

MONOGRAPH

Toward a Unifying Social Cognitive Theory of Career and
Academic Interest, Choice, and Performance

ROBERT W. LENT

Michigan State University

STEVEN D. BROWN

Loyola University, Chicago

AND

GAIL HACKETT

Arizona State University

This article presents a social cognitive framework for understanding three intricately linked aspects of career development: (a) the formation and elaboration of career-relevant interests, (b) selection of academic and career choice options, and (c) performance and persistence in educational and occupational pursuits. The framework, derived primarily from Bandura's (1986) general social cognitive theory, emphasizes the means by which individuals exercise personal agency in the career development process, as well as extra-personal factors that enhance or constrain agency. In particular, we focus on self-efficacy, expected outcome, and goal mechanisms and how they may interrelate with other person (e.g., gender), contextual (e.g., support system), and experiential/learning factors. Twelve sets of propositions are offered to organize existing findings and guide future research on the theory. We also present a meta-analysis of relevant findings and suggest specific directions for future empirical and theory-extension activity. © 1994 Academic Press, Inc.

We are grateful to Albert Bandura, Nancy Betz, Ellen Lent, Fred Lopez, and Mark Savickas for their valuable feedback on earlier drafts. Correspondence and reprint requests should be addressed to Robert W. Lent, Department of Counseling, Educational Psychology and Special Education, Michigan State University, 437 Erickson Hall, East Lansing, MI 48824.

There has been considerable movement and vitality evident in theories and research on career development over the past 20 years (Hackett, Lent, & Greenhaus, 1991). During this time, several novel theoretical perspectives have been introduced (e.g., Krumboltz, Mitchell, & Jones, 1976; Vondracek, Lerner, & Schulenberg, 1986), and a number of earlier, foundational theories either have been refined and expanded (Dawis & Lofquist, 1984; Holland, 1985; Super, 1990) or have faded in their influence on career inquiry and practice (e.g., Ginzberg, Ginsburg, Axelrad, & Herma, 1951; Roe, 1956).

While the availability of numerous competing models speaks to the complexity of the career development process and may be taken as a sign of the intellectual vigor of the field, there may also be a distinct value in considering convergences among the career theories and prospects for more integrative frameworks (Borgen, 1991; Hackett et al., 1991; Osipow, 1990). In a recent review of career theory and research, we cited the utility of empirical efforts at consolidating explanations of career choice and development, e.g., by testing competing theoretical constructs designed to explain common outcomes (Hackett & Lent, 1992). Such work may aid in judging the comparative or complementary value of the models and in refining or abandoning particular theoretical constructs.

In addition to theory-testing research, we suggested that the field may profit from theory-building efforts that "(a) bring together conceptually related constructs (e.g., self-concept, self-efficacy), (b) more fully explain outcomes that are common to a number of career theories (e.g., satisfaction, stability), and (c) account for the relations among seemingly diverse constructs (e.g., self-efficacy, interests, abilities, needs)" (Hackett & Lent, 1992, p. 443).

Our goal in the present article is to make a modest first effort at such theory integration. In particular, we will outline a conceptual framework that attempts to explain central, dynamic processes and mechanisms through which (a) career and academic interests develop, (b) career-relevant choices are forged and enacted, and (c) performance outcomes are achieved. The framework emphasizes learning and cognitive phenomena that may complement, and foster conceptual linkages with, existing career models. In formulating this scheme, we drew primarily from Bandura's (1986) social cognitive theory trying to adapt, elaborate, and extend those aspects of the general theory that seemed most relevant to basic career development processes.

We have employed several guidelines to contain this complex task and, especially, to help balance the competing objectives of parsimony and comprehensiveness. First, because we intend to highlight mechanisms that may help shape career-related interests and selections, we will limit ourselves primarily to issues of career entry and to the life periods (late adolescence and early adulthood) that are associated with preparation for,

and implementation of, career choice. We expect that the sociocognitive factors we posit as being important to career entry will also influence subsequent career choices and adjustment; however, once implemented, initial career choices are subject to revision by a variety of additional factors which extend beyond the scope of the present framework. Our approach is thus to offer "segmental" models of career behavior (cf. Super, 1990), rather than trying to frame one sweeping, grand theory of lifelong career development.

Second, we conceptualize our framework as relevant to both academic and career behavior. One rationale is that models of academic choice and success often posit causal mechanisms that are quite similar to those viewed as important to models of career development. Because they appear in different literatures, their similarities are often ignored. Another rationale is that we view academic development as dovetailing, developmentally, with career development. Interests and skills developed during the school years ideally become translated into career selections—although social and economic factors frequently intervene to affect the level and content of choices pursued. For simplicity, we usually employ the term "career" in referring to interest and choice processes, but we intend for this analysis to subsume academic development phenomena as well.

Third, we anchor our basic models within social cognitive theory, which emphasizes the role of self-referent thinking in guiding human motivation and behavior. Such a decision does not minimize the importance of affective, developmental, biological, or other influences. To the contrary, we try to deal with each of these factors to varying degrees. We view general social cognitive theory as providing a useful framework for encompassing diverse influences upon career development and, most importantly, for suggesting common, central pathways through which these diverse factors affect career behavior. Moreover, social cognitive theory has been applied to a wide array of psychosocial domains (Bandura, 1986), providing an extensive knowledge base from which career-relevant hypotheses and interventions may be derived.

In the sections that follow we will (a) highlight several distinctive features and mechanisms of social cognitive theory that are central to the proposed career framework; (b) render a set of interlocking models of career-relevant interest, choice, and performance; (c) summarize research findings that are relevant to our models' tenability; and (d) suggest directions for future research and model expansion.

SOCIAL COGNITIVE ASSUMPTIONS AND MECHANISMS

In this section we briefly overview certain aspects of social cognitive theory that distinguish it from other theories of psychosocial functioning and that suggest its potential contribution in explaining career behavior.

In particular, we note the relatively complex model of triadic reciprocal causality upon which social cognitive theory is founded. We also highlight several specific person mechanisms—self-efficacy, outcome expectations, and goals—that may be used to form the core of a career-specific social cognitive framework. Finally, we indicate some important assumptive differences between the framework we propose and prior social learning-based accounts of career development, particularly that of Krumboltz and colleagues (e.g., Mitchell & Krumboltz, 1990).

Conception of Person–Situation Interaction

To recognize the mutual, interacting influences between persons and their behavior and environments, Bandura (1986) advocated a model of interaction termed *triadic reciprocity*. In this scheme, (a) personal attributes, such as internal cognitive and affective states and physical attributes; (b) external environmental factors; and (c) overt behavior (as distinct from internal and physical qualities of the person) all operate as interlocking mechanisms that affect one another bidirectionally.

While the major career development models acknowledge that vocational outcomes are jointly determined by persons and their environments (Osipow, 1990), they generally subscribe to what might be termed a partially bidirectional account of interaction (cf. Bandura, 1986), which assumes that behavior results from the interaction of person and environment, $B = f(P \rightleftharpoons E)$. That is, behavior is considered as the by-product of P – E transaction, rather than as a co-determinant of this transaction. By divesting behavior of its interactive role, such a view does not explicitly acknowledge that it is largely through their overt actions that people “influence the situations that, in turn, affect their thoughts, affect, and [subsequent] behavior” (Bandura, 1982, p. 4).

Existing career development models also tend to view person and self variables in trait-oriented terms (Lent & Hackett, 1994). By emphasizing relatively global, static self attributes, such models may not adequately capture the “dynamic interactions” that occur between developing individuals and their changing contexts (cf. Vondracek et al., 1986), nor may they account well for change and plasticity in human functioning (although some recent elaborations have attempted to address such problems, e.g., Rounds & Tracey, 1990). By contrast, social cognitive theory emphasizes the situation and domain-specific nature of behavior, relatively dynamic aspects of the self system, and the means by which individuals exercise personal agency.

Sociocognitive Mechanisms

In its analysis of the personal determinants within the triadic causal system, social cognitive theory highlights a variety of cognitive, vicarious, self-regulatory, and self-reflective processes (Bandura, 1986). While each

of these processes is assumed to play an important role in guiding psychosocial functioning, our framework emphasizes three social cognitive mechanisms that seem particularly relevant to career development: (a) self-efficacy beliefs, (b) outcome expectations, and (c) goal representations.

Self-Efficacy

The aspect of social cognitive theory that has received the most attention in the career literature involves self-efficacy appraisals. Self-efficacy refers to “people’s judgments of their capabilities to organize and execute courses of action required to attain designated types of performances” (Bandura, 1986, p. 391). These beliefs are seen as constituting the most central and pervasive mechanism of personal agency (Bandura, 1989). In particular, self-efficacy percepts are postulated as helping to determine one’s choice of activities and environments, as well as one’s effort expenditure, persistence, thought patterns, and emotional reactions when confronted by obstacles. Introduced into the career literature by Hackett and Betz (1981), self-efficacy has been found to be predictive of academic and career-related choice and performance indices (Hackett & Lent, 1992; Multon, Brown, & Lent, 1991; Sadri & Robertson, 1993).

In the social cognitive view, self-efficacy is not a passive, static trait, but rather is seen as a dynamic set of self-beliefs that are specific to particular performance domains and that interact complexly with other person, behavior, and contextual factors. Although involving judgments about personal capabilities, self-efficacy beliefs are not synonymous with objectively assessed skills; in fact, self-efficacy often yields only moderate relations with objective ability indices (e.g., Betz & Hackett, 1981; Lent, Brown, & Larkin, 1986). Social cognitive theory assumes that human ability is a dynamic (rather than fixed) attribute, and that competent performance at complex or challenging tasks generally requires both component skills and a strong sense of efficacy to deploy one’s resources effectively (Bandura, 1991).

Outcome Expectations

Personal beliefs about probable response outcomes, termed outcome expectations, constitute another important component in social cognitive theory. Whereas self-efficacy beliefs are concerned with one’s response capabilities (i.e., “can I do this?”), outcome expectations involve the imagined consequences of performing particular behaviors (“if I do this, what will happen?”). Bandura (1986) distinguished between several classes of outcome expectations, such as the anticipation of physical (e.g., monetary), social (e.g., approval), and self-evaluative (e.g., self-satisfaction) outcomes, that may importantly affect career behavior.

Several theories place a heavy emphasis on the relation of expected

outcomes and action. For example, Vroom's (1964) model, which has had an important influence in the organizational/career literature (Locke & Henne, 1986; Wanous, Keon, & Latack, 1983), viewed choice behavior as being largely dependent upon the subjective probability that certain acts will produce particular outcomes, together with the value one places on those outcomes. Career counseling methods that emphasize the weighing of decisional consequences associated with different options also implicitly acknowledge the import of outcome expectations (cf. Mitchell & Krumboltz, 1984).

Social cognitive theory suggests that "people act on their judgments of what they can do, *as well as* [italics added] on their beliefs about the likely effects of various actions" (Bandura, 1986, p. 231). Although affirming the dual role of self-efficacy and outcome expectations, Bandura (1986) has argued that these two forms of belief are often differentially potent, with self-efficacy serving as a more influential determinant of behavior. For example, there are many instances in which people may anticipate valued outcomes accruing from a given course of action, but avoid such action if they doubt their capabilities. A strong sense of efficacy, however, may sustain efforts even where outcome attainment is uncertain.

Whether self-efficacy and outcome expectations uniquely affect behavior presumably depends on the nature of a particular activity. In situations where the quality of performance guarantees particular outcomes, self-efficacy is seen as the predominant causal factor and as a partial determinant of outcome expectations. However, where outcomes are only loosely tied to the quality of performance, outcome expectations may make an independent contribution to motivation and behavior (Bandura, 1989). The latter scenario may be particularly relevant to career development in that the vagaries of academic and career environments often produce only imperfect linkages between quality of performance and outcomes. Further, costly life decisions would seem to mandate consideration of response outcomes as well as personal capabilities. For example, it is not difficult to imagine a person with high self-efficacy for mathematics choosing to avoid science-intensive career fields if she or he anticipates negative outcomes (e.g., non-support of significant others, work/family conflict) to attend such options.

Goals

Social cognitive theory holds that goals play an important role in the self-regulation of behavior. While environmental events and personal history help shape their behavior, people are seen as more than just mechanical responders to deterministic forces; by setting goals, people help to organize and guide their behavior, to sustain it over long periods of time even in the absence of external reinforcement, and to increase the likelihood that desired outcomes will be attained. Thus, humans can tran-

scend the "indefinite but omnific 'history of reinforcement' " (Bandura, 1986, p. 468) and maintain some control over their own behavior.

