based perspectives. *Journal of Applied Psychology*, *98*, 199–236.
Corr, P. J. (Ed.). (2008a). *The reinforcement sensitivity theory of personality*. Cambridge: Cambridge University Press.
Corr, P. J. (2008b). Reinforcement Sensitivity Theory (RST): Introduction. In P. J. Corr (Ed.), *The reinforcement sensitivity theory of personality*. Cambridge: Cambridge University Press.
Corr, P. J. (2015). Reinforcement sensitivity theory of personality questionnaires: Structural survey with recommendations. *Personality and Individual Differences*, *89*, 60–64.
Corr, P. J., & Cooper, A. (2016). The Reinforcement Sensitivity Theory of Personality Questionnaire (RST-PQ): Development and validation. *Psychological Assessment*, Online First Publication, February 4.
Corr, P. J., DeYoung, C. G., & McNaughton, N. (2013). Motivation and personality: A neuropsychological perspective. *Social and Personality Psychology Compass*, *7*, 158–175.
Corr, P. J., & McNaughton, N. (2012). Neuroscience and approach/avoidance personality traits: A two stage (valuation–motivation) approach. *Neuroscience and Biobehavioral Reviews*, *36*, 2339–2354.
Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*, 227–268.
Dweck, C., & Elliott, E. (1983). Achievement motivation. In P. Mussenand & E. Hetherington (Eds.), *Handbook of child psychology* (pp. 643–691). New York, NY: Wiley.
Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist*, *34*, 169–189.
Elliot, A. J., & Thrash, T. M. (2002). Approach-avoidance motivation in personality: Approach and avoidance temperaments and goals. *Journal of Personality and Social Psychology*, *82*, 804–818.
Erez, A., & Judge, T. A. (2001). Relationship of core self-evaluations to goal setting, motivation, and performance. *Journal of Applied Psychology*, *86*, 1270–1279.
Furnham, A. (1992). *Personality at work: The role of individual differences in the workplace*. London: Routledge.
Furnham, A. (2015). *Backstabbers and bullies: How to cope with the dark side of people at work*. London: Bloomsbury.
Furnham, A., & Jackson, C. (2008). Reinforcement sensitivity in the workplace. In P. J. Corr (Ed.), *The reinforcement sensitivity theory of personality*. Cambridge: Cambridge University Press.
Furnham, A., Petrides, K., Jackson, C., & Cotter, T. (2002). Do personality factors predict job satisfaction? *Personality and Individual Differences*, *33*, 1325–1342.
Gray, J. A. (1975). *Elements of a two-process theory of learning*. London: Academic Press.
Gray, J. A. (1982). *The neuropsychology of anxiety: An enquiry into the functions of the septo-hippocampal system*. Oxford: Oxford University Press.
Gray, J. A., & McNaughton, N. (2000). *The neuropsychology of anxiety: An enquiry into the functions of the septo-hippocampal system*. Oxford: Oxford University Press.
Hoffman, B. J., Woehr, D. J., Maldagen-Youngjohn, R., & Lyons, B. D. (2011). Great man or great myth? A quantitative review of the relationship between individual differences and leader effectiveness. *Journal of Occupational and Organizational Psychology*, *84*, 347–381.

Hogan, J., & Holland, B. (2003). Using theory to evaluate personality and job performance relations: A socioanalytic perspective. *Journal of Applied Psychology*, *88*, 100–112.

Hogan, R., Hogan, J., & Warrenfeltz, R. (2007). *The Hogan guide: Interpretation and uses of Hogan Inventories*. Tulsa, OK: Hogan Assessment Systems.

Hogan, R., Raskin, R., & Fazzini, D. (1990). The dark side of charisma. In K. E. Clark & M. B. Clark (Eds.), *Measures of leadership* (pp. 343–354). West Orange, NJ: Leadership Library of America, Inc.

Hurtz, G. M., & Donovan, J. (2000). Personality and job performance: The big five revisited. *Journal of Applied Psychology*, *85*, 869–879.

Hutchison, A., Burch, G., & Boxall, P. (2008). Reinforcement sensitivity theory and workplace motivation. In S. Boag (Ed.), *Personality down under: Perspectives from Australia* (pp. 33–40). Hauppauge, NY: Nova Science Publishers.

Hutchison, A., Burch, G., & Boxall, P. (2013). Reinforcement sensitivity theory as a predictor of senior-executive performance. *Personality and Individual Differences*, *55*, 931–935.

Jackson, C. (1999). Interactions between personality, attributional style and beliefs about money as predictors of sales success. *Selection and Development Review*, *15*, 9–12.

Jackson, C. (2001). Comparison between Eysenck's and Gray's models of personality in the prediction of motivational work criteria. *Personality and Individual Differences*, *31*, 129–144.

Johnson, R. E., Change, C.-H., Meyer, T., Lanaj, K., & Way, J. (2013). Approaching success or avoiding failure? Approach and avoidance motives in the work domain. *European Journal of Personality*, *27*, 424–441.

Judge, T. A., & Bono, J. E. (2001). Relationship of core self-evaluations traits-self-esteem, generalized self-efficacy, locus of control, and emotional stability-with job satisfaction and job performance: A meta-analysis. *Journal of Applied Psychology*, *86*, 80–92.

Judge, T. A., & Ilies, R. (2002). Relationship of personality to performance motivation. *Journal of Applied Psychology*, *87*, 797–807.

Judge, T. A., Thoresen, C. J., Bono, J. E., & Patton, G. K. (2001). The job satisfaction-job performance relationship: A qualitative and quantitative review. *Psychological Bulletin*, *127*, 376–407.

