© Academy of Management Review
2004, Vol. 29, No. 3, 440–458.

AGING, ADULT DEVELOPMENT, AND WORK MOTIVATION

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We describe a framework for understanding how age-related changes in adult development affect work motivation, and, building on recent life-span theories and research on cognitive abilities, personality, affect, vocational interests, values, and self-concept, identify four intraindividual change trajectories (loss, gain, reorganization, and exchange). We discuss implications of the integrative framework for the use and effectiveness of different motivational strategies with midlife and older workers in a variety of jobs, as well as abiding issues and future research directions.

By 2010, nearly half the U.S. workforce will be composed of individuals forty-five years or older (Bureau of Labor Statistics, 2002)—with similar workforce age trends occurring in most developed countries. The prevalence of midlife and older persons in the U.S. workforce stems from a confluence of several factors, including the aging of the baby boom generation, proportionately lower birthrates during the last third of the twentieth century, and recent economic conditions that discourage early retirement. In the United States, initial interest in workforce aging tended to focus on the potentially negative ramifications for organizational effectiveness. However, as a result of accumulating research evidence that refutes the notion of a universal negative relationship between age and job performance (e.g., McEvoy & Cascio, 1989; Waldman & Avolio, 1986), legislative mandates to prevent potential age bias in personnel actions (e.g., the Age Discrimination in Employment Act), and projections of future manpower shortages in select job sectors, many organizations have undergone a renaissance in their attitude toward the hiring, retraining, motivating, and retaining of midlife and older workers.

Recent reviews of worker age and organizationally relevant outcomes further suggest that chronological age serves as a proxy indicator for a broad constellation of age-related processes that exert diverse and indirect effects on work outcomes (for reviews, see, for example, Davies, Matthews, & Wong, 1991; Hansson, DeKoekkoek, Neece, & Patterson, 1997; Sterns & Miklos, 1995; Warr, 2001). In particular, recent work on career stages (e.g., Dalton & Thompson, 1986; Greller & Simpson, 1999) and barriers to employee development among midlife and older workers (e.g., London, 1998; Simpson, Greller, & Stroh, 2002; Sterns & Doverspike, 1988) suggests that age-related changes in motivational variables, rather than chronological age or cognitive abilities per se, play a key role in successful work outcomes for middle-aged and older workers. To date, however, relatively little attention has been given to understanding the effects of aging and adult development on work motivation (for exceptions, see Boerlijst, Munnichs, & van der Heijden, 1998; Raynor & Entin, 1982; Warr, 2001). In light of growing organizational interest in how best to manage and motivate an older workforce, the paucity of research in this area represents a serious gap in our knowledge.

In this article we extend extant theories of work motivation to take into account the dynamics of adult development across the life span. In confronting the question of age-related changes in motivation, we suggest that contemporary, process-oriented theories of work motivation (e.g., expectancy theories, goal theories) are insufficient for identifying the sources of age-related differences in work motivation. Process-oriented formulations usefully delineate the structure and operation of proximal psychological variables (e.g., expectancies, self-efficacy)

We thank Peter Warr, Gilad Chen, and the reviewers for their valuable comments on earlier versions of this article. We also express deep gratitude to the late Frederick Kanfer for his many contributions to this work. Support for preparation of this article was provided by a grant from the National Institute on Aging (AG16648).

through which person and situation factors affect goal choice and goal striving. They do not, however, address the "what" and "why" questions that are inevitably raised in a full account of how age affects workplace motivation.

For example, it is commonly noted that older workers, relative to younger workers, are often more reluctant to engage in new skill training and tend to prefer collaborative (versus competitive) tasks. Explanations of these phenomena based on the level of input variables (e.g., self-efficacy) describe the impact of age-related changes on motivational processing but do not explain why such age-related changes are observed. To address this question, we need an integrative account of work motivation that delineates (1) the dynamics of adult development in cognition, emotion, personality, and the self and (2) the pathways through which these dynamics affect psychological input variables involved in motivational processing.

From a practical perspective, the proposed framework enhances the precision of extant process models and aids prediction about when and which organizational interventions are most likely to enhance work motivation and performance. For example, as discussed in detail later, specific age-related cognitive changes may yield low but realistic self-efficacy judgments for skill training that places heavy demands on fluid intellectual abilities (e.g., programming). Interventions that attempt to build self-efficacy through increased effort in the face of such person-task realities are likely to be short lived and counterproductive. In contrast, low self-efficacy judgments for training of skills that do not place heavy demands on fluid intellectual abilities (e.g., conflict management) may be productively enhanced through increased effort.

The integration of adult development theory and research with extant process-oriented models of work motivation also offers the opportunity to set out a research agenda for workplace motivation in domains for which there is currently little empirical data. For example, in most studies of work motivation during the past half-century, researchers have used young adults. Thus, these samples do not allow detection of potential changes in motive primacy at later points in life. Similarly, relatively little is known about how age-related changes in affect regulation influence goal striving. For example, evidence suggesting that older workers use different emotion regulation strategies, relative to younger workers, may be used to create more favorable conditions for effective self-regulation. Finally, the use of specific motivational techniques, such as assigned goal setting, may show age-related differences in effectiveness as a function of developmental changes in self-concept and identity.

In summary, we maintain that aging and adult development represent important but largely unexplored influences on work motivation. To provide a starting point for theory development and systematic research efforts in this area, we begin by placing motivation in the broader context of life-span research that emphasizes intraindividual change over the life course. We propose that the effects of aging and adult development in key person characteristics, such as cognition and nonability traits, can be organized usefully into four common themes based on the nature of change across the life span: loss, growth, reorganization, and exchange. Within each theme we describe representative research from a variety of domains, including cognitive abilities, personality, affect, interests, and values. Next, we coordinate age-related changes in person characteristics with motivational processing components to illuminate the pathways through which aging and adult development in person factors may affect motivational outcomes. We also describe implications for the use and modification of managerial practices designed to enhance work motivation. In the final sections we consider several issues not explicitly addressed in our analysis and propose future research directions to address the workplace issues that an aging workforce will require organizations to consider in the not-too-distant future.

BASIC TENETS OF AN ADULT LIFE-SPAN APPROACH

Life-span theorists propose that person-environment transactions not only determine the direction, intensity, and persistence of action but also help shape the person-situation context in which motivation takes place. That is, reciprocal person-environment transactions create differential trajectories of adult development and action opportunities. Early work and

nonwork experiences, such as schooling, may contribute to work motivation across the life span, through their influences on the individual's development of skills, work beliefs, and job options. Similarly, individual differences in motives, such as achievement orientation, during young adulthood may condition initial job choices and career paths in a way that attenuates or accentuates the need for lifelong learning or skill development. In developmental models, work motivation opportunities and constraints stem from the confluence of dynamic internal forces (such as career and job preferences) and external forces (such as changes in technology and economic conditions).