A goal may be defined as the determination to engage in a particular activity or to effect a particular future outcome (Bandura, 1986). Goals operate principally through people's capacity to symbolically represent desired future outcomes (i.e., to exercise forethought) and to react self-evaluatively to their own behavior based on internal standards for performance. Goals achieve their self-motivating quality by linking self-satisfaction to goal fulfillment and to the enactment of behavior that meets internally-set standards. Social cognitive theory posits important reciprocal relations among self-efficacy, outcome expectations, and goal systems (Bandura, 1986).

Goals are a ubiquitous, if generally implicit, element of career choice and decision-making theories. Such concepts as career plans, decisions, aspirations, and expressed choices are all essentially goal mechanisms. In each case, their import derives from their presumed role in motivating behavior (or symbolizing intended behavior); the differences among these various goal terms relate principally to their degree of specificity and proximity to actual choice implementation. For example, career goals have often been referred to as occupational aspirations or daydreams when they are assessed remotely in time from actual career entry, do not demand commitment or carry real consequences, and do not require subjects to factor in reality considerations, such as job market conditions. They are more likely to be dubbed expressed choices, plans, or decisions when they involve specific intentions (e.g., determination to engage in a particular field or role), are assessed near or at career entry, and require commitment.

Key Assumptive Issues

Approaches to career and academic behavior derived from Bandura's general theory represent a relatively recent contribution to the literature. In the career area specifically, two distinct branches of social cognitive inquiry have evolved: Krumboltz et al.'s (1976; Mitchell & Krumboltz, 1990) social learning theory of career decision making and Hackett and Betz's (1981) translation of self-efficacy theory to career development. The framework we present is both importantly tied to, yet substantively distinct from, these prior lines of inquiry.

The contrasts with Krumboltz's social learning theory are particularly salient. Like Krumboltz's theory, our approach acknowledges the influence of genetic endowment, special abilities, and environmental conditions on career decision making. Both positions also agree on the importance of learning experiences (operant, associative, and vicarious), in interaction with person and contextual factors, in guiding career development. However, the two theories differ somewhat in the phenomena that they attempt

to explain, i.e., Krumboltz is primarily concerned with choice behavior, while our framework focuses on the interlocking processes of interest development, choice, and performance. The two approaches also diverge on a number of key points, most notably on the relative prominence accorded to cognitive processes, the specific cognitive constructs included within the models, and the interactive role of cognition in regulating motivation and action.

One important distinction is that, within social cognitive theory, self-efficacy mechanisms are posited to be major mediators of choice and development whereas, within Krumboltz's position, self-efficacy is assigned a relatively minor role. Moreover, Mitchell and Krumboltz (1990) appear to confound self-efficacy with outcome expectations and to conceptualize self-efficacy as a global, comparative appraisal of one's abilities—rather than as personal convictions about one's generative capabilities to negotiate specific task or situational challenges.

Another noteworthy distinction between the two models concerns the role of goal setting in career decision making. In our model, cognized goals figure prominently as reflections of self-efficacy, outcome expectations, and interests, and as self-regulators of motivation. Krumboltz and colleagues do not highlight "goals" or "goal setting." However, they do acknowledge the import of "recently expressed intentions" (a goal variant) on career entry behavior (Krumboltz et al., 1976), and a recent theoretical statement suggests that goal mechanisms may be featured more significantly in future elaborations of Krumboltz's theory (Krumboltz & Nichols, 1990).

Perhaps the key points of divergence between the two models reflect assumptive differences about self-regulation and cognition. While clearly encompassing social and cognitive phenomena, Krumboltz's theory and recent work on career beliefs lean toward a rationalist perspective on the relation between thought and behavior (cf. Mahoney & Patterson, 1992). And, in attributing a primary causal role to past behavior and learning experiences, Mitchell and Krumboltz's (1990) scheme reflects a largely mechanistic, operant conditioning view of human functioning. In such a view, "internal events are mainly products of external ones devoid of any causal efficacy. Because agency resides in environmental forces, the self system is merely a repository and conduit for them" (Bandura, 1989, p. 1175).

By contrast, the social cognitive position attempts to highlight specific theoretical mechanisms, such as self-efficacy, which may account for the relation between past and future behavior. Simply asserting that past learning experience begets future behavior or that a cumulative, non-specific "reinforcement history" is responsible for career outcomes does not provide a sufficient explanation of the means by which prior experience exerts its impact on future behavior, let alone what factors produced the

past behavior. We take the view that the effects of learning experiences on future career behavior are largely mediated cognitively. For instance, people differentially recall, weight, and integrate past performance information in arriving at efficacy appraisals; thus, such appraisals are not likely to be isomorphic with, or mechanically implanted by, past performance indicators.

Social cognitive theory also attempts to take a cognitive constructivist approach to career development (Lent & Hackett, 1994). Constructivist theories emphasize cognitive feedforward (as opposed to feedback-only) mechanisms, highlighting the importance of anticipation, forethought, and active construction of meaning in interaction with environmental events. Such theories view people as proactive shapers of the environment, not merely as responders to external forces. They also acknowledge complex, bidirectional influences between cognition, affect, and behavior (Mahoney & Patterson, 1992). We have elsewhere (Lent & Hackett, 1994) identified some key points of convergence, divergence, and complementarity between our framework and other, non-social learning models of career development (Dawis & Lofquist, 1984; Holland, 1985; Super, 1990).

EXTENDING SOCIAL COGNITIVE THEORY TO CAREER DEVELOPMENT: THREE INTERLOCKING MODELS

Reviews of the growing literature on career and academic self-efficacy have suggested that it may be valuable to devise an approach to career development that extends the Hackett/Betz position by incorporating aspects of social cognitive theory beyond the self-efficacy construct and by developing explicit predictions to organize existing findings and guide future research (e.g., Lent & Hackett, 1987). We address this agenda in this section and the following one. In particular, we outline a conceptual framework that incorporates several person and environmental variables that are dealt with to varying degrees by different career development theories, especially the social cognitive variants. We also depict the manner in which these diverse theoretical ingredients may interrelate and the modes by which they may affect career interests and behavior.

We present our theoretical position in two parts. The present section focuses on the sociocognitive core of our framework. We (somewhat artificially) compartmentalize interest development, choice, and performance into three distinct, but interlocking models. Within each model, we highlight the sociocognitive mechanisms that we believe exert important influences on career and academic development. In the following section, we turn to other important person (e.g., gender) and contextual variables, suggesting how they interrelate with the cognitive factors over the course of career development. In essence, we try to weave together diverse but seemingly critical influences on career development, including

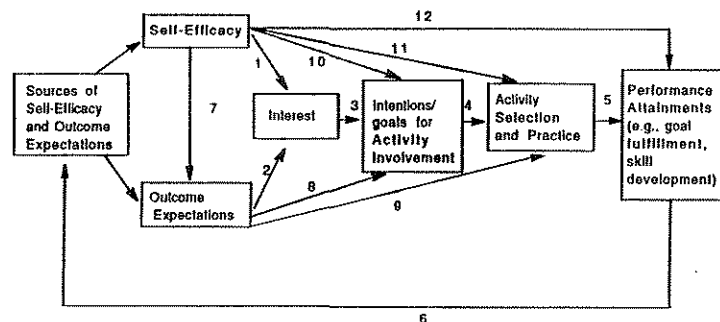


FIG. 1. Model of how basic career interests develop over time. This model highlights cognitive and behavioral influences during childhood and adolescence. Copyright 1993 by R. W. Lent, S. D. Brown, and G. Hackett. Reprinted by permission.

intrapersonal, interpersonal, historical, and contemporaneous mechanisms.

While our conceptual scheme attempts to build stronger links between Bandura's theory and its earlier career-specific translations, we should point out that we took a number of liberties in applying the general social cognitive model to career behavior. For example, in order to deal with the complexities of career behavior and to build clearer ties to other career theories, we posit certain theoretical linkages and directional paths that do not necessarily follow from Bandura's model. We should also note that the directional arrows in our framework illustrate what we believe are predominant causal pathways. However, to remain faithful to social cognitive theory's triadic, reciprocal view of causation, we acknowledge that (a) over the course of development, the major theoretical elements (person, behavior, context) will tend to influence one another bidirectionally; and (b) at any given point in time (or for particular individuals over time), certain variables will carry differential causal weight. For example, socioeconomic conditions, such as extreme poverty, can powerfully affect career choice options based, in part, on their impact on other system elements, such as learning opportunities.

Model of Interest Development

The Self-Efficacy/Outcome Expectations/Interest Link

We define vocational interests as patterns of likes, dislikes, and indifferences regarding career-relevant activities and occupations (cf. Hansen, 1984b). Figure 1 illustrates the hypothesized sociocognitive determinants of basic career and academic interests and the manner in which interests promote career-related activity involvement and skill acquisition. Over the course of childhood and adolescence, people's environments expose them to a wide array of activities of potential career relevance. They also

observe or hear about others performing various occupational tasks. Not only are they exposed (directly and vicariously) to diverse activities but also they are differentially reinforced for pursuing certain activities from among those that are possible and for achieving satisfactory performance in chosen activities. Through repeated activity engagement, modeling, and feedback from important others, children and adolescents refine their skills, develop personal performance standards, form a sense of their efficacy in particular tasks, and acquire certain expectations about the outcomes of their performance.

These perceptions of self-efficacy and outcome likelihood figure prominently in the formation of interests (see paths 1 and 2 in Fig. 1). More specifically, it is likely that people form enduring interests in activities in which they view themselves to be efficacious and in which they anticipate positive outcomes (cf. Bandura, 1986; Lent, Larkin, & Brown, 1989). Indeed, it may be difficult for robust interests to blossom where self-efficacy is weak or where neutral or negative outcomes are foreseen.

Although many different (potentially career-relevant) activities are tried out and pursued for a time during one's formative years, people generally come to develop characteristic patterns of career interests (Holland, 1985). Bandura's (1986) general hypotheses about how intrinsic interests develop may help explain why certain activities generate differential interest over time. Elaborating somewhat upon Bandura's general model, we posit that emergent interests lead to intentions or goals for further activity exposure (path 3), which increase the likelihood of subsequent task selection and practice (path 4). Activity involvement or practice, in turn, produces particular performance attainments (path 5) (e.g., successes and failures), resulting in the revision of self-efficacy and outcome expectancy estimates (path 6).

We believe that this process repeats itself continuously over the lifespan, although it is perhaps most fluid up until late adolescence or early adulthood, when interests regarding broad domains of work activity tend to stabilize (Hansen, 1984b). Once interests crystallize, it may take very compelling experiences to provoke a fundamental reappraisal of career self-efficacy and outcome beliefs and, hence, a change in basic interest patterns. Such occasions seem rare in later life but are theoretically possible, particularly when changing life or work circumstances (e.g., job layoff, accident, birth of a child, technological innovations) require or encourage the cultivation of different competencies.

In the course of interest formation, it is likely that outcome expectations will partly be determined by self-efficacy (path 7), since people presumably expect to achieve desirable outcomes in activities at which they view themselves to be efficacious (Bandura, 1986). Further, outcome expectations may affect activity goals (path 8) directly as well as indirectly through interests. That is, people develop goals for activity involvement

partly because of their interest in (liking for) these activities and partly because of the rewards (both extrinsic and intrinsic) that they anticipate. Outcome expectations may also contribute directly to activity choices (path 9).

It is important to note that, while various types of outcome expectations (e.g., social and physical rewards) help to foster interests, Bandura (1986) posits that self-evaluative outcomes (e.g., anticipated self-satisfaction) play a particularly influential role in interest development. "Some of the most valued rewards of activities are in the satisfaction derived from fulfilling personal standards, rather than in tangible payoffs" (Bandura, 1986, p. 231). In this view, mastery of challenging tasks engenders positive self-evaluation; the anticipation of additional mastery and self-satisfaction helps sustain task engagement, leading to skill development, and the growth of interest in activities that may have originally held little intrinsic allure.

Self-efficacy percepts, like outcome expectations, are assumed to exert direct effects on activity goals and choices (paths 10 and 11, respectively). Because of their role in helping persons to interpret, organize, and apply their skills, self-efficacy beliefs are also seen as contributing directly to one's performance accomplishments (e.g., level of task success achieved; path 12). We do not posit a similar performance path for outcome expectations; rather, we believe the latter are more influential in motivating activity choices than in determining how well people perform at chosen tasks.

