Reexamining Doctoral Student Socialization and Professional Development: Moving Beyond the Congruence and Assimilation Orientation

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Introduction

In the spring of 2000, hundreds of national leaders in graduate education from colleges and universities around the nation gathered to talk about ways of reforming doctoral training in the arts and sciences (Re-envisioning the Ph.D. Conference, Seattle, 2000). The meeting, sponsored by the Pew Charitable Trusts, underscored a growing crisis in American doctoral education. Up until recently, traditional disciplinary Ph.D. programs were assumed to be training students to enter the professorate. For a variety of reasons, the availability of academic posts in many fields has declined in recent years (Chronicle of Higher Education, 1999) and a larger percentage of doctoral degree recipients have, as a result, begun to look for employment in sectors outside of academe (Sanderson & Dugoni, 1997). The reduced availability of academic posts in many fields, along with the increased migration of a variety of doctoral degree recipients to the private sector, has forced many doctoral training programs to reconsider reforming the structure and outcomes of doctoral training.
Certainly, the changing employment prospects and professional aspirations of doctoral degree recipients beg the question of how doctoral education in the disciplines might be reformed. Such reform would be functional in assisting students in becoming more employable, and would also increase the breadth of learning that occurs in doctoral programs. In effect, such reform is centered on the question, "What might be done to equip doctoral students for the 21st century?"

Any discussion about what students need to know speaks to closely held conceptions about how doctoral students should be professionally developed or socialized. Of the many frameworks for understanding student professional development and socialization, two theoretical propositions have received focused attention in the literature: (1) the psychological and sociological frameworks of career choice and professional decision-making (Katz, 1963; Klein and Weiner, 1977; Holland, 1966; 1973; 1985; 1997; Williamson, 1965; Zaccaria, 1970), and (2) frameworks of professional socialization (Bragg, 1976; Merton, Reader, & Kendall, 1957; Tierney and Rhoads, 1994; Weidman, 1989; Weidman, Twale, & Stein, 2001).
It may seem odd to examine career choice literature as a pathway to a discussion on graduate student socialization. As I make clear in this chapter, career choice theorists lay the foundation for all future research on both career decision-making and professional career development and socialization. Career choice theorists have attempted to explain the factors that operate on the individual level to motivate career decision-making and development. Socialization theorists attempted to explain how the organization (either work or academic) motivated individuals’ career decision-making and development. The career choice and socialization theorists share the goal of explaining career decision-making and development. Where career choice theorists do so from the standpoint of the individual, socialization theorists do so from the standpoint of the organization.

Regardless of the orientation researchers in these fields adopted, both traditions have provided a sound theoretical basis for understanding a process conceptually similar to career choice and professional development--why one chooses to pursue doctoral education and what drives the professional socialization that occurs during doctoral training. I will argue that even though these frameworks
accurately describe the type of socialization that occurs in doctoral programs, too often the socialization described by these frameworks (and actually practiced in doctoral programs) is skewed toward an "congruence and assimilation" orientation. As I will elaborate, this orientation is problematic for many reasons. Chief among these reasons is that an adherence to traditional notions of congruence and assimilation poses challenges to individuals who might be quite dissimilar from the organization to incorporate their own unique identities into graduate work. Moreover, this orientation ignores the possibility of a socialization process that is more unique, individualistic, and reflective of the diverse nature of more recent incumbents to academic and professional roles. Lastly, this orientation attenuates our ability to increase the overall breadth of doctoral students' knowledge; the extent of their practical experiences; and the applicability of their competencies to non-research institutions and to the private sector.

As with others (Fordham, 1988; Taylor and Antony, in press; Tierney, 1997; Turner and Thompson, 1993; Weidman, Twale, and Stein, 2001), the challenge I attempt to address is to advance a framework for graduate student
socialization that accounts for the increasing numbers of women and minorities entering professional and academic degree programs. I submit that such a framework should not require congruence and assimilation in order for the student to be considered successfully socialized. Therefore, my purpose here is to discuss graduate student socialization broadly, and to provide an alternative way of thinking about how socialization can be conceived theoretically, and practiced. I submit that any focused discussion of the topic must first trace the paradigmatic roots of popular theories of student socialization. And, as I have already hinted, these roots are found embedded in the psychological and sociological frameworks of career choice and decision-making, both of which ultimately shaped the primary assumptions underlying current professional socialization theory.

In appreciating the connections among these various theoretical traditions, it becomes possible to illuminate how socialization, both in theory and practice, adopted a congruence and assimilation orientation that was derived from the earlier assumptions of career choice and development theorists.
In my presentation of the psychological and sociological theories of career choice, and in my subsequent presentation of socialization theory, I aim to expose the manner in which the congruence and assimilation orientation operates. I then will demonstrate how this orientation spills over into current thinking about how graduate students are, and should be, socialized. Ultimately, my goal is to discuss the theoretical and practical reasons why the congruence and assimilation orientation is problematic and proffer the lineaments of a modified framework for graduate student socialization. I will argue that an alternative framework might more profitably guide the type of structural reform necessary for increasing the overall breadth of doctoral students’ knowledge, the extent of their practical experiences, and the applicability of their competencies to non-research institutions and the private sector.

For the purposes of this chapter I focus exclusively on Ph.D. programs in the arts and sciences. Although there are many similarities with professional doctoral programs and what I discuss here, my intent is to focus on what we have thought of as the traditional disciplines; once that
foundation has been laid, in future work I will turn to the similarities and differences for the professions.

The Traditional Psychology of Career Choice and Aspiration Development

An Historical Perspective

Psychological theories of career choice and aspiration development began to appear in the early 1900s. Most notably, Parsons (1909) developed a schema that summarized the conceptual framework that career guidance counselors should follow in helping people make career decisions (Brown, Brooks, and Associates, 1984). When Parsons conducted his research, the United States was becoming an industrialized nation with a rapidly increasing population due to the influx of immigrants. The education received in schools was seen primarily as inappropriate for the world of work. As a result, vocational guidance and vocational education emerged to assume the role of helping individuals make career or occupational decisions (Brown, et al., 1984). Parson’s approach to choosing an occupation had three basic tenets. First, an individual should establish a clear understanding of his or her aptitudes, abilities, interests, ambitions, resources, limitations and their causes. Second, an individual should establish knowledge of
the requirements and conditions of success, advantages and 
disadvantages, compensation, opportunities, and prospects 
in different lines of work. Third, an individual should 
establish true reasoning on the relations between these two 
groups of facts (Parsons, 1909).

According to Brown et al. (1994), because the growing 
industrial sector in the United States provided many 
employment opportunities, vocational guidance and education 
concentrated upon the study of occupations. This focus was 
rooted in the belief that adequate information about 
occupations provided a sufficient foundation upon which an 
individual could base occupational aspirations. Guiding 
individuals' occupational aspirations through the 
systematic study of various occupations, a method based 
upon Parsons' second tenet, was the predominant model until 
the 1940s (Brown, et al., 1984).