Life-span researchers generally work with three basic assumptions: (1) the individual's characteristics are not fixed before reaching adulthood (where adults are typically defined as individuals over the age of eighteen), (2) adult development is a sequential and generally orderly progression, and (3) development in adulthood is not simply an extension of child and adolescent development. In addition to considering inner changes (e.g., biological, psychological, and maturational), life-span researchers also recognize the effects of external forces on individuals and groups (e.g., sociological changes for specific cohorts within a cultural milieu).

An appreciation of life-span development requires consideration of two different types of individual differences: (1) interindividual differences—that is, the differences between individuals—and (2) intraindividual differences—that is, individual change during development. The bulk of correlational research between traits and organizational criteria involves investigation of interindividual differences. When samples are homogeneous in age, such correlations represent a snapshot of the relationships for a particular generational cohort. When samples are heterogeneous in age, the result can be a confounding of aging effects, cohort differences, and the trait-criterion relationships that are generally the main interest of the investigator. In contrast, researchers traditionally evaluate evidence for intraindividual differences in longitudinal studies, where the same people are followed over an extensive time period. Generally speaking, however, longitudinal studies are not capable of evaluating generational cohort differences.[1]

Research from the life-span perspective emphasizes observable regularities in (age) group differences, as well as intraindividual change over the life course. For our current purposes, the question we focus on is how these findings can enrich extant work motivation formulations with respect to midlife and older workers. In the next section we consider the four themes we used to organize the impact of maturational effects on work motivation.

LOSS, GROWTH, REORGANIZATION, AND EXCHANGE

In the United States, aging is often associated with general decline—particularly in cognitive and intellectual capabilities. Increasingly, however, researchers in a number of domains have shown that the assumption of general decline with age is simplistic and misleading. There have been numerous applications of life-span perspectives to intellectual abilities, personality, affect, and theories of the self (e.g., see Lachman & James, 1997). Such research suggests that adult development is not simply a matter of decline but can better be considered in terms of four distinct patterns of development—namely, loss, growth, reorganization, and exchange. In this section we highlight major findings for these development patterns from research in the cognitive abilities, personality, affective, value, self-concept, and vocational interest domains.

[1] As noted by a reviewer, age-related changes observed in cross-sectional studies are often difficult to disentangle from cohort effects. Cross-sequential designs, involving longitudinal investigation of different cohorts, have many advantages over cross-sectional studies but are often impractical. Nonetheless, the accumulation of discriminant and convergent validity for the hypothesized change process across methodologies can instill confidence that observed age-related changes occur across cohort groups. In cognitive aging research, for example, demonstration of changes in age-related knowledge can be obtained through convergence of findings obtained in longitudinal studies conducted in different cultures (with different cohort experiences); multimethod, multiformat studies; and experimental, cross-sectional studies that examine age-related differences in knowledge across a variety of domains.

Loss

In research on adult intellect over the past sixty years or so, scholars have well documented a differentiation between two broad kinds of intellectual abilities across the adult life span: (1) fluid intellectual abilities—called "Gf"—and (2) crystallized intellectual abilities—called "Gc" (see Cattell, 1943, 1987). The loss trajectory is largely associated with findings that indicate a gradual decline in cognitive abilities over the life span, particularly those associated with fluid intelligence (Wechsler, 1944). Fluid intellectual abilities are most associated with working memory, abstract reasoning, attention, and processing of novel information. Although there is some controversy about the exact age when Gf peaks, the typical research finding is that maximum levels of Gf are usually reached in the early twenties (for a review see Schaie, 1996).

The well-documented findings indicating a decline in Gf over the life course have led many practitioners to conclude that this is the major factor responsible for putative declines in performance with age. However, as Poffenberger suggested sixty years ago:

> It would be a safe estimate to say that one's maximal capacity in essential functions declines in the neighborhood of 1 to 1 ½ percent a year from the age of 25 years to the age of 50 to 55 years, with a more rapid fall in the later years. It must be remembered, however, that the work of the world is seldom done at maximal capacity, for only in the rare emergency does one call forth his full power. The level of achievement that is attained at any age is much more likely to be a question of interest and incentive than of capacity (1942: 65).

Although Poffenberger's observation that workers infrequently work at their capacity limits is an arguable point, it is clear that as capacity declines with age, the cognitive "cost" of exerting the same quantity of cognitive resources increases. Moreover, this pertains to both immediate levels of cognitive effort and effort in terms of extended allocation of time resources. That is, the prospect of working seventy to eighty hours a week may be manageable for younger workers but typically becomes increasingly less attractive for middle-aged and older adults.

As Poffenberger's statement implies, the detrimental impact of a decline in fluid intellectual abilities (essential functions) on job performance is not univocal. Rather, it must be considered in light of two additional issues: (1) the influence of task demands and job knowledge and (2) the potential compensatory effects of motivation. We consider these issues in greater detail later in this article.

Growth

A second theme—emphasizing a positive trajectory with age—stems from theory and research focusing on the second kind of intellectual abilities: Gc. Crystallized intellectual abilities represent broad aspects of educational or experiential knowledge (Cattell, 1987). Gc is associated with general knowledge, extent of vocabulary, and verbal comprehension. In contrast to Gf, measures of Gc tend to show increasing levels of performance well into middle age and beyond.

Although Gf is generally well encapsulated and represented in tests of general mental ability, Gc actually represents an extremely wide range of domain knowledge and is less well represented in standard intelligence tests (Ackerman, 1996). Literally all domain knowledge held by individuals makes up Gc, although traditional measures of Gc typically focus only on knowledge that is well represented by the wider culture. A complete assessment of Gc for adults of working age would, by necessity, include both occupational (job) knowledge and avocational knowledge (such as hobbies, music, art, popular culture, etc).

Ackerman and his colleagues (Ackerman, 1996, 2000; Ackerman & Rolfhus, 1999; Beier & Ackerman, 2001, 2003) obtained evidence that indicates a strong positive association between adult age (up to sixty years) and knowledge level, when sampling varying knowledge domains. Further, they found this relationship is stronger than the association between traditional measures of Gc and age, suggesting that middle-aged adults are more knowledgeable than young adults, when considering a broad conceptualization of knowledge.

The evidence showing age-related increases in Gc or domain knowledge across the life course suggests that individuals may compensate for declines in Gf by selecting jobs and goals and by using self-regulatory strategies that optimize existing knowledge and skills. As

such, the effect of decline in Gf on job performance may be partially or fully offset by the individual's movement into jobs or work roles that place high demands on Gc and low demands on Gf (see also Baltes & Baltes, 1990).

Reorganization

Mounting evidence for a third pattern of adult development comes from theorizing and research related to changes in the organization and structure of nonability traits (such as personality, emotion, and affect) across adulthood. In contrast to the previous two themes, which focus on normative changes in level of cognitive abilities, the reorganization theme suggests some type of discontinuity in adult development that creates a qualitatively different constellation of motives for action.

