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Worklife Across the Lifespan

Lisa M. Larson

Iowa State University, lmlarson@iastate.edu

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Keywords
educational and occupational aspirations, career choice, job search, job satisfaction, job performance, cognitive ability, personality, interests, women, diverse groups

Disciplines
Counseling Psychology | Industrial and Organizational Psychology | Multicultural Psychology | Other Education | Women's Studies

Comments
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CHAPTER 6

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An extensive literature search across the spectrum of vocational psychology was conducted using the time frame of 1991–2008 and resulted in 47 quantitative reviews (i.e., meta-analyses). First, theories of vocational psychology are presented including John Holland’s (1997) and René Dawis and Loyd Lofquist’s (1984; Dawis, 2005) theory of work adjustment person–environment fit (P–E fit) models; Lent, Brown, and Hackett (1994) social cognitive career theory; the social learning theory of John Krumboltz (1990); Donald Super’s career construction theory (Super, 1992); and L. S. Gottfredson’s (1999) circumscription theory. Next, vocational outcomes of young people (the development of interests, educational and occupational aspirations, educational achievement, and career choice) and wage-earning adults (job search, job entry, job performance, job satisfaction, career success, and mental health outcomes) are reviewed. The last two major sections concern diverse groups (women and racially and ethnically diverse groups) and individual differences (cognitive ability, personality, and interests) as predictors of vocational outcomes.

Keywords: educational and occupational aspirations, career choice, job search, job satisfaction, job performance, cognitive ability, personality, interests, women, diverse groups

Vocational psychology . . . is the behavioral study of the worklife, the study of people’s behavior in choosing, preparing for, entering, progressing in, and finally retiring from one’s life work. Each of these verbs represents a variable that ranges from negative to positive; for example “choosing” can extend from a default or accidental to a well informed, fully rational choice, and “progressing” includes regressing. And “life work” can be more than one kind of activity.

—Dawis, 1996, p. 229

Dawis’ definition of vocational psychology addresses the broad outcomes across the lifespan that includes both positive and negative outcomes, and paid and unpaid work, although paid work is emphasized. This definition emphasizes vocational psychology’s concern with processes as well as with outcomes. As the title of the chapter implies, these outcomes encompass both educational and work environments. The person predictors of vocational outcomes range from status variables, such as sex and ethnicity, to individual differences, such as interests, to more domain-specific person variables such as self-efficacy (SE). The environmental predictors range from distal variables, such as socioeconomic status (SES) or tracking in school, to proximal variables. Within industrial/organizational (I/O) psychology, proximal variables include taxonomies of the work environment (i.e., work design characteristics [e.g., job complexity], social characteristics [e.g., supervisor support], and work context characteristics [e.g., work conditions]). Within counseling psychology, the proximal variables are support (e.g., social support or parent support) or barriers (e.g., discrimination or harassment). Mediators that explain part or all of the relation between the predictor and the vocational outcome.
(e.g., SE, job stress) have been examined. Moderators that alter the relation of the predictor and the vocational outcomes were also examined (e.g., job complexity moderated the influence of SE on performance type of study [Judge, Jackson, Shaw, Scott, & Rich, 2007]).

Vocational psychology theories attempt to explain a wide range of vocational outcomes across children, adolescents, and adults. Donald Super's career construction theory (Super, 1992) concerns career development across the lifespan, whereas L. S. Gottfredson's (1999) circumscription theory emphasizes the impact of sex roles and occupational prestige on the ways in which children and adolescents ultimately narrow their career choices. The social learning theory of John Krumboltz (1990) focuses on how the person's learning experiences, shaped by the environment, impact her or his career choices and guide future career counseling. John Holland's (1997) person-environment fit (P-E fit) model presents a hexagonal structure of interests and a corresponding hexagonal structure of work environments that predict choice, satisfaction, and tenure. René Dawis and Loyd Loquhist's (1984; Dawis, 2005) theory of work adjustment (TWA) is the predominant P-E fit theory that examines the satisfaction of the employee and the satisfaction of the employer (i.e., satisfactoriness), as well as work outcomes like tenure and adjustment.

**History**

Vocational psychology has deep and enduring roots. One root is the individual difference tradition (Thorndike, 1911), in which people vary systematically on a range of traits; by knowing that information, educators could help teach each individual (Walsh & Savickas, 2005). The individual difference tradition also spawned the measurement of intelligence, followed by the measurement of interests and aptitudes at premier academic institutions like Teachers College, Columbia University. Here, James Mckeen Cattell, E. L. Thorndike, and Robert S. Woodworth mentored Harry Hollingsworth, who published the first vocational psychology textbook in 1916. Hollingsworth was also important as a mentor as well, having mentored E. K. Strong. Another critical academic institution in our history was the Carnegie Institute of Technology; it became the first institution to offer an applied psychology department and to hire a well-known applied psychologist, Walter Dill Scott, who developed the first occupational aptitude test.

A second root, the vocational guidance movement, was fueled by the transformation of an agricultural society into a manufacturing society. As people moved to the cities, there was a societal need to help educate and train young men and place them into employment (e.g., Young Men's Christian Association employment bureaus and classes). Frank Parsons (1909) emerged from the vocational guidance movement and was the first to articulate the P-E fit model that continues to dominate the field (Walsh & Savickas, 2005).

A third root in vocational psychology concerns the engagement of the pioneers of vocational psychology in both world war efforts. During World War I, offshoots of the field flourished, namely aptitude testing (Army Alpha and Army Beta group intelligence tests), the development of performance ratings of officers, and the development of qualification criteria for hundreds of military jobs (Savickas & Baker, 2005). After World War I, vocational testing exploded, leading to the development of the Strong's Vocational Interest Blank (Strong, 1927) and the predominance of the P-E fit orientation in the field. During World War II, vocational psychologists helped classify 9 million men through the Army General Classification Test (Savickas & Baker, 2005). Moreover, vocational psychologists across 30 universities generated research to study military problems. Air force psychologists were involved in selecting, classifying, and training Air Force personnel. (Donald Super was one of those psychologists.)

A fourth root in vocational psychology concerned the schism in the 1930s between applied psychologists focused on selection and adjustment, and the applied psychologists focused on vocational guidance. The former group persuaded employers that well-adjusted workers were more productive, thus shifting the lens to industry rather than to the individual (Savickas & Baker, 2005). Vocational guidance psychologists continued to focus on the individual. Besides a schism as to who the client was (industry vs. the individual), there was also a schism between applied psychologists who remained in academia and researched vocational choices of high school students and college students versus applied psychologists who worked in industry and clinics and concerned themselves with the application of psychology to business and industry. The selection and adjustment psychologists, as a group, were
ultimately excluded from joining the American Psychological Association (APA) due to being viewed as unscientific; this led them to form their own professional organization (the American Association of Applied Psychology) (Savickas & Baker, 2005). The vocational guidance psychologists, as part of the APA, remained at universities. This schism persists, with work adjustment and job selection literature quite distinct from the vocational choice literature. The final root for vocational psychology concerns the expansion of career theory in the 1950s, during which most of the predominant theories were developed and first presented.

**Organization of the Chapter**
The first section of the chapter is organized by the major theories in the field. Those that have received attention in the form of reviews or meta-analyses will receive the most attention. The next section is devoted to vocational outcomes (e.g., vocational choice) and vocational processes (vocational exploration, career decision making) that precede entry into the workforce and involve young people in educational settings (i.e., children, adolescents, and college students). The third section concerns employed adults and is organized by vocational outcomes (e.g., job satisfaction). The fourth section of the chapter will identify integrative vocational psychology reviews focused exclusively on the multicultural variables of sex, race and ethnicity, and culture. The fifth section of the chapter will be directed toward individual differences, since this area has been one of the most prolific areas of investigation. In the final section, I will identify fruitful research directions for the next generation of vocational psychologists.

**Search Criteria**
An extensive literature search was conducted using the time frame of 1991 to 2008. Three approaches were used. First, all relevant handbooks were located. Second, the search involved pairings of vocational terms with one of two terms “meta-analysis” or “review.” Third, relevant journals were searched to identify any vocational reviews or meta-analyses that might have been missed in the literature search. The literature search yielded more meta-analyses than conceptual reviews. Meta-analysis is a statistical technique that empirically condenses the effect sizes of the relation of two variables into a correlation ranging from 0 to 1. The meta-analyses that were reviewed were across multiple disciplines (e.g., counseling psychology, I/O psychology). Only correlations equal to or larger than .20 will be reported.

**Theories**

**Overview**
Theories continue to be prominent in vocational psychology and to evolve. The P-E fit theories those in which attributes of the person and attributes of the environment are complementary. The key characteristics of the person and the environment vary across these theories, and the definition of the environment varies. In these theories, the influence of the person is bidirectional. These theories assume that positive vocational outcomes occur as a result of the match between the person and the environment. René Dawis and Lloyd Lofquist’s (1984) theory and John Holland’s (1997) theory are the dominant P-E fit theories. The other dominant theory is Lent, Brown, and Hackett’s social cognitive career theory (SCCT; Lent et al., 1994). This theory is rooted in social learning theory (Bandura, 1977) and social cognitive theory (Bandura, 1982, 1986). The SCCT also involves interaction between the person and environment; in addition, the person’s actions are viewed as more than the outcome of the P-E interaction. Thus, Bandura’s social cognitive theory is embedded in triadic causality (person, environment, and actions) rather than the bidirectional causality in which one’s actions are viewed as a function of P-E fit. Self-efficacy is the determining mechanism in career-related activities. John Krumboltz’s theory, reflecting more emphasis on social learning theory will also be discussed. Two developmental theories, Super’s career construction theory and L. S. Gottfredson’s circumscription and compromise theory, will also be described, with major terms identified. Finally, sociological theories will be briefly reviewed.

The largest number of reviews was located for social cognitive career theory and reviews of SE in particular. Holland’s hexagonal structure and the congruence construct also yielded large-scale studies. Dawis’ and Lofquist’s TWA was indirectly related to much of the research that will be presented later in the chapter concerning adult outcomes, including job satisfaction, job performance, and career success. Some of Gottfredson’s constructs, particularly occupational prestige and sex role socialization, will be discussed under the section pertaining to children. Career construction theory does not lend itself as well to empirical reviews and, not surprisingly, none was found. However, several chapters were located elucidating Super’s theory.
Theory of Work Adjustment

The TWA (Dawis & Lofquist, 1984), which originated in the 1950s, is a P-E fit theory that focuses on adults in the work environment. The theory explains job satisfaction, job performance, and job tenure. The theory is derived so that the employee is at the center of the theory, with the focus placed on her or his satisfaction and adjustment on the job. The employer is also at the center of the theory, with the employer's satisfaction with the employee's performance labeled as satisfactoriness. The theory is anchored in the assumption that the employee's satisfaction and satisfactoriness intertwine to produce beneficial work outcomes for both (Dawis, 2005). The broader theory derived from TWA extends beyond work to encompass other environments and is labeled the person–environment–correspondence theory (PEC; Dawis, 2005). The PEC theory is based on a harmonious relationship (correspondence) between the person and the environment, and has been used as a unifying theory in the field (Savickas & Lent, 1994). The focus of this chapter will be on TWA, although the overlap with PEC is extensive.

The important attributes of the person are his or her needs and abilities. Needs are defined as work values and include achievement, comfort, status, altruism, safety, and autonomy (Dawis, 2002, 2005). The person's abilities are general dimensions that underlie groups of acquired skills (i.e., behavior sequences emitted in response to a task) (Dawis, 2005). The TWA theorist measures skills as to the repeatability of the behavior sequence, energy expenditure, speed of performance, and difficulty of the task. The attributes of the environment correspond with the person's needs and skills. The environment's capacity to meet a person's needs is called a reinforcer (Dawis, 2002). Reinforcers are the aspects of the task that fulfill the person's needs or meets her or his important work values (e.g., a person values achievement, and the task offers achievement). The environment's skill requirements are those skills necessary for the satisfactory execution of the job duties.

The correspondence between the person and environment predicts job satisfaction and job tenure. The theory can be used to predict the person's satisfaction with the job (satisfaction) or can be used to predict the employer's satisfaction with the employee (satisfactoriness). A person is satisfied to the extent that her or his needs and work values are met on the job. For example, if the employee values autonomy, and the job can provide sufficient autonomy, then the employee will be satisfied. Likewise, the employer is satisfied with the worker (satisfactoriness) to the extent that the employee performs the necessary job requirements. The TWA predicts outcomes derived from both satisfaction and satisfactoriness. The degree to which an employee is satisfied will determine whether the employee stays (job tenure) or quits the job. The degree to which an employer is satisfied with the employee (satisfactoriness) will determine whether the employee is promoted, transferred, retained, or fired. Other outcomes that may concern TWA scholars include productivity, profit, morale, mental health, turnover or retention rates, and accident or safety records (Dawis, 2002, 2005). Occupational choice is also an outcome, although rarely discussed (Dawis, 2002, 2005). The person examines the costs and benefits for a range of occupations; the person chooses the best fit among certain occupations and the skills required for those occupations; the person chooses the best fit among multiple options.

The TWA identifies temporal process dimensions (personality style and adjustment style) that are distinct from the more structural person and environment attributes. The first four personality style dimensions describe how people interact with the work environment over time. These personality styles are celerity or speed with which an individual initiates interaction with the environment (quickness), pace or activity level of one's interaction with the environment (intensity), the pace of interaction with the environment (cyclical, or erratic; pattern), and the sustainability of the interaction with the environment (endurance).

The remaining temporal process dimensions concern four adjustment styles that describe different ways people adjust to various degrees of dissatisfaction in a job (discorrespondence). Initially, people vary as to their flexibility, defined as the ability to tolerate a mismatch between needs and rewards. After time, the person becomes dissatisfied and tries to change either self (reactive adjustment) or job (active adjustment). Finally, perseverance is used to describe the duration of the adjustment behavior; that is, how long the person is in a state of discorrespondence.

In general, support is strong for TWA's first three propositions concerning the role of satisfaction and satisfactoriness (i.e., subjective job performance), in work adjustment (e.g., intentions to quit [negative]), and the prediction of satisfaction and satisfactoriness (Dawis, 2002). First, work adjustment at any time is indicated by concurrent levels of the
John Holland's (1997) theory continues to dominate the landscape of vocational psychology. This P–E fit theory originated by Holland in the 1950s (Holland, 1959) has shaped how many psychologists think about vocational psychology. The theory elaborates on Frank Parsons’ original idea of matching people’s skills to the job. Holland’s (1997) theory states that people search for environments that let them exercise their skills and abilities, express their attitudes and values, and take on agreeable problems and roles. Finally, behavior is determined by an interaction between the person and the environment (Holland, 1997). The assumption is that, when there is a good match between the person and the environment, people are more likely to make better vocational choices and be better adjusted.

Holland integrated theory and practice and identified six vocational personality/interests types that can adequately capture most people. Arranged around a hexagon, these six types capture each type’s characteristics, self-descriptions, and occupations, and are labeled, in order, realistic (mechanical, practical, working with one’s hands, being outdoors), investigative (scientific, analytic, problem-solving), artistic (creative, musical, originator), social (serving/helping others), enterprising (persuading/managing others), and conventional (organizing/working with data/numbers) forming a well-known acronym, RIASEC (Holland, 1997). The types are measured with a myriad of well-known assessment tools, such as the 2005 Strong Interest Inventory (SII; Donnay, Morris, Schaubhut, & Thompson, 2005) (see Swanson, 2011, Chapter 8, this volume). The theory asserts that people can be described according to the extent to which they identify with each of these six types. This results in a Holland three-letter code, in which the first letter of each type is used (e.g., RIC would represent a person whose highest score was the Realistic type followed by the next highest score, the Investigative type, followed by the third highest score, the Conventional type).

The environment can also be described by these same six types, arranged in the same hexagonal configuration. The environment’s six types are derived in two ways, based either on the preponderance of people in that work setting from a particular type (e.g., most accountants’ first letter in their Holland code is Conventional) or based on the most common activities performed in that work environment (e.g., predominant activities in an accounting firm are data management and processing). The environment is usually considered the work environment but could be the intended environment or the academic environment (e.g., academic department). Holland code types for the environment have been linked to the Occupational Information Network (O*NET). The O*NET system serves as the nation’s primary source of occupational information, providing comprehensive information on key attributes and characteristics of workers and occupations; this database can be easily accessed online.

Four theoretical assumptions in Holland’s theory are based on four diagnostic indicators: congruence, consistency, differentiation, and vocational identity. The first fundamental indicator in Holland’s (1997) theory, labeled congruence, describes the degree to which the person’s Holland code and environment’s code are similar. A highly congruent person would be someone whose three-letter Holland code matches the Holland code for the environment. The congruence index is used to determine the degree of P–E fit (see Swanson, 2011, Chapter 8, this volume).

The second fundamental indicator in Holland’s (1997) theory, labeled consistency, describes the relation of the six personality/interest types to each other. The arrangement of the six types around a hexagon, the RIASEC, is important to the theory in terms of determining consistency. A highly
consistent three-letter Holland code would be one in which three types are close to one another on the hexagon. The first letters of each of the six types are described as the RIASEC; thus, a person whose code type is ASE would be a very consistent code type because the top three scores are representing three types that are right next to each other on the hexagon.

The third fundamental indicator in Holland's (1997) theory, labeled differentiation, describes the distinctness of the personality/interest type (Spokane & Cruza-Guet, 2005). Differentiation is operationalized as the person's highest minus the lowest score among the six types, or among the three scores comprising the three-letter code (Spokane & Cruza-Guet, 2005). The most differentiated profile would be one in which the person could be described predominantly as one type on the hexagon and the least differentiated profile would be a flat profile (i.e., the person's scores across the RIASEC would be within a range of one or two points).

The final fundamental indicator, labeled vocational identity, refers to the degree to which a person has a clear “picture of one's goals, interests, and talents” (Holland, 1997, p. 5). A person with a high degree of identity would have a profile that is consistent, differentiated, and congruent. This person will likely do competent work, be satisfied and personally effective, and engage in appropriate social and educational behavior (Holland, 1997, p. 40). The theory (Holland, 1997) also allows for the work environment to be described in terms of the same parallel constructs (work environment consistency, differentiation, and identity) (Spokane & Cruza-Guet, 2005).

Many of Holland's (1997) propositions have been supported. First, six types can describe a person's work personalities or interests. Second, they are arranged in a circumplex (Day & Rounds, 1998), and this circumplex structure holds for U.S. racial and ethnic minorities (Day & Rounds, 1998). Day and Rounds (1998) found structural equivalence across samples of African American, Mexican American, Asian American, Native American, and Caucasian American groups (N = 49,450) students using the UNIACT. An analysis by Darcy and Tracey (2007) from the American College Testing database across time (grades 8, 10, and 12, N = 69,987) shows that the RIASEC order is consistent with the data, and that it is consistent for both boys and girls and across the three age periods. However, they did not find equal spacing across the RIASEC types; there was more space between realistic and conventional types and between artistic and social types, and less space between social and enterprising types. Cross-culturally, support for the circumplex model is mixed. According to Long and Tracey's (2006) analysis on 29 independent RIASEC correlation matrices across Chinese participants, Holland's circumplex model did not fit the data well, although the RIASEC ordering was present. The ordering was consistent across instrument, age (middle school, college, adult), sex, and region (mainland China, Taiwan, Hong Kong). More space than anticipated by the theory existed between realistic and conventional and between artistic and investigative. Gati's (1991) model, Rounds and Tracey's (1996), and Liu and Rounds’ (2003) modified octant rating (circumplex with eight points with an unidentified type between realistic and conventional and between investigative and artistic) fit the Chinese data better than did the six evenly spaced points on the hexagon. Rounds and Tracey (1996) examined 96 RIASEC samples from U.S. and ethnic minorities (n = 16), U.S. white European samples (n = 4), and samples from 19 countries including Australia, Brazil, Canada, Columbia, France, Guyana, Iceland, Indonesia, Israel, Japan, Malaysia, Mexico, New Zealand, Pakistan, Papua New Guinea, Paraguay, Portugal, and Taiwan. They compared the structural equivalence of RIASEC models to U.S. matrices generated from 77 RIASEC matrices reported by Tracey and Rounds (1993). Rounds and Tracey (1996) found that Holland's circular order model was not supported, but Gati's three-group partition (realistic/investigative, artistic/social, and enterprising/conventional) and the authors' alternative three-class partition (realistic/investigative, artistic, and social/enterprising/conventional) were supported. The U.S. racial and ethnic minority samples did not yield a good fit across all three models.