During the Great Depression, American industry no 
longer provided the plentiful job opportunities that it had 
in earlier times, and the primary concern of vocational and 
occupational counselors became the retraining of displaced 
workers (Brown, et al., 1984). This shift in America's 
economy caused vocational research to shift as well. No 
longer was the exclusive study of occupational
opportunities (which were by then few and far between) in vogue. With the advent of factor analysis and the emergence of psychometrics, the systematic study of individuals began. The Depression, along with World War II, helped to create the perceived need to select individual workers for the training required by specific jobs. To aid in the new effort to place workers with certain attributes and aptitudes into the most appropriate of the available jobs, numerous tests (e.g., the Minnesota aptitude tests and the Army General Classification Tests) and occupational interest inventories were developed (Antony, 1996).

The testing movement, guided in part by the earlier study of occupations, formed the basis of many psychological and social-psychological theories guided by what has been called the “trait and factor” approach to understanding occupational choice and decision-making (Brown, et al., 1984). Perhaps the best known derivative theory among all trait and factor theories of occupational decision-making is Holland’s structural-interactive theory of career choice (Holland, 1966; 1973; 1985; 1997). Before launching into a full discussion of Holland’s theory, I will provide a brief description of trait and factor theory. I do so in order to account for the origins of the
congruence and assimilation orientation (which I ultimately intend to critique in this paper) and how this orientation lies at the heart of Holland's theoretical assumptions. As I discuss below, trait and factor theory, and the manner in which it ultimately shaped Holland's thinking, has significant implications for how we organize doctoral study.

**Trait and Factor Theory—Matching Personality and Occupations**

The first well-articulated theory of occupational aspiration and decision-making, the trait and factor approach, is derived from the psychology of individual differences (Zaccaria, 1970). Trait and factor theory is based upon the assumption, as explained by Williamson (1965), that each individual is characterized by a unique pattern of capabilities and potentialities (traits). These traits and capabilities can be correlated with the requirements of specific jobs, and successful persons in any given job will tend to possess those traits and capabilities (Katz, 1963; Klein and Weiner, 1977; Williamson, 1965; Zaccaria, 1970). According to Klein and Weiner (as cited in Brown, et al., 1984), four primary assumptions drive trait and factor theory. These are: (1)
each individual has a unique set of traits that can be measured reliably and validly; (2) occupations require that workers possess certain traits for success, although a worker with a rather wide range of characteristics can be successful in a given job; (3) the aspiration of an occupation is a rather straightforward process, and matching is possible; and (4) the closer the match between personal characteristics and job requirements, the greater the likelihood for success, productivity, and satisfaction.

Although trait and factor theory led to the development of numerous tests, instruments, inventories, and scales, the application of the theory has not been without its critics. Many accuse counselors who utilize the trait and factor method of ignoring the individual’s input in interpreting the validity of testing results. Others argue that trait and factor approaches are overly deterministic, ignoring interactions between personality and environment (Brown, et al., 1984). Despite these criticisms, trait and factor theory had a profound impact upon early career research. Specifically, trait and factor theory formed the foundation for a host of career and interest inventories—many of which are still used today. Trait and factor theory also influenced the development of
more refined theories grounded in some of the theory’s primary assumptions. The most widely cited example is Holland’s structural-interactive theory of career choice (Holland, 1966; 1973; 1985; 1997).

**Holland’s Theory--A Personality-Occupation Typology**

A product of many of the pioneers in trait and factor theory, Holland developed a structural-interactive theory of career choice (Holland, 1966; 1973; 1985; 1997) guided by one overarching notion. Specifically, Holland’s theory is derived from the notion that human behavior is a function of the interaction between individuals and their environments (Smart, Feldman, & Ethington, 2000). Holland’s theory finds its roots in earlier trait and factor theories. This is evident in Holland’s assertions that individuals’ occupational interests are one aspect of personality and that descriptions of one’s occupational interests provide insight into that person’s personality (Brown, et al., 1984). More specifically, Holland (1982) contends that the aspiration of a particular occupation is an expression of personality rather than being something independent of personality. But it is Holland’s accounting of the interaction between individuals and their
environments that most distinguishes his theory from earlier trait and factor approaches.

In sum, there are three components making up Holland’s theory: individuals, environments, and the fit or consonance between the two. Holland’s theory forwards three basic assumptions (Smart, et al. 2000). The first assumption is that individuals will choose academic or work environments that are compatible with their own personalities (what Smart, et al. (2000) refer to as the “self selection” assumption). The second assumption is that academic or work environments reinforce and reward different patterns of student abilities (what Smart, et al. (2000) refer to as the “socialization” assumption). The third assumption is that individuals will flourish in environments that are consonant, or fit with, their personalities (what Smart, et al. (2000) refer to as the “congruence” assumption).

Holland developed six basic personality types used to describe both individuals’ personalities and environments--realistic, investigative, artistic, social, enterprising, and conventional. Salient attributes of Holland’s personality types for individuals are shown in Table 1.
Similarly, salient attributes of Holland's personality types for environments are shown in Table 2.

The **realistic** personality prefers, or environment

Insert Tables 1 and 2 about here

supports, activities involving the manipulation of machinery, tools, or animals, and those that place a lower premium on social skills. The **investigative** personality prefers, or environment supports, activities that are analytical and require one to be curious, methodological, precise, and less interested in demonstrating leadership skills. The **artistic** personality prefers, or environment supports, activities that tend to be expressive, nonconforming, original, introspective, and do not require clerical skills. The **social** personality prefers, or environment supports, working with and helping others—activities that are not necessarily ordered, systematic activities requiring mechanical and scientific abilities. The **enterprising** personality prefers, or environment supports, activities that require leading others, attaining organizational goals or economic gain—activities that are not necessarily systematic or require scientific ability.
Finally, the conventional personality prefers, or environment supports, artistic activities, activities involving the systematic manipulation of data, records, files, and materials.

According to Holland, individuals can usually be viewed as belonging to predominantly one of these personality types, and environments are typically composed of individuals who share dominant personality characteristics. Ultimately, the more one resembles any particular personality type, the more likely he or she will be to exhibit the characteristics associated with that type, and the more likely he or she will be to choose to work in a job environment that is congruent with that personality type. Moreover, the environments will tend to support the activities of individuals who more closely match the predominant personality type of others working in the environment. This match or consonance between individual and environment facilitates socialization in that individuals whose personalities are consonant with the environment are more likely to behave in ways that get rewarded, and are more likely to be accepting of the culture and norms of the environment (Smart, et al., 2000). Lastly, the consonance between individual and environment
is a primary determinant of successful achievement, satisfaction, and development. Individuals who are in environments that match their personalities are more likely to change or develop in ways that are consistent with the fundamental values and norms of the environment (Smart, et al., 2000). Said differently, academic or work environments are more likely to develop individuals in ways that are functional for professional success to the extent that there is a degree of consonance between the individual and the environment. One wonders how such a theory influences graduate student socialization and to this we now turn.