Carstensen's (1998) socioemotional theory provides an example of current theorizing in this area. According to this theory, motive changes across adulthood occur as a result of the reorganization of goals around affect. Specifically, Carstensen proposes that the purpose of social interaction changes over the life span as a function of a shift in the individual's time orientation emphasizing "life lived from birth" to "life left until death" (see Neugarten, 1968). These changes, in turn, influence the development and use of different emotion regulation strategies (e.g., avoiding conflict, suppression).

According to socioemotional selectivity theory, adolescents and young adults seek social interactions primarily for their informational value and their ramifications for future opportunities. Regulatory strategies aimed at modifying the environment or modulating emotion-related behaviors are likely to be more useful than cognitive change or reappraisal strategies during this life phase. During later adulthood, however, the informational value of social interaction declines, as the individual focuses on "time left." At this life stage, the motive for social interactions shifts from gaining resources to obtaining affective rewards (emotional satisfaction) and supporting one's identity. These changed motives for social interaction, in turn, promote the use of cognitive change and reappraisal strategies for modulating the emotion process.

Exchange

Recent work on specific issues in personality, self-concept, interests, and values provides additional evidence for developments that result in an exchange in the primacy of motives across the life span—that is, age-related changes in the strength of action tendencies or the primacy of motive classes for action. We describe evidence for such exchange development patterns below.

Personality traits. Trait theorists, such as Costa and McCrae (1988), emphasize the genetic and biological basis for personality structure and argue that traits, by definition, can be expected to remain stable over time and consistent across situations. Trait research in this tradition has focused on two questions about the stability of personality. The first concerns normative change in level of personality traits across adulthood (Costa & McCrae, 1994). Findings from both cross-sectional and longitudinal studies indicate that there are mean, age-related changes in trait levels across the life span (e.g., Jones & Meredith, 1996). Extroversion, neuroticism, and openness to experience all show mean declines with age so that older adults can be expected, on average, to be less active, less anxious, and less open to new experiences than younger adults. In contrast, increases in mean levels of conscientiousness and agreeableness over the life span have been observed in several cross-sectional studies. Warr, Miles, and Platts (2001), for example, have shown significant age differences in conscientiousness, with older adults more conscientious but less sociable, outgoing, change oriented, and career motivated than younger adults.

In a second relevant stream of personality research, scholars have examined the age at which personality organization stabilizes and personality traits can be expected to show increasing consistency over time. Bloom (1964), for example, suggests that stable personality organization occurs around the age of twenty, although Costa and McCrae (1988; McCrae & Costa, 1990) suggest that personality traits stabilize by age thirty. However, results of a recent meta-analysis by Roberts and DelVecchio (2000) indicate that personality traits do not stop changing at a specific period in the life course. As Roberts and DelVecchio state, "It appears then that traits are mostly consistent in adult-

hood, with some indication that they retain a dynamic quality" (2000: 17).

Stage-based models. The dynamic quality that Roberts and DelVecchio (2000) describe appears most evident during life course transitions associated with entry into the workforce and again during the period typically regarded as midlife. The increased consistency observed during midlife is of particular interest. Further evidence bearing on this period is provided in recent work derived from stage models of personality.

Stage-based models of personality describe the normative, sequenced patterns of personality change across the life course. In many models, such as Erikson's (1964) psychosocial theory of development, each age-related period is associated with a specific developmental task. The successful resolution of the task provides the basis for an individual's progression to the next stage in the sequence.

Maslow's (1943, 1954) need hierarchy theory is arguably the most well-known stage model in organizational behavior. Consistent with basic tenets of modern life-span approaches, in this early theory Maslow suggested that progression through the hierarchy is a function of the adult development in the context of experience and only loosely associated with age, such that higher-order needs for affiliation and self-actualization tend to occur in later adulthood, following accomplishment of lower-order needs during early adulthood. Although Maslow's approach has largely faded from view in organizational research, other stage-type approaches to adult personality development have flourished (e.g., Neugarten & Hegestad, 1976; Sheldon & Kasser, 2001). Indeed, work drawing on these models, such as "Passages," by Sheehy (1976), "Seasons of a Man's Life," by Levinson, Darrow, Klein, Levinson, and McKee (1978), and Hall and Mirvis's (1995) concept of the protean career, have substantially impacted popular thinking about the nature and meaning of work, particularly with regard to changes in motivation for work and learning during the midlife period.

Building on Erikson's (1964) theory, McAdams and his colleagues (see McAdams & de St. Aubin, 1998) have focused on an aspect of midlife development that has been relatively understudied—namely, the rise of generativity motives during midlife. Generativity motives refer to a class of tendencies pertaining to caring for others, parenting, and helping the broader society and future generations. Studies provide inconsistent evidence on intraindividual differences in generativity across adulthood, but cross-sectional studies of generativity by McAdams, de St. Aubin, and Logan (1993) and by Keyes and Ryff (1998) do show mean differences in the strength of generativity motives across age groups. Their findings indicate that both younger and older adults express and display less evidence of generativity (e.g., providing emotional support to others) than do middle-aged adults.

McAdams (2001) has also suggested that circumstances may lead individuals to express generativity in some but not other life roles. MacDermaid, Franz, and DeReus (1998) have provided empirical evidence for this notion in a study showing the specificity of generativity expressions as a function of context (home versus work) and role (parent versus worker).

The findings on generativity suggest that personality trait approaches to work motivation might neglect an important dimension of achievement motives for midlife workers. In contrast to achievement motives that typically focus on job performance levels per se, generativity motives focus attention on the process and collaborative nature of goal accomplishments. Further research is needed to evaluate the salience of these motives among midlife workers in the workplace and the relationship of generativity motives to the direction of workplace behavior. The emphasis on collaboration and helping associated with this motive class also suggests that (compared to younger workers) midlife workers may respond more positively to managerial strategies that emphasize cooperation rather than competition.

Vocational interests. Whereas we can define motives as dispositions to find a general class of incentives attractive (Veroff, Reuman, & Feld, 1984), vocational interests represent preferences with respect to the attractiveness of various classes of work/job attributes. To date, there have been relatively few studies of patterns of vocational interests across the life span, and much of the evidence that exists is considerably dated. Perhaps the largest investigation of the stability of interests was started in the 1930s, by Strong (1955; see also the extensive review by Campbell & Hansen, 1981). Strong noted that there was substantial stability of vocational in-

terests across a period of twenty-two years. The Strong Vocational Interest Blank does not assess underlying traits per se but, rather, provides profiles for individuals that indicate the degree of similarity between the individuals' attitudes and preferences and those of job incumbents across many different occupations. The reported test-retest correlations across eighteen years indicated the degree to which individuals were consistently aligned with particular jobs and ranged from .48 (public administrator) to .79 (engineer).

On the surface, these results suggest that vocational interests change relatively little across the work life span. However, because the Strong measure does not generally take into account the "level" of the job (e.g., line versus supervisory levels), it may be that the longitudinal findings reported by Strong (1955) reveal consistency in the "kinds" of jobs that individuals prefer but do not take into account changes with respect to interest in job "levels" (however, see an approach suggested by Holland, 1959). For example, individuals who have profiles indicating concordance with architects as young adults generally have a similar profile twenty years later—even though they may have moved from jobs that mostly involve extensive drafting to supervising groups of junior architects.

