Industrial and Organizational Psychology, **2** (2009), 77–93.

FOCAL ARTICLE

Work Motivation: Identifying Use-Inspired Research Directions

RUTH KANFER
School of Psychology, Georgia Institute of Technology

Abstract

The study of work motivation progresses through the inspiration that comes from creating new alignments between scientific understanding and considerations of practical use (cf. D. E. Stokes, 1997). Using the 3 C's framework for work motivation (Kanfer, Chen, & Pritchard, 2008a, b), I coordinate 5 practical concerns related to work motivation with recent scientific trends in order to encourage the development of new research agendas in the field.

Most reviews of work motivation, my own included, organize the field around seminal empirical studies, major theoretical perspectives, or some combination of both. In these reviews, the practical usefulness of a perspective often receives less attention than findings that address basic theoretical tenets and challenges. This works well for most pedagogical purposes. But such reviews are often less satisfying for organizational scientists interested in conducting what Stokes (1997) called use-inspired research. According to Stokes (1989), use-inspired research agendas bring together the goals of basic understanding with contemporary concerns for how findings may be used to benefit societies, organizations, and individuals.

The objective of this brief article is to promote the development of use-inspired research agendas by coordinating a few practical concerns about work motivation with recent scientific findings and research trends. This article is comprised of three sections. In the first section, I discuss the forces that place work motivation in *Pasteur's Quadrant* (Stokes, 1997), that is, at the interface of science and practice. I also describe general research trends and a few of the more salient basic research advances and practical challenges that have served as catalysts for recent changes in the field. In the second section, I introduce the three C's framework for work motivation research recently developed by Kanfer, Chen, and Pritchard (2008a). This framework categorizes work motivation research thematically into one of the three dimensions: content, context, and change. For each dimension, I present a brief overview of the domain space, followed by at least one use-inspired question. I then describe the real-world conditions that have made the question important, relevant scientific advances and research findings, and some of the challenges, synergies, and obstacles involved in developing a use-inspired research agenda and science-based practices. In the third and final section, I provide some concluding thoughts about future research directions in work motivation.

Correspondence concerning this article should be addressed to Ruth Kanfer. E-mail: rk64@prism.gatech.edu

Address: School of Psychology, 654 Cherry St., mc0170, Georgia Institute of Technology, Atlanta, GA 30332-0170

Ruth Kanfer, Georgia Institute of Technology.

https://doi.org/10.1111/j.1754-9434.2008.01112.x Published online by Cambridge University Press

Work Motivation: The Nexus of Science and Practice

Stokes (1997) referred to the interface of science and research as *Pasteur's Quadrant*, in honor of Louis Pasteur's contributions to both the germ theory of disease and his research that led to pasteurization and vaccines that advantaged all society. As a science, work motivation falls within the broader field of human motivation—a field of study whose aim is to understand the influence, interplay, and mechanisms by which internal and external forces affect the direction, intensity, and/or persistence of behavior. In this branch of motivational science, research is directed toward describing and understanding the mechanisms and processes that influence work-related behaviors.

But the scientific perspective on work motivation represents only part of the field. For managers, work motivation refers to an aspect of the job in which they are responsible for arranging the task, socioemotional, and physical conditions of their subordinates in a way that encourages employees to allocate sufficient personal resources for the accomplishment of organizationally valued performance objectives. To be successful, managers must recognize, diagnose, and remediate motivational problems as they occur, and the choice of which method or managerial practice to use is often a difficult one. Thus, from a practical perspective, the study of work motivation refers not just to understanding the forces and psychological processes that impinge on action but also to the application of that understanding to the arrangement of work conditions and implementation of management practices that encourage and sustain employee resource allocations (in the forms of time, effort, cooperation, knowledge sharing, and transfer). Clearly, both science and practice contribute to the direction of progress and research in work motivation. It is also the case that science, societies, organizations, and individuals stand to benefit from the new knowledge generated by such research.

Although the influence of science and practice on work motivation research changes over time, advances in science and the rate of real-world change tend to keep the field in long-term equilibrium. During the mid-20th century, for example, scientific progress in cognitive, information processing psychology spurred the development of several new work motivation theories and research directed toward the identification of basic motivational mechanisms and processes. Research to investigate the utility of these new approaches in organizational practice soon followed. In the late 20th century, however, the pace of theory development declined. Research in work motivation slowly changed course as changes in the nature of work raised pressing new questions for which extant theories were not sufficient, such as how to sustain motivation and job performance in emotionally demanding work environments and how to enhance motivation for new job skill learning. During the past 2 decades, research on work motivation has continued to shift away from theory development and toward deeper exploration of how changes in the world of work influence work motivation. Findings in turn have promoted the development of revised person-fit and person-centric formulations that provide better understanding and prediction of motivated behavior in specific problem environments.

At the start of the new millennium, research inspired by practical concerns continues to dominate the field. Contemporary work motivation research has also become increasingly context specific, focusing, for example, on the impact of motivation in training, in job search, and in teams. The sustained growth of jobs in the services sectors has also directed substantial research attention toward illuminating the person and situational determinants of emotion regulation during job performance. And the spot shortage of new entrants in various job sectors has encouraged research on the effects of applicant selection procedures and the provision of nonmonetary incentives on job choice and employee retention, respectively.

Work motivation research inspired by emerging concerns associated with the changing

https://doi.org/10.1111/j.1754-9434.2008.01112.x Published online by Cambridge University Press

nature of work has advanced our knowledge in two ways. First, the focus on fresh, real-world problems in work motivation has encouraged investigation of previously neglected or understudied determinants of employee behavior, such as coworker relations and nonwork demands. Second, the study of work motivation in specific contexts has aided in the identification of different pathways by which motivation may affect work behavior and job performance. Nonetheless, as I suggest later in this article, there are increasing signs that the tide may again be changing, as rapidly accumulating advances in science create new opportunities for theory development in work motivation.

The Three C's of Work Motivation: Content, Context, and Change

Recently, my colleagues and I proposed an updated organization of the field intended to reflect current trends and anticipate future developments (see Kanfer et al., 2008a, b). Our heuristic framework, called the three C's of work motivation, organizes theory, research, and practical concerns thematically into three broad and overlapping categories: content, context, and change. Consistent with the classic person–situation interactionist perspective, inputs from the content (person) and context (situation) domains are assumed to exert independent and joint effects on core motivational processes (i.e., goal generation/choice and goal striving) and their outcomes.