Values and Aptitudes

It is important to note how our model accounts for the effects of values and aptitudes, two ubiquitous career/academic variables. Early theorists often viewed vocational aptitudes as largely inherited capacities (e.g., Strong, 1943). Although aptitudes can be conceptualized as basic skill potentialities that may have a heritable component, the transformation of native aptitudes into career-relevant skills requires nurture as well as nature. The fact that devices for measuring aptitudes, such as the SAT, generally rely on learned material highlights the difficulty in divorcing aptitude from its experiential context (cf. Walsh & Betz, 1990). It therefore seems prudent to speak of abilities or skills that combine both innate potential and acquired competencies.

We expect that the effects of ability (as reflected by past performance or achievement indices) on interests will be largely mediated by self-efficacy beliefs, since people may rely more on perceived than tested abilities in formulating their interests. (Prior performance/ability is included within the rubric of sources of self-efficacy in Fig. 1.) Although early vocational interest models, such as Strong's (1943), predicted a direct relation between tested abilities and interests, findings have revealed that

this relation is generally quite modest (cf. Hansen, 1984b). By contrast, measures of perceived capabilities often produce much higher relations with interests (Barak, 1981; Vroom, 1964), supporting the notion of a cognitive mediational link between tested ability and interest.

Values, which may be defined in terms of preference for reinforcers in the work or academic environment (Dawis & Lofquist, 1984), are acquired by children and adolescents through basic social learning processes (e.g., vicarious learning, self-evaluative experiences). Interactions with or observation of family members, peers, teachers, other significant persons, cultural and religious institutions, and print and electronic media sources provide much of the context for imparting values and personal standards of behavior. People develop proclivities for particular reinforcers (e.g., status, money, autonomy), and they perceive different activities or occupations as varying in terms of their ability to satisfy these desirable extrinsic outcomes as well as more intrinsic and self-evaluative ones (e.g., self-satisfaction linked to fulfilling personal standards).

In our framework, outcome expectations incorporate the concept of values. That is, we believe that interest in a particular academic or career-relevant activity depends, in part, on the outcomes that are anticipated to result from participation in the activity, along with the relative value or importance of these outcomes to the individual. This view of the role of values vis-à-vis interests may be contrasted with those of Vroom (1964) and Dawis and Lofquist (1984). Whereas Vroom's model of interests (occupational preference, in his terminology) assumes that interests result principally from outcome beliefs (instrumentality \times valence estimates), we emphasize the dual effects of self-efficacy and outcome beliefs.

In Dawis and Lofquist's scheme, interests "derive from experiences with specific combinations of values and abilities" (1984, p. 19). Our conception is similar in the sense that we view values (or reinforcer preferences) and abilities as guiding people toward particular activities or environments that would enable the satisfaction of their values and the expression of their abilities. However, as noted above, we view self-efficacy as an important mediator of the ability-interest relation, and we conceptualize particular paths between self-efficacy, outcome beliefs (which include values), and interests that do not have clear parallels within Dawis and Lofquist's model.

Predictions

Following from the above analysis, we offer the following specific predictions:

Proposition 1. An individual's occupational or academic interests at any point in time are reflective of his or her concurrent self-efficacy beliefs and outcome expectations.

HYPOTHESIS 1A. There will be a positive relation between occupationally relevant self-efficacy beliefs and (expressed or inventoried) vocational interests.

HYPOTHESIS 1B. There will be a positive relation between occupationally relevant positive outcome expectations and (expressed or inventoried) vocational interests; negative outcome expectations will relate inversely to vocational interests.

HYPOTHESIS 1C. An additive combination of self-efficacy and positive outcome expectations will account for more variance in career/academic interests than will either self-efficacy or outcome beliefs alone.

HYPOTHESIS 1D. Self-efficacy and outcome beliefs regarding broad domains of work activity (e.g., artistic capabilities) will tend to stabilize by late adolescence or early adulthood.

HYPOTHESIS 1E. A significant portion of variance in vocational interest stability will be accounted for by stability in self-efficacy and outcome expectations.

HYPOTHESIS 1F. Changes in self-efficacy and/or outcome expectations will be associated with changes in vocational interests.

Proposition 2. An individual's occupational interests also are influenced by his or her occupationally relevant abilities, but this relation is mediated by one's self-efficacy beliefs.

HYPOTHESIS 2A. There will be a positive relation between measures of vocational ability and interest.

HYPOTHESIS 2B. The correlation between vocational ability and interest will be eliminated when the influence of self-efficacy is controlled.

Additional Theoretical Possibilities

In addition to this basic model of interest development, a few more detailed theoretical possibilities might be cited. For example, Bandura (1986; Bandura & Schunk, 1981) has suggested that there may be a temporal lag between newly acquired self-efficacy and investment of interest in activities that have previously been perceived as neutral or unenjoyable by the individual. If so, it may take repeated mastery experiences for self-efficacy to promote new interests in such activities. Increased interest might then emerge after a time delay rather than as an immediate consequent of enhanced self-efficacy.

Bandura (1986; Bandura & Schunk, 1981) also has posited that there may be a threshold effect in the emergence of interests from self-efficacy. That is, at least moderate self-efficacy may be necessary to develop and sustain interest in an activity, but additional increases in self-efficacy beyond that threshold may not yield linear increments in interest. In fact, very high levels of self-efficacy in relation to task demands may actually diminish interest in an activity by removing its challenging quality. Temporal lag and threshold effects may serve to truncate self-efficacy/interest relations or to produce curvilinear relations (cf. Lent, Larkin & Brown, 1989).

It may be useful for us to speculate further about the nature of the

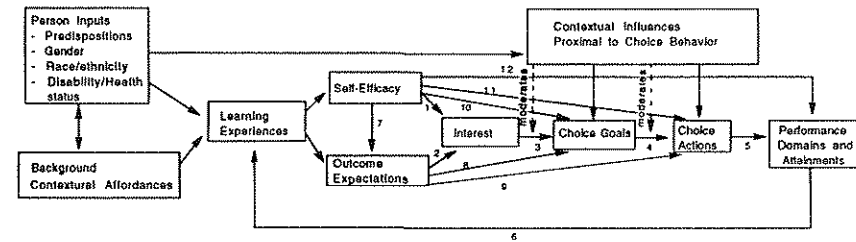


FIG. 2. Model of person, contextual, and experiential factors affecting career-related choice behavior. Copyright 1993 by R. W. Lent, S. D. Brown, and G. Hackett. Reprinted by permission.

relation between self-efficacy and outcome beliefs in promoting interests. Rather than combining in simple additive fashion, it is possible that these two sets of beliefs interact such that favorable outcome expectations are needed to potentiate self-efficacy percepts. This is another way of saying that self-efficacy may not translate into interests unless people expect their activity involvement to be rewarded. An individual with high perceived efficacy but low outcome expectations relative to a given activity may be less likely to develop an enduring interest in that activity since the latter is seen as offering limited potential for reinforcement.

Finally, Bandura (1986) emphasized the interplay between goal structures and internal performance standards in promoting self-efficacy and intrinsic interests. In particular, the attainment of challenging goals (in relation to self-set standards) creates self-satisfaction and enhances self-efficacy and, in turn, task interest. Goals that are explicit, attainable, and proximal are also most likely to encourage interest development (also see Locke & Latham, 1990). Thus, although our model emphasizes the effect of interest on goal selection, this influence is conceived as bidirectional.

Model of Career Choice

Roe (1956) and others have noted that occupational choice is a multifaceted act that may be defined in diverse ways. Vroom (1964), for instance, distinguished between the preferred occupation, the chosen occupation, and the attained occupation, acknowledging—as have earlier theorists (e.g., Ginzberg et al., 1951)—that the choice process often entails compromise between what one would like to do and what is actually attempted. Further, “people not only *select* occupations, they are *selected for* occupations” (Vroom, 1964, p. 56); hence, choice attainment (and stability) depends in part on the degree to which the individual meets (and continues to meet) educational or vocational requirements—a point well acknowledged by person–environment fit career models (Dawis & Lofquist, 1984; Holland, 1985).

Our model of the career/academic choice process is illustrated in Fig. 2. This figure actually incorporates the basic causal sequence suggested

by Fig. 1, the primary difference being that the activity goals and selection variables now specifically represent career/academic choice goals and their enactment. Thus, in a sense, this model is a developmental extension of the process of basic interest formation. It may be seen that we have conceptually divided the career choice phase into several component processes: (a) the expression of a primary choice goal from among one's major career interests, (b) actions designed to implement the choice (e.g., enrolling in a particular training program or academic major), and (c) subsequent performance attainments (e.g., academic failures, admission acceptances) that create a feedback loop, affecting the shape of future career behavior.

This model adopts Krumboltz and associates' distinction between career choice intentions (or choice goals) and entry behaviors (or choice actions), i.e., those actions designed to implement one's intentions (Mitchell & Krumboltz, 1990). (Tiedeman & O'Hara, 1963, similarly distinguished between anticipatory/planning and implementation stages of career decision making.) We find this distinction useful for several reasons. First, subdividing the choice process in this way highlights the intermediate role of personal goals in choice making. We do not believe that choice actions are automatically implanted by the press of one's environment or personal history; rather, self-set goals, arising from the interplay of self-efficacy, outcome beliefs, and interests, afford a measure of personal agency in the determination of one's career future. (Of course, goals are also sensitive to non-volitional influences.)

Second, choices do not represent static acts. Once implemented, choices are often modified by ensuing performance outcomes. For example, after declaring an engineering major, a student may have serious difficulty passing required physics courses. Such compelling performance data may force a revision of perceived capabilities, ultimately prompting a change in goals (e.g., selection of a new major). Thus, the proposed scheme conceptualizes career/academic choice as a dynamic enterprise. Finally, by offering a finer-grained analysis of how interests, in concert with other theoretical elements, beget choices, it is possible to highlight certain factors that may moderate the explanatory power of the model.

We should note here an important point about our conception of goals in relation to that of Locke and Latham's (1990) goal setting model of work performance. We conceptualize choice goals as the intention to engage in a particular action or series of actions (e.g., to declare a major in physics or to become an engineer). By contrast, Locke and Latham's model views goals in terms of "level of performance to be attained on a task" (p. 24). Although this distinction between choice goals and performance goals is important, the two models may offer complementary views of career behavior. That is, our model may help explain the career and academic paths that people select (e.g., direction or content of career-

related choices), while the Locke/Latham framework emphasizes the level of performance they achieve on chosen or assigned tasks.

The Interest/Choice/Action Link

Hackett and Betz (1981) hypothesized that self-efficacy percepts would influence career choices but did not describe the specific paths through which self-efficacy might operate, or how it might function in relation to other causal mechanisms. Figure 2 attempts to fill in such details. As indicated in the figure and discussed earlier within the context of the interest development model, self-efficacy and outcome beliefs jointly give rise to interests (paths 1 and 2). Interests, in turn, promote cognized career choice goals (i.e., intentions, plans, or aspirations to engage in a particular career direction) (path 3), which increase the likelihood of choice actions (e.g., declaring a corresponding academic major) (path 4). Choice actions (or "entry behaviors," in the parlance of Krumboltz et al., 1976) then lead to particular performance domains and achievement experiences (path 5), which may support or weaken efficacy and outcome percepts (path 6) and, ultimately, choice persistence.

In addition to affecting choice behavior indirectly through interests (path 2), outcome expectations may exert a direct effect on choice goals (path 8) and actions (path 9). The more valued the perceived outcomes, the more likely that people will adopt particular career goals and action courses. Self-efficacy is also seen as affecting the choice process through several routes: indirectly via outcome expectations (path 7) and interests (path 1), and directly via career goals, actions, and performance attainments (paths 10, 11, and 12, respectively).

The literature on goal setting indicates that there are a number of properties of goals that affect their influence on behavior and, hence, are relevant to our choice model. For instance, goals vary along a dimension of intensity, or commitment, referring to "one's attachment to or determination to reach a goal" (Locke & Latham, 1990, p. 125). Goal-setting theory posits that goal commitment level moderates goal-action relations; likewise, reasoned action theory implies that stronger behavioral intentions tend to increase the likelihood of corresponding actions (Ajzen, 1988). Translated into career development terminology, we expect that firmly held goals (as indexed by expressed choice certainty, decidedness, or commitment) will be more likely to promote choice entry behaviors than will more tentative goals.