Support for Holland's assumption that congruence leads to better adjustment, satisfaction, and performance seems mixed. Congruence, when assessed using an index, did not significantly relate to job satisfaction in the most recent meta-analysis on the topic (Tsabar, Tziner, & Meier, 2005; N = 6557, k = 53, p = .17, which includes 0 in the 95% confidence interval [CI]). There does seem to be evidence that people who change jobs move in a congruent direction (Spokane & Cruza-Guet, 2005). The ability to make congruent choices may be mediated by adjustment variables like anxiety or depression, or by the importance a person places on identification with a group (Spokane & Cruza-Guet,
Finally, people seem to have difficulty identifying congruent occupational options, seeking congruent accurate information, evaluating options that are congruent, and engaging in effective entry behaviors (Spokane & Cruza-Guet, 2005).

Some researchers use a different way to measure congruence through continuous scores on the SII across Holland's hexagon for the P measure and educational major or occupation as the E measure. Researchers have shown interests across the RIASEC to be predictive of choice of major that is parallel or consistent with the interest profile (Gasser, Larson, & Borgen, 2007; Harmon, Hansen, Borgen, & Hammer, 1994) and choice of occupation (e.g., Ackerman & Beier, 2003; Donnay & Borgen, 1996; Donnay et al., 2005; Harmon et al., 1994).

Holland’s assumption concerning consistency (having a Holland three-letter code with the strongest types being closer to each other on Holland’s hexagon) and differentiation (spikes on Holland profile rather than a flat profile across all six types) leading to positive vocational outcomes has not been clearly demonstrated. However, one intriguing study showed in a hierarchical regression analyses, separated by sex, that the interaction of differentiation with agreeableness and conscientiousness explained statistically significant variance in work performance for men, and that the interaction of congruence with agreeableness, artistic, and social subscales was significantly related to work performance in women (Kieffer, Schinka, & Curtiss, 2004).

Social Cognitive Career Theory
Built upon Betz and Hackett’s earlier work on career SE of women in nontraditional domains, Lent, Brown, and Hackett (1994) adapted Bandura’s (1977, 1986) social cognitive theory to the vocational psychology domain. Their theory sees SE as the driving force to explain the development of interests, academic and career choice, and performance and persistence in educational and occupational pursuits (Lent et al., 1994).

The theory is anchored in the construct, SE. Self-efficacy is defined as “people’s judgments of their capabilities to organize and execute courses of action required to attain designated types of performances” (Bandura, 1986, p. 391). Lent and colleagues incorporated Bandura’s four sources of SE into SCCT. They were mastery, modeling, social persuasion, and physiological arousal (anxiety). They identified two other key sociocognitive mechanisms in their model, namely outcome expectations and goals. Outcome expectations (OE) were defined as people’s personal beliefs about probable response outcomes (Lent et al., 1994) and were classified by Bandura as physical (e.g., monetary), social (e.g., approval), and self-evaluative (e.g., self-satisfaction). Goals were defined as the determination to engage in a particular activity or to affect a particular future outcome (Bandura, 1986). For SCCT, expressed choices, career plans, decisions, occupational aspirations are all forms of goals. In SCCT, distinction is made between a choice goal (an intention to act) and a choice action (having made a selection or choice). In this model, SE is the mediator between thought and action, between knowing what to do and executing the action or choice (Bandura, 1986).

The social cognitive model in general and SCCT in particular has three key actors; namely, the person, the proximal environment, and the person’s actions. The person variables, referred to as human agency, are his or her motivational, emotional, and cognitive processes. The person’s actions include not only his academic and vocational performance but also his choices (e.g., choice of occupation) (Bandura, 1986; Lent et al., 1994). The interplay among the person’s agency, his or her actions, and the environment are dynamic and reciprocal. In this context, three vocational outcomes are prescribed, all of which are intricately linked with the other.

The first set of outcomes predicted in SCCT is the development of vocational interests. As exogenous variables, the four sources of SE are postulated to directly impact SE and outcome expectations, which in turn directly affect vocational interests. Self-efficacy and outcome expectancies are postulated to directly and indirectly affect intentions/goals, activity selection and practice, and performance attainments. Intentions/goals are thought to directly influence activity selection and practice and indirectly influence performance attainments. Activity selection and practice is thought to directly influence performance attainments. Performance attainments cycle back to influence the sources of SE (Lent et al., 1994).

The second set of outcomes predicted is career-related choice behaviors. In this model, person inputs (e.g., gender, ethnicity) and background are exogenous variables that predict learning experiences and contextual influences proximal to the choice behavior. Learning experiences are posited to impact SE and outcome expectations, which in turn directly
influence interests, choice goals, and choice actions and indirectly influence performance domains and attainments. Interests directly affect choice goals and indirectly affect choice actions and performance domains and attainments. Contextual influences that are proximal to choice behaviors are thought to moderate the relation of interests and choice goals and moderate the relation of choice goals and choice actions (Lent, 2005). Choice goals directly affect choice actions and indirectly affect performance domains and attainments. Choice actions directly affect performance domains and attainments. Performance domains and attainments cycle back to directly influence learning experiences.

The third set of outcomes predicted is performance and persistence in educational and occupational pursuits (Lent et al., 1994). In this model, the exogenous variable is ability/past performance, which directly affects SE and outcome expectations and performance attainment level. Self-efficacy and outcome expectations directly affect performance goals/subgoals and indirectly affect performance attainment level. Performance goals/subgoals are thought to directly affect performance attainment level. Performance attainment level then cycles back to directly influence future performance (Lent et al., 1994).

Four meta-analyses were located that specifically examined SCCT. The findings will be presented in order of the presentation of the three models; namely, the development of interests, then career-related choice, and then academic achievement. In all the studies, SE was domain-specific not generalized SE.

DEVELOPMENT OF INTERESTS
Regarding interest development, SE seems to strongly relate to interests when parallel content domains exist (Rottinghaus, Larson, & Borgen, 2003). In their meta-analyses (k = 60, N = 39,154), academic SE (e.g., math, art) correlated strongly with academic interests; vocational SE across the RIASEC correlated strongly with interests across the RIASEC (rs ranged from .51 to .69). Age, sex, and measure moderated the effect somewhat. Men yielded slightly higher SE-interests (SE–I) relations than did females; older versus younger samples yielded slightly higher SE–I relations, and the Campbell Interest and Skill Survey (Campbell, Hyne, & Nilsen, 1992) versus the SII yielded higher SE–I relations especially for the social, enterprising, and conventional domains. These studies were not experimental, so cause cannot be established.

Self-efficacy also appears to contribute to mathematics and/or science course interests after outcome expectancies have been partialed out (Young et al., 2004). Their meta-analyses concerned the relations of mathematics and science outcome expectancies with other sociocognitive constructs, including SE (k = 10; N = 3331). Young and colleagues reported in their review that studies using structural equation modeling consistently showed both direct and indirect effects of SE on mathematics course interests. Finally, SE has also been shown to moderately relate to career intentions, with Lent and colleagues (1994) reporting an effect size of r = .40.

Finally, there is some evidence that SE relates to the four sources of SE. Lent and colleagues (1994) in their meta-analysis of three studies presented the following effect sizes: r = .51 for mastery, r = .28 for social persuasion, and r = —.40 for emotional arousal.

In the model of the development of interests, outcome expectancies are also an important construct. Consistent with the model, outcome expectations have also been shown to relate strongly to SE (Lent et al., 1994; Young et al., 2004) and Lent and colleagues (1994) reported an effect size of r = .49, whereas Young and colleagues (2004) reported a very similar effect size for the mathematics domain of r = .45 (k = 7, N = 1208) and r = .41 (k = 4; N = 2456) for the mathematics/science domains combined. Also supporting the SCCT model, outcome expectancies have also been shown to be strongly related to interests based on these same two meta-analyses (Lent et al., 1994; Young et al., 2004).

The relation of outcome expectancy and interests was reported by Lent and colleagues to be a moderate effect size (r = .52); Young and colleagues reported a similar effect size of .54 for the mathematics/science domain across ten samples with an N of 3,331 (Note: Lent et al. did not report number of samples or sample size.) Finally, both meta-analyses reported a linkage of outcome expectancies with intentions. Lent and colleagues referred to them as choice goals (i.e., expressed choice, intentions, and range of occupational considerations) related to outcome expectancies (r = .42). Young and colleagues reported a correlation of r = .50 for mathematics outcome expectancies and course intentions (k = 4, N = 774). Young and colleagues reported in their review that studies using structural equation modeling consistently showed both direct and indirect effects of outcome expectancies on mathematics course interests. Moreover, Young and colleagues also reported across eight studies that
mathematics/science outcome expectancies and interests uniquely predicted mathematics course intentions.

Although sources of SE (i.e., mastery, modeling, social persuasion, and lowering anxiety) are postulated to increase SE (Bandura, 1986), Lent et al. (1994) identified the first three of these sources (mastery, modeling, and social persuasion) as impacting outcome expectancies, in that they provide the reinforcing consequences that lead a person to expect more positive outcomes in the future. Young and colleagues reported evidence \( (k = 3, N = 391) \) that mathematics outcome expectancies did relate moderately to perceived mastery in mathematics \( (r = .48) \), modeling \( (r = .41) \), social persuasion \( (r = .50) \), and anxiety \( (r = -.47) \). Although the model presumes that mastery would be the strongest source among the four sources, Young and colleagues did not find differential effect sizes across the four sources in relating to mathematics outcome expectancies.

Although the theory presents SE as partly determining the development of interests, some empirical evidence has emerged that suggests the pathway is bidirectional. That is, SE may be partly determined by interests. First, the reciprocal relation of SE and interests has been demonstrated (Nauta, Kahn, Angell, & Cantarelli, 2002; Tracey, 2002). Second, interests are in part inherent traits, with at least 40%-50% of the variance being genetic (e.g., Betzworth et al., 1994; Gottfredson, 1999; Moloney, Bouchard, & Segal, 1991; Waller, Lykken, & Tellegen, 1995). Third, interests appear stable over many years (Hansen & Swanson, 1983; Low & Rounds, 2007; Rottinghaus, Coon, Gaffey, & Zytwowski, 2007; Strong, 1955; Swanson & Hansen, 1988). Furthermore, in a meta-analysis \( (k = 66, N = 23,665) \), Low, Yoon, Roberts, and Rounds (2005) provided convincing evidence that interests remain relatively unchanged in adolescence and increased dramatically during the college years, and then remained stable for the next two decades. Stability was measured using both rank order and profile correlations. Interests, in part, motivate people to seek out activities in their environment and avoid other activities in their environment and determine if, whether, and to what extent efficacy in some domains develop. Silvia (2006) sees initial interest (distinct from interests) as an emotion that, through attributional processes and key variables of task difficulty, interacts over time to create enduring interests. He argues for more experimental research (e.g., Silvia, 2003) testing under what conditions confidence may elicit interests and what psychological processes (e.g., attributional processes) may be involved.

**CAREER-RELATED CHOICE**

The second model concerns the prediction of career-related choices. Lent and colleagues (1994) in their meta-analyses reported that choice goals were moderately related to SE \( (r = .40) \), outcome expectations \( (r = .42) \), and interests \( (r = .60) \). Young, and colleagues (2004) showed mathematics/science outcome expectancies to be moderately related to intentions \( (r = .50) \). Across several studies, Young and colleagues (2004) also reported that outcome expectancies are unique predictors of course intentions above and beyond SE, and that outcome expectancies may mediate the relation of SE and course intentions. Young and colleagues also showed evidence that course interests directly affected course intentions after other sociocognitive variables were controlled.

Besides the meta-analyses, multiple studies have shown SE to be predictive of choice of major (e.g., Larson, Wei, Wu, Borgen, & Bailey, 2007), occupation (e.g., Betz et al., 2003; Rottinghaus, Betz, & Borgen, 2003), and educational aspirations (e.g., Rottinghaus, Betz, et al., 2003; Rottinghaus, Lindley, Green, & Borgen, 2002). Likewise, researchers have shown interests to be predictive of choice of major (Gasser et al., 2007; Harmon et al., 1994) and choice of occupation (e.g., Ackerman & Beier, 2003; Donnay & Borgen, 1996; Donnay et al., 2005; Harmon et al., 1994). Self-efficacy combined with interests has also been shown to be predictive of choice of major (e.g., Betz, Harmon, & Borgen, 1996; Larson, Wu, Bailey, Borgen, & Gasser, 2010) and occupation (e.g., Betz et al., 1996, 2003; Donnay & Borgen, 1999). The SCCT theory postulates that SE is domain specific. Consistent with the theory, a number of studies have consistently shown evidence that specific versus general RIASEC domains of SE and interest domains of SE and confidence are significantly more predictive of career-related goals and choice actions such as educational major, choice of occupation, and educational aspiration (e.g., Betz et al., 2003; Donnay & Borgen, 1996, 1999; Gasser et al., 2007; Larson, Wu, et al., 2010; Rottinghaus et al., 2002; Rottinghaus, Betz et al., 2003).

**ACADEMIC PERFORMANCE ATTAINMENT**

The third model concerns academic performance. Self-efficacy appears to significantly predict academic performance \( (r = .34) \) based on Multon,
Brown, and Lent’s (1991; \( k = 18, N = 1,194 \)) findings. Moderators revealed that the relation was stronger for younger versus older students, for lower versus high-complexity tasks, and for subject versus standardized tests. Finally, the relation was strong for post-test rather than pretest measurement of SE. Young and colleagues’ meta-analytic findings concerning subsequent mathematics grades are consistent with Multon and colleagues findings. Young and colleagues reported an effect size of .24 for outcome expectancies and subsequent mathematics grades. Studies examining the unique contribution of outcome expectancies after SE has been controlled for have found that only SE uniquely contributes to subsequent academic achievement (Lent, Lopez, & Bieschke, 1993; Tilley, 2002).

Other Theories

SOCIAL LEARNING THEORY OF CAREER CHOICE AND COUNSELING

John Krumboltz’s social learning theory of career decision making and counseling (Krumboltz, Mitchell, & Jones, 1976; Mitchell & Krumboltz, 1990, 1996) focuses on how individuals learn from interactions with the environment in making career choices. It also tries to address the origin of career choice. The emphasis is on instrumental learning (reinforcement and punishment) and associative learning (a neutral stimulus is paired with an emotionally laden one). Mitchell and Krumboltz (1996) outline four factors that influence a person’s career path. The first factor that influences career decision making by interacting with the environment is the person’s innate genetic endowment and any special abilities the person may possess. The second factor that influences career decision making is environmental conditions and events, broken up into 12 categories: job opportunities, social policies, rewards for some occupations, labor laws, physical events, natural resources, technological developments, changes in social organization, family training and resources, educational system, neighborhood influences, and community influences. The third and most important factor influencing career decision making has to do with learning experiences (i.e., instrumental and associative learning). Instrumental learning includes antecedents (e.g., innate ability and environmental conditions), covert and overt behaviors, and immediate or delayed consequences. Associative learning occurs when two stimuli are paired (e.g., smiles become associated with approval). The fourth factor in career decision making is called task approach skills (i.e., skills one brings to a task, such as expectations about performance, work habits, emotional responses).

These four factors (innate abilities, environmental conditions, learning experiences, and task approach skills) interact over time to result in generalizations about self (self-observation generalizations) and the world (worldview generalizations). Six hypotheses predict a person’s preference for (or avoidance of) an occupation to the extent that she or he has: succeeded (or failed) at tasks typical of the occupation; role models have been reinforced (or not reinforced) for those activities; and someone has spoken positively (or negatively) to him or her about that career (Mitchell & Krumboltz, 1996).

CAREER CONSTRUCTION THEORY

The career construction theory (Super, 1992; Super, Savickas, & Super, 1996) covers career development across the lifespan. In this theory, the person’s own subjective meaning of their experiences moves to the forefront in the form of the narrative. People are believed to construct their careers by imposing meaning on their vocational behaviors and occupational experiences. These constructions are elicited from the career counselor in the form of stories or narratives (Savickas, 2005).

Three key constructs to be gleaned from the person’s narrative are his or her vocational personality, life themes, and career adaptability. One’s vocational personality is the objective and subjective P-E fit. The objective P-E fit concerns the information gleaned from the range of career assessments regarding the person and the environment (e.g., Holland code, classification of occupation according to Holland’s RIASEC). The objective P-E fit includes the individual’s career-related needs, abilities, values, and interests (Savickas, 2005). The subjective P-E fit encompasses theideographic personal ideas about the self, work, and life. One’s vocational personality concerns the “what” regarding vocational development.

People’s life themes, referred to as the “why,” are their ideas of the kind of people they are, the way in which their preferred or current occupations reflect their self-concepts, and the way in which work is reflective of the self. Vocational development is the process of trying to improve the P-E fit, express the self, and give back to the community (Savickas, 2005).

Career adaptability is defined as how people construct their careers. It consists of the attitudes, behaviors, and competencies a person uses in fitting the self to work that suits the person. In this theory,
the interaction of P–E fit is emphasized; that is, the coping process. Savickas sees career adaptability as a “psychosocial construct that denotes an individual’s readiness and resources for coping with current and imminent vocational development tasks, occupational transitions, and personal traumas” (Savickas, 2005, p. 51).

To be career adaptive, Savickas (2002, 2005) identifies four dimensions that must be addressed: becoming concerned about one’s future as a worker, increasing personal control over one’s vocational future, displaying curiosity by exploring possible selves and future scenarios, and strengthening confidence to pursue his or her aspirations. Career concern, the first dimension, incorporates planfulness and foresight into career planning by having the individual connect the past to the future, by being optimistic and future oriented. Career control, the second dimension, means the person and others believe he or she is responsible for constructing his or her career. Career curiosity, the third dimension, means the person is inquisitive about options and explores the fit between self and the world of work. Career confidence, the final dimension, reflects anticipation of success in encountering challenges and overcoming obstacles. Savickas (2005) provides an excellent case study example in which the reader can see an illustration of how a career counselor examines one’s vocational personality, life themes, and career adaptability by engaging in a person’s narrative. The counselor becomes an active player in helping to shape the narrative.

Savickas (2002) elucidates propositions of Super’s theory, which emphasizes individual development rather than an individual difference view. The first three propositions anchor the theory in developmental contextualism; that is, that people construct their careers within a particular context. Life space is defined as a set of social roles. One’s occupation is seen as a core role for most people. Career pattern is defined as a sequence and duration of work positions determined by parents, person’s education, abilities, traits, self-concepts, and adaptability in transaction with opportunities presented by society (Savickas, 2002).

The next propositions integrate the individual difference tradition into the model. The theory states that the variation across people’s attributes, such as ability, interests, and values, and the diversity across occupations and occupational requirements ensure considerable variation as to which occupations people seek out. Occupational success depends on the extent to which the person finds the work role an adequate outlet for his or her predominant vocational characteristics.

The next propositions concern the development of vocational self-concepts defined as “symbolic representations that are personally constructed, interpersonally conditioned, and linguistically communicated” (Savickas, 2002, p. 161). The propositions concerning vocational self-concepts are as follows. Job satisfaction depends on the degree the person has implemented his or her vocational self-concepts. The process of career construction is developing and implementing vocational self-concepts in work roles. Self-concepts develop through interaction. These vocational self-concepts become increasingly stable, although they can change with time and experience.

The last set of propositions concerns the progression of developmental tasks across time. People experience a maxicycle of career stages across time, labeled as periods of growth, exploration, establishment, management, and disengagement. Each stage is subdivided into periods marked by vocational development tasks that are social expectations. Minicycles of the stages occur when moving from one stage to the next. Vocational maturity is a psychosocial construct that denotes the degree of development along the stages. Crites (1978) defined vocational maturity as five attitudes about career decision making; namely, decisiveness, involvement, independence, orientation, and compromise. One proposition defines career adaptability (i.e., how one constructs a career). Career construction is prompted by vocational development tasks and produced by responses to these tasks (Savickas, 2002).