Two additional features of this framework differentiate it from prior organizations of the work motivation literature. First, the scope of each category has been substantially broadened to include distal influences, such as biological processes (in the content theme) and culture (in the context theme). Second, we include a third thematic category, change. Change pertains to theory, research, and practical issues related to the effects of time on work motivation determinants, processes, and outcomes. The inclusion of a temporal dimension makes explicit the multilevel nature of work motivation and the potential for reciprocal relationships between person and context variables over time. The temporal dimension also incorporates research that investigates the potentially different effects that various inputs may have on motivational processes as a function their different timescales.

Figure 1 presents a graphic depiction of the heuristic framework. The left-hand side of the figure displays the content and context dimensions in terms of the relations among

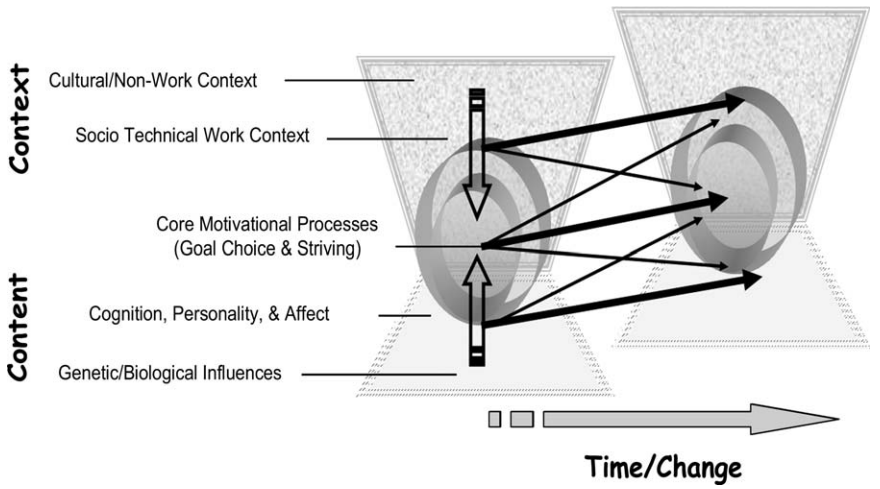

Figure 1. A heuristic model of work motivation as a function of context, content, and change (adapted from Kanfer et al., 2008).

https://doi.org/10.1111/j.1754-9434.2008.01112.x Published online by Cambridge University Press

variables within each dimension and their relations to core motivational processes. The temporal, or change dimension, is reflected by the solid arrows that portray same- and potential cross-level influences of content, context, and motivational processes from Time 1 to Time 2.

As shown in the figure, the outcomes of motivational processes at Time 1 may exert cross-level effects that modify the salience or level of content and content variables at Time 2, such as when increased motivation to accomplish a difficult goal subsequently improves the individual's mood or the individual's status in his/her work team. The framework also recognizes that content and context variables may exert lagged cross-level effects on motivational processes, such as can occur when a job transfer experienced at Time 1 exerts a later direct influence on motivational processes at Time 2.

Content Themes in Work Motivation

Theories and research included in this dimension focus on the characteristics upon which individuals differ, including biological and physiological factors, nonconscious motives, cognitive abilities, self-represented traits, vocational interests, work experiences and attitudes, knowledge, skills, and affective states. As shown in Figure 1, we arrange these constructs in terms of their putative influence on each other as well as their proximity to motivational processes.

Content theories of work motivation have a long history and include work-oriented versions of some of the most well-known human motivation theories, such as Atkinson's (1964) achievement motivation theory and Deci's (1975) intrinsic motivation theory. Content approaches typically specify the motive or set of motives that provide the impetus for action, although theories differ greatly on the origin, nature, and appropriate manner for assessing motive strength. The primary characteristic that distinguishes most content approaches from work in other domains is the attention given to the influence of individual differences in person characteristics. Most content, but not all, approaches to work motivation emphasize relatively stable, between-individual differences in trait or motive strength, rather than within-individual differences in strength over time or across situations.

Recent progress in content approaches offers a number of new insights for understanding work motivation in modern settings. To illustrate, I pose two questions below that attempt to link new advances in science with real-world issues.

Question 1

Do self-report measures of personality traits capture all the relevant non ability trait variance for predicting work behavior and performance? Or could there be other unmeasured motives that capture additional variance and/or predict characteristic patterns of work behaviors that contribute to performance? What methods exist to assess these motives?

The practical issue. One of a manager's most important tasks is to learn how their employees differ in the way they interpret and respond to the routine work environment. Self-report measures of personality based on the five-factor model provide good assessment of consciously accessible self-attributed traits. Some of these explicit traits provide quite good prediction of other consciously mediated variables, such as attitudes and goals performance, (Barrick & Mount, 1991). But traits that operate in the explicit motivational system may be less helpful for predicting individual differences in subtle behavioral regularities related to what employees notice in the work environment, how they interpret ambiguous situations, and the way they respond to affordances and constraints in their work environment. For example, managers are often able to predict the selective and particular fashion by which their subordinates relate their accomplishments and hardships to others, approach and avoid particular people and tasks, and experience different degrees of enjoyment and frustration during task accomplishment. These behavior patterns do not appear to be consciously mediated and are, in fact, often

https://doi.org/10.1111/j.1754-9434.2008.01112.x Published online by Cambridge University Press

enacted with little employee self-awareness. Personality-motivation theorists, such as McClelland (1985), Kuhl (2000), Schultheiss (in press), and Kehr (2004), have proposed that individual differences in the implicit motive system may drive the characteristic patterns of approach and avoidance behavior that individuals display in response to various tasks, individuals, and situations. In contrast to explicit traits, implicit motives are largely consciously inaccessible, operate on a fast-time scale, and are affective in character.

Understanding the origins and determinants of individual differences in routine, motivated patterns of workplace attention and behavior has always been important, but the changing nature of work demands has focused even greater attention on this issue. Many modern jobs require employees to perform activities that have low probabilities of success. In the professional and services sectors, for example, surgeons must often perform risky procedures under less-than-optimal conditions, and telephone sales agents must solicit orders from individuals, many of whom will not be interested in making a purchase. Employees who are technically or interpersonally competent, but who maintain a strong implicit motive to avoid failure are unlikely to perform well or feel efficacious in such environments.

Many modern jobs also provide employees with flexibility in how performance is accomplished. In rapid response teams and project teams, for example, employees often have considerable discretion in the strategies they use to accomplish role objectives. Individual differences in implicit motive strength for recognition and power may exert potentially important differences in the way that employees go about performing their work role. In healthcare teams, for example, individuals who are high in need for power and recognition may avoid performing routine tasks (such as conducting equipment checks) that do not afford opportunities to receive recognition or exert influence on others. Although high levels of this implicit motive are unlikely to preclude the employee from contributing to team performance, their characteristic pattern of performance may contribute to interpersonal conflicts that ultimately reduce team performance.