Findings in the cognitive ability and knowledge domains further suggest that there may be important dissociations between the vocational interests of individuals across the work life span, depending on the job demands for Gf and Gc. For high Gf–demanding jobs, the expectation is that, in order to protect self-concept (see below), individuals will show a transition from a preference for line work as early adults to a preference for supervisory activities (which have lower Gf demands). In contrast, for jobs that have high Gc requirements, individuals can be expected to show greater stability of interests across the work life span. Occupations such as medical doctor, college professor, lawyer, and so on typically fit the high Gc demand pattern.

Clearly, a missing link in this domain is evidence on how vocational interests change across adulthood with respect to the nature and relative importance of various job dimensions, including, for example, power, social interaction, task challenge, autonomy, and variety. In a review of the relationship between age and preferences for various job features, Warr (1997, 2001) suggests that age is likely to be positively associated with increased preferences for physical security, job security, salary, and opportunities for skill utilization through late midlife. In contrast, age should be negatively associated with preferences for job variety, feedback, and provision of external goal assignments. Warr (2001) further suggests that age-related preferences in job features may influence motivation through their impact on the valence or anticipated utility of performance.

Affect and emotion. Researchers investigating age and affective constructs have focused broadly on three aspects: experience, expressivity, and control (Gross, Carstensen, Pasupathi, Tsai, Skorpen, & Hsu, 1997). Gross et al. (1997) suggest that age-related declines in emotional expressivity may be limited to negative emotions and that aging is associated with improvement in emotion regulation, particularly in terms of the use of cognitive emotion regulation strategies. Charles, Reynolds, and Gatz's (2001) longitudinal research findings on positive and negative affect support these notions and indicate that negative affect declines with age but that positive affect remains relatively stable through late midlife. Results obtained by Carstensen, Paspuathi, Mayr, and Nesselroade (2000), in a cross-sectional experience-sampling study, further indicate that both younger and older adults experience positive emotions through age sixty but that older adults also report fewer negative emotions than younger adults. Such findings suggest improved emotional functioning in each age group and are consistent with evidence by Blanchard-Fields and Irion (1988) indicating that older adults make more frequent use of emotion control strategies than younger adults.

Self-concept. The prevailing wisdom in the study of self-concept is that, within many cognitive and intellectual domains, most individuals are sensitive to changes in their abilities with increasing age and typically seek to act in ways that serve to protect their overarching self-concept. That is, with the transition from young adulthood into middle age and beyond, individuals see themselves as possessing lower abilities for Gf-related tasks and higher levels of Gc-related knowledge (Ackerman, Beier, & Bowen, 2002). Strategies for protecting self-concept include avoidance (such as an aversion to Gf-related activities) and compensation (such as an

increased interest in demonstrating Gc-related knowledge).

Protecting self-concept seems to be one of the leading determinants of middle-aged and older adults' avoidance of some kinds of career development activities (e.g., Maurer, 2001). Within the framework delineated by Dweck and Leggett (1988), it appears that such adults fall victim to a "performance orientation," where they avoid situations that are likely to place them at a disadvantage in comparison to younger workers. A salient example of this phenomenon is when middle-aged or older workers are confronted with new technology (such as when managers were confronted with e-mail and computerized spreadsheets two decades ago). In contrast, such workers may be much more willing to sign up for career development activities that build on their real or perceived strengths (such as developing management potential or interpersonal skills), since they do not view these activities as demanding Gf-type abilities. Nonetheless, there is persuasive evidence that older workers tend to do more poorly in employee training (Kubeck, Delp, Haslett, & McDaniel, 1996).

Values. Although the study of values has a long history (e.g., see Allport, Vernon, & Lindzey, 1951, and Rokeach, 1973), relatively little of this work has direct relevance to understanding the impact of adult development on work motivation. Ryff and Baltes (1976) suggest that as individuals move from midlife to old age, they tend to show a diminution of "instrumental" values (such as financial security) but an increased orientation toward "terminal" values (such as a desire for a world at peace). Although this hypothesis is consistent with other personality and affective life-span theories that stress recalibration of a lifetime perspective and an increase in generativity motives during midlife, a more definitive conclusion about age-related changes in values awaits empirical investigation.

Summary

Theoretical and empirical advances in the life-span perspective indicate that the characterization of adult aging as a process of decline is incomplete. In the intellectual domain, decline in Gf occurs in the context of growth in Gc, as reflected in knowledge and skills. In the personality domain, the mean level of some personality traits declines (e.g., openness to experience) while other traits show a mean level increase (conscientiousness). Consistent with these findings, a growing body of work suggests a reorganization of personality and affect, often in some form of discontinuity, around midlife. Characteristics of this period of adulthood include the emergence of generative motives; greater use of emotion control strategies; and a preference for transactions that support positive affect, self-concept, and identity. To date, however, we know of no studies that examine the pathways by which these age-related changes in person characteristics influence motivational processing and work outcomes. In the next section we propose a coordinating framework for identifying pathways of work motivation influence, and we propose implications of aging and adult development research for motivational outcomes.

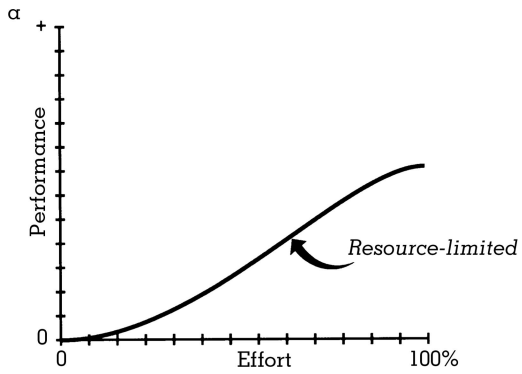
TOWARD AN EXPANDED FRAMEWORK: WORK MOTIVATION IN A LIFE-SPAN CONTEXT

Consistent with Warr (2001), we use a variant of the expectancy-value formulation to delineate the mechanisms and processes involved in work motivation. We describe how age-related changes and adult development (in the factors discussed previously) may influence motivation, and we highlight consequences for work behavior and job performance.