Goals may also tend to exert a stronger motivational effect on behavior to the extent that they are clear and specific, are perceived as challenging but attainable, are proximal (i.e., occur reasonably close in time) to behavior, and are set in relation to behavior that is susceptible to voluntary control (Ajzen, 1988; Bandura, 1986; Locke & Latham, 1990). Parenthetically, it may be difficult, in practice, to separate the effects of goal

commitment and specificity since people are more likely to become firmly committed to specific rather than vague goals.

It seems important to relate our choice model to alternative conceptions of the career choice process. Career choice models generally assume some linkage between interest and choice. Holland's (1985) theory, for instance, posits that people tend to select career options that match their primary career interests or that combine their primary and ancillary interest themes, e.g., a person with dominant artistic interests will gravitate toward artistic occupations. While our model shares this general assumption, it adds several features that may complement or help elaborate extant views of the choice process. In particular, we specify goals as forming an intermediate link between interests and choice actions and view self-efficacy and outcome expectations as precursors of interest. We also see self-efficacy and outcome beliefs as potentially contributing directly to goals (paths 8 and 10). As we discuss later, this independent effect of efficacy and outcome beliefs may help explain career choice when opportunities to implement interests are perceived as limited.

Our notion of a feedback loop, wherein the products of earlier career-relevant behavior serve to confirm or redirect future career choices, recalls the decision-making models of Tiedeman and O'Hara (1963) and Harren (1979). The social cognitive framework shares these models' emphasis on the iterative, dynamic flow of the decisional process. One important difference, however, is our view that the effect of performance experiences on future choices is mediated largely by self-efficacy and outcome expectations which, in turn, help to solidify or redefine interests and goals.

We believe that the basic model presented in Fig. 2 may account for a good deal of academic and career-related choice behavior across the lifespan, though the specific nature of the choice goals and actions will depend on one's developmental status. We should also note that this model is intended to depict a set of normative processes taking place under conditions of optimal voluntary control. However, we fully recognize that, in the "real world," a variety of important factors, such as cultural and economic conditions, will moderate the explanatory power of the model. In a subsequent section, we will highlight contextual factors that comprise an "opportunity structure" within which choices are made and pursued; among other things, these factors may constrain or strengthen the relations between interests, goals, and actions.

Predictions

The following propositions and hypotheses summarize the key causal paths in our choice model, which incorporates the interest development model presented earlier:

Proposition 3. Self-efficacy beliefs affect choice goals and actions both directly and indirectly.

HYPOTHESIS 3A. Occupationally relevant self-efficacy will relate positively to choice goals (e.g., expressed choices).

HYPOTHESIS 3B. Occupationally relevant self-efficacy will relate positively to entry behaviors (e.g., information and job searches, applications for admission/employment, declaration of an academic major, attained choices).

HYPOTHESIS 3C. The correlation between self-efficacy beliefs and choice goals will be reduced but not eliminated when the influence of vocational interests is controlled.

HYPOTHESIS 3D. The correlation between self-efficacy beliefs and entry behaviors will be reduced but not eliminated when the influences of vocational interests and goals are controlled.

Proposition 4. Outcome expectations affect choice goals and actions both directly and indirectly.

HYPOTHESIS 4A. There will be a positive relation between occupationally relevant positive outcome expectations and choice goals (e.g., expressed choices).

HYPOTHESIS 4B. There will be a positive relation between occupationally relevant positive outcome expectations and entry behaviors (e.g., information and job searches, applications for admission/employment, declaration of an academic major, attained choices).

HYPOTHESIS 4C. The correlation between occupationally relevant outcome expectations and choice goals will be reduced but not eliminated when the influence of vocational interests is controlled.

HYPOTHESIS 4D. The correlation between occupationally relevant outcome expectations and entry behaviors will be reduced but not eliminated when the influences of vocational interests and goals are controlled.

Proposition 5. People will aspire to enter (i.e., develop choice goals for) occupations or academic fields that are consistent with their primary interest areas.

HYPOTHESIS 5A. There will be a positive relation between indices of (expressed or inventoried) interest and choice goals (e.g., aspirations, expressed choices).

Proposition 6. People will attempt to enter occupations or academic fields that are consonant with their choice goals, provided that they are committed to their goal, and their goal is stated in clear terms, proximal to the point of actual entry.

HYPOTHESIS 6A. There will be a positive relation between choice goals and entry behaviors.

HYPOTHESIS 6B. The relation of choice goals to entry behaviors will be moderated by goal properties (e.g., commitment, clarity, proximity to entry point). That is, entry behaviors will be more predictable from choice goals when goal commitment is high and when goals are specific and expressed close in time to the point of choice implementation.

Proposition 7. Interests affect entry behaviors (actions) indirectly through their influence on choice goals.

HYPOTHESIS 7A: There will be a positive relation between (expressed or inventoried) interests and choice actions (e.g., information and job searches, applications for admission/employment, declaration of an academic major, attained choices).

HYPOTHESIS 7B: The correlation of interests to choice actions will be eliminated when the influence of choice goals is controlled.

Model of Performance

The Expectancy/Performance Bidirectional Link

We define performance broadly here to include level of accomplishments (e.g., course grades) as well as indices of behavioral persistence (e.g., stability of academic major). The basic performance model, embedded within Fig. 2, is seen as useful in explaining achievement relative to goals that are either personally selected or (where activities are mandated by external agents) personally adopted.

Figure 2 depicts performance attainments as being affected, in part, by one's goals, which help to mobilize and sustain task-relevant actions. Following Bandura's (1986) general thesis, we believe that self-efficacy asserts a direct effect on performance (by virtue of its role in helping people to organize and orchestrate their skills; path 12) as well as indirect effects via goals and actions. The relation of outcome expectations to performance is seen as largely mediated by goals and actions (paths 8 and 9). In keeping with social cognitive theory's triadic view of person-environment-behavior transactions, we denote a loop between performance attainments and one's subsequent choices and behavior (path 6). For example, successful performance will tend to enhance self and outcome percepts, thereby strengthening one's interests and goals.

We should note that Fig. 2 is somewhat misleading in its portrayal of the goal-performance relation. Although performance attainments ultimately follow the pursuit of a particular academic or career track, it is not one's entry behaviors per se that determine accomplishments. Rather, as we suggested in discussing our choice model, choice goals help govern the performance domains (e.g., type of academic major or work tasks) that one will pursue; however, the quality of performance attained may depend, in part, on the level of one's performance goals. For example, students who select an engineering major (choice goal) also form goals concerning their grade performance in the various required courses. "Shooting for" an A in physics (performance goal) helps regulate one's ensuing course behavior (e.g., amount of study time).

Figure 3 highlights the specific links between self-efficacy, outcome expectations, performance goals, and task attainment level. In addition to the model relations discussed above, note that ability (as assessed by

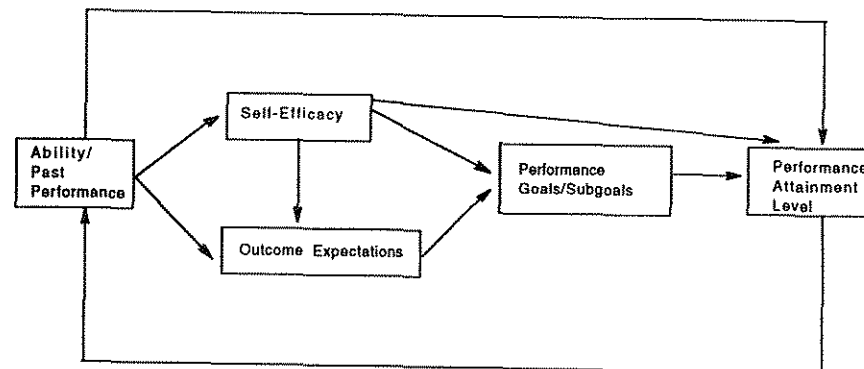


FIG. 3. Model of task performance, highlighting the roles of ability, self-efficacy, outcome expectations, and performance goals. Copyright 1993 by R. W. Lent, S. D. Brown, and G. Hackett. Reprinted by permission.

achievement, aptitude, or past behavioral indices) is seen as affecting subsequent attainments via two primary paths: (a) directly, in the form of (more or less) developed task mastery skills and (b) indirectly through perceived efficacy and outcome expectations. This figure omits interest to choice of career/academic activities than to selection of performance goals. In fact, interest has generally been found to be more useful in predicting career choice than career success criteria (Hansen, 1984b).

Once we shift our focus from choice to performance, and highlight the role of performance goals versus choice goals, our performance model comes to resemble that of Locke and Latham (1990, p. 70; also see Wood & Bandura, 1989) in important ways, e.g., by predicting that self-efficacy will affect performance both directly and indirectly, via personal goals. However, by way of contrast, our model incorporates the role of outcome expectations in complementing self-efficacy (especially where outcomes are only loosely tied to the quality of one's performance) and specifies a link between performance attainments and subsequent self-efficacy and outcome expectations.

Bandura, Locke, and their co-workers have provided important analyses of the specific mechanisms through which personal goals affect performance (e.g., Bandura, 1986, 1989; Locke & Latham, 1990; Schunk, 1989; Wood & Bandura, 1989). Goals are seen as helping to regulate energy expenditure, promote task persistence, and direct people's attention to important outcomes and aspects of their behavior. While goal setting may be sufficient to promote the execution of relatively simple or well-learned behaviors, the performance of more complex tasks also requires particular problem-solving or "analytic strategies," or what we have termed task mastery skills. For instance, simply setting a grade goal of A will not

ensure effective performance in a calculus course. In addition, students need to possess effective study, mathematical reasoning, and computational skills. Further, performance may be facilitated by breaking overall distal goals into more proximal subgoals (Bandura & Schunk, 1981).

Bandura (1986) has also identified a variety of factors that can moderate the relation of self-efficacy to performance behavior. For example, self-efficacy percepts may more strongly affect performance when there are appropriate incentives to prompt action; efficacy appraisals are made under conditions that favor honesty; self-efficacy and action are assessed in close temporal proximity and along specific, common dimensions; performance goals and feedback are clear; and people possess accurate knowledge regarding their capabilities.

Predictions

The following propositions and hypotheses summarize the key causal paths in our performance model:

Proposition 8. Self-efficacy beliefs influence career/academic performance both directly and indirectly through their effect on performance goals. Outcome expectations influence performance only indirectly through their effect on goals.

HYPOTHESIS 8A. There will be a positive relation between self-efficacy beliefs and career/academic performance.

HYPOTHESIS 8B. The relation between self-efficacy and performance will be reduced but not eliminated when the influence of performance goals is controlled.

HYPOTHESIS 8C. There will be a positive relation between positive outcome expectations and career/academic performance.

HYPOTHESIS 8D. The relation between outcome expectations and performance will be eliminated when the influence of performance goals is controlled.

Proposition 9. Ability (or aptitude) will affect career/academic performance both directly and indirectly through its influence on self-efficacy beliefs.

HYPOTHESIS 9A. There will be a positive relation between measures of career/academic ability and corresponding performance indices.

HYPOTHESIS 9B. The relation between ability and performance will be reduced but not eliminated when the influence of self-efficacy beliefs is controlled.

Self-Efficacy/Ability Correspondence

An extension of this basic performance model having potential for clinical applications involves conditions in which self-efficacy estimates diverge from measures of past behavior or ability. All career counselors have encountered students whose perceived competencies greatly over-

or underestimate their assessed potential (reflected by prior grades or test scores). Although often perplexing, such disparities may result from a variety of experiences (e.g., grade inflation, attending a substandard high school) or cognitive influences (e.g., information-processing biases; cf. Heppner & Frazier, 1992) and may have interesting implications for performance (Brown et al., 1989; O'Brien, Brown, & Lent, 1992).

Social cognitive theory assumes that the most facilitative efficacy percepts are those that slightly exceed one's current skill level (Bandura, 1986). Such modest "over-confidence" encourages people to take on challenges that promote skill development and self-efficacy. (If people only tackled tasks they were sure to perform well, there would be little opportunity for personal growth.) However, self-efficacy that either grossly exceeds or undershoots current skill level may be maladaptive: unrealistically high self-appraisals may set one up for failure, while unduly pessimistic ones may prompt avoidance of challenges that are within one's competence range, thereby constraining academic or career development. Once strong skills are developed, a robust sense of efficacy may help sustain performance even in endeavors that offer a high rate of failure or rejection, e.g., the arts, technical innovation (Bandura, 1989).