Another situation in which individual differences in implicit motive strength has important implications for managers pertains to jobs that provide employees with autonomy for completing complex and often multiphase task assignments. Across a variety of jobs, ranging from programmer to sales representative, individuals are often assigned difficult outcome goals that require substantial self-management. One behavior pattern of considerable concern to managers relates to the "high maintenance" employee, namely, the employee who readily accepts a hard goal assignment but subsequently exhibits great difficulty in meeting the goal for personal reasons, such as procrastinating or failing to self-monitor progress and make necessary adjustments in time and/or effort. High maintenance employees are particularly problematic in jobs that involve off-site work or inflexible performance deadlines. From a motivational perspective, such high maintenance employees appear to have particular difficulty in effectively performing tasks they want to accomplish but do not enjoy.

Relevant contributions from work motivation theory and research. Recent work motivation theory and research has focused on the effects of individual differences in explicit traits and motive tendencies, that is, conscious and purposive preferences for action settings and behaviors as assessed by self-report personality measures. As many have noted (e.g., Hough & Schneider, 1996), the individual's background and the desire to provide socially acceptable responses may have an important influence on scores obtained using these measures. Beyond these criticisms of personality tests, however, it is also possible that the traits responsible for the behavior patterns observed in the workplace do not lie entirely in the explicit motivational system but rather in a second, less well studied motivational system, namely, the implicit motive system.

Over the past 2 decades, a substantial body of evidence has accumulated

https://doi.org/10.1111/j.1754-9434.2008.01112.x Published online by Cambridge University Press

in personality, cognitive neuroscience, and experimental-social psychology that supports the existence and influence of individual differences in a second, implicit motivational system. In contrast to the explicit system, individual differences in the implicit system are fast, not consciously accessible, and are usually closely linked to emotional processes (Michalak, Puschel, Joormann, & Schulte, 2006). A nascent body of research in the organizational psychology domain also shows the effects of these traits on what individuals attend to and on action tendencies, albeit to date in performance on only a small number of specific tasks (e.g., Lord & Moon, 2006).

McClelland (1985) proposed that individual differences in implicit motives for affiliation, achievement, and power can be distinguished from explicit motives. Meta-analytic findings by Spangler (1992) provide support for this assertion. Each implicit motive can be further distinguished in terms of two components; hope (approach) and fear (avoidance). In contrast to explicit traits that operate primarily through the verbal–symbolic system, implicit motives are posited to operate largely though the nonverbal, affective system. Preliminary research findings suggest that individual differences in implicit motives influence attention and behavior in part through preconscious orienting and affect-amplifying functions. Individuals who are high in fear of failure, for example, are more likely to identify and avoid tasks that have a high probability of failure than persons who are low on fear of failure.

McClelland, Koestner, and Weinberger (1989), Brunstein and Maier (2005), Kuhl (2000), Baumann, Kaschel, & Kuhl (2005), and Schultheiss (in press) further describe motivation in terms of the concordance between explicit and implicit motive systems. In organizational psychology, Kehr (2004) has also proposed an account of motivation that emphasizes the impact of discordance between the systems and the effects of conflict on attainment of conscious goal objectives. In these dual-system formulations, individuals may adopt work goals based on explicit motive tendencies and then encounter difficulty in accomplishing the goal as a result of conflict with implicit motive tendencies. When there is discordance, goal imagery has been proposed to strengthen self-regulatory processes (in service of explicit goal accomplishment) that modulate the influence of disruptive implicit motive tendencies on goal progress. These conceptualizations of self-regulation as the primary process through which individuals attenuate the negative impact of conflicting implicit motive action tendencies offer a new perspective on the function and consequences of self-regulation activities during goal striving.

Implications and future directions. Abiding managerial interest in identifying person characteristics that influence routine patterns of work behavior challenges the scientific community in several ways. First, additional research is needed to more clearly delineate the features of important routine behavior patterns, the work settings in which they most often occur, and their relationship to different traits. Second, and perhaps even more important, applied scientists must give greater consideration to the structure and function of the implicit motive system. To date, most work motivation research on trait influences has focused on performance rather than motivated patterns of work behavior (though for exceptions, see Barrick, Mount, & Strauss, 1993; Barrick, Stewart, & Piotrowski, 2002). From a managerial perspective, however, understanding how traits and motives affect employee patterns of behavior—not just performance—can be very helpful. Indeed, after more than 50 years of emphasis on the explicit motive system in work motivation, there is likely to be considerable scientific controversy about whether a second, distinct motive system even exists.

To date, the major obstacle in the study of implicit motives and motivation remains quite pragmatic, namely, the difficulties associated with developing valid measures of individual differences in nonconscious motives. Promising results have been reported for the validity of several new

https://doi.org/10.1111/j.1754-9434.2008.01112.x Published online by Cambridge University Press

implicit motive measures, including the Operant Motive Test (Scheffer, Eichstaedt, Chasiotis, & Kuhl, 2007) and the Multimotive Grid (Sokolowski, Schmalt, Langens, & Puca, 2000). James and his colleagues (e.g., James, 1998; James, McIntyre, Glisson, Bowler, & Mitchell, 2004; LeBreton, Barksdale, Robin, & James, in press) have also reported results showing that their implicit motive measure, the Conditional Reasoning Test, provides significant predictive validities for several work-related behaviors. Further research findings that demonstrate the validity of implicit motive measures and that provide evidence for significant predictive validities of implicit motives on patterns of workplace behavior are likely to launch a new generation of thinking about how to model and study work motivation.

From an applied perspective, scientific work aimed at identifying and distinguishing routine patterns of motivated work behavior offers important information for the development of more effective practices to manage employee motivation. At another level, further scientific exploration of the implicit motive system is likely to resonate well with managers, many of whom likely agree that employees importantly differ in more motive tendencies than they can tell.

Question 2

Work motivation theories typically examine the influence of individual differences in a specific (e.g., Extraversion) or broad set of explicit traits (e.g., Big Five factors). In the workplace, however, people are typically distinguished in terms of their standing on constellations of traits that seem to "go together" (e.g., extraverted, densely networked, verbally facile, confident, quick to read and respond to others). Are there scientific methods that take a more holistic, person-centric view of traits and how they affect work motivation?