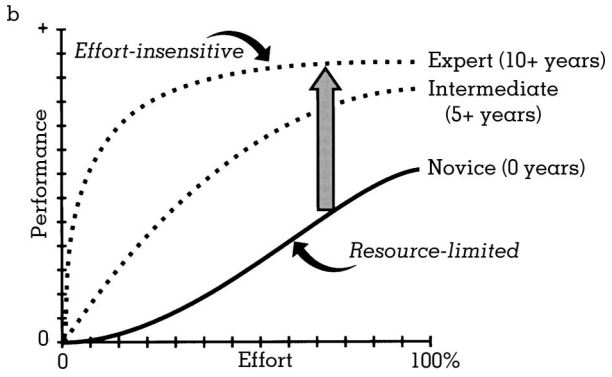
Kanfer's Model

Similar to other expectancy theories of motivation, Kanfer's (1987) model posits that individuals allocate personal resources (e.g., effort) to a particular job or task based on perceptions of three functions: the "perceived" effort-performance function (see Figure 1a), the performance-utility function (see Figure 2), and the effort-utility function (see Figure 3). The effort-performance function describes the form of the relationship that an individual perceives across a range of effort levels and the likely performance outcome associated with levels of effort. As such, the perceived effort-performance function may mirror or differ from an objective effort-performance function (see Figure 1a) that describes the demands of the job or task. Inaccurate perceived effort-performance functions can occur, for example, when the individ-

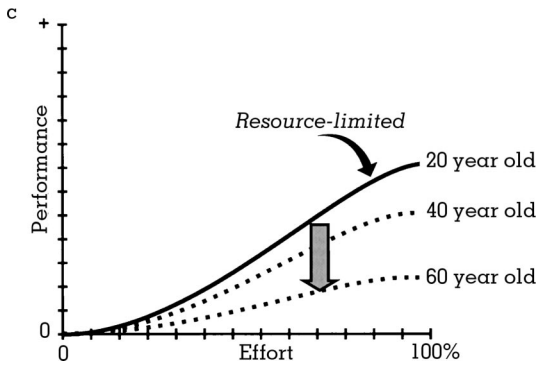
FIGURE 1
Hypothetical Relationships Between Level of Effort and Level of Performance



(a) Effort-performance function. This function relates to either actual or perceived relationship between effort and performance.



(b) Changes in effort-performance functions with age/experience, shown for a task that is primarily associated with crystallized intelligence (Gc).



c) Changes in effort-performance functions with age, shown for a task that is primarily associated with fluid intelligence (Gf).

ual has an erroneous self-concept (i.e., either believing that higher or lower performance will occur for a particular level of effort) or when the individual has insufficient information about the impact of his or her effort on the level of performance. Performance-utility and effort-utility functions describe the individual's perceptions of the form of the relationship between the attractiveness of different levels of performance and effort, respectively.

FIGURE 2
Hypothetical Performance-Utility Function As a Function of Age

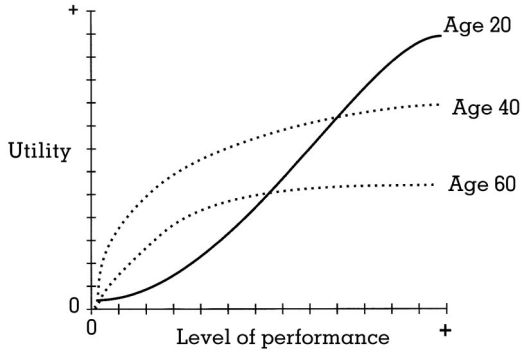
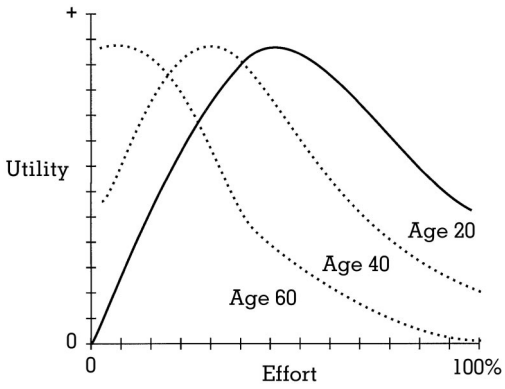


FIGURE 3
Hypothetical Effort-Utility Function As a Function of Age



We propose that the effects of adult development on work motivation occur through the impact on these three motivational components or functions. In general, the perceived effort-performance relationship is determined by task demands in the context of an individual's cognitive abilities, knowledge, and skills. Nonability factors, such as traits, motives, interests, and self-concept, exert their primary influence on the performance-utility and effort-utility functions. We describe the details of this mapping and implications below.

Impact of Age-Related Changes in Cognition on Motivation

We propose that adult life-span patterns for Gf and Gc have their primary effect on the effort-performance function and must be considered in light of the nature of demands imposed by the work or job role. Further, because Gf and Gc have different life-span development patterns, there are distinct implications for issues of work motivation. These implications are captured within the effort-performance framework (described by Norman & Bobrow, 1975, as the performance-resource function; see also Ackerman, 1987, and Fiedler, 1989, for a related approach). Generally, one can map the level of attentional effort to the amount of Gf resources allocated to a task. When job tasks are novel and not trivial in difficulty, they will require Gf resources such that there is usually a direct performance return for increasing allocation of effort (see Figure 1a).

The mapping of job or work role demands in terms of Gf and Gc also requires consideration of demand level. Although job analysis is ultimately required to determine the demands of a specific job, the broad organization of jobs around relative levels of Gf and Gc demands permits further consideration of age-related effects on the perceived effort-performance function.

Work that involves substantial attentional effort (Gf) and comparatively lower levels of Gc, such as the job of an air traffic controller, places very high demands on Gf and also shows the most diminished performance with age (Sells, Dailey, & Pickrel, 1984). By congressional mandate, one cannot even train to become an air traffic controller after the age of thirty-one. Similarly, controllers retire relatively young, with a mandatory retirement age of fifty-six. Jobs that have similarly high demands on Gf include domains of the physical sciences and mathematics (e.g., see Simonton, 1988). In light of the decline in Gf with age, jobs that place higher demands on Gf than Gc can be expected to become more difficult for middle-aged workers, and, as a result, workers typically show diminished performance as they age.

In contrast, for high-knowledge tasks (Gc dependent), age-related growth in relevant knowledge enables relatively high levels of performance, even in the absence of high levels of effort (this is sometimes called an "effort-insensitive task"; see Figure 1b). In contrast to jobs that demand higher levels of Gf, jobs that place higher demands on Gc should not become more difficult or show diminished performance at midlife. An example of such a job is teaching elementary school, where performance tends to remain relatively stable across the career and retirement typically occurs past midlife.

Many jobs entail a substantial combination of Gf and domain knowledge for peak performance. With such jobs, performance is better determined as a joint function of level of Gf and degree of domain knowledge. Examples in this broad category include neurosurgery and financial analysis—jobs that often demand relatively high levels of both Gf and Gc. In these jobs, even as Gf declines with increasing age, concomitant increases in job knowledge more than compensate, yielding superior performance well into middle age. Jobs that require a high level of education or training typically fit this mold, such as many medical occupations, or other technical fields, such as architecture. However, for job tasks that retain substantial novelty or that cannot be accomplished by drawing on previous experience, there remains a substantial performance return for increasing levels of effort (an effort-dependent task). For such tasks, as levels of Gf decline with increasing age, the slope of the effort-performance function decreases so that even maximal effort leads to a lower level of performance than was possible at younger ages (see Figure 1c).