The theory’s scholars have generated some research and attracted a number of practitioners. No meta-analyses or recent conceptual reviews of the theory were located. The propositions of the theory have received some support using data post hoc. Scholars agree that the theory does a good job of describing vocational development and does capture, after the fact, the integration of empirical data (Savickas, 2002).

**OCCUPATIONAL CIRCUMSCRIPTION AND COMPROMISE THEORY**

Occupational circumscript and compromise theory (L. S. Gottfredson, 1996, 1999) “focuses on how young people gradually come to recognize and deal with or fail to deal with the array of vocational choices their society provides” (L. S. Gottfredson, 2005, p. 71). Key concepts in the theory include...
self-concept (i.e., one's public and private view of self [L. S. Gottfredson, 2002]), images of occupations (i.e., occupational stereotypes), cognitive maps of occupations (sex type by prestige level, organization of occupations [L. S. Gottfredson, 2002]), compatibility (P-E fit), accessibility of occupations (realistic and available occupations), occupational aspirations (joint product of compatibility and accessibility), and social space (range of alternative within the cognitive map that person considers acceptable [L. S. Gottfredson, 2002]). Circumscription is the process by which youth narrow their range or zone of acceptable alternatives (L. S. Gottfredson, 2002). Compromise is the process by which youth give up their most preferred choices for less compatible choices that they perceive as more accessible (L. S. Gottfredson, 2002). Gottfredson also identified four stages corresponding to preschool (orientation to size and power), elementary school (orientation to sex roles), middle school (orientation to social valuation), and high school and beyond (orientation to internal, unique self).

Gottfredson's model has generated research particularly concerning occupational prestige and sex role socialization in children and adolescents (L. S. Gottfredson, 1999, 2002, 2005). Some researchers have found evidence supporting circumscription, while other researchers have found evidence that does not support compromise (L. S. Gottfredson, 2005). More research is needed that yields contrasting hypotheses for this theory in contrast with other theories such as social cognitive theory (L. S. Gottfredson, 2005). The literature search did not yield reviews or meta-analyses.

SOCIOLOGICAL THEORIES

Sociological theories of vocational choice development emphasize societal factors that directly and indirectly impact socioeconomic inequality and mobility. Examples include occupational prestige, parents' SES, parents' education, and structural features of secondary course preparation, like college tracks versus vocational tracks. These societal factors are moved to the foreground while person variables are in the background (Johnson & Mortimer, 2002). Occupational choice became of interest to sociologists as a context for studying intergenerational mobility. Over time, sociological theories that tried to explain how the prestige level of different occupations differs across people have incorporated sex, ethnicity, community size, number of siblings, and family of origin features. Discrimination of women and racial and ethnic minorities has been incorporated into understanding the attainment process.

The strength of sociological approaches to career choice and development has been the central role of the social context outside the person as impacting the process. Some of the most important social contexts include cross-national differences in the structure of education and work (e.g., U.S. youth receive general high school diplomas vs. German youth, who are tracked to either the university or apprenticeships), structural features of schools (e.g., inequities in access to college preparation courses, differential learning due to tracking, quality differences in schools), and structural features of organizations (e.g., formal hiring procedures vs. informal procedures result in more or less hiring of racial and ethnic minority workers). Sociological factors thought to influence occupational attainment include the family (SES, occupation, work values, conditions of employment, and access to opportunities), adolescent employment, and community labor market conditions.

In the next section, the literature has been organized by vocational outcomes (e.g., vocational choice) and vocational processes (e.g., career decision making) that precede entry into the workforce. The population of interest includes children, adolescents, and college students.

Vocational Outcomes and Processes of Young People

The description of the history of vocational psychology already mentioned the split between vocational guidance of adolescents and college students and the work adjustment of employed adults. The literature concerning adolescents and college students focused on the processes and outcomes preceding entry into the workforce. The setting is the educational environment, with the majority of the samples being high school students and college students. The outcomes evolve as the child matures. The development of vocational interests, educational aspirations, and occupational aspirations are salient beginning in childhood. Educational attainment for all levels of schooling sets the stage for subsequent education and career advancement and hence is a salient vocational outcome. In college, choice of educational major and tentative career choice are important outcomes. The processes include the precursors to those aspirations, achievement, and choices, including exploration and the decision-making process. In the past 10 years, enough studies
have been directed toward children so that several conceptual reviews have organized this literature (Hartung, Porfeli, & Vondracek, 2005; Watson & McMahan, 2005). Vocational outcomes will be presented first, including the development of interests, educational aspirations, occupational aspirations, educational achievement, and vocational choice. Vocational processes will be presented last, including career exploration and awareness, career decision making/career maturity, and decision making styles.

Vocational Outcomes

DEVELOPMENT OF INTERESTS

Given the enormous attention interests have received in vocational psychology, little work has focused on the interests of children, with notable exceptions (e.g., Tracey, 2002). Some evidence shows that there are few differences across U.S. racial and ethnic groups in terms of structure, stability, and content of interests for middle school students (Davison-Avié & Spokane, 1999) and high school students (Day & Rounds, 1998; Day, Rounds, & Swaney, 1998). The hexagonal structure of interests posited by Holland’s (1997) theory emerges more clearly for college students than for elementary and middle school students (Tracey & Ward, 1998). Socialization and occupational gender stereotyping appear to influence the occupations children prefer (e.g., Oppenheimer, 1991) and the extent to which those interests are traditionally feminine or masculine (e.g., Barak, Feldman, & Noy, 1991). Tracey (2002) showed that self-perceived competence in an activity predicted level of interests in that activity. The reverse was also true; level of interests predicted perceived competence in the activity. Denissen, Zarrett, and Eccles (2007), in a longitudinal study of 1,000 children between grades 1 and 12, showed a similar linkage between interests in English, math, science, sports, and instrumental music and self-perceived competence in those subjects. They provided evidence that the correlation increased over time, which they referred to as longitudinal coupling.

EDUCATIONAL ASPIRATIONS

Educational aspirations are defined as the impressions formed about academic abilities and the highest level of education an individual would like to attain (Rojewski, 2005). They are strongly related to occupational aspirations, seem stable from eighth grade on (Rojewski & Kim, 2003), and are thought to be the bedrock of occupational choice (Rojewski, 2005). Educational aspirations appear to influence career choice because the higher the educational aspiration, the more opportunities are available to obtain a higher educational degree, which in turn increases occupational opportunities. These educational aspirations do not simply concern postsecondary aspirations but concern aspirations in middle school and high school to pursue college-bound math and science courses. Educational achievement likewise opens (or closes) doors of opportunity, which, in turn, leads to higher (or lower) educational and occupational aspirations. Rojewski and Yang (1997), for example, showed that achievement in grade 8 had a modest positive influence on occupational aspirations. In a sample of adolescents sampled first in eighth grade and then 2 years after high school graduation, two results were clear from their structural equation modeling. The students’ occupational aspirations 2 years after high school were influenced more by academic achievement and educational aspirations in grade 8 than by anticipated occupational attainment in grade 8 (Rojewski & Kim, 2003).

OCCUPATIONAL ASPIRATIONS

Occupational aspirations can be defined as an individual’s expressed career-related goals or choices (Johnson, 1995). Current aspirations predict future occupational aspirations and occupational choices. E. K. Strong, Jr., as early as 1955 showed that occupational aspirations of first-year college students predicted occupational attainment 19 years later (r = .69). Aspirations have been differentiated from occupational expectations, which reflect what occupations people realistically expect to enter. Gottfredson’s theory (L. S. Gottfredson, 1999, 2002, 2005) identifies two processes, circumscription and compromise, which account for the discrepancy between aspirations and expectations. Aspirations may be compromised when people do not feel they have the ability to be successful, think the educational requirements are out of reach, believe their aspirations are not supported by family or friends, or perceive barriers regarding entry into or success in their occupational aspirations (Rojewski, 2005).

Several theories account for the development of occupational aspirations. Super’s stage of career exploration is characterized by a gradual narrowing of career options from fantasizing to identifying tentative options (Super, 1992). Social cognitive career theory does not explicitly address occupational aspirations; rather, it identifies career goals and initially focuses on the development of interests. Holland’s (1997) vocational typology identifies six clusters of work environments (realistic, investigative, conventional, social, enterprising, and artful) that are associated with individuals’ interests. This typology provides a framework for understanding how interests may be translated into occupational choices. Holland’s theory shows that there are few differences across racial and ethnic groups in terms of structure, stability, and content of interests for middle school students (Davison-Avié & Spokane, 1999) and high school students (Day & Rounds, 1998; Day, Rounds, & Swaney, 1998). Vocational outcomes will be presented first, including the development of interests, educational aspirations, occupational aspirations, educational achievement, and vocational choice. Vocational processes will be presented last, including career exploration and awareness, career decision making/career maturity, and decision making styles.
goals and educational goals, which are dynamically impacted by SE, outcome expectancies, and interests as well as past performance attainments. Circumscription and compromise theory (L. S. Gottfredson, 2002) purports that children compromise their “ideal” aspirations by incorporating the salient barriers and reality of their situations to achieve an accessible realistic expectation. The circumscription process occurs when expectations are narrowed by eliminating options that do not fit with people’s occupational self-concepts. These processes begin in the early stages, incorporating prestige and sex role stereotyping. Sociological theories posit that the link between occupational aspirations and occupational attainment are determined more by social forces (e.g., SES) than by personal forces (e.g., ambition) (Rojewski, 2005).

Occupational aspirations appear to develop in early childhood and become more realistic and stable over time (Rojewski & Kim, 2003; Rojewski & Yang, 1997). Studies have shown that half of children aged 8 and 11 years old reported stable aspirations 8 months later (Trice, 1991; Rojewski, 1997). Change is also common, and most often occurs within the same prestige level (e.g., doctor to lawyer or plumber to electrician) rather than higher or lower prestige (e.g., McNulty & Borgen, 1988). If aspirations across prestige levels occur, the change seems more likely to be from lower to higher prestige (Rojewski, 2005).

Sex, race and ethnicity, SES, and miscellaneous variables have been investigated as influencing occupational aspirations. Across multiple studies, sex continues to emerge as impacting occupational aspirations (Rojewski, 2005). It seems that children as young as age 4 report sex-based occupational preferences (Trice & Rush, 1995). Fantasy aspirations for girls compared to boys increased more proportionally from second grade (10% more) to 12th grade (20% more) (Helwig, 1998a, b, 2001, 2004). Females were more likely to have high- and low-prestige aspirations, whereas males were more likely to aspire to moderate-prestige jobs (see Rojewski, 2005). Despite higher aspirations, females’ actual career expectations may not be consistent with those high aspirations. For example, females may restrict their range of potential occupations at an early age and may narrow their expectations downward over time (e.g., Hansen, 1994; Wahl & Blackhurst, 2000). Likewise, it appears that girls’ aspirations and expectations may diverge, such that their aspirations are high while their actual expectations are more traditional across both Hispanic (Arbona & Novy, 1991) and Caucasian girls (Arbona & Novy, 1991; Davey & Stoppard, 1993).

The literature regarding ethnicity has shown mixed results when other variables are not controlled (see Rojewski, 2005). It may be that SES or sex is a more powerful predictor than ethnicity regarding occupational aspirations (Arbona & Novy, 1991; Rojewski, 2005). For example, Arbona and Novy (1991) showed no differences across Hispanics and Caucasians, but did find sex differences, with girls having more social and conventional occupational aspirations whereas boys had more realistic and investigative occupational aspirations. Socioeconomic status was reported to moderate the effects of race/ethnicity on occupational aspirations (Rojewski & Yang, 1997).

A longitudinal study by Cook, Church, Ajanaku, and Shadish (1996) looked at career expectations and career aspirations over time of African American inner-city boys and Caucasian boys, sampling the children at second, fourth, sixth, and eighth grades. As the inner-city African American boys group (n = 110) aged, the gap widened between their own occupational aspirations and career expectations whereas boys had more realistic and investigative occupational aspirations. Sociological theories posit that the link between occupational aspirations and occupational attainment are determined more by social forces (e.g., SES) than by personal forces (e.g., ambition) (Rojewski, 2005).

Across multiple studies, higher SES is directly or indirectly related to higher educational and occupational aspirations (e.g., Rojewski & Yang, 1997; Wahl & Blackhurst, 2000). A host of other variables have also been examined as to their influence on occupational aspirations. One variable that has consistently emerged is the role of the parents and families. Barber and Eccles (1992) showed that maternal employment, family processes, and parental expectations directly affected adolescents’ values, self-concept, and achievement, which in turn, influenced educational and occupational aspirations.

**EDUCATIONAL ACHIEVEMENT**

The successful progression of children, adolescents, and college students through school and college is an important vocational outcome. Several clear predictors within the child (i.e., person predictors) have emerged in this literature. Cognitive ability appears to be a potent predictor of educational achievement (Benbow & Stanley, 1996; Snow, 1996). A recent meta-analysis examined graduate business students’ academic success. The predictors were undergraduate grade point average (GPA) and...
the aptitude test required for graduate degrees in business schools, the Graduate Management Admission Test (GMAT) (Kuncel, Crede, & Thomas, 2007). They showed that both predictors combined contribute unique and substantial variance in predicting first-year graduate GPA and overall GPA of graduate students. In a meta-analysis of 58 studies with German-speaking samples, the Big Five personality factor conscientiousness was positively related to academic grades (Trapmann, Hell, Hirn, & Schuler, 2007). This finding is similar to the meta-analysis conducted by Barrick and Mount (1991) that showed conscientiousness to be the only Big Five factor related to job performance. None of the other Big Five factors related to educational achievement. The meta-analyses concerning the social cognitive career theory by Lent and colleagues (1994) presented earlier in the chapter showed that SE (MULTON et al., 1991) and outcome expectancies (Young et al., 2004) were predictors of educational achievement. However, it appears that outcome expectancies do not predict academic grades in analyses in which SE is entered first in the regression equation (Lent et al., 1993; Tilley, 2002). In sum, cognitive ability, prior educational success (i.e., GPA), conscientiousness, and SE seem substantial contributors of educational attainment.

Besides person predictors, the role of parental involvement in educational achievement has been sufficiently researched to warrant several meta-analyses. Fan and Chen (2001), across 25 studies, found parental involvement overall (i.e., collapsing aspiration for child’s education, communication, supervision, participation, and other) related ($r = .25$) to academic achievement (i.e., collapsing specific subject grades, GPA, combined grades). The specific parental involvement dimension of parental aspirations/expectations for child’s education, in particular related to academic achievement ($r = .40$), whereas parental home supervision (e.g., rules concerning television watching and homework) did not relate ($r = .09$). Also, parental involvement overall was moderately related to general achievement like GPA ($r = .33$) and only somewhat related to achievement in specific domains ($r$ ranges from .15 to .18) (Fan & Chen, 2001).

Rosenzweig (2001), examining 34 studies and 438 independent findings, found that seven positive parenting practices, when combined, accounted for 16.3% of the variance in educational attainment defined as standardized achievement tests, grades, GPAs, teacher tests and ratings, and orientation toward school. These seven practices were each significantly related to educational attainment: aspirations and grade expectations ($r = .29, 50$ findings); parent engagement (i.e., interested and knowledgeable about child’s life, spending time with child, active involvement, monitoring progress, positive attention to child-rearing) ($r = .19, 25$ findings); authoritative parenting (i.e., being demanding and yet responsive to children’s needs and requests, showing warmth, clear standards, encouraging verbal exchanges, social responsibility, psychological autonomy) ($r = .20, 22$ findings), autonomy support (i.e., degree to which parents value and use techniques that encourage independent problem solving, choice, and participation in decisions) ($r = .23, 12$ findings), emotional support (i.e., showing personal love and compassion, initiating and receiving positive physical contact with child, accepting child for who she or he is) ($r = .28, 6$ findings), providing resources and learning experiences (i.e., establishing and supporting a positive learning environment at home, cultural enrichment) ($r = .25, 10$ findings), and specific parent participation activities in school (i.e., participating in decision making councils or frequency of participation in volunteer activities at the school) ($r = .32, 6$ findings).

Significant moderators included SES, grade level, and ethnicity. Socioeconomic status (low, middle, high, mixed) was influential for high and low levels but less so for the middle level (Rosenzweig, 2001). The relations of school success with the following parent involvement variables were significantly stronger for the low-SES children compared to other levels: parent participation in school, emotional support, aspirations for educational attainment, engagement, and providing resources and learning experiences. The relation of educational attainment and authoritative parenting was significantly stronger for high-SES children. The relation of educational attainment and parental engagement was significantly higher for middle-class children. Grade level (elementary, middle, and high school) was also a significant moderator. The relation of educational attainment and the seven positive parenting practices was strongest for the elementary level, weaker for the middle school level, and lowest for the high school level. Finally, ethnicity (white, African American, Asian American, Latino American, and other) emerged as a significant moderator. Only five of the seven positive parenting practices emerged as significant in a regression equation for Asian American and Latino American students: parental engagement, authoritative parenting, parent participation in school, aspirations for educational attainment and grade expectations, and providing...
people choose, and remain in, and are satisfied with their occupations for reasons other than congruence” (Phillips & Jome, 2005, p. 131). The point is that congruence accounts for very little explanatory power in why people choose and remain in their jobs.

Gottfredson’s theory (L. S. Gottfredson, 1999, 2002, 2005) assumes that occupational choice comes about through a process, whereby occupational prestige and sex role stereotyping over time result in a narrowing of occupations under consideration. This theory has received mixed support (Phillips & Jome, 2005). People do share similar cognitive structures of the occupational world. Constructs of sex-role stereotyping, occupational prestige, and interests have been shown to be important in career choice (e.g., Leung & Plake, 1990). However, sex-based stereotypes appear to be learned earlier than posited in the theory (e.g., Henderson, Hesketh, & Tuffin, 1988). Also inconsistent with the theory is that girls perceive more flexibility than boys in the gender tradition of occupations they consider (e.g., Henderson et al., 1988). Moreover, occupational alternatives seem to expand rather than narrow over time, which is also inconsistent with the theory. One difficulty that may account for some of the mixed findings concerns the inability to untangle some levels of prestige, sex roles, and interests (Phillips & Jome, 2005). For example, it is hard to identify high-prestige, traditionally feminine occupations across the six Holland types.

Social cognitive career theory has received considerable support in the prediction of vocational choice. High scores on SE measures for the six Holland types have been shown to discriminate among educational major choices (Betz et al., 1996; Larson et al., 2007; Lent, 2005) and among occupational choices (e.g., Donnay & Borgen, 1999; Lent, 2005). Basic dimensions of confidence have also been shown to differentiate educational major choice (Rottinghaus, Betz, et al., 2003) and occupational choice (Betz et al., 2003). Interests have long been shown to discriminate among educational major choices (e.g., Rottinghaus et al., 2002) and occupational choice (e.g., Donnay & Borgen, 1996; Harmon et al., 1994). Self-efficacy and outcome expectancies have also been shown to relate to career choice partly through interests (Lent, 2005).

SUMMARY

It is clear that social cognitive constructs, predominantly SE, are being widely researched as outcomes and as predictors. Self-efficacy is predicted by the

VOCATIONAL CHOICE

Vocational choice can be defined as a decision to choose a particular educational major, a particular job, or a particular career or occupation. In the literature, occupational and career choice are used synonymously, although the former term has been seen as more inclusive of a broader array of occupations across prestige level. Moreover, occupational choice is more anchored to a particular point in time, whereas career choice could be interpreted as a process that occurs across time. Choice of job is quite specific to one point in time and may or may not imply stability over time. Young adults’ early entry into the workforce or entry into lower-prestige jobs may be best seen as actions of necessity rather than as something they aspire to or freely choose.

In this section, the term occupational choice refers to occupations unless otherwise noted. Factors contributing to occupational choice have been extensively studied in vocational psychology for many years. Different theories emphasize different determinants of choice and have received variable amounts of support.