The practical issue. One of the most widely held beliefs in organizational science and management is that, *ceteris paribus,* employee differences in work motivation and performance are primarily because of individual differences in nonability traits, including personality, action style, passion for the work, self-concept and self-confidence, and ways of interpreting information. An extensive research literature provides indirect support for this notion, showing stable and significant relationships among a variety of nonability traits, motivation, and performance. A few studies (e.g., Barrick et al., 1993) provide specific evidence indicating that the effects of specific traits on performance result as a consequence of their influence on motivational processes.

But there is a problem. The problem is how to get a handle on which traits "go together." Most managers and even employees believe that different traits go together and that trait sets offer a better description of the individual than single traits. Indeed, it is unusual to hear a manager describe an employee using a single trait and much more common to hear an employee described in terms of a cluster of person characteristics that are assumed to operate in an integrative or synergistic manner to affect motivational processing and behavior. Even typological personality measures, such as the Myers-Briggs, offer managers a system for capturing multiple person characteristics that tend to go together and may be used to predict behavior. An evidence-based system is needed to understand how traits go together and influence work motivation.

Relevant contributions of theory and research. The notion of a person space defined in terms of cross-domain trait complexes, rather than in terms of single traits, has also been advocated in the scientific arena (e.g., Ackerman, 2003; Mischel & Shoda, 1995; Snow, 1978). Although Ackerman and his colleagues report empirical evidence on the relationship of broad trait complexes that encompass personality, interests, abilities, and self-variables, there has been very little research to date investigating the differential predictive validity of trait complexes for motivational constructs and action patterns in the work domain. It is also possible that explicit trait complexes may be

https://doi.org/10.1111/j.1754-9434.2008.01112.x Published online by Cambridge University Press

linked to the implicit trait motives proposed by McClelland (1985) through dimensions of self-concept (cf. Kanfer et al., 2008b). In organizational psychology, however, most research on trait relations has focused on the influence of explicit personality traits on motivation and performance.

Implications for research and practice. The practical call for finding a more parsimonious organization of person characteristics and their influence on work motivation has important implications for theory development. Historically, personality is assumed to influence work motivation. In turn, motivation and abilities jointly influence job performance. The person-centric view suggests a slightly different organization, such that diverse person attributes (including personality and abilities) may be clustered into distinct trait complexes that, in turn, affect motivation and performance (Ackerman, 2003). Although organizational psychologists typically think of knowledge, skills, and abilities; and nonability personality traits and motives as separate fiefdoms, the data support the more popular view that important relationships between these domains do exist (Ackerman & Heggestad, 1997). Practically, a better scientific understanding of cross-domain trait complexes and their effects on motivational processes is necessary in order to develop more effective strategies for tailoring feedback and work assignments to boost employee motivation.

Context themes in work motivation. Although substantial progress has been made delineating the structure and influence of person determinants on motivational processes and action, far less attention has been directed to studying situations or the context for motivation and action. At the most general level, context pertains to the circumstances or events that form the environment within which motivational processes and action takes place. In the three C's framework, context is conceptualized as a nested set of variables. At the broadest level, cultural, socioeconomic, and life span/nonwork forces operate in unison to form the distal contextual background for proximal contextual influences on work motivation. Proximal sociotechnical variables, such as organizational, work group, and work role variables mediate the influence of distal factors on motivational processes. Within each layer of influence, contextual variables may operate in isolation or interactively to affect motivation.

Over the past few decades, managerial interest in the effects of context on work motivation has flourished. Practice-oriented concerns about context typically tend to focus on how job characteristics and work conditions influence employee motivation. More recently, however, change in the composition of the workforce has broadened managerial interest in understanding how the employee's cultural history, nonwork factors, and unique team composition features (such as age or gender diversity) influence work motivation.

Question 3

Is employee motivation different in every context or situation? Or are there common features of context that can be expected to influence work motivation across a variety of situations?

The practical issue. The transition from an industrial to postindustrial economy in much of the developed world has set in motion a sea change in the defining features of the workplace. In contrast to manufacturing work dominant during the industrial era, the workplace today is increasingly no longer a single physical place where the individual performs routinized job tasks, on a routine work schedule, for most of his/her adult life. Modern-day workers are less likely to work for the same or just a few organizations over the adult life span and may often perform job tasks at a variety of physical locations, on irregular work schedules, in the absence of a supervisor, and with a changing cast of coworkers and clients. Examples of change in the nature of work include healthcare employees who work irregular shift schedules; professional employees who telework for at least part of the workweek; and employees in marketing,

https://doi.org/10.1111/j.1754-9434.2008.01112.x Published online by Cambridge University Press

military, and even manufacturing organizations who often work in self-governing project teams. Many sales and management personnel perform a nontrivial portion of their job tasks on the telephone away from their desks, in airports, coffee houses, and their cars. Although work routines certainly emerge and persist for these individuals, the nature of these routines and their salient characteristics are far less driven by a single core technology of the organization than in the past.

The changing nature of work has also led to large-scale change in work demands. In contrast to jobs in the manufacturing sector that placed a premium on specific job knowledge, equipment skills, and physical/motor skills, jobs in the rapidly growing services sector place strong demands on domain knowledge, people skills, and adaptability. In the professional and services sectors, many jobs demand high and sustained levels of attention and mental effort over much of the workday. Such job demands may exert a negative effect on subjective well-being (Sonnentag, 2001) that in turn may influence work motivation.

Relevant contributions from work motivation theory and research. Context is a particularly difficult dimension of work motivation to organize. The definition of context as circumstances or events implies a multidimensional structure that encompasses, among other things, the individual's history, perspective, physical place, interpersonal relations, subjective state, and time. In addition, context may be conceptualized at different levels of granularity or specificity. Circumstances and events may be described across a broad span of activities and time, such as the transition to retirement, or defined narrowly, such as the "last day of work." Circumstances and events may also be characterized by a setting or place, such as "at work," "during lunch," or "while trying to finish a report," in affectively loaded interpersonal terms, such as "among coworkers I like" or "while talking to an abusive customer," or in reference to the individual's subjective state, such as "at the end of an exhausting day," or "while I was feeling good." In a person-centered perspective, the aspects of context that are relevant for work motivation pertain to those features that are salient to the individual. For example, individuals may perceive the initiation of an organizational change program as a new context with implications for work motivation but fail to perceive an accompanying change in supervisors as a new context for action, or vice-versa.