Kahneman, D. (2012). *Thinking, fast and slow*. London: Penguin.

Kaplan, R. (1991). *Beyond ambition: How driven managers can lead better and live better*. San Francisco, CA: Jossey-Bass Limited.

Kirkpatrick, S. A., & Locke, E. (1991). Leadership: Do traits matter? *Academy of Management Executive*, *5*, 48–60.

Kluckhohn, C., & Murray, H. A. (Eds.). (1950). *Personality in nature, society, and culture*. New York, NY: Knopf.

Kluger, A. N., & DeNisi, A. S. (1996). The effects of feedback interventions on performance: A historical review, a meta-analysis, and a preliminary feedback intervention theory. *Psychological Bulletin*, *119*, 254–284.

Koopmans, L., Bernaards, C. M., Hildebrandt, V. H., Schaufeli, W. B., de Vet, H. C. W., & van der Beek, A. J. (2011). Conceptual frameworks of individual work performance: A systematic review. *Journal of Occupational and Environmental Medicine*, *53*, 856–866.

Kotter, J. P. (1982). *The general managers*. New York, NY: The Free Press.

Kurzban, R. (2016). The sense of effort. *Current Opinion in Psychology*, *7*, 67–70.

Latham, G. P. (2007). *Work motivation: History, theory research and practice*. Thousand Oaks, CA: Sage.

Locke, E. A. (1991). The motivation sequence, the motivation hub, and the motivation core. *Organizational Behavior and Human Decision Processes*, *50*, 288–299.

Locke, E. A. (1997). The motivation to work: What we know. *Advances in Motivation and Achievement: A Research Annual*, *10*, 375–412.

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice-Hall.

Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35 year odyssey. *American Psychologist*, *57*, 705–717.

Locke, E. A., & Latham, G. P. (2004). What should we do about motivation theory? Six recommendations for the twenty-first century. *The Academy of Management Review*, *29*, 388–403.

Loi, R., Chan, K. W., & Lam, L. W. (2014). Leader-member exchange, organizational identification, and job satisfaction: A social identity perspective. *Journal of Occupational and Organizational Psychology*, *87*, 42–61.

Lombardo, M., Ruderman, M. N., & McCauley, C. D. (1988). Explanations of success and derailment in upper-level management positions. *Journal of Business and Psychology*, *2*, 199–216.

McNaughton, N., & Corr, P. J. (2004). A two-dimensional neuropsychology of defense: Fear/anxiety and defensive distance. *Neuroscience and Biobehavioral Reviews*, *28*, 285–305.

McNaughton, N., & Corr, P. J. (2008). The neuropsychology of fear and anxiety: A foundation for Reinforcement Sensitivity Theory. In P. J. Corr (Ed.), *The reinforcement sensitivity theory of personality* (pp. 44–94). Cambridge: Cambridge University Press.

Newton, T., & Keenan, T. (1991). Further analyses of the dispositional argument in organizational behavior. *Journal of Applied Psychology*, *76*, 781–787.

Nicholson, N. (2000). *Managing the human animal* (1st ed.). New York, NY: Texere.

O'Boyle, E. H., Jr., Forsyth, D. R., Banks, G. C., & McDaniel, M. A. (2012). A meta-analysis of the dark triad and work behavior: A social exchange perspective. *Journal of Applied Psychology*, *97*, 557–579.

Paulsen, R. (2014). *Empty labor*. Cambridge: Cambridge University Press.

Perkins, A. M., Arnone, D., Smallwood, J., & Mobbs, D. (2015). Thinking too much: Self-generated thought as the engine of neuroticism. *Trends in Cognitive Sciences*, *19*, 492–498.

Perkins, A. M., & Corr, P. J. (2006). Cognitive ability as a buffer to neuroticism: Churchill's secret weapon? *Personality and Individual Differences*, *40*, 39–51.

Perkins, A. M., & Corr, P. J. (2014). Anxiety as an adaptive emotion. In G. Parrott (Ed.), *The positive side of negative emotions*. New York, NY: The Guilford Press.

Politser, P. (2008). *Neuroeconomics: A guide to the new science of making choices*. Oxford: Oxford University Press.

Poortvliet, P. M., Anseel, F., & Theuwis, F. (2015). Mastery-approach and mastery-avoidance goals and their relation with exhaustion and engagement at work: The roles of emotional and instrumental support. *Work & Stress: An International Journal of Work, Health & Organisations*, *29*, 150–170.

Poropat, A. E., & Corr, P. J. (2015). Thinking bigger: The Cronbachian paradigm and personality theory integration. *Journal of Research in Personality*, *56*, 59–69.

Roberts, B. W., Kuncel, N. R., Shiner, R. L., Caspi, A., & Goldberg, L. R. (2007). The power of personality: The comparative validity of personality traits, socioeconomic status, and

cognitive ability for predicting important life outcomes. *Psychological Science, 2*, 313–345.

Schmidt, F. L., & Hunter, J. E. (1998). The validity and utility of selection methods in personnel psychology: Practical and theoretical implications of 85 years of research findings. *Psychological Bulletin, 124*, 262–274.

Smits, D. J. M., & Boeck, P. D. (2006). From BIS/BAS to the Big Five. *European Journal of Personality*, *20*, 255–270.

Steel, P., & König, C. J. (2006). Integrating theories of motivation. *Academy of Management Review*, *31*, 889–913.

van der Linden, D., Taris, T. W., Beckers, D. G. J., & Kindt, K. B. (2007). Reinforcement sensitivity theory and occupational health: BAS and BIS on the job. *Personality and Individual Differences, 42*, 1127–1138.