Holland’s theory explains occupational choice as congruence between the person’s primary interests and the occupational environment. A clear picture emerges regarding congruence from over 40 years of evidence: “what we know is that people choose, achieve, remain in, and are satisfied with their occupations for reasons other than congruence” (Phillips & Jome, 2005, p. 131). The point is that congruence accounts for very little explanatory power in why people choose and remain in their jobs.

Gottfredson’s theory (L. S. Gottfredson, 1999, 2002, 2005) assumes that occupational choice comes about through a process, whereby occupational prestige and sex role stereotyping over time result in a narrowing of occupations under consideration. This theory has received mixed support (Phillips & Jome, 2005). People do share similar cognitive structures of the occupational world. Constructs of sex-role stereotyping, occupational prestige, and interests have been shown to be important in career choice (e.g., Leung & Plake, 1990). However, sex-based stereotypes appear to be learned earlier than posited in the theory (e.g., Henderson, Hesketh, & Tuffin, 1988). Also inconsistent with the theory is that girls perceive more flexibility than boys in the gender tradition of occupations they consider (e.g., Henderson et al., 1988). Moreover, occupational alternatives seem to expand rather than narrow over time, which is also inconsistent with the theory. One difficulty that may account for some of the mixed findings concerns the inability to untangle some levels of prestige, sex roles, and interests (Phillips & Jome, 2005). For example, it is hard to identify high-prestige, traditionally feminine occupations across the six Holland types.

Social cognitive career theory has received considerable support in the prediction of vocational choice. High scores on SE measures for the six Holland types have been shown to discriminate among educational major choices (Betz et al., 1996; Larson et al., 2007; Lent, 2005) and among occupational choices (e.g., Donnay & Borgen, 1999; Lent, 2005). Basic dimensions of confidence have also been shown to differentiate educational major choice (Rottinghaus, Betz, et al., 2003) and occupational choice (Betz et al., 2003). Interests have long been shown to discriminate among educational major choices (e.g., Rottinghaus et al., 2002) and occupational choice (e.g., Donnay & Borgen, 1996; Harmon et al., 1994). Self-efficacy and outcome expectancies have also been shown to relate to career choice partly through interests (Lent, 2005).
four sources of SE. Self-efficacy across the six Holland types seem to predict and be predictive of vocational interests. Self-efficacy and outcome expectancies across academic domains are seen to be Choice goals seem to be predicted by SE, outcome expectancies, and interests within the respective domain. The prediction of choice goals across academic domains has received some attention. Interests continue to receive enormous amounts of attention as outcomes of SE, as predictors of career choice, and as an individual difference variable. The literature concerning the structure of interests cross-culturally is impressive. Educational aspirations have received some attention as an outcome with sociocognitive variables like SE and interests as predictors. Occupational aspirations are influenced by past achievement and past educational aspirations, as well as by parents' influences, gender, and SES. Finally, academic performance is clearly predicted by cognitive ability, SE, and parental involvement. It also seems that SES, grade level, and ethnicity alter the relation of parental involvement and academic success.

Vocational Processes

CAREER EXPLORATION AND AWARENESS

Few recent studies have sampled children and focused on career exploration and awareness. The findings are tentative and come from individual studies (Hartung et al., 2005). It seems children aged 10–12 engage in dynamic career exploration and increasingly work for pay outside the home as they enter middle school (e.g., Entwisle, Alexander, Olson, & Ross, 1999). Parents may be more important than peers by age 12 in the career exploration process (Hartung et al., 2005). Career awareness has been examined by determining what children know about various occupations. It seems clear that children by the age of 10 know about occupations. Moreover and not surprisingly, brighter children may know more about occupations than those peers who are less bright. It also seems that how much career information children and adolescents learn is impacted by SES. For example, poverty reduces the amount of career knowledge children have acquired (Weinger, 1998). Two studies conducted 25 years apart found that few job options, lower SES, and ethnicity accounted for the most variance in predicting less occupational knowledge in 180 children (Jordan, 1976; Jordan & Pope, 2001). Researchers have noted that children's knowledge does increase with age, but also have noted that children's occupational stereotypes may not evaporate with more accurate knowledge over time (Watson & McMahon, 2005). In one study, Hispanic ninth graders did reduced stereotyped attitudes toward careers after career interventions. However, children with stereotyped attitudes distorted counter-stereotyped information (Haas & Sullivan, 1991).

In terms of gender, it seems girls are aware of work–family balance at a younger age than are boys, yet this may also impact girls' choices about careers. For example, girls as young as the sixth grade compared to boys incorporated more diverse life roles in terms of how they viewed work and family, as well as other life roles (Curry, Trew, Turner, & Hunter, 1994). At the same time, girls consider fewer career options than boys and also are more decided about their careers than are boys; it may be that the girls' decisions are premature and lacking in specificity and careful planning (McMahon & Patton, 1997).

CAREER DECISION MAKING

AND CAREER MATURITY

Several theories identify decision making stages as well as related factors thought to be involved in the decision making process. Tiedeman's model (Super, Tiedeman, & Borow, 1961; Tiedeman, 1979; Tiedeman & O'Hara, 1963) identifies the stages of exploring, crystallizing choice, and clarifying choice by putting it into action. Harren (1979) extended Tiedeman's model to include person and contextual factors. These stages were labeled awareness, planning, commitment, and implementation. Krumboltz and Hamel (1977) created the DECIDES model standing for define, establish plan, clarify values, identify alternatives, eliminate alternatives, and starting action. Katz (1966) and Pitz and Harren (1980) proposed expected utility models that posit that the best decisions are those that include comprehensive information gathering and the weighing of probable outcomes and desired utilities of options. Gati (1986) created the sequential elimination model as an adaptation to the expected utility models. Gati's model has individuals eliminate alternatives in arriving at an optimal choice. There is weak support for these models in the literature, primarily because it appears that people do not follow a systematic logical progression in their career decision making, as the theories propose (Phillips, 1997; Phillips & Jome, 2005).

Difficulties in making vocational decisions have been investigated by categorizing subtypes of undecided students. Researchers have identified subtypes of career information processing, a focus of Robb & Ross, 1997). Developmental factors may also play a role in how students make decisions. For example, it seems girls are aware of work–family balance at a younger age than are boys, yet this may also impact girls' choices about careers. For example, girls as young as the sixth grade compared to boys incorporated more diverse life roles in terms of how they viewed work and family, as well as other life roles (Curry, Trew, Turner, & Hunter, 1994). At the same time, girls consider fewer career options than boys and also are more decided about their careers than are boys; it may be that the girls' decisions are premature and lacking in specificity and careful planning (McMahon & Patton, 1997).
of career indecision ranging from needing more information to chronically indecisive regardless of information received (e.g., Chartrand, Martin, Robbins, & McAuliffe, 1994). Measures have been developed to assess indecision, such as the Careers Factors Inventory (Chartrand et al., 1994); these measures have been used to assist career counselors in working with undecided students and used to assist researchers in identifying correlates of career indecision, such as neuroticism and lack of confidence (Phillips & Jome, 2005).

Career maturity or vocational maturity, most commonly identified with Super’s (1992) model, was defined by Super and Jordaan (1973) as “readiness to cope with developmental tasks of one’s life stage, to make socially required career decisions, and to cope appropriately with the tasks which society confronts the developing youth and adult” (p. 4). Vocational maturity is often linked to career decision making and assumes children will make more mature decisions as they age (e.g., more decisive, involved, independent, oriented, and able to compromise). Walls (2000) did find that children’s accuracy of occupational knowledge increased as they got older. It may be that children who have made a choice have a stronger vocational identity. Vondracek, Silbereisen, Reitzle, and Wiesner (1999) showed, in a sample of German children aged 10–13, that career maturity was higher in children who had made a vocational choice than for those who had not made a choice. It also seems that parents play a role in the timing of making a vocational choice. Evidence of occupational stereotyping that biases occupational preference was noted (Hartung et al., 2005). The good news is that gender stereotyping of occupations may have declined with successive generations of children, especially for girls (Watson & McMahon, 2005). Other societal influences that appear to have some influence on vocational preferences were parents, the school, media, and the home environment (Hartung et al., 2005). For example, parental support had an impact on the timing of vocational preferences (Walls, 2000).

**DECISION MAKING STYLES**

Most research in this area concerns Harren’s three decision-making styles; namely, rational, intuitive, and dependent styles. The rational style is posited to be the most efficient for making deliberative choices, although the research is mixed. Results concerning career maturity were inconclusive. Phillips, Christopher-Sisk, and Gravino (2001) have used a relational continuum to describe decision making styles; that is, a taxonomy of how young people make decisions in a relational context. Scholars are now speculating that the “best” decision making style may depend on the context.

**Vocational Outcomes of Wage Earning Adults**

**Overview**

Many theories have been used to explain the range of vocational outcomes concerning adults in the world of work. The theories have bridged counseling psychology, industrial/organizational psychology, and social/personality psychology. Holland’s (1997) P–E fit theory and Dawis and Lofquist’s TWA (Dawis, 2002, 2005; Dawis & Lofquist, 1984) have been the predominant theories from counseling psychology. Work motivation theories have been dominant in I/O psychology. Work motivation is viewed as a “set of energetic forces that originate both within as well as beyond an individual’s being to initiate work-related behavior and to determine its form, direction, intensity, and duration” (Pinder, 1998, p. 11). Social psychology’s contribution has come in the adaptation of mini-theories that explain why certain antecedents or mediator/moderators may have an impact on a particular vocational outcome. Two examples include attribution theory (i.e., job satisfaction or performance is based, in part, on how the person attributes his or her situation [My job satisfaction is based on my hard work versus the whims of the organization]) and expectancy theory (i.e., satisfaction is produced by the reinforcers that follow performance).

The theories highlight different processes and outcomes. Holland’s theory is most commonly seen as identifying congruence as an antecedent of job satisfaction and subsequent work adjustment. Dawis’ TWA focuses on the complementary outcomes of job satisfaction and satisfactoriness (job satisfaction from employer’s perspective). Dawis identifies processes that the person uses to stay within an organization when the P–E fit is in a state of discorrespondence (Dawis, 2005). These include flexibility (tolerating mismatch), reactive adjustment (change self), active adjustment (change the job), and perseverance (duration of discorrespondence). His theory can be used to examine tenure and negative indicators like intentions to quit and quitting. Work motivation theory identifies person characteristics that motivate the person to choose, persist, and be successful in the job (Latham & Pinder, 2005). Social psychology theories focus on the explanation for a particular relation. For example, expectancy theories
would explain how job performance leads to job satisfaction because satisfaction follows from the rewards produced by performance.

Outcomes
Since 1990, researchers have extensively examined the contribution of antecedents or predictors on a wide range of vocational outcomes. The vocational outcomes in this section are frequently multifaceted and are often measured by more than one method. The organization of this section will be by outcomes organized logically by how they occur sequentially in people's lives. The outcomes are job search behaviors and job search outcomes, job satisfaction, job attitudes, organizational citizenship behavior (defined as behaviors that facilitate the core aspects of the job), job performance, counterproductive work behaviors, turnover intentions/intentions to quit, quitting/turnover, absenteeism, withdrawal, career success, negative mental health outcomes, and life satisfaction and well-being. When a construct is both a predictor and an outcome (e.g., job satisfaction is an outcome and a predictor of job performance), the construct will be discussed separately as an outcome and also as an antecedent of another outcome.

JOB SEARCH BEHAVIORS AND JOB SEARCH OUTCOMES
Job search behaviors can be defined as a purposive, volitional pattern of action that begins with the identification and commitment to pursuing an employment goal (Kanfer, Wanberg, & Kantrowitz, 2001). Most authors had measured only frequency (how many times the person engaged in job search activities) or effort (how many hours the person engaged in job search activities over a specific time period). In the meta-analyses, Kanfer and colleagues (2001) defined job search behaviors as both frequency and effort. Kanfer and colleagues defined job search outcome in three ways: job status (I have/do not have a job), job search duration, and number of job offers. In their meta-analyses ($k = 82, N = 21,898$), Kanfer and colleagues investigated the contribution of sets of antecedents that influence both job search behaviors and the job search outcome. The antecedents were personality traits, generalized expectancies, self-evaluations, situational antecedents (motives [financial need and employment commitment] and social support), and demographic variables. They will be reviewed in that order, starting with the prediction of job search behaviors followed by job search outcomes.

Personality is thought to have an impact on the job search through the engagement of different search strategies and the extent to which people use proactive job search behaviors (Kanfer et al., 2001). Job search behaviors (measures of frequency of job search activities or time spent searching were used) were related to extraversion ($\rho = .46$), openness ($\rho = .27$), and conscientiousness ($\rho = .38$) (Kanfer et al., 2001).

Generalized expectancies are thought to have an impact on job search behaviors through their influence on both problem- and emotion-focused coping. The two antecedents in this category—locus of control and optimism—were not predictive of job search behaviors. However, self-evaluations were predictive of job search behaviors, namely SE ($\rho = .27$) and self-esteem ($\rho = .27$). Self-evaluations were thought to have an impact on job search behaviors through their influence on persistence when difficulty increases (Kanfer et al., 2001).

Situational antecedents were also modestly related to job search behaviors, including motives of financial need ($\rho = .21$) and employment commitment, defined as the belief that having a job is very important ($\rho = .29$) and social support ($\rho = .24$). Motives are thought to influence job search behaviors by influencing job search effort and intensity, and social support is thought to influence job search behaviors as a way of coping with negative aspects of the job search by receiving advice in the short term and encouragement in the long run (Kanfer et al., 2001). None of the demographic variables influenced job search behaviors, including age, gender, education, race, and job tenure.

The antecedents, in general were less predictive of job search outcomes (i.e., job status, number of offers, and duration of search) than of job search behaviors (i.e., three dimensions labeled intensity of effort, content duration, and temporal-persistence). There were also less data on job search outcomes than on job search behaviors as criterion variables. Job search behaviors modestly related to job status (i.e., having a job) ($\rho = .21$) and number of offers ($\rho = .28$). Neuroticism was modestly related to number of offers ($\rho = -.22$). Extraversion, openness, and agreeableness modestly related to number of job offers in the only study that measured both job offers and those traits ($s = .41, .28, .29$) (Kanfer et al., 2001). Interestingly, conscientiousness, which was measured more frequently, showed no relation with job search outcomes. Generalized expectancies were not predictive of job search outcomes. Self-evaluation was measured through the assessment of the extent to which job seekers would estimate their own performance, situational factors, and job characteristics, and job search outcomes.
was related; self-esteem was modestly related to the duration of the search \((p = -.24)\), and \(SE\) was modestly related to the number of offers \((p = .28)\). The situational antecedent of motive was not related to job search outcomes, whereas the social antecedent of social support was moderately related to job status \((p = .30)\). Demographic variables were not related to the job search outcomes.

**JOB SATISFACTION**

Job satisfaction is defined as a "pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (Locke, 1976, p. 1300). Job satisfaction has been most frequently measured by the Job Descriptive Index (Smith, Kendall, & Hulin, 1969) and the Minnesota Job Questionnaire (Weiss, Dawis, & England, 1967).

Surprisingly, one salient predictor of job satisfaction may be a genetic influence. Arvey, Bouchard, Segal, and Abraham (1989) presented evidence with monozygotic twins reared together versus apart that job satisfaction was dispositional, and as much as 30% of the variance was inherited. This may partially explain the strong relationship of job satisfaction with life satisfaction (Fritzse & Parrish, 2005).

One class of job satisfaction predictors has been dispositional traits ranging from broad traits to a specific trait, locus of control. Connolly and Viswesvaran (2000), in their meta-analyses, were interested in the interaction of negative and positive affectivity with job satisfaction. They also examined a third trait labeled affective disposition, defined as the "tendency to respond to classes of environmental stimuli in a predetermined affect-based manner" (Judge & Hulin, 1993). Their meta-analyses \((N = 6233, k = .27)\) did find moderate relations of job satisfaction with positive affectivity \((p = .49)\), negative affectivity \((p = -.33)\), and affective disposition \((p = .36)\). The next study was the examination of the Big Five personality factors as antecedents of job satisfaction. Judge, Heller, and Mount (2002), in their meta-analyses \((N = 24527, k = 163)\), reported small effect sizes concerning the relation of job satisfaction with neuroticism \((p = -.29)\), extraversion \((p = .25)\), and conscientiousness \((p = .26)\). Finally, locus of control has also been examined as a specific dispositional attribute; it was shown to correlate with job satisfaction at about .20 (Fritzse & Parrish, 2005).

Holland's supposition concerning congruence as predictive of job satisfaction has received considerable attention. The most recent meta-analyses were conducted Tsabari and colleagues (2005; \(N = 6557, k = 53)\). The congruence–job satisfaction relation was .17, which included 0 in the 95% CI. In other words, there was no relation. Owings and Fritzse (2000) suspect that one reason for the weak relation of congruence and job satisfaction may be that job satisfaction often includes domains that are not directly related to environmental congruence, such as pay or coworkers. Another reason may be that job satisfaction measures aspects of satisfaction other than the tasks associated with one of the six domains of Holland's RIASEC (Spokane & Cruza-Guet, 2005). Tsabari and colleagues (2005) did find that the correlation was influenced by several moderators. First, the correlation varied by vocational type. Only social types on Holland's RIASEC hexagon did not include 0 in the 95% CI, although the effect was small \((p = .11)\). The correlation also varied by the congruence index used. The strongest congruence index was the Lachan index, with \(p = .22\) with a 95% CI ranging from .18 to .25. Finally, the correlation varied by interest questionnaire; the relation was .09 when the General Occupational Themes from the SII were used, compared to the relation being .20 when the Self-Directed Search was used.

Dik (2006) also found moderators of the congruence–job satisfaction relation in a sample of employed young adults. Congruence was associated more with job satisfaction for participants who placed less importance on their jobs and who perceived less opportunity for active involvement in their work. Congruence was associated more with intrinsic job satisfaction than with overall job satisfaction. The modified C index (Eggerth & Andrew, 2006) resulted in a higher mean congruence score and had larger congruence–satisfaction correlations compared to other congruence indices' correlations with satisfaction (Dik, 2006).

Within the I/O literature, the environment has been defined as the organization, rather than by Holland's six types. Person–organization fit has also been shown to be an antecedent of job satisfaction. Verquer, Beehr, and Wagner (2003), in their meta-analysis \((k = 21)\), reported an effect size of \(p = .28\). Type of fit, method of calculating fit, dimension of fit, and use of established measure moderated the relation. Saks and Ashforth (1997) also reported a significant relation between person–organization fit and job satisfaction.

Other antecedents of job satisfaction have been examined. Perceived organizational support positively relates to job satisfaction with a strong effect size \((p = .62)\) (Rhoades & Eisenberger, 2002; \(k = 73)\,
A second meta-analyses (Podsakoff, LePine, & LePine, 2007; k = 183; N = 20,943) differentiated stressors into hindrance stressors, which consist of role ambiguity, organization politics, and job security concerns, from challenge stressors, which consist of levels of workload, time pressure, job scope, and responsibilities. In Podsakoff and colleagues’ model, hindrance and challenge stressors were thought to have an impact on job satisfaction directly and indirectly through strain. Hindrance stressors (i.e., role ambiguity, organization politics, and job security concerns) were significantly related to job satisfaction (p = -.57); challenge stressors were not related to job satisfaction.

Meta-analyses have been conducted on specific populations, namely, nurses and people employed part-time versus full-time. Zangaro and Soeken (2007; k = 31, N = 14,567) examined nurses’ job satisfaction and only reported uncorrected correlations. They identified three antecedents of job satisfaction yielding medium effects. They were the relation of job satisfaction with autonomy (r = .30), job stress (r = -.43), and nurse-physician collaboration (r = .37). Thorsteinson (2003), in his meta-analysis (k = 38, N = 51,231), examined whether part-time workers versus full-time workers would differ in job satisfaction. Thorsteinson reported no significant differences between part-time versus full-time workers on either global job satisfaction or any of the facets of job satisfaction.