ADDITIONAL PERSON, CONTEXTUAL, AND EXPERIENTIAL INPUTS

To this point we have highlighted certain hypothesized cognitive and behavioral determinants of career interest, choice, and performance. This focus stems from our effort to elaborate the role of self-reflective and self-regulatory mechanisms in career development. The present section offers a second "layer" of theoretical analysis; it is aimed at achieving a more comprehensive account of the career development process and at fine-tuning and clarifying some of the more basic model predictions. In particular, we briefly discuss several additional sets of model components: person inputs, such as overt physical attributes; features of the social, physical, and cultural environment; and career-relevant learning experiences.

Social cognitive assumptions about reciprocal causation suggest that these components be considered as complexly interactive sources of influence on career development. While acknowledging the interdependent relations among them, we envision three predominant causal paths through which person, contextual, and experiential factors may influence career-related interests and choice behavior (see Fig. 2). Specifically, these factors may serve as (a) precursors of sociocognitive variables, (b) moderators of certain key theoretical relations, or (c) direct facilitators or deterrents (e.g., selection practices that restrict access to particular choice options). Certain factors may operate through more than one influence mode.

Experiential Sources of Self-Efficacy and Outcome Beliefs

According to social cognitive theory, self-efficacy beliefs are largely determined and modified by four informational sources: personal performance accomplishments, vicarious learning, social persuasion, and physiological states and reactions. Personal success experiences with a given task tend to raise efficacy estimates, while repeated failures lower them. However, the actual effect of personal performance experience on self-efficacy depends on several factors, such as the variety of conditions under which a task was performed, and the consequences of task performance. For example, stronger self-efficacy perceptions are likely to result from repeated successful task experiences that have been reinforced and performed under conditions of varying challenge.

Observing similar others succeed or fail at a particular activity (vicarious learning) may also affect one's self-efficacy, especially if one has had little direct experience upon which to estimate personal competence. Social persuasion can be useful in getting people to attempt or sustain certain behaviors. Physiological state when performing a task may also inform efficacy judgments. For example, indicants of anxiety, fatigue, or depression during task performance may diminish inferred self-efficacy, whereas feelings of composure, stamina, or exhilaration may enhance perceived task proficiency. Although personal accomplishments are ordinarily viewed as the most influential source of efficacy information, the relative effects of the four sources may depend on how they are patterned within a given learning context (Bandura, 1986).

An important issue involves the manner in which efficacy information is processed (Bandura, 1986; Schunk, 1989). Rather than influencing self-efficacy directly, experiential source data may be filtered via various cognitive screens (e.g., confirmatory bias), affecting the way such data are perceived, weighted, and incorporated into self-efficacy judgments. We view affective disposition as one potentially important filter through which efficacy information is distilled. For example, persons with a tendency toward high negative affect (predisposition to experience unpleasant emotional states; Watson & Clark, 1984) may differentially attend to failure information and discount success data. Thus, such persons may underestimate their capabilities, and their affective bias may serve to moderate (or distort) the effect of efficacy-relevant experience on their perceived competence. These effects of negative affect are speculative, although it is noteworthy that induced mood state has been found to influence self-efficacy estimates (Kavanagh & Bower, 1985).

Similar experiential sources may serve to inform outcome expectations. For instance, people likely anticipate future response-contingent outcomes by (a) recalling the extrinsic and intrinsic (e.g., self-evaluative) outcomes that attended their own relevant past actions (e.g., studying produced

good grades and self-approval); (b) observing the consequences experienced by similar others (modeling); and (c) attending to third-person (e.g., written) accounts of reinforcement contingencies. Additionally, Bandura (1986) suggests that outcome expectations are partially determined by self-efficacy in situations where outcomes are closely linked to the quality of one's performance.

Predictions

In order to clarify the experiential sources of efficacy and outcome beliefs, we offer three propositions:

Proposition 10. Self-efficacy beliefs derive from performance accomplishments, vicarious learning, social persuasion, and physiological reactions (e.g., emotional arousal) in relation to particular educational and occupationally relevant activities.

HYPOTHESIS 10A. Self-efficacy beliefs regarding particular career/academic activities will be positively related to the perceived amount of (a) personal success experiences, (b) exposure to successful models, (c) favorable social-persuasive communications, and (d) positive physiological reactions (e.g., relaxed state) during task performance. Self-efficacy beliefs will be inversely related to the perceived amount of personal and vicarious failure experiences and negative persuasive and physiological (e.g., anxiety) experiences, relative to particular career/academic activities.

HYPOTHESIS 10B. Direct, personal performance experiences will account for more variance in self-efficacy beliefs than will vicarious, social-persuasive, or physiological reaction experiences.

HYPOTHESIS 10C. The relation of prior performance experience to self-efficacy beliefs will be moderated by the nature and variety of conditions under which the task was performed. Successes achieved under conditions varying in level of difficulty or challenge will be more strongly related to self-efficacy than will those achieved under conditions of limited difficulty or challenge.

HYPOTHESIS 10D. Prior performance accomplishments will be more strongly related to self-efficacy when accomplishments have been reinforced than when they have not been reinforced or have been punished.

HYPOTHESIS 10E. The relation of prior performance experience to self-efficacy beliefs will be moderated by cognitive biases and distortions. For example, self-efficacy will be more predictable from performance experience among persons exhibiting low rather than high levels of negative affectivity.

Proposition 11. As with self-efficacy beliefs, outcome expectations are generated through direct and vicarious experiences with educational and occupationally relevant activities.

HYPOTHESIS 11A. Positive outcome expectations regarding particular career/academic activities will be positively related to the perceived amount of reinforcing (including self-evaluative) consequences that one has directly experienced, or ob-

served others experience, for engaging in such activities. Negative outcome expectations arise chiefly via negative direct and vicarious performance consequences.

HYPOTHESIS 11B. Outcome expectations will relate more strongly to direct, personally experienced performance consequences than to vicariously experienced consequences (i.e., observing, hearing, or reading about others' outcomes).

Proposition 12. Outcome expectations are also partially determined by self-efficacy beliefs, particularly when outcomes (e.g., successes, failures) are closely tied to the quality or level of one's performance.

HYPOTHESIS 12A. There will be a positive relation between occupationally relevant positive outcome expectations and self-efficacy beliefs.

HYPOTHESIS 12B. The relation between outcome expectations and self-efficacy beliefs will be moderated by the degree of response-outcome contingency. That is, the relation of self-efficacy to outcome expectations will be higher when outcomes are closely versus loosely tied to performance quality.

Person Factors

While social cognitive theory highlights the role of certain cognitive factors in the self-regulation of behavior, it also acknowledges the influence of other types of individual difference variables. The sheer number of potentially career-relevant person factors (e.g., see Super's, 1990, Archway Model) makes a thorough discussion of this topic difficult. We have earlier dealt with a variety of person variables (e.g., interests, abilities) that may importantly interact with self-efficacy, outcome beliefs, and goal mechanisms. We will focus here on gender and race/ethnicity, sources of individual difference that generally are considered only in cursory fashion by the major theories of career development (Osipow, 1990). We will also briefly consider the issue of genetic influence on vocational attributes.

While gender and race/ethnicity have long been the focus of career development research, until recently much of this inquiry has involved documenting simple race or sex differences in particular vocational outcomes (Hackett & Lent, 1992). Study of the specific paths through which race and sex may affect career development has been much less common, and there is continuing controversy over whether generic career theories can adequately explain the career behavior of women and minority group members, or whether gender- and culture-specific models may be required (Hackett & Lent, 1992).

While race and sex are, at one level, biological attributes, few would deny their profound psychological and social significance. In fact, much of their relevance to career development derives not from their physical presence per se, but rather from the characteristic reactions they may evoke from the social/cultural environment—as well as from their relation to the structure of opportunity within which academic and career behavior is enacted. Thus, race and sex may be viewed as socially conferred or

constructed statuses, transcending their biological properties and resulting in selective exposure to career-relevant experiences.

Cogent arguments have been made for distinguishing between sex (a biological variable) and gender (a sociocultural construction involving the psychological ramifications of sex) (Unger, 1979). Similar distinctions may be made between race and ethnicity (cf. Casas, 1984). By viewing gender and ethnicity as socially constructed aspects of experience, it is possible to emphasize those sociocultural agents that help shape the career development process, e.g., by orchestrating the learning opportunities to which particular children and adolescents are exposed, as well as the nature of the outcomes they receive for performing different activities. Hackett and Betz (1981) have illustrated, for example, how the process of gender role socialization may bias boys' and girls' access to sources of information necessary for developing strong efficacy percepts in particular, culturally sanctioned activities.

Similar psychosocial processes may help dictate the development of career-related self-efficacy and outcome expectations in persons of particular racial/ethnic groups. For example, educational access issues can influence the quality and types of learning experiences one receives, and certain cultures may selectively reinforce particular occupationally relevant activities. Personal expectations and performance standards, forged through learning experiences, may also blend with social realities to enhance or delimit academic/career options. Thus, impediments to career development may stem both from environmentally precipitated forces (e.g., differential socialization processes and opportunities for skill development) and from the internalization of these forces, e.g., via self and outcome beliefs. Conversely, beneficial social conditions (e.g., exposure to a wide range of successful role models) can facilitate skill acquisition and corresponding self and outcome beliefs.

In sum, as diagrammed in Fig. 2, we believe that the effects of gender and ethnicity on career interests, choices, and performances will be partly mediated by the differential learning experiences and consequences that give rise to self-efficacy and outcome expectations. Moreover, as Fig. 2 also illustrates, gender and cultural factors are also typically linked to the opportunity structure within which academic/career goals are framed and implemented. We will consider this important link when we turn to the effects of contextual factors in the social cognitive career model, below.

Finally, some studies suggest that there is a genetic source of influence on vocational interests (e.g., Hansen, 1984b; Moloney, Bouchard, & Segal, 1991). Such findings, emanating from the behavior genetics literature, raise important questions about the intervening paths through which genetic mechanisms may operate. In our framework, heritable attributes are included within the rubric of person inputs (see Fig. 2). We believe that basic skill potentialities, and their interaction with environmental re-

sources, may partly explain the genetic link to interests. Through socio-cognitive and behavior-genetic processes such as goal-setting, activity practice, selective exposure and reinforcement, and differential susceptibility, native aptitudes are transformed into career-relevant skills. Skill development fosters percepts of differential self-efficacy and outcome expectations which, in turn, promote particular interest patterns.

In essence, this analysis suggests that genetic effects on interest operate, at least in part, through intervening learning experiences that shape abilities and form the substrate upon which self-efficacy and outcome beliefs are based. We do not rule out the possibility that broad interest predispositions are inherited more directly; however, the expression of inherited career-relevant qualities are likely to be modulated by contextual and experiential factors (cf. Vondracek et al., 1986).

Contextual Determinants

In sketching our conception of environmental influences, we found it useful to draw upon certain ideas and constructs presented by Vondracek et al. (1986) and Astin (1984). For example, we adapted the concepts of perceived "structure of opportunity" (Astin) and "contextual affordance" (Vondracek et al.)—which share important similarities—as organizing principles in our analysis. According to Vondracek et al., "the concept of affordance centers on the idea that environments offer, provide, and/or furnish something to the organism as long as the organism can perceive 'it' as such" (1986, p. 38).

Conceptions of the environment often differentially emphasize either objective setting features or perceived aspects of the environment (Huebner & Corazzini, 1984). We believe that both modalities are important to academic and career behavior. For example, certain behavioral patterns, such as gender role stereotyping, may have palpable effects on choice goals and their implementation, whether or not they are actively perceived by the individual. However, the effect of a particular contextual factor on choice behavior often depends on the individual's appraisal and response (Vondracek et al., 1986). Supports, opportunities, and barriers—like beauty—lie at least partly in the eye of the beholder. This emphasis on personal perceptions of the environment is quite consistent with the importance that social cognitive theory places upon cognitive appraisal processes in guiding behavior. Such a view does not minimize the significance of objective features of the environment, but it does highlight the person's active, phenomenological role as the interpreter of contextual inputs.

Several writers have highlighted particular opportunity structure factors that may influence career development (e.g., see Astin, 1984; Hansen, 1984a; Mitchell & Krumboltz, 1990). For conceptual convenience, we have divided these factors into two subgroups, based on their relative

proximity to career choice points: (a) more distal, background influences that precede and help shape interests and self-cognitions (e.g., differential opportunities for task and role model exposure; emotional and financial support for engaging in particular activities; cultural and gender role socialization processes), and (b) proximal influences that come into play at critical choice junctures (e.g., personal career network contacts; structural barriers, such as discriminatory hiring practices).