A final consideration pertains to the demands associated with employee development or training. New job skill training, such as learning to use a new operating system or a new programming language, can be expected to initially increase demands on Gf and decrease the slope of the effort-performance function. As such, older workers are more likely to show poorer performance in these transient environments compared to younger workers.

Implications of Age-Related Changes in Cognition for Managerial Practice

As noted previously, age-related changes in cognition involve trajectories of both loss (in Gf) and gain (in Gc). We posit that the effectiveness of managerial practices to increase effort among midlife adults depends on the type of cognitive abilities demanded by the job. Jobs

that are primarily associated with Gf demands are likely to become increasingly difficult for workers as they enter midlife. If a worker hopes to maintain performance levels, he or she will need to compensate for decline in Gf by working harder and/or longer. Thus, we propose the following.

> *Proposition 1a: As Gf declines with age (loss), increased effort is expected to become the "first-use strategy" by which individuals will seek to sustain performance in jobs that place high demands on Gf.*

Nonetheless, the potential compensatory effect of increased effort in such jobs is a double-edged sword. Depending on the demands of the job and the extent of cognitive decline, increased effort often entails a cost that can eventually outweigh the benefits to performance. First, increased effort may not fully compensate for declining abilities. Mathematicians, for example, may devote more attention and time to a project as a means of compensating for a decline in fluid abilities—to a point. Second, consistent with self-regulation theories of motivation, declining performance in the face of increased effort can be expected to have strong negative consequences for self-efficacy and self-concept. Decline in these variables, in turn, can be expected to reduce work motivation and increase the likelihood of job withdrawal behaviors.

For adults performing jobs that demand high levels of Gf, motivational practices designed to increase effort may also show short-term positive effects but may fail to sustain motivation over the long term, as the accumulating costs of motivational compensation exert negative effects on self-efficacy and/or self-concept.

> *Proposition 1b: As Gf declines with age (loss), compensatory motivational strategies to sustain performance by increasing effort in high-Gf tasks will be undermined by negative effects on psychological factors (e.g., self-efficacy) that support motivation.*

Our analysis suggests that, in contrast to the usual purpose of implementing motivational interventions to *enhance* performance levels, motivational interventions undertaken with midlife adults engaged in high-Gf jobs serve principally to *slow* performance decline. Although well intentioned, such motivational interventions appear to shift the goal focus from promotion to prevention. Consistent with findings obtained by Higgins and his colleagues (see Brockner & Higgins, 2001), prevention-focused goals exert a panoply of detrimental effects on performance through their effects on emotion and motivation.

In contrast, an opposite pattern of effects can be observed for motivational interventions among midlife adults performing jobs that are mainly associated with substantial demands on Gc (see Figure 1b). Because job experience and age are often inextricably intertwined, the midlife worker will be more skilled than the younger worker (age-related gain); thus, any loss of Gf abilities will be compensated for by higher levels of job knowledge (Gc). Effective performance without substantial investment of effort, in turn, is likely to enhance self-concept and self-esteem. Lawyers, accountants, teachers, writers, and other "knowledge workers" may show stable or increasing levels of performance well past middle age. Studies by Hunter (1983) and Schmidt, Hunter, and Outerbridge (1986) provide indirect support for the positive influence of Gc (represented in terms of job experience and job knowledge) on job performance. This analysis suggests the following.

> *Proposition 2a: As Gc increases with age (gain), individuals engaged in jobs that demand high levels of knowledge and/or experience (high-Gc jobs) are expected to maintain their performance without increased effort.*

> *Proposition 2b: As Gc increases with age (gain), motivational interventions to increase effort among individuals engaged in jobs that demand high levels of knowledge and/or experience (high-Gc jobs) are expected to improve performance as a result of the positive consequences of performance for other variables, such as self-concept.*

Our hypotheses imply that motivational interventions typically are not needed to support performance among midlife adults engaged in high-Gc jobs. However, even for high-Gc jobs, organizations often undertake motivational in-

terventions in order to improve performance beyond current levels. Organizations may, for example, encourage employee training or set higher performance standards as a means of enhancing job effort. But, as we discuss in the next section, age-related reorganization of motives may lead to different perceptions by younger and older workers with respect to the return on investment of effort.

> *Proposition 2c: Managers seeking to improve performance (above current levels) among individuals engaged in high-Gc jobs will need to provide stronger performance incentives to spur the effort of midlife workers, compared to younger workers.*

At this point, however, there have been no studies that directly evaluate this hypothesis; it remains an important research question.

Impact of Age-Related Changes in Personality, Self-Concept, and Values on Motivation

The picture of adult development regarding personality, self-concept, and values is a complex one, given the interplay of many different sources of variance across an individual's work life span. Nonetheless, most perspectives point toward major reorganization and exchange of motives for action. We propose that these themes affect the relationship between level of performance and its utility (see Figure 2). For younger workers, an increasing utility is present for increasing levels of work performance. Increasing performance potentially yields many extrinsic and intrinsic rewards, such as pay, sense of achievement, recognition, and promotion.

As workers age, however, the strength of achievement motives (demonstration of mastery and excellence compared to others) and openness to experience appear to decline, and the strength of motives related to promoting positive affect and protecting self-concept increases. Older individuals are less threatened by a failure to get promoted, partly because occupational achievement plays a smaller role in their lives, compared with individuals who are in the early part of their careers. For older workers, who may have reached the top of their occupational level, higher levels of performance are less likely to be associated with a pay increase (although the rising use of variable pay systems, to include stock options and bonuses, may sustain the performance-pay relationship for some individuals). Although integrative data are lacking in this area, we speculate that changes in age-related goals reduce the utility of performance.

> *Proposition 3a: In the absence of work role changes and/or changes in the compensation scheme, the attractiveness of higher levels of job performance is expected to decline with age.*

This proposition suggests that, among older workers, work motivation will be less determined by level of performance achievement and, rather, more determined by judgments of how much effort is required for requisite performance (the perceived effort-performance relationship) and the utility of allocating that effort (the effort-utility relationship). In essence, motivation in this context is largely a matter of how much effort an individual prefers to allocate and the extent to which preferred effort levels will satisfy task demands. In high-Gf tasks, motivation among older workers may be dampened as the discrepancy between preferred effort level and task demands increases. In mixed-Gf/Gc tasks, declines in work motivation may be attenuated by altering work roles to reduce the Gf demands of the job.

However, it is important to note that this proposition builds on a classic treatment of the performance criterion, in which performance typically refers to technical performance (e.g., number of sales made, products produced [e.g., see Borman & Motowidlo, 1993]). Although the technical dimension of performance has historically been of greatest interest to organizations, there is increasing evidence to support the notion that other aspects of performance, such as contextual performance, also contribute to the accomplishment of organizational objectives (e.g., Johnson, 2001).