**JOB ATTITUDES**

Although job satisfaction was examined individually, job satisfaction has also been considered as part of a larger constellation of job attitudes. From this perspective, job attitudes include positive attitudes toward the job (job satisfaction and affective commitment [employee’s emotional attachment to, identification with, and involvement in the organization]) and negative attitudes toward the job (burnout and turnover intentions). Thoresen, Kaplan, Barsky, Warren, and Chermont (2003), in their meta-analyses (k = 205, N = 62,527), hoped to elucidate the role of emotions in predicting job attitudes. First, they differentiated affect into two dimensions: namely, positive and negative affect. They expected that job attitudes and performances that are positive and negative should differentially relate accordingly to indices of positive and negative affect. However, their meta-analyses did not support this. Positive affectivity and negative affectivity related moderately with job satisfaction (ps = .34, -.34), affective commitment (ps = .35, -.27), depersonalization (ps = -.27, .47), and personal accomplishment (ps = .49, -.34), and somewhat with turnover intentions (ps = -.17, .28). Positive and negative affectivity did seem to differentially relate to emotional exhaustion (ps = -.32, .62).

Second, Thoresen and colleagues (2003) were interested in differentiating the role of dispositional traits of affectivity from more state-like affect. They speculated that an argument could be made that trait affectivity should be more influential than state affect because work attitudes have accumulated over time; thus, trait affectivity that is consistent across many situations would have had a cumulative effect on job attitudes. On the other hand, state affect could be argued to be more influential because it is more proximal to job attitudes. Their findings showed little difference between the relation of job attitudes with trait measures versus state affect measures. Another meta-analysis by Rhoades and Eisenberger (2002) examined perceived organizational support as contributing to job attitudes. Perceived organizational support was defined as employees’ belief that the organization values their contribution and cares about their well-being (Rhoades & Eisenberger, 2002; k = 73, N = 13,719). Job attitudes included organizational commitment (affective commitment and continuance commitment [resulting from accumulated personal interests binding one to the organization; Meyer & Allen, 1997]), job-related affect (job satisfaction and positive mood at work [general emotional state without a specific object; George, 1989]) job involvement (identification with and interest in the specific work one performs; O’Driscoll & Randall, 1999), strains (aversive psychological and psychosomatic reactions), desire to remain on the job, and intentions to quit. Rhoades and Eisenberger (2002), in their meta-analysis, showed that perceived organizational support was moderately related to all of the job attitudes including job satisfaction (p = .62), positive mood at work (p = .49), job involvement (p = .39), strain (p = -.32), desire to remain with organization (p = .66), and turnover intentions (p = -.51).

The final meta-analysis that examined job attitudes as outcomes was that by Humphrey, Nahrgang, and Morgeson (2007). They were interested in how much job characteristics, social characteristics, and work context characteristics influenced job attitudes. The job attitudes included satisfaction with the job, growth, supervisor, coworkers, compensation, and promotion. Job attitudes also included organizational commitment, job involvement, and internal work motivation.
The job characteristics included autonomy (freedom an individual has in carrying out work), skill variety (the extent to which an individual must use different skills to execute his or her job), task variety (extent to which an individual performs different tasks), task significance (extent to which a job impacts others' lives), task identity (extent to which an individual can complete a whole piece of work), feedback from the job (extent to which a job imparts information about an individual's performance), information processing (extent to which a job necessitates an incumbent to focus on and manage information), job complexity (extent to which a job is multifaceted and difficult to perform), specialization (extent to which a job involves the performance of tasks requiring specific knowledge and skill), and problem solving (extent to which a job requires the production of unique solutions or ideas). Social characteristics included interdependence (extent to which a job is contingent on others' work and other jobs are dependent on the work of the focal job), feedback from others (extent to which other organizational members provide performance information), social support (extent to which a job provides opportunities for getting assistance and advice from either supervisors or coworkers), and interaction outside the organization (extent to which a job requires person to communicate with people outside the organization). Work context characteristics include physical demands (amount of physical activity or effort necessary for a job) and work conditions (aspects of the work environment such as health hazards, temperature, and noise). The studies that measured work demands included only job satisfaction.

Satisfaction with the job and satisfaction with growth opportunities were moderately correlated above .20 with all the work characteristics and social characteristics except satisfaction with growth was not related to feedback from others. Job satisfaction was also modestly correlated above .20 with work demands. Satisfaction with the supervisor and coworkers was correlated above .20 with work characteristics except task identity and with social characteristics. Satisfaction with compensation was only correlated above .20 with the work characteristics of autonomy and feedback from the job and the social characteristics of feedback from others. Satisfaction with promotion was correlated above .20 only with the work characteristics of task variety and feedback from the job and the social characteristic of feedback from others. Organizational commitment was moderately correlated with all work characteristics and all social characteristics.

Job involvement correlated with all work characteristics except task identity and none of the social characteristics. Internal work motivation correlated with all work characteristics except task identity and all social characteristics except social support (Humphrey et al., 2007).

**Organizational Commitment**

Organizational commitment has been defined as consisting of three components; namely, affective commitment (identification with and attachment to the organization), continuance commitment (resulting from accumulated personal interests binding one to the organization), and normative commitment (sense of obligation to remain with the organization; Meyer & Allen, 1997). Several meta-analyses identify some antecedents of organizational commitment. The first antecedent identified was job satisfaction. One meta-analyses (\(N = 39,187 \ k = 112\)) by Harrison, Newman, and Roth (2006) showed organizational commitment to be strongly related to job satisfaction (\(r = .60\)). A second antecedent, perceived organizational support (support in the organizational environment), also was strongly related to organizational commitment (\(r = .67\)), as shown by Rhoades and Eisenberger (2002) in their meta-analysis (\(k = 73, \ N = 13,719\)). Person–organization fit has also been shown in a meta-analysis to be an antecedent of organizational commitment (Verquer et al., 2003; \(r = .31\)). An additional antecedent, hindrance stressors (i.e., role ambiguity, organization politics, and job security concerns), was identified in Podsakoff, LePine, and LePine’s (2007) meta-analyses. They showed hindrance stressors (and not challenge stressors) significantly related to organizational commitment (\(r = -.52\)). Finally, part-time versus full-time job status did not differ by organizational commitment (Thorsteinsson, 2003).

**Global Job Performance**

Job performance has been defined in either a broad, global way or based on separating job performance into two facets. The global job performance assessment has dominated and has often been measured as a subjective global rating (e.g., supervisor ratings) and an objective global rating (e.g., salary or productivity). Job performance will be specified as either a global rating (subjective and/or objective) or instrumental performance. The predictors or antecedents thought to influence global job performance will be presented in the following order: cognitive abilities and job knowledge, personality, SE, job satisfaction, and additional antecedents.
Cognitive abilities and job knowledge, although seldom researched in counseling psychology, have long been examined as an antecedent of work performance in I/O psychology (Borman et al., 2003; Hough & Oswald, 2000). The general factor in intelligence, referred to as the g factor, is predictive of job knowledge, job performance, and training performance (e.g., Hunter & Hunter, 1984; Judge et al., 2007; Levine, Spector, Menon, Narayanan, & Cannon-Bowers, 1996; Schmidt & Hunter, 1998) with the influence strongest for high-complexity roles (see Borman et al., 2003). Research findings accumulated over 85 years, primarily in the United States, suggest that a general cognitive ability test plus a structured interview is highly predictive of future job performance (Schmidt & Hunter, 1998). The potency of cognitive ability as a predictor of job performance is cross-culturally robust. This relation of cognitive ability to job performance and job training was supported in a meta-analysis using only German samples (\(k = 9, 90, N_s = 7,46,11,969\)) with \(p\) values of .534 and .467 (Hülsheger, Maier, & Stumpf, 2007). A meta-analysis using only British samples (Bertua, Anderson, & Salgado, 2005; \(k = 283, 223, N_s = 1,32,62,75,311\)) found similar strong relations of cognitive abilities and specific abilities relating to job performance and training success (\(r_s = .50, .48\)). Salgado and colleagues (2003) widened the cross-cultural meta-analytic examination to 11 European countries (\(k = 19, 15, N_s = 1,93,62,897\)) to examine the relation of cognitive ability with job performance and job training across occupational groups. They also found similar moderate to large relations between cognitive ability and job performance (\(r_s\) range from .24 [police] to .67 [manager]; and training success (\(r_s\) range from .25 [police] to .74 [engineer]). As with American studies, job complexity moderated the relation to both outcomes, in that more cognitively complex positions yielded a stronger relation (Salgado et al., 2003). Job knowledge is also predictive of job performance and training performance, especially in conditions of high job-test similarity (\(r_s = .62, .76\)) (Borman et al., 2003).

Personality traits have gained prominence as antecedents of job performance. One well-known meta-analysis is Barrick and Mount’s (1991) meta-analysis (\(k = 162, N = 23,994\)) of the Big Five and objective and subjective indices of job performance. Objective indices were productivity, salary, tenure, and status change. Subjective ratings were supervisor ratings. Five occupational groups were examined; namely, professionals, police, managers, sales people, skilled workers, and semiskilled workers. Conscientiousness was related to job performance across three criteria (job proficiency, training proficiency, personnel data) with \(r_s\) ranging from .20 to .23. When the subjective supervisory data was separated from the objective data (i.e., turnover/tenure, productivity data, status change, and salary), the supervisor ratings yielded a higher relation (\(r = .26\)) than the mean of the objective ratings (\(r = .10\)). Extraversion and openness to experience yielded relations with training proficiency of \(r_s = .26\) and .25, respectively.

Researchers continue to examine the role of conscientiousness in job performance. Dudley, Orvis, Lebiecki, and Cortina’s (2006) meta-analysis (\(k = 42, N = 7,342\)) examined if facets of conscientiousness (achievement, dependability, order, and cautiousness) related to indices of job performance beyond the general trait of conscientiousness. In this study, prior meta-analytic estimates were included. Given the lower internal consistency estimates in subscales, the uncorrected \(r_s\) rather than the population estimates are reported. None of the facets was related to overall job performance (\(r_s\) range from .01 to .13). Likewise, the facets did not relate to task performance (\(r_s\) range from .06 to .13).

Three meta-analyses have examined the relation of SE (or generalized SE) to predict job performance (Judge et al., 2007; Sadri & Robertson, 1993; Stajkovic & Luthans, 1998). Sadri and Robertson (\(k = 16, N = 1,658\)) showed that SE was related to performance overall (\(r = .40\)) and behavioral intentions (\(r = .34\)). Stajkovic and Luthans (1998) added more studies to those located in 1993 by Sadri and Robertson (\(k = 157, N = 21,616\)) and found a relation of SE and performance overall of \(r = .36\). They identified several moderators of that relation. The magnitude of the relation was strongest for simple tasks, decreasing for moderate and high task complexity. The relation of SE and performance was also lower in magnitude for field settings (\(r = .37\)) compared to lab settings (\(r = .60\)). Judge and colleagues (2007), in the final meta-analysis, used prior meta-analytic estimates and computed some that were not reported in the literature. They examined whether the relation of SE and performance would be attenuated after the relation of performance and distal influences—namely, the Big Five, ability, and experience—had been taken into account. These authors showed that the contribution of SE to work-related performance is much smaller once the distal variables were controlled. Self-efficacy’s standardized regression coefficient was not statistically different from zero in any of the distal effects, suggesting the role of self-efficacy in job performance was indeed unique. Kemppainen et al. (2003) examined the role of self-efficacy on performance of sales people, but did not examine any distal effects.
behavior forming the core of the job. An example of instrumental performance would be productivity (number of articles published). Contextual performance, most commonly called organizational citizenship behavior (OCB), has been defined as supporting the core of the job. An example of OCB would be the willingness to serve on committees or assist other workers. The examination of OCB will be reviewed immediately after instrumental job performance. Several meta-analyses have examined instrumental job performance or task performance as distinct from global job performance. Task performance was positively related to perceived organizational support (p = .18) (Rhoaides & Eisenberger, 2002; k = 73, N = 13,719). Trust was also related to task performance (p = .33) (Colquitt, Scott, & LePine, 2007; k = 132, N = 7,284).

**ORGANIZATIONAL CITIZENSHIP BEHAVIOR**

Organizational citizenship behavior has also been called contextual performance or interpersonal facilitation. Some studies have reported the antecedents of OCBs as distinct from task performance.

Regarding personality traits, Dudley and colleagues (2006) in their meta-analysis examined if the facets of conscientiousness (i.e., achievement, dependability, order, and cautiousness) related to OCBs. They divided situational antecedents into motivational work characteristics (e.g., task variety), social characteristics (e.g., social support), and work context characteristics (working conditions). Job performance was defined subjectively (e.g., supervisor ratings) and objectively (e.g., salary). No motivational, social, or work context characteristics in the work environment predicted objective performance. Motivational (autonomy, task variety, task significance, feedback from the job, and job complexity) and social (feedback from other) characteristics in the work environment related to subjective performance (ps range from .20 to .37).

Person–organizational fit models have been shown to be predictive of job performance. Hoffman and Woehr (2006), in their meta-analyses (k = 24), reported significant effect sizes of person–organization fit indices that related positively to both objective measures of job performance (p = .25) and subjective measures of job performance (p = .26).

**INSTRUMENTAL JOB PERFORMANCE**

The two facets of job performance (instrumental performance and contextual performance) have received increasing attention. Instrumental performance, also called focal performance, in role behaviors or task performance has been defined as...
differentially relate to predictors. Moreover, the OCB facets correlated highly with each other. All five facets related to predictors around .20 (job satisfaction, organizational commitment, fairness, leader support, and the Big Five conscientiousness). LePine and colleagues then tried dividing the five facets into two facets, namely OCB-Interpersonal (courtesy and altruism) and OCB-Organizational (sportsmanship, civic virtue, and compliance), and still the results yielded no differentiation. The global measure of OCB correlated highest with outcomes: job satisfaction (ρ = .31), organizational commitment (ρ = .32), fairness (ρ = .31), leader support (ρ = .41), and conscientiousness (ρ = .13) (LePine et al., 2002).

Dalal (2005) examined the relation of OCB and counterproductive work behaviors in his meta-analysis (k = 49; N = 16,721). He theorized the explanatory mechanism of the relation between OCB and counterproductive work behaviors (CWB) on the one hand and organizational justice, job satisfaction, and organizational commitment on the other. Employees respond to working conditions that are satisfying and workplace processes that are fair by behaving in ways that benefit the organization and/or others (OCB). However, if employees are dissatisfied and feel workplace processes are not fair, then they behave in ways that are not helpful (CWB). The relation of organization and/others (OCB). However, if justice (ρ = .32) and CWB were split into two separate constructs, an interpersonal CWB and an organizational CWB, significant antecedents of OCB-Interpersonal (courtesy and altruism) and OCB-Organizational (sportsmanship, civic virtue, and compliance), and still the results yielded no differentiation. The global measure of OCB correlated highest with outcomes: job satisfaction (ρ = .31), organizational commitment (ρ = .32), fairness (ρ = .31), leader support (ρ = .41), and conscientiousness (ρ = .13) (LePine et al., 2002).

Dalal (2005) examined antecedents of OCB and CWB. Significant OCB antecedents were organizational commitment (ρ = .28), organizational justice (ρ = .20), conscientiousness (ρ = .23), and positive affect (ρ = .34). Job satisfaction and negative affect were not significant antecedents. He theorized that positive affect and negative affect should have an impact on OCB and CWB because affect is arousal that entices action, with positive affect leading to constructive action and negative affect leading to destructive action. The results suggest that positive and negative affect may operate differently on the two constructs.

COUNTERPRODUCTIVE WORK BEHAVIORS
These negative work outcomes have received some attention. In the meta-analysis reported earlier, Dalal (2005) reported several antecedents that related above .20 to CWBs. These included job satisfaction (ρ = -.37), organizational commitment (ρ = -.36), organizational justice (ρ = -.25), conscientiousness (ρ = -.38) (the uncorrected correlation was much smaller, r = .2), positive affect (ρ = -.34), and negative affect (ρ = .41). Dudley and colleagues (2006) related a similar correlation for CWBs and conscientiousness with an uncorrected correlation of -.16 and a ρ = -.26. The facet scale, dependability, was also modestly related to CWBs (r = -.21; ρ = -.34). Colquitt and colleagues (2007) recently showed trust to negatively relate to CWBs (ρ = -.33).

TURNOVER INTENTIONS/INTENTION TO QUIT
Intentions to quit are defined as one's desire or willingness to leave an organization. The theory of reasoned action (Ajzen, 2002) explains intentions as the mechanism that leads to the action of quitting. This vocational outcome has received considerable attention in meta-analyses. In terms of affective antecedents, Thoreson and colleagues (2003) in their meta-analysis showed intentions to quit to be related to negative affectivity (ρ = .28) but not to positive affectivity. One situational antecedent among many examined was shown to relate to turnover intentions, namely a social antecedent (feedback from others) (ρ = .34). Person—organization fit has also been shown to be an antecedent of intentions to quit (Verquer et al., 2003) (ρ = -.21). Perceived organizational support relates strongly to turnover intentions, with a ρ = -.51 (Rhoades & Eisenberger, 2002). Hindrance stressors also strongly related to turnover intentions (ρ = .49), as reported by Podsakoff and colleagues (2007) in their meta-analysis. It appears that part-time versus full-time workers are no more or less likely to have intentions of leaving their job (Thorsteinson, 2003).

WITHDRAWAL BEHAVIORS
Withdrawal behaviors are identified as those that pull employees away from the organization and are often seen as precursors to quitting. Two meta-analyses were located concerning withdrawal behaviors. Perceived organizational support did relate to withdrawal behavior (ρ = -.26) (Rhoades & Eisenberger, 2002). Hindrance stressors were also related to withdrawal behaviors (ρ = .22) in Podsakoff and colleagues' meta-analysis (2007).

QUITTING/TURNOVER
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salary attainment had several significant predictors across all four sets of predictors. Salary attainment was related to one sociodemographic variable, age (p = -.26), and was modestly related to organizational sponsorship (p = .23), as shown by Podsakoff and colleagues’ (2007) meta-analysis. One creative suggestion in the literature concerning the examination of turnover as a construct was made by Griffiths, Steel, Allen, and Bryan (2005). They suggested that scholars needed to measure perceived job alternatives if a person quits the job. Their intent was to capture positive reasons for leaving a job rather than only negative reasons (e.g., lack of organizational support). They proceeded to develop such a measure, titled the Employment Opportunity Index (Griffiths et al., 2005).

LATENESS

Lateness has rarely been investigated in meta-analyses. Harrison and colleagues (2006) found no relation with job satisfaction, organizational commitment, or contextual performance. Lateness was negatively related to focal performance (i.e., task performance) (ρ = -.26) and absenteeism (ρ = -.29).

ABSENTEEISM

Absenceeism appears to be unrelated to many vocational antecedents. No relation was identified between absenteeism and job satisfaction (Harrison et al., 2006), organizational commitment (Harrison et al., 2006), motivational work characteristics, social characteristics (social support), or work context characteristics in the work environment (Humphrey et al., 2007). These results suggest that absenteeism perhaps should be viewed not as absence per se, but rather as a process in which workers are drawn away from the workplace by valued features of their nonwork environment (Fritzsche & Parrish, 2005).

CAREER SUCCESS

One outcome that cuts across any given job is career success. Career success can be defined as the accumulated positive work outcomes and psychological outcomes resulting from one’s work experiences (Seibert & Kraimer, 2001). In their meta-analysis (k = 52, N = 45,293), Ng, Eby, Sorensen, and Feldman (2005) operationalized career success as objective (i.e., salary attainment, number of promotions) and subjective (job satisfaction, career satisfaction). They examined four sets of predictors: human capital (e.g., amount of work experience or knowledge); organizational sponsorship, defined as the extent to which the organization provides special assistance to employees to facilitate their career success (Dreher & Ash, 1990); sociodemographic variables; and stable individual differences. Each of these predictors will be discussed in order by examining the outcomes of objective career success first, followed by subjective career success.