**Holland’s Theory and Graduate Student Socialization**

Researchers have successfully validated Holland’s theory as a tool for explaining patterns of stability or change among undergraduates in various academic environments (see Smart, et al., 2000). However, researchers have been slow to specifically use Holland’s theory to study graduate student socialization, with only one study (Smart, 1987) showing that congruence between undergraduate and graduate majors was related to satisfaction with graduate education. Notwithstanding, Holland’s three basic assumptions of self-selection, socialization, and consonance have heuristic value and face
validity in the context of how graduate student socialization actually occurs. As any former graduate student or current faculty member knows, graduate students and academic departments select one another based upon a mutual fit between one another’s interests and orientations (Holland’s assumption of self-selection). It is also commonly known that those graduate students who behave in ways that are consistent with the norms and values of the academic department, and who excel in ways that are deemed appropriate by faculty, are more likely to be rewarded (Holland’s socialization assumption). Lastly, these two prior conditions allow graduate students to undoubtedly flourish in academic environments that closely match their interests and orientations (Holland’s assumption of congruence).

Holland’s theory advanced thinking about how individuals choose, and succeed in, academic and professional environments by taking into account the manner in which aspects of the individual interact with environmental characteristics to produce stability or change. In a way, Holland’s theory moved traditional psychological approaches to career aspiration development away from the highly deterministic trait and factor camp--a
movement that was, in part, a response to the general
dissatisfaction career theorists began to have with
traditional psychological approaches. While Holland refined
his structural-interactive theory, many sociologists
developed their own theoretical perspectives on how
individuals choose careers. I will discuss this movement
next, as it partially forms the foundation of traditional
theories of graduate student socialization.

Sociological Perspectives on Career Choice and Development

The sociological approach to career choice and
development is based upon the assumption that circumstances
external to an individual, or elements beyond his or her
control, have a profound influence upon career aspiration.
Osipow (1973) was one of the first sociologists to begin
examining career choice from a sociological perspective.
According to Osipow, the sociological approach is grounded
in the assumption that the degree of freedom an individual
has in choosing a career is small, and that any person’s
self-expectations for career attainment are largely
consonant with the expectations others in society have for
that person. Therefore, society is assumed to present
occupational opportunities in a manner that is in line with
the expectations it carries for the individual (Osipow, 1973).

A sociological theory of career aspiration takes into account the manner in which circumstances impose career aspirations upon individuals. Of the many circumstances that have been examined in the sociological literature, the influence of an individual’s social class upon educational and career aspirations has been extensively examined by sociologists. In numerous studies of the influence of social class membership upon occupational attainment, a strong association between social class and the types of careers chosen by individuals has been established (e.g., see Alwin, 1974; Berman and Haug, 1975; Blau and Duncan, 1967; Dawkins, 1982; Deskins, 1994; McClelland, 1990; Morrow and Torres, 1995; Sewell, Haller, & Ohlendorf, 1970; Sewel, Haller, & Portes, 1969; Solorzano, 1992). Specifically, individuals from lower social class backgrounds tend to choose (or be directed towards) occupations carrying less social status or prestige (Havighurst, 1964; Hollingshead, 1949; McClelland, 1990; Morrow and Torres, 1995; Osipow, 1973; Sewell, Haller, & Ohlendorf, 1970; Sewell, Haller, & Portes, 1969; Solorzano, 1992). One mechanism through which the association between
social class and occupational aspiration operates is "career inheritance" (i.e., when individuals choose careers that are identical or similar to their parents' ). Students tend to choose the particular occupations of their fathers (Antony, 1996; 1998a; 1998b; Brown, et al., 1984; Werts, 1968). Specifically, this was found to be the case for physicians' and dentists' sons--these students tended to be more likely to enter those same occupations than would be expected in the general population (Antony, 1996; 1998a; 1998b).

Additionally, the relationship between social class and occupational aspiration has also been reported in research by Blau and Duncan (1967), Lipsett (1962) and Sewell and Shah (1968), who concluded that variables such as race, gender, parental occupation, family income, place of residence, and parental marital status (all indicators of, or otherwise correlated with social class) profoundly affect opportunities, training, life experiences, and preparation (both academic and occupational). In trying to determine what influences an individual's career aspiration, these researchers concluded that the social position at which the individual begins (i.e., his or her family's social class) plays the most influential role.
Carter (1999) has written an extensive review of the literature on these sociological paradigms of status attainment, and has found that these paradigms are useful in promoting a model that explains such phenomena as educational aspirations and degree attainment—particularly for minority student populations.

Social class membership likely influences career aspirations because parents’ levels of educational attainment (a component of social class) are associated with particular levels of resources and experiences. These are resources and experiences upon which one can draw during childhood and adolescence (the time during which many of the foundational values, beliefs, and goals might be formed regarding occupations and the self).

Family income, another indicator of a family’s social class, has been shown to be strongly related to students’ occupational aspirations and career expectations (Osipow, 1973). Specifically, students will choose occupations that are at similar salary and prestige levels to those of their parents. Additionally, family income has been found to have profound effects upon students’ expectations of a future salary and the availability of future opportunities (Osipow, 1973; Sharp and Weidman, 1989), possibly shaping
their self-conceptions regarding their efficacy toward attaining a particular career.

One wonders how such findings regarding social class influence graduate student socialization. One might not be surprised, for example, that individuals from low-income families are more likely to attend lower status colleges and universities for undergraduate studies, and are less likely to have parents who have attained graduate or professional degrees (McDonough, 1997). Given the findings presented above regarding career inheritance, students from lower social-class backgrounds are less likely to aspire to careers that require graduate and professional education (Antony, 1998a; 1998b; Pascarella, Brier, Smart, & Herzog, 1987). Moreover, graduate and professional students from lower social-class and/or minority backgrounds are more likely to feel obligations to apply their learning in practical ways—typically in the service of their communities. This orientation fundamentally shifts the type of socialization students receive during graduate or professional school, at times placing them at a distinct disadvantage if faculty believe these orientations are antithetical to the academic or professional enterprise in which students are training (Antony and Taylor, in press;
Becker, Geer, & Hughes, 1965; Cooley, Cornell, & Lee, 1991; Fordham, 1988; Fries-Britt, 1998; Taylor and Antony, in press). My point here is not to be overly deterministic, but rather to point out the strong influence that social class can have on one’s choices and on one’s socialization during graduate school.

Perhaps one of the most exciting developments coming out of the sociological tradition is that of socialization theory. Socialization theory is an attempt to account for the interaction between individual and social or organizational factors in the production of both occupational attainment and professional development. Its primary focus lies in the description of the stages or processes that individuals undergo as they evolve from neophyte to full member of an occupation.

A diverse body of work on socialization has recently been brought together to specifically address the socialization of collegiate faculty (Tierney and Rhoads, 1994) and undergraduates (Weidman, 1989). In the next section, I will briefly summarize the work of these classical socialization theorists. Because socialization theory is a useful way to organize our thinking about graduate student socialization, I will then relate this
summary of socialization theory to the topic of graduate student socialization.

**Socialization Theory**

Socialization is typically viewed as a process of active social engagement in which one individual (or an organization) directly influences the perceptions, behavior, and skill acquisition of another individual. In educational settings, this socialization occurs as a function of direct communications between teachers and students, and also occurs indirectly—or at least in a more latent fashion—through interactions between peers, and the perceptions students develop regarding how to engage the curriculum and how to earn positive evaluations.