The narrow specification of performance in terms of technical achievement may obscure important features of performance that may support the perception of a steeper performance-utility function. Alternative definitions of performance that emphasize nontechnical factors, such as helping and job dedication, may represent the primary dimensions for evaluat-

ing performance, as well as activities of particular value to midlife and older workers. Jobs in which these features are emphasized, such as teaching, may attenuate the flattening of the performance-utility function and thereby promote work motivation. For example, performance goals that explicitly incorporate mentoring activities, responsibility to others, or ill-defined problem solving as a dimension of performance may increase the attractiveness of higher levels of performance among midlife and older workers. Similarly, jobs in which higher levels of performance offer the opportunity for positive affective events and/or strengthened sense of identity may also preserve steeper performance-utility perceptions.

Proposition 3b: Age-related decline in the performance-utility function is moderated by the correspondence between the performance criterion and age-related valued outcomes.

Implications of Age-Related Changes in Personality, Self-Concept, and Values for Managerial Practice

The reorganization of goals and exchange of motive primacy associated with midlife alter the work motivation landscape for numerous employees and present a conundrum for many organizations. Among younger workers, deficits in work motivation associated with the performance-utility function often can be addressed by modifying the schedule of extrinsic incentives, by goal setting, and/or by redesign of work to permit new learning opportunities. The performance criterion (e.g., quantity, quality of production) is rarely adjusted. Among midlife and older workers, however, shifts in motive primacy and goals require that adjustments be made to the performance criterion. Adjustments in the performance criterion, such as when performance is defined in terms of project management, innovation, problem solving, or training effectiveness, foster recalibration of performance levels to shifts in valued outcomes.

For some individuals, recalibration occurs in the context of organizationally sponsored career progression through a series of work role changes. Among engineers, for example, entry-level work roles tend to emphasize mastery of technical performance, but supervisory and managerial work roles in the field emphasize effective project management. Recalibration of this form typically requires high levels of performance at each level. For other individuals, recalibration may occur through job changes outside the organization.

Our analysis suggests that work motivation among midlife and older workers may be enhanced via strategies aimed at tailored reconfiguration of work roles and associated performance criteria. Although theory and research on career progression provide indirect support for this notion (e.g., Dalton & Thompson, 1986), the viability of this strategy for enhancing work motivation remains an important empirical question.

Impact of Age-Related Changes in Affect and Interests on Motivation

The third component in accounts of motivational processing pertains to the perceived utility of effort. Our review of age-related changes in person characteristics suggests that adult development may affect this function and, in turn, work motivation in two ways: (1) through the reorganization of motives to promote positive affect and (2) through change in the intensity of vocational interests.

A fundamental characteristic of motivation defined in terms of effort is its potential cost to the individual. As Kanfer (1987) has noted, research on the relationship between task characteristics and arousal suggests that the utility of effort is highest in the midrange. Low allocations of effort are associated with boredom; high allocations of effort are associated with stress. Findings in the motivational literature (e.g., Atkinson, 1957) provide support for the notion that young adults prefer to engage in tasks with a moderate level of effort.

Research in two areas suggests that the utility of effort can be expected to decline with age. First, evidence from the affective domain indicates that persons in midlife and later are more likely than young adults to select goals and activities that promote positive affect. To the extent that effort expenditures are likely to be positively associated with emotional exhaustion, stress, and negative affect (and older adults show heightened motive strength for positive affect), lower levels of effort are expected to

have higher utility, and higher levels of effort to have lower utility.

Second, although the interest literature suggests that there is substantial stability in the *direction* of vocational interests during adulthood, there may be a change in intensity of interest. That is, relatively little direct research exists on stability and change in the level of desired work effort across the life span. However, accounts from the popular literature suggest that younger adults are more resilient in the face of relatively high levels of continued effort (e.g., as medical interns, prepartnership lawyers and accountants, etc.), in comparison to middle-aged and older adults. These descriptions are also consistent with recent psychological (Heckhausen & Schulz, 1998; Schulz & Heckhausen, 1996) and economic (Posner, 1995) accounts of behavior among older workers that suggest a reduction in the attractiveness of resource allocations to work as workers reach middle age and beyond. Thus, it appears reasonable to speculate that the utility of higher levels of effort is lower among adults in middle age and beyond than among younger adults (see Figure 3).

Proposition 4: The attractiveness of higher levels of effort declines with age.

Implications of Age-Related Changes in Affect and Interests for Managerial Practice

The hypothesized impact of age-related changes on the effort-utility function suggests that identical extrinsic motivators (such as difficult and specific goals and incentive pay) may have a diminished effect on older adults, since they must be balanced against an "effort conservation" orientation. In contrast to younger adults, older adults may be less willing to commit to performance goals, engage in work behaviors, or persist at tasks that they perceive involve substantial levels of effort.

From an organizational perspective, this analysis suggests that interventions to reduce effort demands may be more effective among older adults than interventions that offer large incentives for increased effort. In skill training, for example, younger adults may perceive highly structured instruction as boring but the provision of performance-contingent incentives, such as pay, to be highly motivating. In contrast, among older adults, highly structured programs that reduce effort demands may be more motivating than the provision of incentives for performance requiring extraordinary levels of effort.

SUMMARY AND CAVEATS

In this article we have presented a theoretically based scheme for investigating the effects of aging, or adult development, on work motivation. We first suggested that age-related changes in person characteristics influence work motivation through their impact on the psychological variables involved in motivational processing. We identified four broad patterns of age-related change in person characteristics over the life course—loss, growth, reorganization, and exchange—and reviewed research evidence from the cognitive, personality, affective, vocational interest, and self-concept domains.

Next, we suggested how aging might affect work motivation by mapping age-related changes to components of Kanfer's (1987) expectancy-based model of motivational processing. Results of this mapping indicate multiple pathways through which aging may affect the decision to allocate personal resources to work roles and jobs. We proposed that age-related decline (loss) in fluid cognitive abilities and age-related growth in crystallized abilities affect motivation through effects on the amount of effort required to sustain performance. We further proposed that the nature of job demands, in terms of the mixture and level of demands on fluid cognitive abilities and crystallized knowledge, mediates the effects of age on this component of motivational processing. Age-related changes in motives and interests affect the perceived utility of performance and effort. As individuals enter midlife, extrinsic rewards for higher levels of performance and achievement lose their lustre, as interest in affirming one's identity and concerns for protecting the self-concept increase. Finally, we proposed that the declining salience of work in older life and the putative reorganization of personality to promote positive affect reduce the attractiveness of higher levels of work effort.

We recognize that our integration is incomplete and does not address a number of issues that will require further attention as theory and research on this topic proceed. We describe a

sampling of outstanding concerns and directions for future research briefly below.

The Interplay of Age-Related Patterns of Adult Development

Our review of life-span theory and research indicates that intraindividual change over the life course is multidimensional. Our organization of adult development along four trajectories is intended to clarify the multiplicity of change patterns that occur but is not meant to imply a universal pattern of age-related change. Indeed, age-related decline in Gf may occur in tandem with age-related gain in Gc, and patterns of exchange and reorganization in nonability traits occur within this context.