Objective career success was measured in the meta-analyses by Ng and colleagues (2005) as salary attainment and number of promotions. The number of promotions was predicted by one organizational sponsorship variable—namely, training and skill development opportunities (ρ = .23) (Ng et al., 2005). Salary attainment had several significant predictors across all four sets of predictors. Salary attainment was modestly related to human capital, including hours worked (ρ = .24), organizational tenure (ρ = .20), work experience (ρ = .27), and educational level (ρ = .29). Salary attainment was also modestly related to organizational sponsorship, including career sponsorship (ρ = .22) and training and skill development opportunities (ρ = .24). Salary attainment was related to one sociodemographic variable, age (ρ = .26), and one individual difference variable, cognitive ability (ρ = .27). Salary attainment was below the cutoff of |.20| but in women modestly had lower salaries than men (ρ = .18).

Subjective career success in the Ng and colleagues (2005) study was predicted by some human capital variables, almost all the organizational sponsorship variables, and several individual difference variables. Career satisfaction was predicted by two human capital variables, hours worked (ρ = .22) and political knowledge and skills (ρ = .28). Satisfaction was predicted by three organizational sponsorship variables; namely, career sponsorship (ρ = .44), supervisor support (ρ = .46), and training and skill development opportunities (ρ = .38). Career satisfaction was negatively related to neuroticism (ρ = -.36), and was positively related to extraversion (ρ = .27), proactivity (ρ = .38), and locus of control (ρ = .47).

NEGATIVE MENTAL HEALTH OUTCOMES

Negative mental health outcomes identified from this literature search included anxiety, stress, overload, burnout, and strain. Humphrey and colleagues’ (2007) meta-analysis identified specific
work characteristics categorized as motivational, social, or work context features of the job environment as being potential antecedents of anxiety, stress, overload, and emotional exhaustion. Anxiety was related to motivational antecedents (i.e., feedback from the job) and social antecedents (i.e., feedback from others) in the job environment (ps = -.32, -.23). Stress was related to motivational antecedents (autonomy), social antecedents (social support, feedback from others), and work context antecedents (work conditions) in the work environment (ps range from -.26 to -.42). Overload was related to motivational antecedents (task variety, and job complexity) in the work environment (ps =.38, .59). Emotional exhaustion from burnout was related to motivational antecedents (autonomy, task significance, task identity) and social antecedents (social support) in the work environment (p = -.28 to -.34).

Burnout's three facets, emotional exhaustion, depersonalization, and personal accomplishment were examined in two meta-analyses. Thoresen and colleagues (2003) related positive affect and negative affect to emotional exhaustion (ps = -.32, .54), depersonalization (ps = -.27, .39), and personal accomplishment (ps = -.49, -.27). Halbesleben (2006) found that social support did not yield different relations across the three burnout dimensions.

Finally, strain was examined as an outcome of hindrance stressors and challenge stressors in Podsakoff and colleagues' (2007) meta-analysis. Hindrance stressors predicted strain (p = .56), as did challenge stressors (p = .40) (Podsakoff et al., 2007).

LIFE SATISFACTION AND WELL-BEING
Life satisfaction positively relates to job satisfaction. This positive relation provides support for the spillover model, which says that happiness in one area of life spills over into other areas of life (Fritzsche & Parasuraman, 2005). Likewise, life satisfaction relates to the Big Five factors in a similar way that job satisfaction relates to the Big Five, with the exception of openness (DeNeve & Cooper, 1998; Judge et al., 2002). In Judge and colleagues' (2002) meta-analysis, life satisfaction and job satisfaction correlated negatively with neuroticism (ps = -.30, -.29), and positively correlated with extraversion (ps = .22, .25), openness (ps = .18, 02), agreeableness (ps = .17, 21), and conscientiousness (ps = .26, .28).

Wellbeing, also known as subjective well-being, is defined by Diener (2000) as the way in which people assess their lives both at the moment and over longer periods. Life satisfaction is included as one indicator of well-being, as is work satisfaction and family satisfaction (Walsh & Eggerth, 2005). Research studies have accumulated showing that two of the Big Five are clear predictors of well-being; namely, emotional stability (negative loading on neuroticism) and extraversion. DeNeve and Cooper (1998), in their meta-analysis, showed, in fact, that all of the Big Five factors (emotional stability for neuroticism) were positively related to subjective well-being (k = 197; N = 42,171). Walsh and Eggerth (2005) presented evidence showing that adults who are in more congruent careers experience more subjective well-being. Lent (2004) reviewed well-being as a construct and differentiated well-being into subjective well-being as defined by Diener (2000) and psychological well-being defined as the striving for perfection that represents the realization of one's true potential (Ryff, 1995, p. 100).

VOCATIONAL PSYCHOLOGY AND DIVERSE GROUPS
Overview
Vocational psychology has a rich tradition of examining the vocational issues affecting women (e.g., see reviews by Borgen, 1991; Buboltz, Eberwein, Watkins, & Savickas, 1995; London & Grelle, 1991; Losocco & Roschelle, 1991). Race and ethnicity have been salient in vocational psychology for many years, with the emphasis on multicultural training and attention to local norms for career assessment. However, issues related to race and ethnicity have become more prominent in the field. The positive development in the field is that researchers are collecting data specific to different racial and ethnic groups, and career counselors are generating tailored interventions specific to different groups, rather than collapsing across racial and ethnic groups. In the literature search, some reviews and meta-analyses were identified concerning gender and race and ethnicity.

Gender
Changing demographics of women will be discussed first, followed by barriers and supports for women. Issues pertaining to sex and schooling, work–family conflict, and sexual harassment will also be examined.

DEMOGRAPHICS
Some statistics paint a picture of women in the United States that words cannot. First, 75% of women aged 45 and older work outside the home. Social and economic opportunity probability of the home workforce because many of their 17 million single parents are also single parents and are the primary breadwinners of their families. Statistics, 7 years (Betz, 2006). Single parents women (Althaus, 2003). The message their mailboxes has shown. First, the message is protective factors. The message to work women, (Stop, 2006). To factors. The message of women, (Betz, 2006).

BARRIERS
Girls & Employment
Women are also struggling to balance work and family issues. The percentage of single parents of women are often below the poverty line, paying work–family policies tend to work with one parent and a repository of statistics and practices are needed (and will be described).

Ecological model of women's experiences is a classification, social–ecological, age and gender, and physical environment.
women aged 25 to 44 work outside the home, and 71% of mothers of children under 18 work outside the home (2006 Current Population Survey Annual Social and Economic Supplement). Second, the probability is 90% that a woman will work outside the home during her lifetime (Betz, 2006). Women work because they have to; in fact, they earn a third of their family’s total income (Bureau of Labor Statistics, 2007). Third, the average marriage lasts 7 years (Betz, 2006). Moreover, there are 12 million single parents in the United States, and most of them are women. One in four children live in a single-parent household (2007 Current Population Survey). Three out of four of the elderly poor are women (Betz, 2006). In short, even if a woman does spend some of her adult years out of the workforce, it is probable that most of her time will be in the workforce. The reality is, women, like men, need to work (Betz, 2006).

Although American society often gives women the message that work will be a stressor for them in their multiple roles (e.g., mothers, workers), research has shown that paid work outside the home is a protective factor against women’s depression (Betz, 2006). The most satisfied women were employed, and the least satisfied women were homemakers. In fact, women who were married and not working were the most distressed among married women (Betz, 2006).

BARRIERS

Girls and women face barriers in the workforce. Employed women are paid 80% of what employed men are paid (Bureau of Labor Statistics, 2007). The pay gap is greatest for older versus younger women, and greater for white women compared to white men. Women continue to dominate lower-paying jobs. The inadequacy of the parental leave policy is one workforce barrier that may contribute to women’s dominance in lower-paying jobs. The Center for Economic and Policy Research issued a report in September 2008 that provided evidence that the United States had the least generous family leave policies of the 21 countries examined (Ray, Gornick, & Schmitt, 2008). These structural practices regarding childrearing contribute to mothers’ (and fathers’) experience of role overload.

Educational barriers are also present. Girls may experience the “null environment” in educational classrooms, meaning that teachers may not encourage and support them (Betz, 2006). Sexual harassment continues to be a barrier for girls and women (Betz, 2006). Occupational and gender stereotypes may lead girls to be less interested in the physical sciences, engineering, and technology. Girls take fewer technology/engineering courses in high school (Science and Engineering Indicators, 2008), and then proceed to college where they earned only 22% of computer science bachelor’s degrees, 20% of engineering bachelor’s degrees, and 21% of physics bachelor’s degrees in 2005 (Science and Engineering Indicators, 2008). Not surprisingly, given those statistics, college women compared to college men report lower SE in computer science, using technology, mechanical, and science SE compared to men (Betz, 2006; Fassinger, 2005). Moreover, college women compared to college men report less vocational interests in the mechanical domain and computer hardware and software domains (Donnay et al., 2005).

Girls and women are reaching parity in some traditionally male domains within the high school classroom, and this carries on into higher education. High school girls, compared to boys, have completed more advanced biology courses and more chemistry courses, and have completed equal amounts of coursework in advanced math courses included trigonometry, pre-calculus, statistics, calculus, and advanced placement calculus (Science and Engineering Indicators, 2008). Moreover, in college, women earned 51% of the bachelor’s degrees in agricultural sciences, 62% of the degrees in biological sciences, and 52% of the degrees in chemistry (Science and Engineering Indicators, 2008). However, these gains are not reflected in the percentage of women faculty in those disciplines.

Russell (2006) suggested that the field needed career development theories in business settings that addressed the career preparation, career entry, and career progression of women, while also taking into consideration the reality of marriage or committed relationships, pregnancy, and childrearing. She identified a number of barriers, including insufficient mentoring, being frequently not placed in positions sequenced for advancement, inadequate attention to long-range goals, lack of a supportive spouse, and the glass ceiling preventing most women from achieving top positions.

Women of color experience the barriers listed above, but they also suffer the double jeopardy of discrimination and racism (Worthington, Flores, & Navarro, 2005). Oppression in the workplace and in society at large contributes to their stress levels (Fassinger, 2005). There are some notable differences in the barriers across different ethnic groups. For example, African American women have long
been in the workforce, but find themselves shut out of higher-paying or more prestigious jobs due to the glass ceiling and due to discrimination and lack of societal supports, such as day care and affordable health care. Mexican American women may be more likely than women from other ethnic groups to be dealing with sex role stereotypes and the extended family’s expectations, and perhaps their own expectations, of needing to be exclusively focused on the family (Betz, 2006).

SUPPORTS

Girls and women’s career development and work adjustment can be facilitated by a variety of support structures within the educational system, family, and job. Parental support and parent availability are crucial to girls’ educational success. Support for career adjustment includes having a supportive spouse, supportive coworkers, and employers. Organizational and structural changes to allow women to meet the demands of work and family are essential. These changes could include job flexibility, job sharing, parental leave with pay, affordable day care, time off for family responsibilities, and telecommuting. Some of these structural changes are being implemented systematically at institutions of higher learning across the country. For example, the National Science Foundation has awarded over 40 institutions institutional 5-year grants geared toward transforming the culture of those institutions to make them more conducive to the hiring and retention of women faculty in the sciences, technologies, engineering, and mathematics departments. Internal supports, such as a sense of agency combined with communion or expressiveness, are also crucial. Other internal supports include persistence, passion for one’s work, coping efficacy, and a sense of connection with others (Betz, 2006).

SCHOOLING

Education is the foundation upon which career success is built. Women earn more college degrees than do men, and a record number of women are earning law, medical, and business degrees (Meece & Scantlebury, 2006). Girls also outperform boys in almost all school subjects, with the exception of high school physics. Yet, in spite of these achievements, disparities continue to exist for girls in primary and secondary schools due to some schools supporting climates conducive for verbal abuse of girls, sexual harassment, and discrimination against girls who are lesbian, bisexual, or transsexual (Kahle, Meece, & Scantlebury, 2000).

Meece and Scantlebury (2006) identify multiple issues salient for girls’ success in education and subsequently, in their careers. Within the school setting, most girls attending school observe that the majority of women are teachers, secretaries, or nurses, whereas the majority of men are administrators, coaches, or custodians. The proportion of male characters continues to outnumber female characters in basal readers (Fleming, 2000). Boys seem to continue to initiate more interaction with teachers, and teachers call on boys more frequently (e.g., Altermatt, Jovanovic, & Perry, 1998). Girls drop out of high school at a lower percentage than do boys (28% vs. 36%) but are less likely to return if they do drop out. In spite of girls’ and boys’ academic achievement being identical, by elementary school, girls rate themselves higher in verbal, social, and reading abilities and lower in math, physical science, and sports abilities; boys rate themselves in the opposite direction. Some girls’ self-esteem may drop from elementary to middle school. Girls from different racial and ethnic groups receive different messages from mothers as they mature. For example, African American mothers expect daughters to be self-reliant, resourceful, and attain autonomy (Collins, 1998). These girls are more likely than their male peers to earn a higher GPA, finish high school, attend college, and enter white-collar careers (Weiler, 2000). In contrast, Latina girls, especially those who are economically disadvantaged, are less likely to extend education past high school and are more likely to move into low-paying positions (Kahle et al., 2000).

WORK–FAMILY CONFLICT

Work–family conflict research cannot be adequately reviewed here. Readers are directed to Chapter 29 of this volume (Eggerth & Cunningham, 2011) for more detailed information, as well as for meta-analyses of the topic (e.g., Allen, Herst, Bruck, & Sutton, 2000; Kossek & Ozeki, 1998; Mesmer-Magnus & Viswesvaran, 2005). Two of the most recent reviews on the topic are discussed here. Work–family conflict has been examined as two constructs referred to as work interference with the family (WIF) and family interference with work (FIW). The antecedents for these two consequences have been separated into work variables (job involvement, hours spent at work, work support, schedule flexibility, and job stress) and nonwork variables (family/nonwork involvement, hours of nonwork, family support, family stress, family conflict, number of children, age of youngest child, marital status,
Workplace Harassment

Workplace harassment is a major concern for men and especially women with regard to their quality of life at work. Bowling and Beehr (2006), in their meta-analysis ($k = 90, N = 17,663$), present an attributional model identifying the antecedents and consequences of workplace harassment. The model explains why negative consequences occur both to the self (blaming self leading to negative mental health outcomes), the perpetrator (blaming perpetrator impacting organizational justice), and the organization (blaming organization impacting individual performance outcomes). The model presents the norm of reciprocity and attributional processes of either blaming the organization and/or blaming the self as a means of explaining the processes involved in the consequences of workplace harassment. In their meta-analysis, Bowling and Beehr reported workplace harassment related to some antecedents of harassment (i.e., role conflict, role ambiguity, role overload, work constraints, and victim negative affectivity) with $p$ ranging from $+.25$ to $.53$. (Sex was not related to workplace harassment.

The consequences of workplace harassment included negative impact on the victim's well-being and on his or her job performance. Specifically, workplace harassment was negatively correlated with the victim's well-being (i.e., positive emotions at work, self-esteem, life satisfaction, job satisfaction, organizational commitment), with $p$s ranging from $-.21$ to $-.39$. Workplace harassment was positively related to negative indices of well-being (i.e., generic strain, anxiety, depression, burnout, frustration, negative emotions at work, and physical symptoms), with $p$s ranging from $.31$ to $.46$. Workplace harassment was positively related to the victim's negative performance outcomes (CWBS, turnover intentions) ($p = .29, .30$), and negatively related to organizational justice ($p = -.35$). Finally, Bowling and Beehr showed that workplace harassment added incremental validity to the prediction of the consequences of harassment after other stressors had been controlled.

Race and Ethnicity

Two reviews and four meta-analyses, all of which were published in the past 5 years, suggest vitality and integrative efforts occurring in the field exclusively focused on racial and ethnic groups and vocational psychology. In addition, one large-scale study is included that has examined the structure of interests across racial and ethnic groups in the United Spousal employment), and demographic variables (sex, income, and coping style). The meta-analysis ($k = 61, N = 7,034$) by Byron (2005) showed that WIF was related above $.20$ to all the work variables except job involvement ($p$s range from $+.26$ to $.48$ and family stress and family conflict ($p = .30, .35$). The FIW construct was related above $.20$ with the work variables schedule flexibility and job stress ($p = .29, .29$), and nonwork variables (family/nonwork involvement, hours of nonwork, family stress, family conflict, and age of youngest child) with $p$s ranging from $+.21$ to $.32$. Gender yielded a non-zero relation with both WIF and FIW, but its effect was marginal ($p = -.03, .12$). However, gender and being a parent did moderate the relation between job stress and WIF and FIW. Specifically, when there were more parents in the sample, women experienced more WIF and FIW than did men; when there were fewer parents in the sample, men experienced more WIF and FIW than did women. Also single parents had more WIF and FIW than did parents who were married; married and single employees without children had similar levels of WIF and FIW.

Ford, Heinen, and Langkamer (2007) examined many of the same variables in their meta-analysis ($k = 120, N = 42,804$). Like Byron (2005), they found job stress, work support, and work hours to be related above $.20$ to WIF ($p$s range from $+.25$ to $.56$). They also did not find job involvement to be related above $.20$ to WIF. The prediction of FIW with family variables was similar to Byron regarding the predictors family stress and family conflict ($p = .27, .26$), but not family hours and family support. They also showed that WIF contributed additional variance (2%) to family dissatisfaction after family variables were controlled for; FIW did not contribute additional variance to job dissatisfaction after work variables were controlled for. Like the Byron meta-analysis, gender exerted few direct effects on WIF or FIW; however, sex had an impact on the job stress–family satisfaction relation such that, for women, job stress had a smaller negative correlation with family satisfaction than for men. Also, the percentage of the sample that had children was a moderator between work hours and family satisfaction, such that work stressors had a strong negative effect on family satisfaction for individuals with children. Both studies imply that parenthood, marital status, and gender need to be considered as moderators in the relation of work and family antecedents on WIF and satisfaction.
States (Day & Rounds, 1998). Career choice will be discussed first, followed by the structure of interests, then job satisfaction and job performance. Finally, workplace learning and development will be briefly discussed.

**CAREER CHOICE VARIABLES**

Culture and choice variables were examined by Fouad and Byars-Winston (2005). In their meta-analysis, they located 16 studies that examined either career aspirations, perceptions of opportunities and barriers, and tasks related to decision making and exploration with a sample size of 19,611 high school or college students. Career aspirations/career choice did not differ between racial and ethnic groups (g = .01). (Hedge’s g is very similar to Cohen’s d). Career exploration/career decision making also did not differ between groups (g = .23, p > .05). Career expectations and perceptions of opportunities and barriers did differ across racial and ethnic groups (g = .38, p < .02). The CI was large, ranging from .06 to .69. Racial/ethnic minorities perceived fewer career opportunities and more career barriers than did white individuals.

**STRUCTURE OF INTERESTS**

The structure of interests does not appear to differ across African Americans, Mexican Americans, Asian Americans, Native Americans, and Caucasians; (N = 49,450). This finding comes from a definitive article by Day and Rounds (1998), who examined the circular structure of Holland’s six vocational types using the Revised Unisix Edition of the ACT Interest Inventory (UNIACT; Swaney, 1995). These findings concerned students going to college, although similar results were found for tenth-grade students regardless of whether they were going to college (Day et al., 1998).

**JOB PERFORMANCE**

McKay and McDaniel (2006) is the most recent meta-analysis (k = 97, N = 1,09,974) comparing African Americans and Caucasians in terms of job performance. Their dataset includes many of the same studies that Roth, Huffcutt, and Bobko (2003) reviewed, so the focus will be on McKay and McDaniel’s review. The effect size used in this study was Cohen’s d. Medium effects or larger (d ≥ .5) will be discussed to allow the reader to focus on salient effects. McKay and McDaniel examined the following outcomes: task performance, contextual performance, personality-applied social skills, on the job training, overall job performance, work samples, job knowledge tests, absenteeism, salary, promotion, accidents, and commendations/reprimands. Of those 12 criteria, only one outcome—namely, job knowledge tests—was notably different for African Americans and Caucasians (d = .53, with a 90% CI of .33 to .74). Caucasians scored higher on job knowledge tests than did African Americans. African Americans and African Americans’ means did not differ more than d = .5 on the dimensions of task performance, contextual performance, personality-applied social skills, on the job training, overall job performance, work samples, absenteeism, salary, promotion, accidents, and commendations/reprimands. Turnover was also not significantly different.