According to Daresh and Playko (1995), the socialization process culminates in students’ abilities to answer three key questions: (a) What do I do with the skills I have learned?; (b) What am I supposed to look like and act like in my professional field?; and (c) What do I as a professional look like to other professionals as I perform my new roles.

In a helpful text that summarizes socialization theories relevant to graduate education, Weidman, Twale, and Stein (2001) speak metaphorically about the
socialization process, indicating that graduate students undergo a sort of "metamorphosis" during the graduate school years. This change implies a period of discomfort. Cahn (1986) and Staton (1990) have described this discomfort as a process in which the graduate student becomes more insecure and uncertain while acquiring new information throughout the graduate school experience.

Weidman, et al. (2001) also describe socialization as an upward moving spiral carrying the new graduate student through recurring processes toward the goal of role acquisition. According to their metaphor, the student ascends the spiral, he or she becomes more accomplished than at entry, having changed in specific ways at each step, and ultimately having been prepared to assume new professional roles.

Socialization theorists such as Tierney and Rhoads (1994) and Mario (1997) have indicated that graduate and professional fields and disciplines in higher education exhibit the same structural dimensions of organizational socialization originally described by Van Maanen and Schein (1979). Borrowing from these same organizational socialization roots and from the work of Thornton and Nardi (1975), Weidman, et al. (2001) describe two assumptions of
socialization: (1) that socialization is a developmental process, and (2) that certain core elements of socialization can be linked to the development of role commitment or identity. It is to a description of this developmental process and these core elements that I turn next.

**Socialization as a Developmental Process**

Thornton and Nardi (1975) used the term stage in an effort to describe role acquisition and identity formation (the key outcomes of socialization) as a developmental process. Although beyond the scope of the present chapter, it is important to point out here that socialization theorists did not corner the market on the idea of stage-oriented development of identity. These theorists owe a great deal to the earlier work of a generation of developmental psychologists, too numerous to cite here. Additionally, the concept of a sequential process of distinct stages driving identity formation was also simultaneously being explored by the earliest of student development theorists, as a way of describing student identity formation (for a thorough review of these theories, see Evans, Forney, & Guido-DiBrito, 1998). In any case, the implication of socialization theorists' borrowed
concept of stage-oriented development is that socialization occurred via a serial passage (i.e., through a sequence of stages). Like their theoretical predecessors, socialization theorists believe that as a student progresses from one stage to another, there is an identifiable increase in the commitment (and adoption of) the identity necessary to be successful in the new role. Weidman, et al. (2001) correctly point out that identity and role commitment are not accomplished completely during professional preparation, but rather continue to evolve after individuals begin professional practice. Nonetheless, four stages (as described in Table 3) have been represented throughout the socialization literature as the organizing framework for understanding how novices develop identity and commitment.

Insert Table 3 about here

In the anticipatory stage of role acquisition, an individual becomes aware of the behavioral, attitudinal, and cognitive expectations held for a role incumbent. This stage covers the preparatory and recruitment phases as the student enters graduate and professional programs (Weidman,
et al., 2001). During the anticipatory stage, novices enter their programs of study with stereotypes, preconceived notions, and certain expectations about the professional role. Bucher and Stellings (1977) have indicated that during this stage, new students may make a commitment to being graduate students and to the idea of becoming a member of the profession.

During the formal stage, the student is able to learn about normative role expectations. At this stage, there is general consensus between students and faculty about the normative expectations (Weidman, et al., 2001). Students are inducted into the program, practice role rehearsal, and thereby determine their degree of fitness, observe and imitate expectations through role-taking, and become familiar faces in the program (Stein, 1992).

During the informal stage of socialization and role acquisition, the student learns of the informal or hidden role expectations which "arise and are transmitted by interactions with others" in the program (Thornton and Nardi, 1975). Students respond to behavioral clues, observe acceptable behavior, and are aware of the degree to which their own behavior is acceptable. While some of this information comes from faculty, students tend to develop
their own peer culture and social and emotional support system among classmates (Staton and Darling, 1989; as cited in Weidman, et al., 2001).

The personal stage of socialization is that in which the role is internalized or adopted. Students form a professional identity, reconcile the dysfunction and incongruity between their previous self-image and their new professional image as they assume their new role (Weidman, et al., 2001). Students must accept the norms and value orientation of the field, and resolve any conflict (i.e., between their own values and norms and that of the field) that could impede a total role transformation (Bullis and Bach, 1989; Gottlieb, 1961).

In summary, thinking about socialization as a developmental process essentially ascribes a serial nature to the development of identity, commitment, and role acquisition. This serial development takes the neophyte from the earliest thinking about what it might be like to be a member of a particular role and, through interactions with the training or professional preparation process, is socialized to become an accepted member of that profession or role. Throughout that socialization process, the neophyte’s conceptions of self and the role are challenged.
These classical stage theories of socialization see the ultimate end of socialization as being one in which the neophyte has adopted not only the identity of the role, but also the values and norms of the profession.

**Core Elements of Socialization**

According to socialization theorists (e.g., Baird, 1990, 1992; Bragg, 1976; Merton, Reader, & Kendall, 1957; Tierney, 1997; Tierney and Rhoads, 1994; Van Maanen and Shein, 1979; Weidman, 1989; Weidman, et al., 2001), the transmission of normative role dimensions to students is a goal of socialization, and can occur as an institutional-level or individual-level process. Regardless of whether socialization is seen as an institutional or individual process, the core elements of socialization are knowledge acquisition, investment, and involvement. These core socialization elements (outlined in Table 3) are related to the development of role identity and commitment—important indicators of successful socialization that results in the internalization of professional norms and values, and role acquisition (Stein, 1992; Thornton and Nardi, 1975).

Based upon the work of Stein (1992), Weidman, et al. (2001) illuminate two ways in which knowledge acquisition is relevant to socialization. Obviously, a sufficient
knowledge of a field is required so an individual is able to perform the role and, ultimately, be considered both competent and professional. The second way in which knowledge acquisition is relevant to socialization is through awareness of the expected dimensions of the professional role, the ability to act successfully in that role, and of others' assessments of one's performance in the role (Stein, 1992).

During socialization, knowledge will move from being general to being specialized and complex. The novice first develops an understanding of the problems and ideology characteristic of the chosen profession and an understanding of why alternative professions were rejected (Weidman, et al., 2001. Moreover, the novice becomes aware of his or her capacity to participate in a professional culture as he or she learns its language, heritage, and etiquette (Weidman, et al, 2000). In short, this development leads the novice to begin to act and feel like a person who occupies the role (an incumbent). This sense of incumbency leads to identification with the role, an idea first introduced by Becker and Carper (1956a; 1956b) and Sherlock and Morris (1967).
The second core element of socialization is that of investment. Investment in a role is "committing something of personal value such as time, alternative career aspirations, self-esteem, social status, or reputation to some aspect of a professional role or preparation for it" (Weidman, et al., 2001). This investment stands to increase during the time spent in a graduate program. According to Geer (1966), as the novice begins developing a commitment to a particular professional role and its related status, contemplating a change in educational institutions or professional aspirations becomes increasingly difficult. Moreover, Stein (1992) has indicated that investment involves learning specialized material and skills that are not usually transferable to other occupations. Stein goes on to suggest that this investment can be considerable, and as more specialized knowledge is acquired the investment on the part of the student increases dramatically.