These two sets of influences contain overlapping elements; indeed, certain contextual features are ever-present (e.g., family and other social inputs) and may play key roles throughout one's academic and career progression, though the nature of their influence may vary across time. In our scheme, contextual factors (a) help shape the learning experiences that fuel personal interests and choices, and (b) comprise the real and perceived opportunity structure within which career plans are devised and implemented. Certain environmental events may also exert direct, potent effects on choice formation and implementation (e.g., discrimination in hiring or promotion).

Moderating and Direct Effects of the Opportunity Structure

One function of opportunity structure variables is that they tend to enhance or constrain volitional control in the choice process. Theories of career choice and development typically prefer to envision hypothetical scenarios in which persons operate as free agents in the selection of their career paths, though they generally acknowledge, at least in broad terms, circumstances that may fetter personal choice. Career development research, likewise, tends to emphasize person-psychological variables, and to underplay the potent role of contextual factors in shaping career paths (cf. Betz, 1989; Tinsley & Faunce, 1980). While our proposed framework allows for the exercise of personal agency, it is also important to highlight those factors that serve to facilitate, restrict, or override personal volition in the choice process.

Although much remains to be learned about environmental effects on academic and career choice behavior, we believe it is reasonable to speculate about a few, potentially influential causal paths. In particular, as Fig. 2 indicates, we suspect that features of the opportunity structure (contextual influences) may moderate the relations of (a) interests to choice goals and (b) goals to actions. We had earlier posited that interests will ordinarily relate positively to choice goals and, likewise, goals will increase the likelihood of choice actions. We now qualify these predictions by suggesting that interest-goal and goal-action relations will tend to be stronger among persons who perceive beneficial environmental conditions (e.g., presence of ample support, few barriers) and weaker among those who perceive less favorable conditions.

In addition to their potential moderating role, we recognize that certain

environmental conditions can directly influence the choice process or affect the relative strength of certain cognitive determinants. For example, optimal socioeconomic and educational conditions allow people to translate their primary career interests into corresponding career goals. However, it has long been acknowledged that interests and career choices do not always coincide (e.g., Williamson, 1939). For instance, interests may be compromised in the service of economic need (cf. Vroom, 1964). Where choices are constrained by such considerations as educational background or economic necessity, career goals and actions may be influenced less by interests than by job availability, self-efficacy, and outcome expectations. As Bandura has noted, "people often choose and pursue occupations because they believe they can do them and they want the money the jobs pay. People don't choose to labor on assembly lines, in coal mines . . . because they were driven by consuming interest in these occupations" (personal communication, March 1, 1993).

Predictions Regarding Person and Contextual Influences

The following hypotheses augment, fine-tune, or clarify basic model relations; they are organized and labeled according to the major propositions presented earlier:

Proposition 1 holds that vocational interests develop largely from self-efficacy and outcome beliefs. We now add the following hypothesis:

HYPOTHESIS 1G. Gender and racial/ethnic differences in interests and in interest-goal relations arise largely through differential access to opportunities, supports, and socialization processes. Thus, such group differences will be reduced when differences in opportunity structures, support systems, barriers, and socialization practices are controlled.

Proposition 5 predicts that career choice goals tend to be consistent with one's primary vocational interests—a fairly common assumption of career choice theories. However, we now suggest that this relation may be affected by important contextual features:

HYPOTHESIS 5B. The relation of interests to choice goals will be moderated by opportunity structures (e.g., job availability, economic conditions, costs associated with occupational entry, perceived and actual barriers to entry) and support systems (e.g., financial, emotional, and instrumental support). Interest-choice goal relations will be stronger when opportunity and support are perceived to be high versus low. Conversely, these relations will be attenuated when perceived barriers (e.g., discrimination, disapproval of significant others) are high versus low.

The primary hypotheses associated with Proposition 6 posit a relation between choice goals and entry behaviors, particularly under certain goal conditions (e.g., commitment). We now supplement these basic hypotheses by considering several important person and contextual factors:

HYPOTHESIS 6C. The relation of choice goals to entry behaviors will be moderated by opportunity structures and support systems. Goal-behavior relations will be stronger when opportunity and support are perceived to be high versus low. Conversely, these relations will be attenuated when perceived barriers (e.g., discrimination, disapproval of significant others) are high versus low.

HYPOTHESIS 6D. Gender and racial/ethnic differences in career goals, actions, and goal-action relations arise largely through differential access to opportunities, supports, and attendant socialization processes. Thus, such group differences will be reduced when differences in opportunity structures, support systems, barriers, and socialization practices are controlled.

HYPOTHESIS 6E. Under conditions of limited educational or economic opportunity, occupational choices will be dictated more by job availability, self-efficacy, and outcome expectations than by interests. Thus, when perceived or actual opportunities are limited, the direct effects of self-efficacy and outcome beliefs on choice actions will be stronger than their indirect effects through interests and goals.

Propositions 10 and 11 deal, respectively, with the experiences that inform self-efficacy and outcome expectations. The following hypotheses attempt to account for the potential relation of gender and race/ethnicity to these sociocognitive variables:

HYPOTHESIS 10F. Gender and racial/ethnic differences in self-efficacy beliefs are mediated largely by differential access to sources of efficacy information and differential rates of reinforcement for performance accomplishments. Such group differences will be reduced when differences in efficacy source experiences and reinforcement are controlled.

HYPOTHESIS 11C. Gender and racial/ethnic differences in outcome expectations are mediated largely by differential access to direct and vicarious reinforcement experiences. Such group differences will be reduced when differences in the access to, or nature of, reinforcement contingencies are controlled.

REVIEW OF THEORY-RELEVANT RESEARCH

Research on social cognitive theory in career psychology, stimulated by the work of Hackett and Betz (1981), has focused largely on the role of self-efficacy beliefs in vocational and academic interest, choice, and performance. There has been relatively less inquiry on the other sociocognitive mechanisms (outcome expectations, goals) or on the interplay between cognitive, other person, and contextual factors. In this section, we provide a brief meta-analytic review of research relevant to a number of our basic model predictions. The review includes studies that specifically encompass career-relevant sociocognitive variables in adolescent and adult samples.

Table 1 presents correlations relevant to our models of interest development, choice, and performance. These coefficients represent correlations averaged over all published studies available to us at this writing. Although we did not include unpublished research or inquiry conducted apart from social cognitive theory (e.g., studies of the relation of aptitudes

TABLE 1
Intercorrelations among Measures of Self-Efficacy, Outcome Expectations, Interests,
Choice Goals, Abilities, and Performance

Measures	1	2	3	4	5	6
1. Self-efficacy ^a	—					
2. Outcome expectations	.49	—				
3. Interests ^b	.53	.52	—			
4. Choice goals ^c	.40	.42	.60	—		
5. Ability ^d	.38	.13	.20	.25	—	
6. Performance	.38	.10	.12	.06	.34	—

^a There were three general types of self-efficacy measures, involving occupational/course titles, educational requirements, or job tasks.

^b Interest measures included both expressed and inventoried interests.

^c Measures of choice goals included indices of science or math-relatedness of expressed choice, intentions regarding course enrollment, and range of occupational consideration.

^d Ability included both standardized test (e.g., ACT) scores and indices of prior achievement (e.g., high school grades).

and interests that did not also include sociocognitive variables), all correlations are based on at least three studies, with total sample sizes ranging from 339 to 1829. Each cell in the table was obtained by transforming individual study correlations into a Fisher's z and weighting the individual z s by their degrees of freedom (see Hedges & Olkin, 1985). Individual weighted z s were summed, divided by the total degrees of freedom to arrive at a mean weighted z , and then transformed back to their corresponding r s. (A list of studies and individual correlations used in these analyses are available upon request from the second author.)

Interest Model

The major hypotheses associated with Proposition 1 state that career-relevant self-efficacy (Hypothesis 1A) and outcome beliefs (1B) will relate positively to measures of vocational interests. The data presented in Table 1 largely support these hypotheses: the average weighted correlation between self-efficacy and interests (based on 13 studies) is .53 ($p < .001$) and between outcome expectations and interests (based on three studies) is .52 ($p < .001$). Thus, self-efficacy expectations and outcome expectations each appear to account for approximately 27% of the variance in vocational interests.

We also hypothesized (1C) that self-efficacy and outcome beliefs will combine additively to predict occupational interests (i.e., that a combination of self-efficacy beliefs and outcome expectations should predict vocational interests better than either self-efficacy or outcome beliefs alone). Data relevant to this hypothesis were too limited to analyze meta-analytically, but two studies provided data that were largely supportive

of this prediction (Lent, Lopez, & Bieschke, 1991, 1993). In both studies, outcome expectations explained significant variance in academic course interest after the influence of self-efficacy (and gender and ACT scores) was controlled, suggesting that a combination of self-efficacy and outcome beliefs predict interest better than does self-efficacy alone.

The major hypotheses derived from Proposition 2 state that abilities will be related to interests (2A), but that this relation is fully mediated by self-efficacy beliefs (2B). The tabled data show a small, though significant, relation between abilities and interests (Hypothesis 2A: $k = 5$, $r = .20$, $p < .01$). It is noteworthy that this correlation, based on a small set of studies from the social cognitive literature, is consistent with a larger body of findings relating aptitudes to interests (e.g., see Randahl, 1991).

A partial correlation derived from the data in Table 1 is supportive of Hypothesis 2B; i.e., the relation of aptitudes to interests is eliminated ($r = .00$) when self-efficacy is controlled, thereby suggesting that the ability-interest relation is fully mediated by self-efficacy. We should note that this and other partial correlations reported herein represent partialled average correlations rather than averaged partial correlations because so few individual studies reported data necessary to calculate partial correlations on their data sets. Although the influence of our partialling procedure on meta-analytic summaries is not fully understood at this time, where average partial correlations could be calculated, results were consistent with those reported in this paper.

Choice Model

Proposition 3 states that self-efficacy will have both a direct relation to choice goals and an indirect effect through interests. Proposition 4 makes the same predictions regarding the relation of outcome expectations to choice goals. Table 1 shows that self-efficacy beliefs ($k = 8$, $r = .40$, $p < .01$) and outcome expectations ($k = 3$, $r = .42$, $p < .01$) each relate significantly to measures of choice goals, thereby supporting Hypotheses 3A and 4A, respectively. The relation of interests to choice goals is also substantial ($k = 6$, $r = .60$, $p < .001$), supporting Proposition 5 and its major hypothesis (5A).

The data are largely consistent with expectations that much (but not all) of the influence of self-efficacy (3C) and outcome beliefs (4C) on goals is mediated by interests: the correlations of self-efficacy ($r = .40$) and outcome expectations ($r = .42$) to choice goals are substantially reduced but not eliminated when the influence of interests is partialled out (r s = .12, $p < .01$, and .16, $p < .05$, for self-efficacy and outcome beliefs, respectively). Thus, it appears that the effects of self-efficacy and outcome beliefs on goals are largely channeled through interests, but that both sets of cognitions also assert a small direct effect on goals, independent of interests. Unfortunately, the heavy reliance on college and

other privileged samples in this literature does not allow us to test assumptions about the relative effects of interests versus self-efficacy and outcome expectations under conditions of limited economic or educational opportunity.

Performance Model

Propositions 8 and 9 discuss the relations of the sociocognitive variables and abilities to performance. The meta-analytic data in Table 1 support the predictions of a direct relation between self-efficacy and academic/vocational performance indices (Hypothesis 8A: $k = 9$, $r = .38$, $p < .001$) and between ability and performance (Hypothesis 9A: $k = 8$, $r = .34$, $p < .001$). They also indicate a weak, though significant, relation between outcome expectations and performance (Hypothesis 8C: $k = 3$, $r = .10$, $p < .05$).

The hypothesized role of goals in partially mediating the relation of self-efficacy beliefs to performance (8B) could not be tested in this data set, but has been largely supported in prior reviews of the goal setting literature (see Locke & Latham, 1990). The role of self-efficacy in partially mediating the relation of ability to performance (Hypothesis 9B) was testable and was supported. Specifically, the relation of ability to performance was reduced but not eliminated ($r = .19$, $p < .01$) when the influence of self-efficacy was partialled out. Thus, ability may affect performance both directly and indirectly through its influence on self-efficacy.