**WORKPLACE CAREER DEVELOPMENT, PROMOTION, AND PERFORMANCE APPRAISALS**

Brooks and Clunis (2007) reviewed research over the past 25 years in the U.S. workforce. Career development, promotion, and performance appraisals were three of the seven topics. Research concerning Asian Americans and Latinos was much more limited than African American studies.

Career development articles mostly focused on supports, barriers, and strategies. Supports identified included opportunity for feedback, access to information, interactive learning processes, and conducive environments. Barriers for African Americans included structural factors in the workplace (e.g., lack of diversity), existence of a “good old boy” network, lack of mentoring, and lack of adequate succession planning, prejudice, stereotypes, and discrimination (Palmer & Johnson-Bailey, 2005). Also, African Americans were more likely to be denied training requests, be steered away from management track titles, be discouraged from seeking professional promotion opportunities, and have the requirements increased regarding promotion (Brooks & Clunis, 2007). Models focused on women are insufficient for African American women. Coping strategies that have been used successfully by women include networking, education and training, career self-management, mentoring, and supervisor support. Hispanic men and women’s chance of promotion centered on English fluency, whereas the non-Hispanic whites’ chance of promotion centered on years of education (Mundra, Moellmer, & Lopez-Aqueres, 2003).

Performance attainments have been examined in terms of bias in the ratings of employees based on rater race. Most of the studies were atheoretical. Most studies show African Americans to be at a disadvantage regarding promotion, regardless of rank.
found Asian Americans lower in career maturity compared to white counterparts (Leong, 1991). One study found Asian Americans lower in career maturity compared to white counterparts (Hardin, Leong, & Osipow, 2001). The authors noted that career maturity implies independent decision making (Crits, 1978); the interdependent decision making valued in an Asian context implies more career immaturity (Hardin et al., 2001).

Work adjustment and vocational problems have been noted both for Asian immigrants and Asian Americans in general. Immigration may result in lower occupational prestige (Cheng, 1996). Language issues and acculturative stress are common for first-generation Asian Americans (Matsuoka & Ryuujin, 1989). As employed Asian Americans become acculturated, their job satisfaction seems to increase (Leong, 2001). However, even with Asian Americans who are not immigrants or first-generation Americans, it appears that Asian Americans in the work-force may report being more underemployed than white counterparts (Hardin & Leong, 2005), which may also contribute to job dissatisfaction. Finally, Asian Americans may be experiencing additional financial strain if caring for an extended family (Leong & Gupta, 2007).

Within the work setting, Asian Americans have been shown to suffer discrimination. For example, Asian Americans, compared to Caucasians, were not selected by classmates to be team managers in mini-assessment centers set up in organizational behavior classes (Cheng, 1996). Occupational stereotyping was demonstrated by Leong and Hayes (1990), who showed respondents thought Asian Americans were more likely to be successful as computer scientists, engineers, and mathematicians and less likely to be successful as insurance sales people. Occupational discrimination has also been documented against Asian American scientists and engineers within U.S. universities (National Science Foundation, 2004) and against women physicians (Corbie-Smith, Frank, Nickens, & Elon, 1999).

More research is needed in all these areas, and the research needs to move beyond descriptive research to identify underlying processes that may explain racism and discrimination. The focus on cultural moderators such as cultural identity, acculturation,
and SES will be much more illuminating than simply describing differences between various groups (Leong & Gupta, 2007).

**ASIAN AMERICAN EDUCATIONAL EXPERIENCE.**

Asian Americans’ educational experience can be split into positive and negative outcomes. Often viewed as the model minority, evidence has accumulated to verify that their academic successes are mostly comparable to European Americans and greater than other American racial and ethnic minority groups like Native Americans, Hispanics, and African Americans (Tseng, Chao, & Padmawjaja, 2007). Based on large, nationally represented samples collected over years (Tseng et al., 2007), academic achievement in third grade (Rathbun, West, & Germino-Hausken, 2004), middle school (Kao, 1995; Kao, Tienda, & Schneider, 1996), and high school (National Center for Educational Statistics, 2001, 2002, 2003a,b) was demonstrated to be comparable to European Americans and superior to other ethnic minority groups after controlling for contextual variables (e.g., SES, sex). Asian Americans and European Americans, in comparison to other ethnic groups, reported lower percentages of high school dropout rates, higher undergraduate graduation rates, and higher standardized test scores in mathematics (Tseng et al., 2007).

The negative outcomes that Asian Americans experience occur outside the classroom and are due to racism that results in peers resorting to verbal abuse, physical harassment, and intimidation (e.g., Juvenon, Nishina, & Graham, 2000; Kao, 1995). This behavior is interwoven with SES, immigration status, language elitism (“In America, everyone should speak English”), and peers resenting positive teacher reactions toward Asian Americans (Gibson, 1988; Tseng et al., 2007).

**Vocational Psychology and Individual Differences**

We inherit dispositions, not destinies. Life ‘vocational’ outcomes are consequences of lifetimes of behavior choices. The choices are guided by our dispositional tendencies and the tendencies find expression within environmental opportunities that we actively create. (Rose, 1995, p. 648)

This quote clearly explains how dispositional tendencies—namely, individual differences—are interwoven into the vocational outcomes that have been discussed in this chapter. The quote also amplifies how the educational and vocational choices people make beginning in childhood and continuing throughout adulthood are impacted by individual differences. That is perhaps why vocational psychology is rooted in the individual difference tradition in psychology. Moreover, the quote reflects counseling psychology’s emphasis on the individuality of each student and client. The foundation of individual difference research lies in the understanding that people differ in magnitude of any characteristic they possess (Dawis, 2005) and that the range is five to six standard deviations or more (Dawis, 2005; Lubinski, 2000) compared to the much smaller (most often less than Cohen’s d of .5) effect size of group differences (e.g., sex differences and racial and ethnic differences).

Not surprisingly, individual differences, especially interests and personality traits, repeatedly emerged as salient predictors of vocational outcomes like educational aspirations, career choice, affective commitment in the job, job satisfaction, job performance, intentions to quit, CWBs, career success, career satisfaction, and mental health outcomes (e.g., Lubinski, 2000). A discussion of individual differences needs to start with a foundation in heritability. Following heritability, cognitive ability, personality traits, interests, and values will be reviewed as they pertain to vocational outcomes. Finally, integrative work in which more than one individual difference variable is examined will be presented.

**Heritability**

Heritability can be defined as the proportion of variance in an observed trait that can be traced to genetic variation in the population (L. S. Gottfredson, 2002). It can range from 0% of the variance in a trait due to genetics—meaning the variation is all due to nurture or the environment—to 100% of the variance in a trait due to genetics—meaning that the variation is all due to nature. Scholars in vocational psychology have begun to acknowledge the accumulated evidence across multiple studies that children are born predisposed toward certain traits, attitudes, and behaviors (Gottfredson, 2002).

For the domain of vocational psychology, the facts accumulating about heritability are startling. The variation in interests due to nature appears to be about 40% (Betsworth et al., 1994; Lykken, Bouchard, McGue, & Tellegen, 1993). The heritability of personality traits appears to be around 50% (Tellegen et al., 1988), whereas the heritability of cognitive abilities appear to be around 70%
(Bouchard, 1998). Work values appear to be also partly due to nature, although the variance due to genetic variation is lower than interests, personality, and cognitive abilities, around 35% (Arvey, McCall, Bouchard, Taubman, & Cavanaugh (1994). Self-rated competence across academic and social domains appears to be influenced by nature as well, with a 50%-60% heritability estimate reported (McGuire, Neiderhiser, Reiss, Hetherington, & Plomin, 1994). Interestingly, some vocational outcomes appear to also be substantially influenced by nature, including level of education (60%-70%), occupation (50%), and income (40%-50%) (L. S. Gottfredson, 2002). Finally, overall job satisfaction appears to be partially attributed to nature, with a heritability estimate of 30% (Arvey et al., 1994).

The influence of nature extends beyond the person to interaction with the environment. Behavioral geneticists have come to understand that the environmental social context of the person is also in part due to nature, based on the people in the environment. "Behavioral genetic research consistently shows that family environment, peer groups, social support, and life events often show as much genetic influence as do measures of personality" (Plomin, DeFries, McClearn, & Rutter, 1997, pp. 203–204). People have differential susceptibility to the same environment based on their internal predispositions. Nonshared (environmental influences not shared by siblings such as peer groups), rather than shared, environmental influences have an impact on the development of general traits. In sum, vocational psychologists need to better understand the processes involved in how and why and in what contexts individual difference variables have the most impact on vocational psychology (L. S. Gottfredson, 2002).

**Ability**

Cognitive ability has been identified in many of the theories of vocational psychology. Dawis postulates in his TWA that cognitive ability is the general dimension that underlies groups of acquired skills. The work environment requires particular skills of the individual for the job to be satisfied with the person, or for the person to achieve satisfactoriness (Dawis, 2005). Holland's theory (1997) includes ability as part of the broad definition of the person including their interests, skills, abilities, and values. Likewise, Super, in the career construction theory, hypothesizes that one's vocational personality includes abilities. In SCCT, Lent and colleagues (1994) predict performance and persistence in educational and occupational pursuits (Lent et al., 1994). One of the exogenous variables is ability, which directly affects SE and outcome expectations and performance attainment level. Krambölz' social learning theory (e.g., Mitchell & Krambölz, 1996) also sees cognitive ability as an antecedent to instrumental learning.

Cognitive ability, measured most commonly by the g factor, is a major attribute in educational achievement (Benbow & Stanley, 1996; Snow, 1996). Cognitive ability is also a potent attribute in job performance and job training (e.g., Hunter & Hunter, 1984; Judge et al., 2007; Levine et al., 1996; Schmidt & Hunter, 1998). Moreover, the more complex the job or training demands, the more important cognitive ability becomes. These results have also been supported cross-culturally with German samples (Hülsheger et al., 2007), British samples (Bertua et al., 2005), and samples from 11 European countries (Salgado et al., 2003).

Cognitive ability has also been shown to overshadow the contribution of SE in the prediction of work performance. Judge and colleagues (2007), in their meta-analysis, examined whether the relation of SE and performance would be attenuated after the relation of performance and distal influences, namely the Big Five, ability, and experience, were taken into account. Self-efficacy's standardized regression coefficient was nonsignificant ($\beta = 13$) in the prediction of work performance, whereas cognitive ability ($\beta = .52$), conscientiousness ($\beta = .26$), and experience ($\beta = .26$) were significant. In that same meta-analyses, Judge and colleagues also showed cognitive ability ($r = .20$) to be predictive of SE itself.

Finally, cognitive ability was shown to be an antecedent in objective career success (i.e., salary) in a meta-analysis (Ng et al., 2005). In fact, salary was related above .20 to only one individual difference variable; namely, cognitive ability ($r = .27$; Ng et al., 2005). Ng and colleagues (2005) did not find cognitive ability related to the other objective indicator of career success; namely, number of promotions.

The general $g$ factor appears quite salient in important vocational outcomes. As Lubitski (2000) clarifies, the measures of cognitive ability seem to capture one's ability to learn as long as cognitive ability refers to ability to learn complex processes and skills and that a different mix of those constituents may be required in different learning tasks and settings.
Interests

Interests seem to be stable dispositional tendencies that guide, direct, and maintain one’s actions toward certain activities and away from other activities (Low & Rounds, 2006). In many vocational psychology theories, interests have played a central role. The most obvious example is Holland’s P–E fit theory, in which interests form the core of the person-side of the equation, and the match occurs when a person seeks out an environment that allows her or him to express interests in a compatible educational or work environment. In SCCT, interests become the criterion variable, with SE and outcome expectations hypothesized as the primary determinants of the development of interests over time (Lent et al., 1994). In Super’s career construction model, interests are part of the objective P–E fit aspect of the vocational personality (Savickas, 2005).

Interests have been one of the most researched constructs in vocational psychology. This may be due to the early construction of E. K. Strong’s Vocational Interest Blank (1927) and the popularity of Holland’s hexagonal structure of interests. It seems clear that interests are, in large part, due to nature (e.g., Betzworth et al., 1994) and that they are relatively stable across time (e.g., Hansen & Swanson, 1983; Low & Rounds, 2007; Low et al., 2005; Rottinghaus et al., 2007; Strong, 1955). Interests also appear to be robust for single individuals over time (Low & Rounds, 2006) and stable in the relative placement of individuals within a group (Low & Rounds, 2006). In fact, there is some evidence that interests may be more stable than personality, despite the assumption of many scholars that personality traits are the developmental antecedents of interests. Low and Rounds (2006) reported stability coefficients for interests that were consistently more stable than the personality traits’ stability coefficients reported in Roberts and DelVecchio (2000) across ages 12 to 40. Moreover, the structure of interests seems to be circular (the six dimensions are not equidistant and may not be all inclusive), with the six dimensions of Holland representing an excellent typology across multiple racial and ethnic groups in the United States (Armstrong, Hubert, & Rounds, 2003; Day & Rounds, 1998), across men and women in the United States (e.g., G. D. Gottfredson, 1999; Low & Rounds, 2006), and cross-culturally (Low & Rounds, 2006; Rounds & Tracey, 1996).

Interests, despite their stability, do interact with the near environment to yield changes in interest patterns (G. D. Gottfredson, 1999). Environmental influences include parents’ actions in what activities they offer and reinforce to children (manual labor not reinforced as career choice in homes with professional parents). Other influences include teachers who encourage learning or engage the student (Meece & Scantlebury, 2006). Mastery, modeling, feedback, and responsiveness to the context (women being encouraged to be primary caretaker for small children) may encourage or discourage certain interests (Betz, 2006). Social and cultural influences are potent, as illustrated by the scarcity of women in the U.S. Senate and House of Representatives.

Interests have been studied as outcomes of personality traits, SE, and outcome expectancies. Scholars have ascertained that some personality traits overlap with some of Holland’s six interests (Barrick, Mount, & Gupta, 2003; Larson, Rottinghaus, & Borgen, 2002) and that specific facets of personality predict specific interests (Staggs, Larson, & Borgen, 2003; Sullivan & Hansen, 2004). Self-efficacy across Holland’s hexagon and across specific academic domains has been moderately predictive of parallel interests (Rottinghaus, Larson, et al., 2003). Interests have also been shown to influence SE bidirectionally (Nauta et al., 2002; Tracey, 2002). Domain-specific outcome expectations, particularly in math/science domains, have been predictive of parallel domains of interests (Lent et al., 1994: Young et al., 2004).

Interests have been shown to be potent predictors of other vocational outcomes. The most well-known outcome is educational major and career choice. Vocational interests across Holland’s hexagon have shown to be robust in predicting among different educational majors (Gasser et al., 2007; Harmon et al., 1994) and among diverse occupational choices (e.g., Ackerman & Beier, 2003; Donnay & Borgen, 1996; Donnay et al., 2005; Harmon et al., 1994). Basic domains of interests (e.g., Basic Interest Scales of the Strong) compared to the six Holland domains have been shown to be superior predictors of both educational major and occupational choice (e.g., Betz et al., 2003; Donnay & Borgen, 1996, 1999; Gasser et al., 2007; Larson, Wu, et al., 2010; Rottinghaus, Betz et al., 2003). Interests across Holland’s dimensions have also been shown to be predictive of educational aspirations (Rottinghaus et al., 2002).

Finally, a specific type of vocational interest—namely, interest in math/science content—has been shown to predict course intentions (Young et al., 2004). Course interests remained significant predictors of intentions even after parallel outcome expectations and other career-related variables were controlled (Gupta, 2003). Needed are further studies of the many influences that influence interests and their relationship to educational major and career choice.
Personality Traits

As opposed to interests that move people toward or away from activities, personality traits appear to affect how a person copes with or adapts to an environment (Low & Rounds, 2006). Interestingly, personality traits are not central in any of the well-known vocational psychology theories and are, at best, distal exogenous predictors in some models, like SCCT (Lent et al., 1994).

Personality traits have received enormous attention in their motivational role as antecedents of a host of vocational outcomes. This is surely due to the popularity of research involving the Big Five and negative and positive affectivity. Positive and negative affectivity (labeled most recently by Tellegen [2000] as positive emotional temperament and negative emotional temperament) are viewed as alternative higher-order affective dimensions to the Big Five. These two superordinate factors, along with a third factor, constraint, were conceptualized by Auke Tellegen (1982, 2000) and measured by the Multidimensional Personality Questionnaire (MPQ; Tellegen, 1982, 2000; Tellegen & Waller, 2008). The constraint factor captures behavioral regulation. Under these three factors are 11 primary traits (Tellegen, 2000) labeled well-being (happiness), achievement (works hard), social potency (forceful and decisive), social closeness (sociability), absorption (entranced by evocative sights and sounds), stress reaction (worry, vulnerable), aggression (victimizer), alienation (victim), control (cautious, careful), traditionalism (social conservative), and harm-avoidance (chooses safe and boring over danger). There is very little overlap among these traits, and strong psychometric properties exist behind each one.

There has been a resurgence of scholars examining personality traits in interest development and career choice of college students (e.g., Ackerman & Beier, 2003; Larson & Borgen, 2006; Larson et al., 2007; Staggs et al., 2003; Sullivan & Hansen, 2004). Several studies examined choice of major, contribution of personality traits in specific interests, and relation of personality traits and SE.

Regarding choice of major, Larson and colleagues (2007) showed that the Big Five contributed somewhat to differentiating among Taiwanese college students who had chosen one of four majors, namely, accounting, engineering, counseling, or finance. For example, female counseling majors were more agreeable and less conventional than were female finance majors. Male counseling majors were more agreeable and less neurotic than were the male finance majors. Ackerman and Beier (2003) also found that personality traits were part of a set of trait complexes (composite traits of ability, interests, and personality traits) that differentiated among adults’ retrospective undergraduate college majors.

Regarding the influence of personality traits on specific interests, Staggs and colleagues (2003), showed in a hierarchical multiple regression that primary personality traits more specific than the Big Five or the Big Three (Tellegen, 2000) were significantly predictive of some basic interests even after the variance due to the salient general trait had been removed. For example, after removing variation due to constraint, harm-avoidance scores (person who scores low tends to prefer excitement and danger; avoids safe activities because they are tedious and dangerous; avoids safe activities because they are tedious and dangerous; avoids safe activities because they are tedious and dangerous; avoids safe activities because they are tedious and dangerous; avoids safe activities because they are tedious and dangerous) contributed an additional 17% of the variance in the prediction of scores on the Strong Basic Interest Scale, mechanical activities. Sullivan and Hansen (2004) showed that facet scales of the Big Five captured most of the variance in some Basic Interest Scales, leaving no significant variation due to the Big Five traits. For example, they showed that the openness scores did not add unique variance to the prediction of the five artistic Basic Interest scales (music/performing arts, art/design, writing, international activities, fashion, and culinary arts) after the variation due to one of openness' facet scales, the aesthetics facet scale, had been removed.

Finally, Larson and Borgen (2006) wanted to ascertain the relation of dimensions of vocational SE (or confidence) across Holland's hexagon and Tellegen's Big Three and his 11 primary traits (Tellegen, 2000). Across four samples of college students, they found positive emotional temperament related substantially to all of Holland's SE dimensions except conventional confidence (rs range from .19 to .66). Moreover, social potency was associated with artistic, social, and enterprising confidence (rs range from .24 to .66). Achievement correlated with investigative and enterprising confidence (rs range from .19 to .34); well-being correlated with social and enterprising confidence (rs range from .20 to .33); and social closeness...
correlated with social confidence (\( r \) range from .19 to .28) (Larson & Borgen, 2006). Larson and Borgen's results suggest clearly that vocational confidence across Holland's interest types is related to broad and specific personality traits. A study by Judge and colleagues (2007) found similar results that suggest that SE needs to be untangled from personality traits. Judge and colleagues examined work outcomes and showed that the specific contribution of task-specific SE to work-related performance was much smaller once the distal variables, including the Big Five, were controlled. Conscientiousness, extraversion, and emotional stability were significant unique predictors of SE.