The expansive definition of context has in turn given rise to a panoply of largely disparate work motivation research streams. Research programs investigating contextual effects on work motivation and action also exist at different levels of analysis, ranging from the broad and pervasive effects of organizational culture to the narrow and specific effects of affectively loaded events such as a negative exchange with a coworker. Research in each of these streams typically characterize context by what Johns (2006) refers to as omnibus context: a cohesive set of characteristics that comprise settings, such as training. But features of what Johns calls discrete context—the particular task, social, and physical variables that influence motivation, attitudes, and behavior—are only infrequently explicitly assessed. Even when the discrete characteristics of a context are described, their effects on motivation and action are typically studied in isolation and at one level of analysis rather than in terms of their effects on context at other levels of analysis. Evidence is also lacking on the primacy of context dimensions as they influence work motivation. For example, a large number of studies show the primacy of affective state on decision-making risk irrespective of the context in which the affective state is aroused. Whether this relation holds in work contexts that also place strong demands on cognitive processes is unclear.

Another problem issue related to context pertains to the definitional ambiguity of causal relations. Most organizational studies of situational influences conceptualize context as a causal influence on motivation and action. Nonetheless, the definition of context certainly permits examination of how individuals influence environments in

https://doi.org/10.1111/j.1754-9434.2008.01112.x Published online by Cambridge University Press

a manner consistent with Schneider's (1983) important observation that "people make the place."

The broad definition of context provided above also implies that motivation and action occur not just with respect to place and psychological features but also with respect to a temporal dimension. The temporal dimension may be further distinguished from level to yield potentially important predictions for work motivation. Work motivation in teams, for example, may instantiate facilitating trait motives for achievement that remain active throughout the project period even though a conflict with another team member can arouse short-term but potentially stronger avoidance motives. Although theories of implicit motivation have begun to address the manner in which individuals resolve conflicts between competing active motives for action, little is currently known about how context affects the relative cycle and strength of different motives over time. For example, it may be that, all other things equal, contexts that arouse achievement motives have a more persistent effect on motivational processes and action than event-based avoidance motives.

Implications for theory and practice. As Johns (2006) notes in his comprehensive analysis of context, the effects of context importantly depend on the features of the work context that are salient to the individual. As such, investigations that examine work motivation using omnibus, organizationally relevant context distinctions (e.g., training, job performance, employee development) may be less useful than studies that examine the effects of discrete context variables or person-driven context distinctions (e.g., learning, performing, assisting, collaborating). In this sense, all context influences on work motivation are local.

The three C's framework suggests a broad universe of exogenous variables that may wax and wane in their salience to the individual as a function of internal and external prompts. Research is needed to identify and classify events and circumstances that trigger changes in motivational constructs and processes. Team member interactions, for example, may elicit a conception of a collaborative environment that instantiates higher levels of self-efficacy and increased allocation of personal resources in the form of time and assistance to others. In contrast, employees instructed to learn a new skill as part of the requirement for passing a probationary period of employment are likely to adopt a performance goal orientation that increases task effort but impedes deeper learning (see Dweck & Leggett, 1988). From a practical point of view, understanding what features of work are salient to which employees may help in the development of managerial strategies that more closely align employee motivation with organizational objectives.

Change themes in work motivation. Change is the third thematic dimension in the three C's framework. Although motivation has long been recognized as a continuous, dynamic process that unfolds over time, most models of work motivation are static and do not account for the effects of more than brief periods of time.

The role of time in work motivation has received relatively less study to date. Theorizing and research by Atkinson and Birch (1970) and Raynor and Entin (1982) provide complementary accounts of how time influences motivational strength, but few organizational studies have been conducted using these perspectives. Similarly, brief affective responses to work events may result in no immediately observable change in work motivation. Over time, however, these responses may accumulate to alter work motivation and long-term patterns of performance (see Kanfer et al., 2008b).

The temporal dimension must also be considered in light of how inputs to motivational processes change over time. Research in the life span and personality literatures provide evidence for small but meaningful changes in personality trait levels over the life span and for the emergence of generativity motives at midlife (see Kanfer & Ackerman, 2004). Similarly, contextual variables also exhibit change over time, although on different timescales. Work groups form and dissolve, and

team cohesion may increase or decline in predictable ways over the life of a team. In contrast, work demands may change abruptly as a function of new technologies, procedures, or organizational change. Employee aging also brings about changes in nonwork demands that may be abrupt (e.g., caregiving demands for a sick parent) or gradual (e.g., increased community involvement).

As Dalal and Hulin (2008) and Ployhart (2008) note, the effects of time at multiple levels can exert important cross-level and cumulative effects on work motivation, such as the entrainment of work motivation processes. Research by Schooler, Mulatu, and Oates (2004) provides indirect evidence for this notion in a longitudinal study demonstrating the long-term effects of job demands on cognitive functioning and cross-domain self-direction. Similarly, research by Frese, Kring, Soose, and Zempel (1996) compared differences in personal initiative as a function of prior long-term employment in East and West Germany. They found that individuals who had been employed in the more constrained East German environment showed less personal initiative in a less constrained employment environment than did individuals who had been previously employed in the less restricting West German work environment. These findings provide compelling evidence for the powerful force that time can play in forging trait-like work motivation strategies that may endure a lifetime.

Question 4

Work motivation theories rarely address the influence of demographic characteristics on motivational processes or their outcomes. What distinguishes work motivation among older workers and younger workers?

The practical issue. Increasing workforce diversity is a worldwide phenomenon among developed countries. Demographic trends and workforce projections by the U.S. Department of Labor through the first half of the 21st century indicate that workers 45–70 years will make up an increasingly larger segment of the available workforce and that the proportion of younger, new entrants into the workforce will continue to decline slightly (as a consequence of birthrates and longer periods of education and training). Taken together, these data and projections suggest that organizations will face increasingly stiff and global competition for younger workers and will need to develop more effective practices for motivating and retaining capable older employees who are nearing normative retirement age.

Although work motivation theories abound, there is currently little evidence on the generalizability of these theories to the mature and late-life workforce. Most studies demonstrating the predictive validity and potential usefulness of extant work motivation theories were conducted decades ago, using samples of young to midlife employees (because relatively few persons then worked beyond the sixth decade of life). There is no a priori reason to assume that core motivational processes delineated in these theories do not operate similarly across the life span. However, it is important to gather empirical evidence on how age-related changes in motivational determinants, including physical and cognitive abilities, nonability traits, and nonwork demands, affect both the decision to work and the personal resource allocation strategies employed to accomplish work goals.