Sherlock and Morris (1967) also point out that the support and mentoring received by an advisor or other faculty member can create a tie (or identification) between the student and the institution or field. This tie or identification can develop into a sense of obligation to live up to the expectations of the mentor, thus increasing
commitment to the role. Thus accepting sponsorships results in deeper commitments to the professional role (Weidman, et al., 2001).

The third element of socialization is involvement. The application of involvement to thinking about socialization makes sense, given the long tradition of involvement theory in the theoretical work on other forms of student development and achievement. Not unlike Durkheim’s (1961) idea that shared group values and friendship support can reduce suicide, Spady (1970a; 1970b), Tinto (1975), and Pascarella (1980) viewed higher levels of social and academic integration as the key to reducing attrition. Each of these theorists, either directly or indirectly, invoked the concept of involvement as the vehicle through which social and academic integration is attained. Most notably, Astin (1984) defined involvement as the mechanism through which commitment to the institution, and the goal of graduation, are developed.

In terms of socialization, involvement intensity varies as students progress through their program (Astin, 1984; Brown, 1970), and involvement with teachers and older students gives the novice insights into professional ideology, motives, and attitudes (Weidman, et al., 2001).
Olesen and Whitaker (1968) indicate that involvement in the role brings about professional role identification.

**Socialization Theory and Graduate Student Socialization**

The conceptions of the socialization process I have reviewed underscore the fact that, during the socialization process, neophytes (or in the case of this chapter, graduate students) explore aspects of themselves and ideas about the career or field that go beyond their own original conceptions. These new conceptions may be uncomfortable at times, but socialization theory makes it clear that it is through a reconciliation of these newer ideas and, eventually, an adoption or integration of these ideas, that an individual becomes socialized into a field.

In the case of graduate students, socialization can be thought of as a developmental process. In the initial stages of program identification and entry, the student carries great expectations and anticipations about what it will be like to be a student in a particular field and in a particular institution. During this initial anticipatory stage, a student becomes aware of the behavioral, attitudinal, and cognitive expectations held for a graduate student, as well as for a professional in the chosen field. Role acquisition and identity formation occurs in a serial
nature. Through interactions with fellow students, faculty, and the overall professional preparation process, the new graduate student is taken from the earliest thinking about what it might be like to be a member of a particular field to becoming an accepted member of that field. Along the way, the student picks up new skills, makes increased commitments and investments to the field, and becomes increasingly involved in the field. As knowledge increases, investments continue, and as involvement intensifies the student gains insights into professional ideology, motives, and attitudes. Ultimately, adopting these motives, attitudes and ideologies brings about professional role identification. This role identification becomes the hallmark of socialization, and allows the student to actually want to become, and be successful as, a member of the profession—an indicator of the student having been successfully socialized into the profession.

Like Holland’s conceptions described above, socialization theory, with its developmental structure and core elements, has face validity. Graduate students do seem to travel through these various stages, making increased levels of investment and commitment along the way to identity formation and role acquisition. As such, I have
attempted up to this point to not merely describe psychological theories of career choice and the basic elements of socialization theory, but to relate these descriptions to our thinking about the structure of graduate education. Having done so, I must now advance the primary argument I intend to make. This argument is essentially that both socialization theories and psychological theories of professional career choice and development share many aspects of what I refer to as the “congruence and assimilation” orientation.

**The Congruence and Assimilation Orientation Defined**

In my presentation of the psychological and sociological theories of career choice, and in my subsequent presentation of socialization theory, I aimed to expose the manner in which the congruence and assimilation orientation operates. Up until this point, however, I have not offered a formal definition of what I mean by the congruence and assimilation orientation.

In short, the congruence and assimilation orientation found throughout psychological and sociological theories of career choice, and in socialization theory, requires the internalization or adoption of a profession’s norms, values, and ethics so
that the neophyte's own professional identity and self-image are defined by them. This internalization or adoption is, in reality, described as a replacement of one's own norms and values with those of the field one aspires to enter. To the extent one's own values are congruent with those of the field, one will be a successful professional in that field. Other researchers have criticized this assimilation demand, and it may be useful to say a word about this now.

Perhaps the earliest recognition of the congruence and assimilation demands of socialization theory can be found in the work of Bess (1978). In this work, Bess discusses the differences between socialization and professionalization. These two terms are, I believe, mistakenly used interchangeably throughout the socialization literature. This belief is supported by Bess, who points out,

Professionalization is the process by which students learn the skills, values, and norms of the occupation or profession, while socialization...refers to the process of adopting the values, norms, and social roles which constrain behavior in an organizational setting
such as a graduate school or the college or university where faculty are employed.

Other researchers have drawn a similar distinction (i.e., merely learning skills, values, and norms versus adoption of those elements) between professionalization and socialization (e.g., see Becker, Hughes, and Strauss, 1961; Bragg, 1976; Friedman, 1967; Tierney and Rhoads, 1994). Despite this important difference, professionalization and socialization share many traits. In particular, both are continuous and social learning processes (Bess, 1978). Moreover, by elaborating upon the work of Bragg (1976), professionalization and socialization can be viewed as different parts of the same five-stage continuum. Specifically, the processes of professionalization and socialization both require the following elements: (1) observation—the identification of a role model(s); (2) imitation—the ‘trying on’ of a role model’s behavior; (3) feedback—the evaluation of the ‘trying on’ of behavior; and (4) modification—the alteration or refinement of behavior as a result of evaluation. I believe that socialization distinguishes itself from the process of professionalization by requiring a fifth
stage, internalization or adoption—the incorporation of the role model’s values and behavior patterns in the individual’s self-image.

Weidman, et al. (2001) indirectly adopt a similar view of the distinction between professionalization and socialization, although they use the word socialization to describe the entire process included in Bragg’s continuum introduced above. They see the early stages of a graduate or professional program (what I would term the years of “professionalization”) as differing from those at the conclusion (what I would call the years of “socialization”). Specifically, they acknowledge a difference both in terms of challenge and in terms of demands for the integration of professional values and ethics as the student progresses through the graduate school years. This is what has been called the dialectic aspect of socialization (Bragg, 1976; Staton, 1990; as cited in Weidman, et al., 2001) in which “socialization [becomes] a subconscious process whereby persons internalize behavioral norms and standards and form a sense of identity and commitment to a professional field.”

Therefore professionalization should be viewed as the transmission of content knowledge; the informing about
professional norms, ethics, and values; and the teaching of technical skills. Socialization distinguishes itself from the process of professionalization, however, by requiring the internalization or adoption of the profession’s norms, values, and ethics to the point of defining the neophyte’s own professional identity and self-image—what I refer to as the congruence and assimilation orientation.