In the adult literature, personality traits were significant predictors of job search behaviors, job satisfaction, global job performance, and training proficiency. The personality traits include positive and negative affectivity, neuroticism, extraversion, openness to new experiences, agreeableness, and conscientiousness.

Positive affectivity was shown to be a positive antecedent, whereas negative affectivity was shown to be a negative antecedent to job satisfaction (\( r = .49, -0.33 \), Connolly & Viswasvaran, 2000; \( r = .34, -0.34 \), Thoresen et al., 2003); affective commitment (\( r = .36 \), Connolly & Viswasvaran, 2000; \( r = .35, -0.27 \), Thoresen et al., 2003); and personal accomplishment (\( r = .49, -0.34 \), Thoresen et al., 2003). Conversely, positive affectivity was shown to be negatively related, whereas negative affectivity was shown to be positively related to turnover intentions (\( r = -0.17, 28 \), Thoresen et al., 2003); emotional exhaustion (\( r = -0.32, 62 \), Thoresen et al., 2003); and depersonalization (\( r = -0.27, 47 \), Thoresen et al., 2003). Future scholars need to examine the relation of more specific traits beyond the overarching dimensions of positive and negative affectivity. Tellegen's 11 primary traits would be excellent specific traits to examine in the future work adjustment literature.

The Big Five personality traits have been examined extensively in the adult literature. One or more of the Big Five have been significant predictors of job search behaviors, number of job offers, job satisfaction, global subjective ratings of job performance, training proficiency, CWBs, career satisfaction, and life satisfaction. Neuroticism, for example, was shown to be a negative antecedent to job satisfaction (\( r = -0.29 \), Judge et al., 2002), life satisfaction (\( r = -0.30 \), Judge et al., 2002), and career satisfaction (\( r = -0.36 \); Ng et al., 2005). Extraversion was shown to be an antecedent to job search behaviors (frequency of activities or time spent searching) (\( r = 0.46 \), Kanfer et al., 2001); number of job offers (\( r = 0.41 \), Kanfer et al., 2001); job satisfaction (\( r = 0.25 \), Judge et al., 2002); training proficiency (\( r = 0.26 \), Judge et al., 2002); career satisfaction (\( r = 0.27 \); Ng et al., 2005); and life satisfaction (\( r = 0.22 \); Judge et al., 2002).

Openness was shown to be an antecedent to job search behaviors (\( r = 0.27 \), Kanfer et al., 2001); number of job offers (\( r = 0.28 \), Kanfer et al., 2001); job satisfaction (\( r = 0.29 \); Judge et al., 2002); and training proficiency (\( r = 0.25 \); Judge et al., 2002). Agreeableness was predictive of number of job offers (\( r = 0.29 \), Kanfer et al., 2001). Conscientiousness was shown to be predictive of job search behaviors (\( r = 0.38 \); Kanfer et al., 2001); job satisfaction (\( r = 0.26 \), Judge et al., 2002); subjective job performance (supervisor ratings) (\( r = 0.26 \); Judge et al., 2002); CWBs (\( r = -0.39, -0.26 \), Dalal, 2005; Dudley et al., 2006); and life satisfaction (\( r = 0.26 \); Judge et al., 2002). Conscientiousness remained a significant predictor of job performance even after accounting for experience, cognitive ability, and SE (conscientiousness, \( \beta = 0.26 \); Judge et al., 2007).

Needs, Work Values, and Goals

Needs and values have not received the attention in counseling psychology that they deserve. However, Rounds and Armstrong (2005) provided an excellent overview of this area. They identify work values as shared interpretations of what people want and expect from work. Needs, compared to values, are defined as more biological, and Rounds and Armstrong use Murray's concept of needs as contrast, values are conceptualized as more cognitive in decision processes. They recognize that values relate to life satisfaction (\( r = 0.21 \); Rounds & Armstrong, 2005). Work motivation theories (Latham & Pinder, 2005) attempt to explain the context and processes that account for an individual's energy, direction of effort, and maintenance of that effort in a work setting. Latham and Pinder (2005) list several individual studies that have shown that work values relate to job satisfaction, job choice, tenure, commitment and cohesion, intention to quit, turnover, and self-report ratings of teamwork (e.g., Dawis, 1991; Kristof, 1996; Ronen, 1994). Other constructs mentioned in work motivation research that affect job performance include self-monitoring strategies, self-regulating strategies (goal setting), core self-evaluations, and goal orientation.
I found one meta-analysis by Judge and Ilies (2002) that examined three indicators of performance evaluation (goal-setting, expectancy, and SE motivation) and their relation to the Big Five. They showed goal setting motivation to be related to neuroticism ($p = -0.29$), agreeableness ($p = -0.29$), and conscientiousness ($p = 0.28$). Expectancy motivation was related to neuroticism ($p = -0.29$) and conscientiousness ($p = 0.23$). Self-efficacy motivation was related to neuroticism ($p = -0.35$), extraversion ($p = 0.33$), openness ($p = -0.20$), and conscientiousness ($p = 0.22$).

Integration Across Ability, Personality, and Interests: Cross-fertilization

The scholarship concerning the overlap among attributes has been burgeoning in the past 10 years. On the counseling psychology side, the role of personality traits has led to ongoing dialogue about the role of personality in training students (Walsh, 2001; Walsh & Eggerth, 2005) and the role of personality and interests in optimal human functioning (e.g., Borgen & Harmon, 1996; Borgen & Lindley, 2003). Empirical studies have emerged investigating personality and interests (e.g., Ackerman & Beier, 2003; Lindley & Borgen, 2000; Staggs et al., 2003; Sullivan & Hansen, 2004) and personality and confidence (e.g., Betz, Borgen, & Harmon, 2006; Larson & Borgen, 2006). Mount, Barrick, Scullen, and Rounds (2005) identified underlying higher-order dimensions that captured the overlap of interests and personality. Ackerman (1996) articulated a theory of adult intellectual development that explains how people accumulate knowledge over time based on personality, interest, and cognitive abilities interrelations. He anchored the theory in a seminal work produced in partnership with Heggstad (Ackerman & Heggstad, 1997), in which they articulated an integrated framework that reconsiders the uniqueness of abilities, interests, and personality. Finally, several quantitative reviews have moved the field ahead (Barrick, Mount & Gupta, 2003; Larson, Rottinghaus, & Borgen, 2002; Staggs, Larson, & Borgen, 2007).

Interests and Personality Overlap

Three meta-analyses have converged to provide an excellent grasp of the extent of overlap between the Big Six (interests) and the Big Five. Larson and colleagues (2002) conducted a meta-analysis ($k = 12, N = 2,571$). Of the 30 interests–personality (I–P) relations, five appeared to be substantial for both men and women across the six Holland types. They were artistic interests–openness ($r = 0.48$), enterprising interests–extraversion ($r = 0.41$), social interests–extraversion ($r = 0.31$), investigative interests–openness ($r = 0.28$), and social interests–agreeableness ($r = 0.19$). Type of measure and sex interaction moderated one additional relation. Conventional interests–conscientiousness was related .25 to .33 for men and for women who took the Self-Directed Search. For women who took the SII, the relation was not present ($r = 0.07$).

Barrick and colleagues (2003), using a broader, more diverse sample, reached essentially the same conclusions regarding the relation of the Big Six and the Big Five. Their significant I–P relations were artistic interests–openness ($r = 0.39$), enterprising interests–extraversion ($r = 0.41$), social interests–extraversion ($r = 0.29$), investigative interests–openness ($r = 0.25$), social interests–agreeableness ($r = 0.15$), and conventional interests–conscientiousness ($r = 0.19$).

Finally, Staggs and colleagues (2007) corroborated the Big Six–Big Five relations using meta-analyses ($k = 5, N = 2,023$). Instead of the Big Five model, they used Tellegen’s Big Three and his 11 primary traits. Five of those primary traits had previously been identified as marker scales for the Big Five: stress reaction for neuroticism, social absorption for extraversion, absorptive potential or social closeness for extraversion, absorption (openness) relation was null ($r = -0.22$). The investigative interests–extraversion ($p = -0.30$), social interests–extraversion ($p = -0.29$), investigative interests–openness ($p = -0.19$), and social interests–agreeableness ($p = 0.19$). Type of measure and sex interaction moderated one additional relation. Conventional interests–conscientiousness was related .25 to .33 for men and for women who took the Self-Directed Search. For women who took the SII, the relation was not present ($r = 0.07$).

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among the 11 attributes: interests versus personality traits, striving for accomplishment versus striving for personal growth, and interacting with people versus interacting with things.

**Trait Complexes**

Ackerman and Heggestad (1997) reconceptualized how many scholars now think of cognitive ability, interests, and personality. That is, they encouraged scholars to think of them in a rearranged way, according to four trait complexes rather than general and specific abilities, six domains of interests, and five domains of personality (Big Five) or the 11 traits identified by Tellegen (1982, 2000). In their seminal work, they presented meta-analytic evidence showing that cognitive abilities and personality traits (the Big Five and the 11 primary traits identified by Tellegen [1982, 2000]) could be integrated across these four trait complexes. In addition, they speculated without data as to where Holland’s Big Six interests would be located. The four trait complexes are labeled science/math, intellectual/cultural, social, and clerical/conventional. They provided evidence that the cognitive ability of fluid intelligence, visual perception, and math reasoning would be located within the science/math complex; no personality traits were identified as being in this complex. They speculated that realistic and investigative interests would be located here. Next, the intellectual/cultural complex included the cognitive abilities of ideational fluency, crystallized intelligence, and knowledge and achievement and the personality traits of openness (Big Five) and absorption (11 primary traits). They speculated that artistic and some investigative interests would be located in this complex. Next, the social complex was shown to include no cognitive abilities and was anchored by the personality traits of extraversion (Big Five) and social potency and well-being (primary traits). They speculated that social and enterprising interests would fall within the social complex. Finally, within the clerical/conventional complex, the cognitive ability, perceptual speed, was located along with the personality traits of conscientiousness (Big Five), and control and traditionalism (11 primary traits) were located. They placed Holland’s conventional interests in this complex.

The meta-analyses that came after Ackerman and Heggestad’s seminal (1997) article supported many of their hypothesized interests-personality linkages using Holland’s Big Six and the Big Five personality traits. These I-P linkages from the meta-analyses included artistic interests and openness, investigative interests and openness, social interests and extraversion, enterprising interests and extraver­sion, and conventional interests with conscientious­ness (excluding women who completed the SII) (Barrick et al., 2003; Larson et al., 2002). Like Ackerman and Heggestad, these two groups of scholars also did not find realistic interests to be linked to the Big Five. Finally, Staggs and colleagues (2007) provided meta-analytic interests-personality linkages using Tellegen’s 11 primary traits. They were the first to show in a meta-analysis that the science/math trait complex may include personality traits not included in the Big Five; namely, harm-avoidance and achievement. Both of these traits related to realistic interests. Moreover, they provided support for the proposed I-P linkages made by Ackerman and Heggestad using the 11 primary traits including artistic interests and absorption, social potency and enterprising interests (not social interests), social interests (not enterprising interests) and well-being. They did not find I-P linkages in the clerical/conventional trait complex; that is, conventional interests were not related to control and traditionalism as Ackerman and Heggestad had proposed.

Staggs and colleagues (2007) went one step beyond the prior meta-analyses and provided, for the first time, meta-analytic I-P linkages that were quite specific. They examined the linkages between the Big Six and the 25 basic dimensions of interests from the Basic Interest Scales of the SII (Harmon et al., 1994) with Tellegen’s 11 primary traits. For example, artistic interests are separated into writing, art, music/drama, applied arts, and culinary arts, and realistic interests are separated into mechanical, agricultural, military, and athletic interests. Using these meta-analytic estimates, they revised Ackerman and Heggestad’s (1997) tentative I-P linkages located in each of their four trait complexes. Figure 6.1 shows the hypothesized meta-analytic I-P relations made by Staggs and colleagues (2007). The personality traits are in capital letters, and Holland’s typology is abbreviated to form the RIASEC. Conventional [C] is left off since there were no conventional I-P relations above .20. Their $r$ values are shown on Figure 6.1. The dotted lines represent those I-P linkages that were negative. Within the science/math complex, they found realistic interests and mechanical and agricultural interests, in particular, to be negatively linked with harm-avoidance (choosing boredom over danger) ($rs$ range from $-21$ to $-31$) and investigative interests and science interests, in particular, to be positively linked to achievement ($rs = .27, .21$). Within the intellectual/cultural
complex, absorption was positively related to general and specific artistic interests ($r$ range from .35 to .44). Within the social complex, social and enterprising interests were differentiated based on the former being related positively to well-being (dispositional happiness) and negatively related to aggression, and the latter being related to social potency (forceful, dominant, charming). Social potency was also positively related to specific enterprising interests (public speaking, law/politics, merchandising, sales, and organizational management) with $r$ ranging from .29 to .49.

Figure 6.2 shows additional specific I–P linkages that were not hypothesized in which the I–P correlations were .2 or greater. Similar to Figure 6.1, dotted lines represent negative relations. In the science/math complex, additional I–P linkages not posited by Ackerman and Heggestad (1997) emerged; interests in military activities were negatively related to harm-avoidance and positively related to aggression. Math interests were positively related to achievement. In the intellectual/cultural complex, interests in applied arts, nature, and social service were positively related to absorption. Within the social complex, a large number of specific I–P linkages of $|.2|$ or greater were reported. The particular linkages provide more evidence that enterprising interests and social interests are uniquely linked with different constellations of personality traits. For example, the Basic Interest Scales that are listed as social interests related negatively to aggression; none of the Basic Interest Scales that were listed as enterprising interests related negatively to aggression. It also appears that the personality trait of well-being is related to primarily specific social interests but also was linked to athletics, a realistic interest, and culinary arts, an artistic interest. Finally, Staggs and colleagues also provide evidence in both figures that traditionalism may need to be moved from the clerical/conventional complex to the social complex. Sex was not found to be a substantial moderator of I–P correlations.
Looking Back and Looking Ahead

Since Frank Parsons' (1909) publication, Choosing a Vocation, which many consider to be the birth of vocational psychology, the field has evolved and been transformed by the societal forces that shaped psychology in general and vocational psychology in particular. Scholars have summarized the most recent past by celebrating the contributions of the grand masters of vocational psychology, like Donald Super, John Holland, and René Davis, and more recently Sam Osipow (Borgen, 1991; Barak & Leong, 2001), and by reviewing trends in the journals (e.g., Borgen, 1991; London & Greller, 1991; Watkins & Savickas, 1990), and trends in the field (Dawis, 1996; Lee, Mitchell, & Sablynski, 1999; Losocco & Roschelle, 1991).

Vocational psychology’s vision is a mosaic with diverse viewpoints. Scholars do not speak with one voice. Some argue that vocational psychology needs to break away from counseling psychology and form its own specialty (e.g., Tinsley, 2001), or that vocational psychology needs to be more scientific and grounded in measurement and basic psychology (e.g., G. D. Gottfredson, 2001; Hesketh, 2001; Vondracek, 2001). Some argue that vocational psychology needs to be more grounded in the multicultural zeitgeist of the day and focus more on those who have not had a voice in the literature (e.g., Blustein, 2001; Fouad, 2001; Subich, 2001).

The separation of the literature dealing with youth and college students versus wage-earning adults has been clearly established, based partly on tradition and partly on different outcomes and processes. Cross-fertilization is occurring, however, with the school-to-work efforts in counseling psychology and the work of scholars in integrating personality, interests, values, and abilities. Multicultural scholars and feminist scholars writing about vocational issues dealing with discrimination, sexual harassment, worklife–family balance are also crossing the divide.

The field is vibrant and thriving. Multiple scholars in counseling psychology, I/O psychology, organizational psychology, and applied and individual differences psychology are generating research, educating the next generation, and disseminating findings.
Also, more longitudinal studies are being conducted. Books and book chapters proliferate that serve to inform and energize new and old scholars alike. A number of scholarly journals are devoted exclusively to vocational psychology. Vocational counselors continue to provide assistance to university clients, high school clients, and elementary students as they explore the world of work, learn about themselves, and develop aspirations, goals, and initial choices about what to study and what activities to pursue. Psychologists in work settings provide assistance to employees, employers, and the public at large regarding how wage earners can be both productive and well adjusted.

As scholars, our first task is to generate new knowledge concerning vocational psychology. That new knowledge needs to build on prior findings and also provide new lines of inquiry. Ideally, vocational theories should fall out of favor due to lack of support for the propositions rather than simply neglect. Likewise, vocational theories that are widely used and accepted should continue to be rigorously examined and anchored in science. For example, scholars need to examine the proposition that congruence defined by a congruence index leads to job satisfaction and tenure; the empirical support is absent. It may be that unexamined moderators are present or that measures of job satisfaction are theoretically inappropriate. Nonetheless, scholars need to either give up on the proposition that congruence as defined by a congruence index leads to job satisfaction or discover under what conditions that proposition holds true. To generate new knowledge, all research methods need to be utilized. The literature search yielded insufficient findings anchored in experimental or quasi-experimental design. Experimental design has many strengths, particularly in maintaining strong internal validity. It is hard to eliminate alternative hypotheses without a proportion of findings being anchored in experimental or quasi-experimental design. Experimental studies may be particularly well-suited to examine potential mechanisms that may explain well-established linkages. For example, if SE and interests are moderately to strongly related, and interests are 40% genetic, then what mechanisms initially lead children to pursue certain activities that they lack confidence in because they have never attempted the activity? Is it curiosity? More research is needed that examines how general variables (e.g., personality traits) are applied to and mediated by task- and situation-specific variables in affecting performance, and how these variables are moderated and affect situational structuring and choice (Locke & Latham, 2004). Also, some traits have a direct impact on performance (like ability), and vocational psychologists need to understand when and why this occurs (Latham & Pinder, 2005).

Our second task, as vocational scholars, is to integrate existing knowledge. Scholars need to continue to generate more quantitative reviews in the form of meta-analyses. In searching the literature base, it became apparent that the number of meta-analyses concerning children’s and adolescents’ vocational development was sparse in comparison to meta-analyses concerning adults in the workforce and/or individual differences, especially personality. The 47 meta-analyses that were located in researching this chapter could be organized according to the sections: wage-earning adults (17), individual differences (16), diverse groups (6), achievement (5), children/adolescents/college students other than achievement (3). The scarcity of quantitative reviews may be one reason the vocational psychology of career choice and vocational development is not more integrated into the larger psychological domain.

Vocational scholars need to generate more conceptual reviews as well. The positive news is that many conceptual reviews are being published in various handbooks and texts. Integrating knowledge within particular domains of the field allows scholars to coalesce what is known and what new directions of inquiry to pursue. It also gives scholars opportunities to discard aspects of theories that are not supported by evidence. For example, congruence and job satisfaction’s relation is either insignificant or too small to be practical. Scholars need to consider moderators or be more precise about what might be going on through the use of moderators (Dik, 2006).

The third task is to disseminate information learned in vocational psychology to a range of audiences. Career counselors need research findings to continue to update and upgrade their knowledge base and skills. Vocational clients need the most parsimonious and empirically grounded theories, measures, and tools to assist them in their learning, choosing, and working. Psychology undergraduates need to be informed of vocational psychology in introductory psychology courses, as well as in other advanced-level courses, such as individual difference courses, personality courses, and specialized courses in vocational psychology or counseling psychology.

The fourth task is to inform other areas and be informed by those areas. Because the field is vast
and scholars can only be well-informed in their particular niches, it is crucial that we inform other scholars within and outside vocational psychology. Vocational psychology will benefit from increasing its visible contribution to psychology, so that the body of work cross-pollinates with related fields like industrial/organizational, clinical psychology, social psychology, and developmental psychology (Vondracek, 2001). Vocational researchers need to continue to learn broadly from areas within and outside our own niches, so that we can continue to see with fresh eyes and new perspectives. The strongest benefit of counseling psychology's commitment to multiculturalism is the understanding that seeing research from many dimensions adds breadth and depth and allows us to be more helpful to clients.

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