To date, most organizational strategies and management practices developed to attract, motivate, and retain an aging workforce have relied on survey findings from older workers and qualitative reports. These surveys typically ask older workers about the importance of various extrinsic incentives (e.g., pay, healthcare benefits, flexible work hours, etc.), experiences they have had in the workplace that indicate coworker age bias or age stereotyping by supervisors, and job-related intrinsic incentives and attitudes (e.g., job satisfaction, commitment). Based on these findings, organizations have implemented a variety of different incentive plans,

https://doi.org/10.1111/j.1754-9434.2008.01112.x Published online by Cambridge University Press

including flexible work schedules, telework, part-time work arrangements, job and work role redesign, employee redeployment, and even the opportunity to work in different store locations on a seasonal basis.

Building strategies to attract and motivate individuals at the opposite end of the life span—young, new workforce entrants—requires consideration of a different time-related factors than those of concern for older workers. Although work motivation theories have been evaluated on younger samples, and so should be directly applicable for developing effective motivational strategies, the samples in which most of these theories were evaluated is of a different cohort than the target population. In contrast to older workers, where age-related changes in person characteristics and sociocultural factors may influence work motivation, the practical problem in attracting and sustaining work motivation among younger workers pertains to determining the impact of cohort on the valence of organizational incentives and work conditions.

Relevant contributions from work motivation theory and research. Theory and research on recruitment of new workforce entrants has steadily increased over the past decade. Findings in this area provide useful practical evidence on the effectiveness of various recruitment tactics among younger job applicants.

For many managers, especially those working outside of professional and high-technology areas, the current concern is less about recruiting young people than about how to motivate, manage, and retain older members of an age-diverse workforce. Surprisingly, theory development and research in this area is still in the early stage and tends to be scattered widely across the industrial–organizational and organizational behavior literatures. To date, research findings suggest four major sources of influence on work motivation among older workers: (a) age-related changes in knowledge, skills, abilities, motives, and interests; (b) job/work role demands; (c) workplace influences (e.g., work conditions, perceptions of age bias among supervisors or coworkers, intergenerational conflicts); and (d) cohort/nonwork factors (e.g., values, health, caregiving responsibilities). Extant findings suggest that changes in motivation for work and motivation at work among older employees are largely associated with changes in the inputs to motivational processing rather than the processes themselves.

In an analysis of age-related person changes and job demands, Kanfer and Ackerman (2004) proposed two different pathways by which work motivation deficits could occur among midlife and older workers. In jobs that place strong demands on age-sensitive abilities (e.g., air traffic controller), increasing employee effort may only partially offset gradual performance declines. In these instances, work role changes or redeployment to positions that make greater use of age-insensitive knowledge and skills is needed (e.g., conducting training). In contrast, in jobs that place strong demands on accumulated knowledge and skills (e.g., accountant), performance levels are often maintained with relatively low levels of limited capacity attentional effort. In these jobs, work motivation deficits may occur as a consequence of boredom and insufficient job challenge. Job redesign and work role interventions to increase job challenge using existing knowledge and skills are posited to reduce feelings of boredom and lead to higher levels of job performance and satisfaction.

Several studies also show that older worker motivation is also affected by social interactions that take place in the work context that indicate age bias. Other studies indicate that older worker motivation for work is positively related to work conditions that are perceived to protect and promote positive self-concept and negatively related to poor health and nonwork caregiving responsibilities (see Kanfer & Ackerman, in press).

In summary, research on work motivation suggests that the origins of differences in work motivation for both younger and older workers lies in the fit of the individual to the

https://doi.org/10.1111/j.1754-9434.2008.01112.x Published online by Cambridge University Press

demands and rewards of the jobs and work group attitudes, rather than in age-related changes in motivational processing per se. With the exception of decline in physical health that makes work impossible, interventions to sustain work motivation among older employees do not appear to appreciably differ in form from those used to sustain work motivation among younger employees. However, age-related differences in cognitive and physical abilities and age- and cohort-related differences in knowledge, skills, values, and attitudes toward work may contribute to a decline in work motivation when organizations do not create work conditions and develop incentive programs that take into account these time-related factors.

Implications for research and practice. Scientists are often hesitant to study basic phenomena in specific samples or in unique team environments out of concern that findings will not generalize to the broader population or other team environments. In this case, however, the practical problem is pervasive and involves enough of the workforce to warrant targeted research. Indeed, at the opposite extreme, one might even argue that theories of work motivation, developed in the 20th century and frequently tested using samples of young to midlife men working in largely homogenous workgroups, carry greater risk of failure to generalize to the modern workplace than more recent studies conducted with age-diverse teams and older workers.

More realistically, the practical issue of age- and cohort-related differences in work motivation raises two basic questions for future research. Among younger individuals, motivation for work and motivation at work are often conceptualized as one and the same because high levels of job performance provide critical opportunities for personal growth, status, advancement, and acquisition of desired material goods. Among older workers, however, the role of work in the attainment of life goals may be more constrained such that the incentive for work may be substantially reduced (e.g., in order to keep company-provided healthcare benefits or provide opportunities for social interaction). However, motivation at work may remain high, particularly for individuals engaged in intrinsically and socially rewarding jobs. Future research is needed to understand the determinants and consequences of this dissociation, particularly among older employees.

In a related vein, most theories of work motivation (tested on younger samples) use time-on-task and effort as the primary criteria for assessing motivation change because these are assumed to be the principal personal resources used to accomplish goals. However, this may not be the case, particularly among older workers. Age-related influences on future time orientation and fluid intellectual abilities may affect the manner in which changes in work motivation are manifest. For example, among older employees, the consequences of increased work motivation may be observed in the increased use of existing knowledge, skills, and social networks for work goal accomplishment. Research is needed to examine the generalizability of traditional criteria across the life span and to explore a wider range of criteria for indexing changes in work motivation.

From a practical perspective, work motivation theory and research indicates that organizations need to consider carefully the intended target group and age appropriateness of various incentives and managerial practices to enhance employee motivation. Flexible work schedules, for example, are likely to be an attractive incentive useful in retaining employees of all ages, but changing the work role to incorporate mentoring duties (that promote intergenerational transfer) represents a change that may have incentive value only for older workers.

Question 5

How long do work motivation interventions last? What can organizations and managers do to sustain work motivation or turn things around when employee motivation is at a low ebb?

https://doi.org/10.1111/j.1754-9434.2008.01112.x Published online by Cambridge University Press

The practical issue. Although jobs sometimes require periodic applications of an employee's maximal effort, high levels of performance in most jobs are achieved through consistent (but submaximal) allocations of effort to work goals over time. Motivational interventions are typically used to alter typical rather than maximal allocations of attentional resources to performance, that is, to encourage higher average levels of effort allocation over time rather than to encourage sustained maximal effort. From an organizational perspective, interventions that sustain motivation over longer periods of time with little or no managerial intervention are also more desirable than interventions that require high levels of managerial support for continued impact. For example, job or work role redesign interventions may increase mean levels of work motivation over time through their instigation of intrinsic motivation processes and enhanced task enjoyment. In these interventions, characteristics of the job rather than supervisors provide the impetus for sustaining high levels of attentional effort. But obviously not all jobs can be made intrinsically motivating, and information is needed on the conditions that facilitate the entrainment of common interventions, such as goal setting and performance contingent provision of monetary or social incentives.