Looking back at the psychological theories of career choice, and the classical structure of socialization theories, it is clear that the congruence and assimilation orientation is in operation. In the next two sections, I will briefly outline how this orientation operates in psychological theories of career choice, and in the classical structure of socialization theories.

The Congruence and Assimilation Orientation of Career Choice Theories

Recalling the origins of psychological theories of career choice, trait and factor theory, it becomes clear that psychological theories of career choice adopt the congruence and assimilation orientation. In the case of trait and factor theory, its primary assumptions were that each individual has a unique set of traits that can be measured reliably and validly; that occupations require
that workers possess certain traits for success; and that the aspiration of an occupation is a rather straightforward process, and matching is possible. However, it is the fourth assumption of trait and factor theory that most clearly illuminates its reliance upon a congruence and assimilation orientation—that the closer the match between personal characteristics and job requirements, the greater the likelihood for productivity, satisfaction and success. Obviously, the implications for such an assertion with regard to graduate students is that the match between students’ personal characteristics and those common among individuals within the academic discipline for which they are training directly influences students’ likelihood for productivity, satisfaction and success.

This fourth assumption of trait and factor theory had an important influence on the thinking of future career researchers, and also influenced the manner in which future socialization theorists structured their thinking about socialization. Specifically, in the case of Holland’s connection to graduate student socialization, the congruence and assimilation orientation is fully evident. According to Holland’s theory, graduate students and academic departments select one another based upon a mutual
fit between one another’s interests and orientations (Holland’s assumption of self-selection). Graduate students who behave in ways that are consistent with the norms and values of the academic department, and who excel in ways that are deemed appropriate by faculty, are more likely to be rewarded (Holland’s socialization assumption). Lastly, these two prior conditions allow graduate students to flourish in academic environments that closely match their interests and orientations (Holland’s assumption of congruence).

Holland makes no secret of congruence being at the center of his theory, and there is a great deal of research that supports his contention. However, my purpose here is to think about the manner in which psychological theories of career choice shaped socialization theorists’ conceptions of how individuals develop identifications with, and ultimately go on to attain, professional roles. In the next section, I will briefly describe how the congruence and assimilation orientation also lies at the center of socialization theory.
The Congruence and Assimilation Orientation of Socialization Theory

The conceptions of the socialization process I have reviewed underscore the fact that, during the socialization process, neophytes experience a reconciliation of their own conceptions and ideas about the profession and professional role with newer ideas—ideas that are acquired during graduate study. Eventually, an adoption or integration of these newer ideas into one’s own thinking, along with acquiring the skills of the profession, are what distinguishes an individual who has become socialized into a field.

In the case of graduate students, socialization can be thought of as a developmental process aimed toward the end of congruence and assimilation. In the initial stages of program identification and entry, the student carries great expectations and anticipations about what it will be like to be a student in a particular field and in a particular institution. During this initial anticipatory stage, a student becomes aware of the behavioral, attitudinal, and cognitive expectations held for a graduate student, as well as for a professional in the chosen field. As knowledge increases, investments continue, and involvement
intensifies the student gains insights into professional ideology, motives, and attitudes. Ultimately, adopting these motives, attitudes and ideologies brings about professional role identification. This role identification becomes the hallmark of socialization, but socialization theories assert that it is the level of congruence with, and assimilation into, the professional field that remains the primary determinant of whether a student has been successfully socialized into the profession. Boiled down, those who argue for socialization theory assert that the degree to which a student assimilates is the degree to which he or she is successfully socialized. As I will argue in the next section, even though this assertion is an accurate description of how socialization is practiced in most graduate school programs, this form of socialization remains problematic. This is because many students who have the potential to be successful are unable to make the uncomfortable decision to replace their own values with the values and norms graduate programs attempt to inculcate through socialization.
Why the Congruence and Assimilation Orientation is Problematic

As I have indicated above, socialization theory traditionally assumes that in order for an individual to be successfully socialized, two conditions must be satisfied. First, the individual must develop characteristics that are congruent with others' in the field of choice. Second, the individual must assimilate his or her values to be congruent with the norms of the profession. I have demonstrated how this congruence and assimilation orientation finds its roots in the psychology of career choice and development. What is problematic with the congruence and assimilation orientation of traditional socialization theory?

Researchers have long been dissatisfied with the "linear" nature of traditional socialization theories. Linear models of socialization are models that assume all individuals progress through the socialization process in a singular way. All individuals progress through each of the stages and core elements of socialization (see Table 3) in a step-by-step incremental fashion. The normative congruence and assimilation expectations common to most traditional socialization theories are, by definition, a
primary feature of linear models of socialization theory. This linear nature has been criticized by researchers (e.g., Fordham, 1988; Taylor and Antony, in press; Tierney, 1997; Turner and Thompson, 1993) for four reasons. First, critics of this traditional linear view of socialization claim that it ignores the effects of graduate students' perceptions (Wentworth, 1980) and gender on the way individuals perform a professional role (Gilligan, 1978). Second, critics (e.g., Thornton and Nardi, 1975) believe that linear approaches to socialization fail to account for change in normative role expectations over extended periods of time. Third, researchers (e.g., Feldman, 1974; Gilligan, 1978) charge that the linear nature of socialization theories assume students are all the same. Fourth, this homogeneity assumption, and the normative consensus orientation required by traditional socialization perspectives, have also been shown to limit women's opportunities for equal access to professional roles and networks (McClelland, 1990; Weidman, et al., 2001).

Weidman’s earlier conceptual framework for undergraduate socialization (Weidman, 1989) has made valuable contributions to socialization theory. However, Tierney (1997) argues that this framework for undergraduate
socialization ignores the possibility of a socialization process that is unique, individualistic, and reflective of the diverse nature of more recent recruits to academic and professional roles.

Recognizing many of the problems associated with traditional linear approaches to conceptualizing socialization, Stein and Weidman (1989; 1990) developed a modified conceptual view of socialization that affords an alternate way to think about, and hence shape, graduate student socialization. This view maintains that socialization is a complex, developmental process in which the relationships among student background characteristics, university experiences, socialization outcomes, and mediating elements such as personal and professional communities prior to and during the graduate school experience come into play (Weidman, et al., 2001). Contrary to the linear relationship between socialization elements in traditional models, the elements in Stein and Weidman (1989; 1990) framework are assumed to be linked in a bi-directional fashion (Weidman, et al., 2001). These newer frameworks recognize "a reciprocity of influences on the student such that the context and processes of the educational experience influence each other and the
socialization outcomes affect the normative context of the higher education environment experienced by students” (Weidman, et al., 2001). The socialization process is conceived to indicate the interaction between and among the various constituent elements rather than being strictly linear, causal phenomenon, and to illustrate that socialization is developmental (Weidman, et al., 2001).