Experiential Bases of the Sociocognitive Variables

Proposition 10 specifies the experiential sources of career-related self-efficacy beliefs. Three studies directly relevant to this proposition (Lent et al., 1991; Lopez & Lent, 1992; Matsui, Matsui, & Ohnishi, 1990) provide collective support for the hypothesized relations of self-efficacy to personal performance accomplishments ($r = .51$, $p < .001$), vicarious learning ($r = .20$, $p < .05$), social persuasion ($r = .28$, $p < .05$), and emotional arousal ($r = -.40$, $p < .01$) (Hypothesis 10A). They also support the expectation that performance accomplishments should be the most potent source of efficacy information (Hypothesis 10B). Several other studies have tested the specific influence of performance accomplishments on self-efficacy beliefs by experimentally manipulating subjects' success and failure at career-analogue tasks. A meta-analysis of their results, calculated by converting treatment effects into correlation metrics (Rosenthal, 1984), indicated strong effects of personal performance experiences on self-efficacy ($k = 3$, $r = .75$, $p < .001$), consistent with Hypothesis 10A.

Although too limited to analyze meta-analytically, there are some data relevant to our hypothesis (10F) that efficacy source experiences should partially explain gender differences in self-efficacy. Consistent with pre-

dictions, Lent et al. (1991) found that gender differences in math self-efficacy beliefs were eliminated when differential efficacy-building experiences were controlled. In a study of Japanese college students, Matsui et al. (1990) found that gender continued to contribute significantly to math self-efficacy after controlling for the primary sources of efficacy information. Because the latter did not report their actual data on this point, it is unclear to what extent the gender/self-efficacy relation may have been at least partially mediated by men's and women's differential experience with math-related tasks and role models. Naturally, cultural differences between the samples in these two studies need to be considered.

Finally, Proposition 12 posits that outcome expectations should be related to self-efficacy, particularly when outcomes are closely linked to the quality of one's performance. We found support for the hypothesized relation of outcome expectations to self-efficacy (Hypothesis 12A: $k = 3$, $r = .49$, $p < .01$), though the predicted moderating role of response-outcome contingencies on this relation (12B) could not be tested from the existing literature.

FUTURE DIRECTIONS FOR RESEARCH AND THEORY

Research Agenda

We highlight below a selected set of research needs stemming from the social cognitive career framework.

Model Tests

The meta-analytic review of the social cognitive career literature indicates that while a number of our basic hypothesized relations have been charted in past research, several have received little, if any, scrutiny. Some areas that deserve future inquiry, particularly because of their potential implications for career intervention, include: (a) the possible roles of self-efficacy and outcome beliefs in interest development, stability, and change (Proposition 1); (b) the connection of self-efficacy and outcome beliefs to goals (Propositions 3 and 4); (c) the relation of goal properties to career entry behaviors (Proposition 6); and (d) learning experiences that shape self-efficacy and outcome expectations (Propositions 10, 11), including factors that may bias the cognitive processing of these experiences. Although there are existing findings relevant to some of these propositions, they tend to either emanate from outside of the career literature or test certain hypotheses only indirectly.

While our framework posits a number of bivariate relations or direct effects of one variable upon another, we believe that one of its most important features is the specification of various factors that may mediate or moderate key relations. For example, we suggest that the effect of

learning experiences on career interests is mediated largely by self-efficacy and outcome belief mechanisms, and that opportunity structures moderate the strength of the relation of interests to goals and goals to actions. Although adding to the complexity of our theory, the specification of mediating factors may encourage finer-grained study of how particular variables enter the causal flow, and operate in unison with other variables, within the process of career development. The elaboration of moderating variables highlights conditions that may strengthen or weaken particular relations, indicating important qualifications of our basic predictions. These mediators and moderators offer a valuable focus for inquiry beyond the examination of more basic theoretical relations.

Indeed, there are undoubtedly a large number of conditions that may moderate the strength, or even affect the form (linear versus nonlinear), of our hypothesized relations. In responding to an earlier draft of this paper, Bandura (personal communication, March 5, 1993) pointed out that certain relations may prove to be nonlinear under particular conditions. For example, continued successful performance of a particular activity will eventually yield a plateau in self-efficacy because added performances supply redundant information about one's capabilities. As another example, once people have mastered a skill and surpassed a threshold level of self-efficacy, they may perform the skill as well as those whose self-efficacy is well above the threshold level.

These examples suggest that certain developmental considerations (e.g., level of skill practice or task mastery) may promote curvilinear efficacy/performance relations. Parsimony and extant social cognitive findings incline us to frame our hypotheses generally in terms of linear bivariate relations at the present time. However, further research is needed to help delimit the specific conditions under which our postulated relations are accurate, are strengthened or weakened, or are better characterized by alternative, nonlinear forms.

Several of our hypotheses attempt to account for the role of gender and racial/ethnic factors in career development. For instance, we posit that the effects of gender and race/ethnicity on career self-efficacy, interests, and goals may be partly mediated by certain experiential and contextual factors, such as opportunity structures and support systems. Reviewers have often observed that much of the research on women's and racial/ethnic minority members' career development lacks a clear theoretical base, and that the foundational career theories are not sufficiently articulated with respect to women and minorities (e.g., see Hackett & Lent, 1992). By positing certain paths through which gender and race/ethnicity may affect career development, we hope to encourage more systematic research, aimed at improved understanding as well as intervention and policy efforts.

As a part of our theoretical analysis, we have classified some commonly

employed dependent variables into somewhat novel conceptual categories. For example, we suggested that measures of vocational aspirations, expressed choices, and plans all represent an underlying goal dimension; that outcome expectations incorporate the concept of values; and that career-related actions or entry behaviors (e.g., enrollment in a particular training program; declaration of an academic major) are conceptually distinct from choice goals. Although these new terms, definitions, and distinctions may appear somewhat cumbersome at first blush, they are intended to provide an organizing scheme for the literature and to suggest latent dimensions that may underlie certain traditional career concepts. In any event, the validity and utility of our novel classifications deserve empirical scrutiny.

Finally, whereas correlation and regression studies are useful in assessing basic relations among our central theoretical constructs (e.g., the joint relation of self-efficacy and outcome expectations to interests), tests of our theory could benefit from research methods and designs that are capable of supporting or demonstrating causal relations. Because the theory implies ongoing, reciprocal relations among key variables (e.g., self-efficacy affects performance and vice versa), causal modeling, time series, and experimental procedures may be particularly useful. Although tests of the full models of interest, choice, and performance may not be practical in a single study, focused tests of particular hypotheses or sets of hypotheses may add cumulatively to the theory's empirical base.

Model Comparisons and Integrations

We believe the possibilities are ripe for research comparing the social cognitive framework with other career theories, examining relations among particular constructs across theories, and studying ways in which the theories might complement one another. For example, Holland (1985) hypothesized that people tend to select careers that are compatible with their interests. We build on this hypothesis by suggesting that the interest-entry behavior relation is mediated by choice goals, and that the relation of goals to actions is moderated by particular social, cultural, and material features of the environment. Thus, people may prefer options that are compatible with their interests, but interests and goals may be less likely to translate into career entry actions in the absence of environmental support. Direct comparisons of these differing views of the choice process could be useful.

Social cognitive theory could also be used to flesh out the experiential determinants of Holland's six personality types, the key mechanisms through which learning experiences promote interests, and the means by which people resolve states of incongruence with their work environments. For instance, coping efficacy (e.g., personal perceptions of one's ability to manage work task or organizational challenges) may affect one's level

of perceived congruence as well as the persistence of efforts designed to modify the work environment. Research on such possibilities may simultaneously push the boundaries of Holland's conceptualization of P-E fit (e.g., types as static entities) and add greater dimension to social cognitive accounts of career change and adjustment.

Dawis and Lofquist's (1984) theory of work adjustment (TWA) specifies that the degree of correspondence (congruence) between an individual's abilities and the ability requirements of the work setting helps to determine important work outcomes, such as job tenure. Importantly, social cognitive theory views ability as a dynamic, rather than fixed, attribute, the exercise of which depends partly on how people interpret and deploy their skills (Bandura, 1989). This raises the possibility that P-E ability correspondence is more strongly predictive of work success/tenure when people possess strong versus weak efficacy percepts, since robust self-efficacy may help maximize skill use.

As in the case of Holland's theory, the social cognitive framework may also complement TWA's view of the process by which people negotiate person-environment incongruence. We concur with TWA's view of work adjustment as a "continuous and dynamic process" (Dawis & Lofquist, 1984, p. 55) of transaction between the individual and the work setting. TWA enumerates a variety of "adjustment style" variables that are used to promote or restore an adequate state of P-E fit. For example, individuals may differ in their characteristic "activeness" in trying to shape the work environment or in their ability to tolerate discordance ("flexibility").

From a social cognitive perspective, the nature and persistence of one's efforts to cope with discordance depends partly on one's sense of coping efficacy and outcome expectations. Those who doubt their ability to affect organizational change, for example, may be less likely to mount active efforts to modify their work environment; instead, they may be more likely either to pursue reactive (self-change) strategies or to change environments. We do not rule out the possibility that dispositional factors such as "activeness" influence responses to incongruence; however, it is likely that such factors interact with more situation- and domain-specific sociocognitive mechanisms. The relative potency and interplay of these factors deserve study.

Super's (1990) theory regards learning experiences as pivotal to the development of career-related personality variables, such as interests. However, it lacks precision in its explanation of learning mechanisms. Social cognitive theory emphasizes specific learning processes and mechanisms that could serve as an adjunct to Super's more macroscopic, trait-oriented view of learning and development. Sociocognitive variables may also contribute to Super's analysis of life-career roles. For instance, role-related efficacy and outcome percepts may help explain the differential

salience of career and family roles for particular persons, as well as change in role salience over time.

Theory Expansion

In its current form our theoretical framework deals primarily with developmental tasks that occur prior to, during, and just after career entry. We have also suggested that aspects of the framework should be relevant across the career lifespan (e.g., stability or change in basic interests and in choice goals). However, it may be valuable to extend this framework in the future by adding new segmental models that treat work adjustment themes and career/life milestone issues in greater depth (e.g., occupational satisfaction, stress, and success; work/family interface; response to workplace injustices; career change; retirement adjustment).

In focusing on work adjustment as opposed to career entry outcomes, it will be necessary to conceptualize self-efficacy, outcome expectations, and goals in somewhat different terms. For example, whereas studies of academic choice might appropriately define self-efficacy in terms of perceived capability regarding a particular subject matter, long-term career adjustment requires a great variety of skills that extend beyond subject-specific competence. Hackett, Betz, and Doty (1985) have identified a number of "process" skill domains (e.g., assertion, communication, leadership) that may be of generic import to career success and advancement, and around which self-efficacy measures could be constructed. Bandura's (1986) notion of coping efficacy (e.g., perceived capability to negotiate organizational obstacles) would also seem quite relevant to workers' sense of workplace satisfaction and stress.

We had earlier noted the potential of our framework to guide inquiry on the career development of women and particular racial/ethnic minorities. However, this broad framework could be elaborated further to better capture the issues, challenges, and obstacles that especially characterize the career development of particular groups of women and minority members. In fine-tuning the model for women, for example, special consideration might be given to contextual factors, such as gender role socialization experiences, that may foster differential self-efficacy and outcome expectations in career choice-relevant domains (e.g., care-giving versus enterprising activities). Many women must also contend with special challenges to their career adjustment, such as the need to cope with work/family role conflict, sexual harassment, or "glass ceiling" obstacles.

A gender-elaborated model might highlight such challenges, noting how particular supportive or oppressive features of the interpersonal environment affect and are affected by cognitive and behavioral person factors. Eccles' (1987) model, and other models of women's career development (e.g., Betz & Fitzgerald, 1987), might be examined as a source of mechanisms that may uniquely inform understanding of women's career lives

and of gender differences in career development. Eccles, for instance, deals explicitly with sociocultural stereotypes of different activities, academic subjects, and occupational fields. She also highlights the role of socializers' gender-related beliefs and their connection to children's perceptions of self and the appropriateness of academic and career activities. Thus, her model might be used to flesh out our conceptualization of specific mechanisms (e.g., parental and teacher expectancies) through which socialization practices etch their mark on women's career/academic development.

Similarly, efforts to elaborate the social cognitive framework to account for the career development of particular racial/ethnic minority groups should consider the special circumstances (e.g., cultural socialization practices, institutionalized racism) with which members of those groups may need to contend. Developmental models of race/ethnicity/culture could be drawn upon to identify particular factors that may have a bearing on minority members' career development (cf. Atkinson & Thompson, 1992). Naturally, theory-elaboration efforts directed at women or racial/ethnic minorities will also need to consider important within-group difference factors, including contextual affordances and supports, thereby guarding against uniformity assumptions, e.g., "all women are alike" (Lent & Hackett, 1987).