Organizations have also become increasingly turbulent environments. Managers are often confronted with situations where they must jump-start employee motivation, for example among layoff survivors or as the result of a string of company setbacks. In these situations, motivational interventions are needed to disrupt ineffective motivation action patterns and facilitate the adoption of more effective motivation patterns.

Contributions of theory and research. Work motivation theories have yet to focus substantial attention on the half-lives and cost effectiveness of different motivational interventions. In general, findings in the behavior analysis literature suggest that interventions that provide extrinsic rewards for higher personal resource allocations work as long as the incentive is in place. One important exception to this finding pertains to the use of extrinsic incentives to build self-managed strategies for maintaining motivation over time. When extrinsic incentives are provided for effective self-management of resource allocations, a more intermittent schedule of extrinsic incentives can often be established without reducing employee motivation.

A second important consideration in the choice of motivational interventions pertains to the extent to which job demands and the work context provide support for increased work motivation. Goal-setting strategies that increase motivation generally also increase job knowledge and skills. Over time, increased job knowledge and skill may permit the employee to perform at high levels but with somewhat lower levels of effort than was required during the initial phase of the motivational intervention. In this instance, the influence of the initial motivational intervention on performance may last indefinitely even though the employee may be allocating fewer resources to the task (e.g., "working smarter, not harder").

Work conditions may also importantly affect the lasting impact of motivational interventions. Although motivation may be enhanced using a standard intervention, such as goal setting, the employee's relations with supervisors and coworkers provide a powerful means by which to sustain motivation over time. Because norms and the attractiveness of team membership remain in force over time, interventions directed toward team-level variables may have less immediate but longer lasting impact on employee motivation.

Implications for theory and practice. Efforts to expand work motivation theories along the temporal dimension by investigating how various contextual factors cause motivational interventions to gain or lose traction over time are clearly warranted. To address the issue of how best to reverse a dysfunctional pattern of work motivation, more theorizing is needed on the role that affective states play in facilitating or impeding the

https://doi.org/10.1111/j.1754-9434.2008.01112.x Published online by Cambridge University Press

effectiveness of motivational techniques. From a practical perspective, research on the impact of social context suggests that a three-pronged motivational intervention strategy may exert the most lasting impact. Specifically, such a strategy would involve managerial actions (e.g., goal setting, work role adjustments, incentives) to (a) promote immediate improvement in individual motivation, (b) promote gradual improvement in employee self-regulation of motivational resources, and (c) facilitate long-term changes in team-level variables that support employee motivation.

Concluding Thoughts

The organization of practical questions using the three C's framework illustrates many points at which scientific and practical interests converge. Some practical questions about work motivation cannot be answered by existing research. In other instances, relevant scientific knowledge about work motivation has not found its way into organizational use. If there is a disconnect between science and practice in work motivation, it is more likely because of poor communication across the two spheres of activity than because of different objectives and interests.

Scientists and practitioners generally agree that employee motivation is of critical importance to job performance and organizational effectiveness. Yet, most meta-analyses of personality or motivation—performance relations show that motivational variables tend to account for only about half the variance in performance than is accounted for by general mental abilities (e.g., Judge & Ilies, 2002; Judge, Jackson, Shaw, Scott, & Rich, 2007). If motivation is so important to performance, then why does it account for so much less variance in the criterion than do cognitive abilities? One possible answer lies in how we conceptualize motivational variables. To date, the bulk of studies investigating motivation have focused on either traits or treatments (e.g., job redesign) but not both. An interactionist perspective on work motivation assumes that person and situation variables interact in their effects on motivation processes and their outcomes. Studies that focus only on traits or only on treatments may obscure the interaction effects and their influence on motivation and performance. That is, when traits and treatments are concordant (e.g., when persons high in implicit and explicit motives for achievement perform work roles that afford the opportunity for mastery and achievement), motivation should be higher than when only traits or treatments are considered. Such synergistic effects may account for a substantially larger share of the variance in performance.

Scientists and practitioners also tend to agree that the most interesting and important questions about work motivation pertain not to what conditions increase work motivation at a single point in time to a maximum level, but rather what combination of person characteristics, experiences, and work conditions bring about a substantial change in an individual's work motivation over time. To address this question, work motivation researchers will need to use different methodologies to triangulate on the interaction of person–situation factors as they affect work motivation over time. Specifically, more longitudinal studies that incorporate experience-sampling or diary methods are needed to identify how different work events influence motivational processes over time and how individual differences in implicit motives and personality traits influence affect the tasks and events that employees experience. Similarly, more idiographic research is needed to identify person-context combinations that are particularly potent in their effects on work motivation and performance.

In this article, I have attempted to illustrate some of the many ways in which science and practice make integral contributions to the study of work motivation. The issues that face both scientists and practitioners are complex and not easily resolved using a theory of persons, a theory of situations, or a theory of time alone. Rather than construct a grand theory, it seems prudent for future work motivation research to build upon extant and emerging

https://doi.org/10.1111/j.1754-9434.2008.01112.x Published online by Cambridge University Press

perspectives to identify specific person–situation interactions that reliably influence work motivation, to identify how such constellations come about, and to determine how and why these conditions and work motivation changes over time. It is an ambitious but realistic agenda for a field that holds much promise for both science and society.

References

Ackerman, P. L. (2003). Aptitude complexes and trait complexes. *Educational Psychologist, 38*, 85–93.

Ackerman, P. L., & Heggestad, E. D. (1997). Intelligence, personality, and interests: Evidence for overlapping traits. *Psychological Bulletin, 121*, 219–245.

Atkinson, J. W. (1964). *An introduction to motivation*. Princeton, NJ: D. Van Nostrand.

Atkinson, J. W., & Birch, D. (1970). *The dynamics of action*. New York: Wiley.

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., & Strauss, J. P. (1993). Conscientiousness and performance of sales representatives: Tests of the mediating effects of goal setting. *Journal of Applied Psychology, 78*, 715–722.

Barrick, M. R., Stewart, G. L., & Piotrowski, M. (2002). Personality and job performance: Test of the mediating effects of motivation among sales representatives. *Journal of Applied Psychology, 87*, 43–51.