In describing their own conceptual advancements over traditional socialization theorists' approaches, Weidman, et al., (2001) follow the conceptual lead of Thornton and Nardi (1975) and suggest that socialization occurs in four stages: anticipatory, formal, informal, and personal. The Weidman, et al., (2001) revised framework suggests that:

...socialization into the profession may be conceived as a process whereby the novice enters the graduate educational program with values, beliefs, and attitudes about self and anticipated professional practice...[; the novice is then] exposed to various socializing influences while pursuing a graduate degree, including normative pressures exerted by faculty and peers, from society, professional organizations, professional practice, and personal reference groups...[; the novice must assess] the
salience of the various normative pressures for attaining personal and professional goals...[; finally, the novice must] assume, change, or maintain those values, aspirations, identity, and personal commitments that were held at the onset of the socializing experience.

Weidman, et al., (2001) state that a student can (through his or her own socialization outcomes) shape the norms and values of an academic department. Moreover, by acknowledging in their final theoretical statement that the novice must ultimately "assume, change, or maintain those values, aspirations, identity and personal commitments that were held at the onset of the socializing experience," their framework moves us away from a simple, linear view of socialization. Additionally, similar to what I have argued for here, their last theoretical statement supports the idea that socialization theory should divest itself from a strict congruence and assimilation orientation. What I offer in the final section of this chapter builds upon this initial beginning by offering what I consider to be the lineaments of a socialization theory that divests itself of the congruence and assimilation orientation.
The Lineaments of a Framework for Graduate Student Socialization

My concern about traditional approaches to socialization, with their dependence upon a congruence and assimilation orientation, centers on three aspects. First, they assume there is only one way of socializing graduate students or shaping their experiences. Second, they assume that all graduate students should be socialized into the same type of career as others in the discipline or field. Third, they assume that future success is measured not only by the extent to which content is mastered, but also by the extent to which the traditional norms and standards of the profession are internalized. These three assumptions lie at the heart of the congruence and assimilation orientation.

What might a modified framework for graduate student socialization—one that divests itself from the congruence and assimilation orientation—look like? I offer the following three points to guide our thinking:

1. Socialization should instill an awareness of a field’s values and norms without expecting a student to accept those values and norms as one’s own;
2. Socialization should take many forms as there is more than one method for socializing graduate students; and

3. Socialization should enhance, and support the assertion of, intellectual individuality.

What follows is an elaboration of each of these points, with a provision of examples.

A Modified Framework for Graduate Student Socialization

A modified framework for graduate student socialization distinguishes between developing an awareness of, versus developing a personal acceptance of, a field’s content, values, and norms. This type of socialization recognizes that an individual can master content and develop the acumen to work within the traditional norms, values, and standards of a profession without having to internalize, or accept as one’s own, those norms, values, and standards. A graduate student socialized in this way learns about the values and norms that drive a profession, but is not expected to adopt those values and norms as one’s own in order to be considered successfully socialized.

An example of how this modified form of socialization works can be found in an earlier study of African American
doctoral student socialization (Antony and Taylor, in press). African Americans who identified strongly with graduate school and the idea of becoming a university professor were interviewed about their socialization experiences and their approaches to ensuring attainment of an academic career. All of these students developed high levels of competence academically, and mastered the skills and techniques of their field. What distinguished those who successfully continued to pursue an academic career from others was the fact that they had been actively socialized (usually by empathic mentors) to learn how to navigate the normative expectations of the field without co-opting their own values. Those students who were socialized to believe that the field’s norms and values needed to be adopted in order to succeed felt a great amount of cognitive and emotional dissonance. This ultimately led these students to assume that an academic career was not for them, and that the personal sacrifices one needed to make in order to attain an academic career were insurmountable and unacceptable. From this example, it is clear that socializing students to learn about the values, norms, and expectations of a field can be accomplished while
refraining from suggesting to students that the field’s normative position should replace one’s own values.

A modified framework for graduate student socialization should accept that there is more than one way to socialize graduate students. Although mainstream content and techniques are likely to be taught in relatively standard or traditional ways, socialization can still shape students’ learning and development through a variety of experiences. These varied experiences might entail modification of pedagogy or curricular content. Students might be socialized into their field by being exposed to alternative forms of education—forms that familiarize them with different applications of the field’s knowledge, or alternative careers within the field. In any case, there are a variety of experiences that could be folded into the graduate school years that, in sum, would socialize students in ways that go beyond traditional notions.

Moreover, departments that recognize the need for flexibility in how students are socialized could develop socialization approaches that broaden students’ intellectual and practical experiences in ways that extend beyond the traditional disciplinary foci. One example brings this idea to life.
In most graduate school environments, a graduate school advisor typically educates someone within the traditional values and norms of a discipline as well as his or her own personal predilections. However, the disciplines and professions are changing rapidly. Knowledge advances at an astronomical rate, and newer ways of thinking about traditional ideas will continue—as they always have—to shape who enters a field and what activities guide practice or research in that field. Many graduate departments now believe that what is needed is a form of graduate school socialization that encourages more interdisciplinary work. Through such interdisciplinary work, students develop competencies that push beyond the parameters of the socialization their mentors or departments can offer. Such diversified socialization can contribute to students applying their knowledge to solving broader (i.e., interdisciplinary) problems, or working in new fields or sectors.

A modified framework for socialization should enhance, and support the assertion of, intellectual individuality. It is through expressions of intellectual individuality that a field expands. History is replete with examples of individuals who, despite considerable pressure to conform
to normative ideas within a field, nonetheless pushed beyond those boundaries, making incalculably valuable advances and contributions to the field.

Intellectual individuality is not an expression of complete departure from the normative intellectual values and accepted content of a field. Rather, intellectual individuality—at its best and most productive—is afforded only to those who have completely mastered what is known, and use that knowledge as the foundation for creating new intellectual approaches. Such individuality is the expression of one's own voice toward the end of advancing traditional intellectual notions in attempt to improve the field. As such, it is one’s expression of intellectual individuality—not intellectual conformity—that is most valuable to a field. For this reason, graduate students should be socialized to develop this individuality.

Conclusion

I have attempted to make a fairly simple argument, which might be summarized in the following manner. First, our present theoretical and practical approaches to graduate student socialization unnecessarily rely upon a congruence and assimilation orientation. Second, this orientation—which finds its roots in traditional
psychological theories of career choice—is problematic. Chief among the many problems is that an adherence to traditional notions of congruence and assimilation poses challenges to individuals who might be quite dissimilar from the organization to incorporate their own unique identities into graduate work. Moreover, this orientation ignores the possibility of a socialization process that is more unique, individualistic, and reflective of the diverse nature of more recent incumbents to academic and professional roles.

Finally, the congruence and assimilation orientation attenuates our ability to increase the overall breadth of doctoral students’ knowledge; the extent of their practical experiences; and the applicability of their competencies to non-research institutions and to the private sector. Future thinking about socialization will benefit from a proactive divestiture from this orientation—one that is guided by the three ideas for a new socialization framework that I propose.

In offering the three ideas for a new socialization framework, my intent is to broaden our conversations about socialization in a way that encourages an explicit recognition of how the notions of congruence and
assimilation play themselves out in our everyday socialization of students. As these three points illustrate, a socialization process that does not rely upon congruence and assimilation of course recognizes the need for students to master the knowledge, content, and techniques of a field, and to learn about the norms and political realities of a profession. Where a congruence and assimilation non-dependent view of socialization takes us, however, is toward an appreciation of individuality. This modified view of socialization honors students’ different personal expectations and orientations. Furthermore, it guides our efforts to work closely with students to tailor the graduate school experience in a way that maximizes their chances of successfully attaining the goals and aspirations they have set for themselves.