Further, the impact of adult development on components of motivational processing must also be considered in terms of situational affordances and barriers. Researchers can use the interactions among patterns of development to identify workers for whom work motivation may be most problematic in midlife and beyond. Among professional workers, for example, opportunities for work role change may sustain high levels of work motivation throughout the life course. In contrast, for service workers performing routinized tasks (e.g., custodians), the dearth of opportunities for work role changes may increase the likelihood of work motivation deficits in midlife and late adulthood.

The Moderating Influence of Job and Work Role Demands

Our analysis indicates that jobs that demand high levels of Gf resources pose a triple threat to motivation among older workers. Ever greater amounts of effort are needed to minimize performance declines as the utilities of performance and effort allocations also decrease. The result most likely will be poorer overall performance, increased stress, or a combination of both. As some organizations have found (e.g., the military and air traffic control), the best options are often to remove the individual from these kinds of jobs (either through a generous early retirement program or through reassignment to jobs that have lower Gf demands, such as administration or training).

However, it is important to recognize that cognitive/intellectual effort represents only one of many conceivable types of effort. Many jobs place relatively low demands on Gf (beyond initial training) and may require effort in interpersonal, rather than technical, domains. Performance in some service sector and managerial jobs, for example, may depend less on cognitive/intellectual effort and more on interpersonal engagement. In these jobs, age-related cognitive declines may have little effect on the perceived effort-performance function. Age-related changes in personality and affect that emphasize positive interpersonal relationships and enhanced emotion control over the life span may operate to enhance work motivation in these jobs, if higher levels of performance bolster self-concept and/or increase the perceived utility of effort. Future research to determine the perceived demands associated with "people" jobs and age-related effects on motivation in these jobs will have important theoretical and practical implications.

Generational Influences

One aspect of life-span development that we have not considered here is the influence of generational cohort differences. Although such a discussion goes beyond our current concerns (e.g., see Smola & Sutton, 2002, and Whyte, 1956), we would be remiss if we did not note that the modal goals, values, and the experiences of different generations of workers (especially in terms of the nature of work and careers) may also interact with developmental changes in cognitive, affective, and conative determinants of work motivation. Cohort differences between baby boomers and gen X'ers, for example, in economic and political conditions, health, mobility, educational opportunities, the nature of work, demands for caregiving, and attitudes toward retirement may also contribute to our proposed influences on the perceived utilities of effort for work and for job performance.

Interindividual Differences

Our review has focused on normative changes over the life span, but we have not explicitly taken into account the stability of interindividual differences across the life span and the potential influence of these differences on work motivation. For example, although mean levels of openness to experience may decline with age, we still expect older persons who are higher in

openness to experience to show higher levels of motivation for training than older persons lower in openness to experience. That is, within a cohort group, we can expect that individual differences in relevant traits will continue to provide useful information for predicting individual differences in work motivation.

Our framework suggests that organizations seeking to enhance motivation among midlife and older workers must also consider the influence of the person characteristics we have reviewed in this article (such as self-concept [see Wylie, 1989]) but that have not often been considered in personality-based studies of work behavior and job performance. For example, older adults with stronger self-concept in the work domain may be more responsive to role-based motivational interventions than individuals with weaker work-related self-concept.

Employee Development and Work Motivation

The relative reluctance of older workers to engage in new skill learning is problematic for both individuals and organizations. Our analysis of work motivation in the context of aging suggests that the motivation for training will decline with age, as declines in cognitive ability slow learning and the time frame for development of Gc-type expertise (in which performance may be sustained with less effort) decreases. As such, we expect that motivation for the development of new expertise, whether to prevent skill obsolescence or to develop expertise in a second or third career, should be higher early in midlife, before the individual approaches retirement (e.g., see Kubeck et al., 1996, and Warr, 2001, for a review; also see Posner, 1995, for a similar conclusion).

Goal Striving

Our analysis of age-related effects on work motivation has focused on the decision to allocate resources to work, and only briefly has touched on potential age-related effects on goal striving. Although theory and research on cognitive aging are currently insufficient for understanding how aging may affect the self-regulatory processes by which individuals implement their goals, we believe this is an important avenue for future research. Memory deficits associated with aging, for example, may exert adverse effects on critical components of self-regulation, such as self-monitoring, and so dampen motivation to overcome obstacles during learning and job performance.

CONCLUDING COMMENTS

To date, research on the ramifications of adult development for work motivation has been quite sparse. Warr (1992, 1994, 1997, 2001), in his investigations of aging and work behavior, has offered a number of valuable suggestions about how age-related change may affect work motivation and about ways to enhance and sustain work motivation among older workers. We have extended this line of theorizing to consider how age-related changes in person characteristics may affect motivational processing and outcomes.

Our review and proposed framework suggest that there is neither theoretical justification nor empirical evidence to support the notion of an inevitable and universal decline in work motivation with age. We also suggest that work motivation in midlife and later years follows the same basic principles as work motivation in young adulthood—namely, the allocation of personal resources to work behaviors that build on competencies, promote a sense of self-efficacy and self-concept, and offer opportunities for the attainment of desired outcomes. The differences in work motivation as adults age pertain mainly to the impact of age-related changes in competencies and motives on motivational-processing components. They also pertain to differential opportunities for protecting self-concept and to the range of options and incentives provided by organizations and the work environment for attainment of reorganized goals. As discussed, age-related changes may enhance, decrease, or have little effect on work motivation, depending on work circumstances. We propose that work motivation among older workers may be enhanced by organizational strategies and managerial practices that take into account normative patterns of adult development.

Contemporary process-oriented formulations of work motivation typically emphasize effort and time, rather than knowledge, as the personal resources that an individual allocates to determine the direction, intensity, and persistence of his or her work behavior. For older workers, knowledge is typically substantial,

whereas time and cognitive effort are often in shorter supply. For younger workers, just the opposite is true. From an organizational perspective, the most effective motivational interventions for midlife and older workers may be those that target the utilization and distribution of relevant knowledge and experience. Along these lines, we anticipate that interdependent team environments may be particularly beneficial for facilitating this form of work motivation (e.g., see Drucker, 1994).

We also note that modern theories of work motivation tend to emphasize intrinsic rewards related to learning and extrinsic rewards related to pay, promotion, and recognition. Among older workers, constraints on learning, pay, and promotion often lessen the value of these rewards. Rewards related to emergent motives for knowledge utilization, helping, collaboration, and enhancing positive affect have yet to be addressed in either theory or practice. If theories of work motivation suggest that older workers are, as a group, less motivated, perhaps the problem lies in limitations of our current theories and organization practices, rather than with the class of individuals.

A theory of work motivation that can account for age-related differences must go beyond chronological age, per se. In particular, the theory must provide testable predictions for (age-related) group differences and provide explanations for the origins and effects of such differences on motivational processes and outcomes. The development and validation of a viable person-oriented theory of work motivation remain formidable goals. We hope that our formulation will help to move the field further forward in this direction.

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