Baumann, N., Kaschel, R., & Kuhl, J. (2005). Striving for unwanted goals: Stress-dependent discrepancies between explicit and implicit achievement motives reduce subjective well-being and increase psychosomatic symptoms. *Journal of Personality and Social Psychology, 89*, 781–799.

Brunstein, J. C., & Maier, G. W. (2005). Implicit and self-attributed motives to achieve: Two separate but interacting needs. *Journal of Personality and Social Psychology, 89*, 205–222.

Dalal, R. S., & Hulin, C. L. (2008). Motivation for what: A multivariate, dynamic perspective of the criterion. In R. Kanfer, G. Chen, & R. D. Pritchard (Eds.), *Motivation: Past, present, and future* (pp. 63–100). New York: Taylor Francis.

Deci, E. L. (1975). *Intrinsic motivation*. New York: Plenum Press.

Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review, 95*, 256–273.

Frese, M., Kring, W., Soose, A., & Zempel, J. (1996). Personal initiative at work: Differences between East and West Germany. *Academy of Management Journal, 39*, 37–63.

Hough, L. M., & Schneider, R. J. (1996). Personality traits, taxonomies, and applications in organizations. In K. R. Murphy (Ed.), *Individual differences and behavior in organizations* (pp. 31–88). San Francisco: Jossey-Bass.

James, L. R. (1998). Measurement of personality via conditional reasoning. *Organizational Research Methods, 1*, 131–163.

James, L. R., McIntyre, M. D., Glisson, C. A., Bowler, J. L., & Mitchell, T. R. (2004). The conditional reasoning measurement system for aggression: An overview. *Human Performance, 17*, 271–295.

Johns, G. (2006). The essential impact of context on organizational behavior. *Academy of Management Review, 31*, 386–408.

Judge, T. A., & Ilies, R. (2002). Relationship of personality to performance motivation: A meta-analytic review. *Journal of Applied Psychology, 87*, 530–541.

Judge, T. A., Jackson, C. L., Shaw, J. C., Scott, B. A., & Rich, B. L. (2007). Self-efficacy and work-related performance: The integral role of individual differences. *Journal of Applied Psychology, 92*, 901–910.

Kanfer, R., & Ackerman, P. L. (2004). Aging, adult development, and work motivation. *Academy of Management Review, 29*, 440–458.

Kanfer, R., & Ackerman, P. L. (2007). Aging and work motivation. In C. Wankel (Ed.), *Handbook of 21st century management*. (Vol. 2: pp. 160–169) Thousand Oaks, CA: Sage Publications.

Kanfer, R., Chen, G., & Pritchard, R. D. (2008a). The three C's of work motivation: Content, context, and change. In R. Kanfer, G. Chen, & R. D. Pritchard (Eds.), *Motivation: Past, present, and future* (pp. 1–16). New York: Taylor Francis.

Kanfer, R., Chen, G., & Pritchard, R. D. (2008b). Work motivation: Forging new perspectives and directions in the post-millennium. In R. Kanfer, G. Chen, & R. D. Pritchard (Eds.), *Motivation: Past, present, and future* (pp. 601–632). New York: Taylor Francis.

Kehr, H. (2004). Integrating implicit motives, explicit motives and perceived abilities: The compensatory model of work motivation and volition. *Academy of Management Review, 29*, 479–499.

Kuhl, J. (2000). A functional design approach to motivation and self-regulation: The dynamics of personality system interactions. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 111–169). New York: Academic Press.

LeBreton, J. M., Barksdale, C. D., Robin, J. D., and James, L. R. (2007). Measurement issues associated with conditional reasoning tests: Indirect measurement and test faking. *Journal of Applied Psychology, 92*, 1–16.

Lord, R. G., & Moon, S. M. (2006). Individual differences in automatic and controlled regulation of emotion and task performance. *Human Performance, 19*, 327–356.

McClelland, D. C. (1985). *Human motivation*. Glenview, IL: Scott Foresman.

McClelland, D. C., Koestner, R., & Weinberger, J. (1989). How do self-attributed and implicit motives differ? *Journal of Personality and Social Psychology, 96*, 690–702.

Michalak, J., Puschel, O., Joormann, J., & Schulte, D. (2006). Implicit motives and explicit goals: Two distinctive modes of motivational functioning and their relations to psychopathology. *Clinical Psychology and Psychotherapy, 13*, 81–96.

Mischel, W., & Shoda, Y. (1995). A cognitive-affective system theory of personality: Reconceptualizing situations, dispositions, dynamics, and invariance in personality structure. *Psychological Review, 102*, 246–268.

Ployhart, R. E. (2008). The measurement and analysis of motivation: Looking past, moving forward. In

R. Kanfer, G. Chen, & R. D. Pritchard (Eds.), *Motivation: Past, present, and future* (pp. 17–62). New York: Lawrence Erlbaum/Psychology Press.

Raynor, J. O., & Entin, E. E. (Eds.). (1982). *Motivation, career striving, and aging*. Washington, DC: Hemisphere.

Scheffer, D., Eichstaedt, J., Chasiotis, A., & Kuhl, J. (2007). Towards an integrated measure of need affiliation and agreeableness derived from the operant motive test. *Psychology Science, 49*, 308–324.

Schneider, B. (1983). Interactional psychology and organizational behavior. In L. L. Cummings & B. M. Staw (Eds.), *Research in organizational behavior* (*Vol. 5*, pp. 1–31). Greenwich, CT: JAI Press.

Schooler, K., Mulatu, M. S., & Oates, G. (2004). Occupational self-direction, intellectual functioning, and self-directed orientation in older workers: Findings and implications for individuals and societies. *American Journal of Sociology, 110*, 161–197.

Schultheiss, O. C. (2008). Implicit motives. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (3rd ed.) (pp. 603–633). New York: Guilford.

Snow, R. E. (1978). Theory and method for research on aptitude processes. *Intelligence, 2*, 225–278.

Sokolowski, K., Schmalt, H., Langens, T. A., & Puca, R. M. (2000). Assessing achievement, affiliation, and power motives all at once: The multi-motive grid (MMG). *Journal of Personality Assessment, 74*, 126–145.

Sonnentag, S. (2001). Work, recovery activities, and individual well-being: A diary study. *Journal of Occupational Health Psychology, 6*, 196–210.

Spangler, W. D. (1992). Validity of questionnaire and TAT measures of need for achievement: Two meta-analyses. *Psychological Bulletin, 112*, 140–154.

Stokes, D. E. (1997). *Pasteur's quadrant*. Washington, DC: Brookings Institution Press.