In the introduction, I described a national meeting on graduate education. Among the outcomes of this conference, scholars and practitioners agreed that graduate education needed to be reformed in order to increase the overall breadth of doctoral students’ knowledge; the extent of their practical experiences; and the applicability of their competencies to non-research institutions and to the private sector. The modified approach to socialization that
I have offered here will move us closer toward achieving the outcomes of this conference.
References


of the Western Speech Communication Association, Spokane, WA. ERIC Document Number ED 306 607.


<table>
<thead>
<tr>
<th>People who are:</th>
<th>Prefer activities that involve the:</th>
<th>Acquire competencies that are:</th>
<th>Perceive themselves to be:</th>
<th>Value:</th>
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<tr>
<td>Realistic</td>
<td>Explicit, ordered, and systematic manipulation of objects, tools, machines, and animals</td>
<td>Manual, mechanical, agricultural, electrical, and technical as opposed to educational or social</td>
<td>Practical, conservative, mechanical, technical, athletic, and lacking in social skills</td>
<td>Material rewards (money, power, and status) for tangible accomplishments</td>
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<td>Investigative</td>
<td>Observational, symbolic, systematic, and creative investigation of physical, biological, and cultural phenomena. Avoid persuasive, social, and repetitive activities</td>
<td>Scientific and mathematical as opposed to persuasion and leadership oriented</td>
<td>Cautious, critical, complex, curious, independent, precise, rational, and scholarly</td>
<td>Development or acquisition of knowledge</td>
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<td>Artistic</td>
<td>Ambiguous, free and unsystematic manipulation of physical, verbal, or human materials to create art forms or products. Avoid routine activities and conformity to established rules</td>
<td>Artistic—language, art, music, drama, and writing—as opposed to clerical or business oriented</td>
<td>Expressive, original, intuitive, nonconforming, introspective, independent, emotional, and sensitive</td>
<td>Creative expression of ideas, emotions, or sentiments</td>
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<td>Social</td>
<td>Manipulation of others to inform, train, develop, cure, or enlighten others. Avoid explicit, ordered, systematic activities involving materials, tools, or machines</td>
<td>Interpersonal (human relations-oriented) and educational as opposed to manual and technical</td>
<td>Cooperative, empathic, generous, helpful, idealistic, responsible, tactful, understanding, and warm</td>
<td>Fostering the welfare of others and social service</td>
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<td>Enterprising</td>
<td>Manipulation of others to attain organizational goals or economic gain. Avoid scientific and intellectual activities</td>
<td>Leadership oriented, interpersonal, speaking and persuasion oriented as opposed to scientific</td>
<td>Aggressive, ambitious, domineering, energetic, extroverted, optimistic, popular, self confident, sociable, and talkative</td>
<td>Material accomplishment and social status</td>
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<td>Conventional</td>
<td>Explicit, ordered, systematic manipulation of data. Avoid ambiguous or unstructured activities</td>
<td>Clerical, computations, and business system-oriented as opposed to artistic</td>
<td>Careful, conforming, orderly, and as having clerical and numerical ability</td>
<td>Material and financial accomplishment, and power in social, business, and political arenas</td>
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Source: Smart, Feldman, & Ethington (2000)
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<th>Environments that are:</th>
<th>Emphasize activities that are:</th>
<th>Promote the acquisition of competencies that are:</th>
<th>Encourage individuals to perceive themselves as:</th>
<th>Reward people for:</th>
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<tr>
<td><strong>Realistic</strong></td>
<td>Concrete, practical, and use machines, tools, or materials</td>
<td>Manual, mechanical, and technical as opposed to human relations oriented</td>
<td>Having practical, productive, and concrete values</td>
<td>Conforming behavior and practical accomplishments</td>
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<tr>
<td><strong>Investigative</strong></td>
<td>Intellectual, analytical, and use knowledge</td>
<td>Analytical, scientific, and mathematical as opposed to persuasive or leadership oriented</td>
<td>Cautious, critical, complex, curious, independent, precise, rational, and scholarly</td>
<td>Skepticism, persistence in problem solving, documentation of new knowledge, and understanding solutions of common problems</td>
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<tr>
<td><strong>Artistic</strong></td>
<td>Ambiguous, free and unsystematic and involve expressive interactions with others</td>
<td>Innovative and creative as opposed to clerical or business oriented</td>
<td>Possessing unconventional ideas of manners and aesthetic values</td>
<td>Imagination in literary, artistic, or musical accomplishments</td>
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<tr>
<td><strong>Social</strong></td>
<td>Centered on the mentoring, treating, healing, or teaching of others</td>
<td>Interpersonal (human relations-oriented) and educational as opposed to manual and technical</td>
<td>Cooperative, empathic, generous, helpful, idealistic, responsible, tactful, understanding, and warm</td>
<td>Empathy, humanitarianism, sociability, and friendliness</td>
</tr>
<tr>
<td><strong>Enterprising</strong></td>
<td>Focused on the manipulation of others to attain organizational goals or economic gain</td>
<td>Leadership oriented, interpersonal, speaking and persuasion oriented as opposed to scientific</td>
<td>Aggressive, ambitious, domineering, energetic, extroverted, optimistic, popular, self confident, sociable, and talkative</td>
<td>Initiative in the pursuit of financial or material accomplishments; dominance, and self-confidence</td>
</tr>
<tr>
<td><strong>Conventional</strong></td>
<td>Focused on explicit, ordered, systematic manipulation of data</td>
<td>Clerical, computation oriented, and business system-oriented as opposed to artistic</td>
<td>Having a conventional outlook and concern for orderliness and routines</td>
<td>Dependability, conformity, and organizational skills</td>
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Source: Smart, Feldman, & Ethington (2000)
<table>
<thead>
<tr>
<th>Stages</th>
<th>Core Elements</th>
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<tbody>
<tr>
<td><strong>Anticipatory</strong></td>
<td>Learns general role expectations through mass media and observation of role incumbents. Accuracy of knowledge a factor because of outsider status.</td>
</tr>
<tr>
<td><strong>Formal</strong></td>
<td>Didactic instruction primary source of knowledge of argot, heritage, etiquette of role. Begins to achieve some competence in required knowledge and skills. Expectations of these dimensions are clear. Begins to understand why alternative roles/institutions were rejected (Thornton &amp; Nardi, 1975; Mortimer &amp; Simmons, 1978). Sorting and selecting of students by faculty.</td>
</tr>
<tr>
<td><strong>Informal</strong></td>
<td>Learns informal (implicit) role expectations (Thornton &amp; Nardi, 1975). Attains status within student or other informal group.</td>
</tr>
<tr>
<td><strong>Personal</strong></td>
<td>Can perform cognitive dimensions of role with adequate skill and competence. Preparation for exams, oral defenses of work.</td>
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