CONCLUDING COMMENTS

The social cognitive models of interest development, choice, and performance presented herein are viewed as evolving constructions, subject to further empirical scrutiny. Our intent is that this framework serve the interests of theory convergence versus proliferation (see Lent & Hackett, 1994). The title of this article alludes to the goal of a "unifying" career theory. While *unified* theory can be seen as a mythical scientific end-state (Dawis, 1994), the field may nevertheless profit from efforts at *unifying* theory, i.e., the process of seeking connections among seemingly diverse theories and phenomena (Lent & Savickas, 1994). Super (1990) has characterized learning theory as the "cement" that adjoins the many segments and determinants of career development. If this is so, we hope the present perspective, which emphasizes key learning and experiential processes, may ultimately contribute to a more comprehensive, cohesive understanding of career choice, development, and adjustment.

REFERENCES

- Ajzen, I. (1988). *Attitudes, personality, and behavior*. Stony Stratford, United Kingdom: Open University Press.
- Astin, H. S. (1984). The meaning of work in women's lives: A sociopsychological model of career choice and work behavior. *The Counseling Psychologist*, *12*, 117-126.
- Atkinson, D. R., & Thompson, C. E. (1992). Racial, ethnic, and cultural variables in

- counseling. In S. D. Brown & R. W. Lent (Eds.), *Handbook of counseling psychology* (2nd ed., pp. 349-382). New York: Wiley.
- Bandura, A. (1982). The self and mechanisms of agency. In J. Suls (Ed.), *Psychological perspectives on the self* (pp. 3-39). Hillsdale, NJ: Erlbaum.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist*, *44*, 1175-1184.
- Bandura, A. (1991). Human agency: The rhetoric and the reality. *American Psychologist*, *46*, 157-162.
- Bandura, A., & Schunk, D. H. (1981). Cultivating competence, self-efficacy, and intrinsic interest through proximal self-motivation. *Journal of Personality and Social Psychology*, *41*, 586-598.
- Barak, A. (1981). Vocational interests: A cognitive view. *Journal of Vocational Behavior*, *19*, 1-14.
- Betz, N. E. (1989). Implications of the null environment hypothesis for women's career development and for counseling psychology. *The Counseling Psychologist*, *17*, 136-144.
- Betz, N. E., & Fitzgerald, L. F. (1987). *The career psychology of women*. San Diego, CA: Academic Press.
- Betz, N. E., & Hackett, G. (1981). The relationship of career-related self-efficacy expectations to perceived career options in college women and men. *Journal of Counseling Psychology*, *28*, 399-410.
- Borgen, F. H. (1991). Megatrends and milestones in vocational behavior: A 20-year counseling psychology retrospective. *Journal of Vocational Behavior*, *39*, 263-290.
- Brown, S. D., Lent, R. W., & Larkin, K. C. (1989). Self-efficacy as a moderator of scholastic aptitude-academic performance relationships. *Journal of Vocational Behavior*, *35*, 64-75.
- Casas, J. M. (1984). Policy, training, and research in counseling psychology: The racial/ethnic minority perspective. In S. D. Brown & R. W. Lent (Eds.), *Handbook of counseling psychology* (pp. 785-831). New York: Wiley.
- Dawis, R. V. (1994). The theory of work adjustment as convergent theory. In M. L. Savickas & R. W. Lent (Eds.), *Convergence in career development theories: Implications for science and practice* (pp. 33-43). Palo Alto, CA: Consulting Psychologists Press.
- Dawis, R. V., & Lofquist, L. H. (1984). *A psychological theory of work adjustment: An individual differences model and its applications*. Minneapolis: University of Minnesota Press.
- Eccles, J. S. (1987). Gender roles and women's achievement-related decisions. *Psychology of Women Quarterly*, *11*, 135-172.
- Ginzberg, E., Ginsburg, S. W., Axelrad, S., & Herma, J. L. (1951). *Occupational choice: An approach to a general theory*. New York: Columbia University.
- Hackett, G., & Betz, N. E. (1981). A self-efficacy approach to the career development of women. *Journal of Vocational Behavior*, *18*, 326-336.
- Hackett, G., Betz, N. E., & Doty, M. S. (1985). The development of a taxonomy of career competencies for professional women. *Sex Roles*, *12*, 393-409.
- Hackett, G., & Lent, R. W. (1992). Theoretical advances and current inquiry in career psychology. In S. D. Brown & R. W. Lent (Eds.), *Handbook of counseling psychology* (2nd ed., pp. 419-451). New York: Wiley.
- Hackett, G., Lent, R. W., & Greenhaus, J. H. (1991). Advances in vocational theory and research: A 20-year retrospective. *Journal of Vocational Behavior*, *38*, 3-38.
- Hansen, J. C. (1984a). Response to the meaning of work in women's lives. *The Counseling Psychologist*, *12*, 147-149.

- Hansen, J. C. (1984b). The measurement of vocational interests: Issues and future directions. In S. D. Brown & R. W. Lent (Eds.), *Handbook of counseling psychology* (pp. 99-136). New York: Wiley.
- Harren, V. A. (1979). A model of career decision making for college students. *Journal of Vocational Behavior*, *14*, 119-133.
- Hedges, L. V., & Olkin, I. (1985). *Statistical methods for meta-analyses*. San Diego, CA: Academic Press.
- Heppner, P. P., & Frazier, P. A. (1992). Social psychological processes in psychotherapy: Extrapolating basic research to counseling psychology. In S. D. Brown & R. W. Lent (Eds.), *Handbook of counseling psychology* (2nd ed.) (pp. 141-175). New York: Wiley.
- Holland, J. L. (1985). *Making vocational choices: A theory of vocational personalities and work environments* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.
- Huebner, L. A., & Corazzini, J. G. (1984). Environmental assessment and intervention. In S. D. Brown & R. W. Lent (Eds.), *Handbook of counseling psychology* (pp. 579-621). New York: Wiley.
- Krumboltz, J. D., Mitchell, A. M., & Jones, G. B. (1976). A social learning theory of career selection. *The Counseling Psychologist*, *6*, 71-81.
- Krumboltz, J. D., & Nichols, C. W. (1990). Integrating the social learning theory of career decision making (pp. 159-192). In W. B. Walsh & S. H. Osipow (Eds.), *Career counseling: Contemporary topics in vocational psychology*. Hillsdale, NJ: Erlbaum.
- Lent, R. W., Brown, S. D., & Larkin, K. C. (1986). Self-efficacy in the prediction of academic performance and perceived career options. *Journal of Counseling Psychology*, *33*, 165-169.
- Lent, R. W., & Hackett, G. (1987). Career self-efficacy: Empirical status and future directions [Monograph]. *Journal of Vocational Behavior*, *30*, 347-382.
- Lent, R. W., & Hackett, G. (1994). Sociocognitive mechanisms of personal agency in career development: Pantheoretical prospects. In M. L. Savickas & R. W. Lent (Eds.), *Convergence in career development theories: Implications for science and practice* (pp. 77-101). Palo Alto, CA: Consulting Psychologists Press.
- Lent, R. W., Larkin, K. C., & Brown, S. D. (1989). Relation of self-efficacy to inventoried vocational interests. *Journal of Vocational Behavior*, *34*, 279-288.
- Lent, R. W., Lopez, F. G., & Bieschke, K. J. (1991). Mathematics self-efficacy: Sources and relation to science-based career choice. *Journal of Counseling Psychology*, *38*, 424-430.
- Lent, R. W., Lopez, F. G., & Bieschke, K. J. (1993). Predicting mathematics-related choice and success behaviors: Test of an expanded social cognitive model. *Journal of Vocational Behavior*, *42*, 223-236.
- Lent, R. W., & Savickas, M. L. (1994). Postscript: Is convergence a viable agenda for career psychology? In M. L. Savickas & R. W. Lent (Eds.), *Convergence in career development theories: Implications for science and practice* (pp. 259-271). Palo Alto, CA: Consulting Psychologists Press.
- Locke, E. A., & Henne, D. (1986). Work motivation theories. In C. L. Cooper & I. T. Robertson (Eds.), *International review of industrial and organizational psychology 1986* (pp. 1-35). Chichester, UK: Wiley.
- Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice-Hall.
- Mahoney, M. J., & Patterson, K. M. (1992). Changing theories of change: Recent developments in counseling. In S. D. Brown & R. W. Lent (Eds.), *Handbook of counseling psychology* (2nd ed., pp. 665-689). New York: Wiley.
- Matsui, T., Matsui, K., & Ohnishi, R. (1990). Mechanisms underlying math self-efficacy learning of college students. *Journal of Vocational Behavior*, *37*, 225-238.
- Mitchell, L. K., & Krumboltz, J. D. (1984). Research on human decision making: Implications for career decision making and counseling. In S. D. Brown & R. W. Lent (Eds.), *Handbook of counseling psychology* (pp. 238-280). New York: Wiley.
- Mitchell, L. K., & Krumboltz, J. D. (1990). Social learning approach to career decision making: Krumboltz's theory. In D. Brown, L. Brooks, & Associates, *Career choice and development: Applying contemporary theories to practice* (2nd ed., pp. 145-196). San Francisco: Jossey-Bass.
- Moloney, D. P., Bouchard, T. J., Jr., & Segal, N. L. (1991). A genetic and environmental analysis of the vocational interests of monozygotic and dizygotic twins reared apart. *Journal of Vocational Behavior*, *39*, 76-109.
- Multon, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to academic outcomes: A meta-analytic investigation. *Journal of Counseling Psychology*, *38*, 30-38.
- O'Brien, K. M., Brown, S. D., & Lent, R. W. (1992). *Self-efficacy belief realism and academic performance in at-risk college students*. Manuscript submitted for publication.
- Osipow, S. H. (1990). Convergence in theories of career choice and development: Review and prospect. *Journal of Vocational Behavior*, *36*, 122-131.
- Randahl, G. J. (1991). A typological analysis of the relations between measured vocational interests and abilities. *Journal of Vocational Behavior*, *38*, 333-350.
- Roe, A. (1956). *The psychology of occupations*. New York: Wiley.
- Rosenthal, R. (1984). *Meta-analytic procedures for social research*. Beverly Hills, CA: Sage.
- Rounds, J. B., & Tracey, T. J. (1990). From trait-and-factor to person-environment fit counseling: Theory and process. In W. B. Walsh & S. H. Osipow (Eds.), *Career counseling: Contemporary topics in vocational psychology* (pp. 1-44). Hillsdale, NJ: Erlbaum.
- Sadri, G., & Robertson, I. T. (1993). Self-efficacy and work-related behavior: A review and meta-analysis. *Applied Psychology: An International Review*, *42*, 139-152.
- Schunk, D. H. (1989). Self-efficacy and cognitive skill learning. In C. Ames & R. Ames (Eds.), *Research on motivation in education, Volume 3: Goals and cognitions* (pp. 13-44). San Diego, CA: Academic Press.
- Strong, E. K., Jr. (1943). *Vocational interests of men and women*. Stanford: Stanford University Press.
- Super, D. E. (1990). A life-span, life-space approach to career development. In D. Brown, L. Brooks, & Associates, *Career choice and development* (pp. 197-261). San Francisco: Jossey-Bass.
- Tiedeman, D. V., & O'Hara, R. P. (1963). *Career development: Choice and adjustment*. New York: College Entrance Examination Board.
- Tinsley, D. J., & Faunce, P. S. (1980). Enabling, facilitating, and precipitating factors associated with women's career orientation. *Journal of Vocational Behavior*, *17*, 183-194.
- Unger, R. K. (1979). Toward a redefinition of sex and gender. *American Psychologist*, *34*, 1085-1094.
- Vondracek, F. W., Lerner, R. M., & Schulenberg, J. E. (1986). *Career development: A life-span developmental approach*. Hillsdale, NJ: Erlbaum.
- Vroom, V. H. (1964). *Work and motivation*. New York: Wiley.
- Walsh, W. B., & Betz, N. E. (1990). *Tests and assessment* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.
- Wanous, J. P., Keon, T. L., & Latack, J. C. (1983). Expectancy theory and occupational/organizational choices: A review and test. *Organizational Behavior and Human Performance*, *32*, 66-86.
- Watson, D., & Clark, L. A. (1984). Negative affectivity: The disposition to experience aversive emotional states. *Psychological Bulletin*, *96*, 465-490.

- Williamson, E. G. (1939). *How to counsel students*. New York: McGraw-Hill.
- Wood, R., & Bandura, A. (1989). Social cognitive theory of organizational management. *Academy of Management Review*, **14**, 361-384.

Received: December 4, 1992