

# IRSS Psychology Theory: Telling Experiences Among Underrepresented IS Doctorates

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## ABSTRACT

With the changing demographics of the American workforce, the National Science Foundation, along with the U.S. Department of Commerce, has highlighted the shortage of minorities in information technology (IT) careers (<http://www.ta.doc.gov/Reports/itsw/itsw.pdf>). Using data from a 6-year period and the psychology Involvement-Regimen-Self Management-Social (IRSS) network theory as defined by Boice (1992), we discuss lessons learned from mentoring a group of Information Systems doctoral students who are members of a pipeline that can potentially increase the number of underrepresented faculty in business schools and who made conscious decisions to renounce the IT corporate domain. While our lessons speak to the need for more diversity awareness, we conclude that effective mentoring for underrepresented groups can and should include faculty of color (though limited in numbers) as well as majority faculty who are receptive to the needs and cultural differences of these student groups. Lastly, we draw on the work of *Ethnic America* to provide additional insight into our findings that are not offered by IRSS network theory.

***Subject Areas: Diversity, Interpretivist Qualitative Research, IT Education, IT Workforce, Mentoring, Social Psychology, and Underrepresented Minorities.***

## INTRODUCTION

Diversity in the composition of faculty and staff has been heralded in previous research, arguing that it promotes a broader range of viewpoints that represent

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the reality of this dynamic and rapidly changing field of information technology (IT) (Briley & Grier, 1997). Diversity and mentoring initiatives continue to challenge practitioners and academicians alike. This is particularly the case of those engaged in the IT domain that has been characterized by a shortage of professionals to further stimulate the American economy and the ability to compete in a global market (<http://www.ta.doc.gov/Reports/itsw/itsw.pdf>). To fill a void of 190,000 IT jobs, the U.S. Commerce Department's report points to the need to increase the number of underrepresented minorities pursuing IT and IT-related undergraduate, masters, and doctoral degrees. The National Center for Education Statistics (NCES, <http://nces.ed.gov/fastfacts>), which reports representation on the overall population, states in its *Salary, Promotion and Tenure Status of Minority and Women Faculty in U.S. Colleges and Universities Report* (NCES, 2002) that African Americans represent 12% of the U.S. population, but 5% of university faculty. Hispanic Americans represent 10% of the country's population, but 2% of university faculty. For Native Americans, faculty representation was less than 1%; population data went unreported. Thus, we define underrepresented ethnic minorities as African, Hispanic, and Native Americans.

Effective mentoring within the context of formal and informal social networks has emerged as a mechanism to heighten African Americans' awareness of the unwritten rules and politics associated with organizational cultures (Igbaria & Wormley, 1992, 1995; Nkomo, 1992). Similar arguments can be found in the study of IT and information systems (IS) academic careers. Popular press (Alsop, 2002; Merritt, 2003) has documented the challenges of top business schools in successfully recruiting, retaining, and graduating minority applicants. At the doctoral level, Payton and Jackson (1999) explored the experiences of African and Hispanic American students and captured the barriers that confront these groups as they navigate the PhD process. As a theoretical grounding, our work uses Boice's (1992) framework to investigate the roles of social networks and mentoring in the lives of IS/IT doctoral students by using psychology theories to provide insights into why underrepresented minorities encounter challenges beyond the academic studies required to thrive in academia. We evaluate how our work can augment Boice's framework to embrace a "sense of community." Further, we use Weiser's (1978) work to capture the social backdrop of ethnicity in the U.S. context.

Clinical psychologist and organizational development theorist Robert Boice (1992, 1999) has worked extensively in the area of new and emerging academics' success, establishing support initiatives and exploring career progression. Boice (1992) offers a four-part theory (Involvement, Regimen, Self-Management, and Social Networks, often called IRSS) to suggest actions and behaviors that should be practiced by new and emerging academics and explains their professional experiences.

*Involvement* is stressed as a major step for new and emerging academics to take part in many dimensions of university activities. This provides academics with formal and informal connections through the university hierarchy, a move that could be helpful in cases of academic politics that usually places minorities in a disadvantaged position, given that they are hardly connected to individuals that would help them in ambiguous situations (Grier & Briley, 1997). *Regimen* involves issues, such as time management and balancing teaching, research, and service

activities—three vital components in most academic institutions. *Self-management* points to unanticipated, emerging academic roadblocks that tend to lead one to focus on wrong or unproductive activities. These activities involve an overcommitment of service and neglecting research that is most essential in obtaining a doctoral degree and/or promotion within the faculty ranks. *Social networks* involves the building of informal relationships via socialization with other colleagues and university administrators.

While Boice's framework is well defined, it only points to the importance of addressing these four factors through the early academic careers of new and emerging academics. He does not speak to the depth of how these dimensions can be applied on a practical basis and, even more so, how they could be applied in the case of new and emerging minority academics. It is well recorded that the experiences of minority academics are strikingly different from nonminorities who would ordinarily have more mentors (networks) to facilitate them through their academic careers (Grier & Briley, 1997; Payton & Jackson, 1999; Warren, Mbarika, Malloy, & Wiley-Patton, 2004). This is not to say that nonminority senior professors are not concerned about minority academics; however, imperative relationships are taxing to establish and cultivate for those unfamiliar with the culture of their perspective disciplines, departmental culture, and social/political dynamics. In fact, in some cases, new and emerging minority academics have made the mistake of quickly running to judgments about potential nonminority mentors, hence depriving themselves of opportunities to be mentored through the doctoral process and junior faculty years. For underrepresented minorities, one major step to increase the propensity for success is the practical application of the four-part IRSS categories via the inclusion of formal and informal mentoring relationships (Payton & Jackson, 1999).

Given the vital connection between the IRSS framework and mentoring models, we attempt to address two relevant research questions:

1. How applicable is Boice's theory to the experiences of minority IT/IS doctoral students?
2. What types of mentoring relationships are used by these students?

To address these questions, our work focuses on The PhD Project IS Doctoral Student Association (ISDSA) as well as an extensive survey of previous research in this domain. The PhD Project's decade-long success, in general, and the affiliated IS Doctoral Student Association, in particular, holds significant implications for the corporate arena and academia. Specifically, it increases the number of underrepresented minority faculty who can, in turn, affect the number of students who may enter the IT field (The PhD Project, 2003). Our definition (and The PhD Project definition) of minorities includes African American, Hispanic American, and Native American IS doctoral students who have typically remained underrepresented based on the U.S. census data (<http://nces.ed.gov/fastfacts>). Thus, we focused on these three groups and do not include Asian Americans who are not typically underrepresented in technical domains. To this end, note that the American Council on Education (ACE) reports that Asian Americans saw a significant increase in the number of doctorates in life sciences (10.8%) and engineering (6.7%). Moreover and according to the ACE 20-year trend report, this group increased its number

of faculty positions by 9% while being the only underrepresented group to show growth in full professorships. Similar findings were reported by the National Science Foundation (2003), which indicate that Asians, whether U.S or non-U.S. citizens, were most likely to have earned their doctorates in the sciences and engineering (p. 50).

The mentors of ISDSA are minority faculty in the IS/IT area and were members of the planning committee of the ISDSA annual conference from 1996 to 2001. With the leadership of the mentors, the organizing committee invited seasoned minority and majority IS faculty to annual ISDSA conferences to nurture the mentoring aspects of academic life, such as the journal, peer review, and conference submission processes. We discuss the paramount importance of mentoring as the crux of our arguments in this article, but use Weiser (1978) to acknowledge the persons of color, in general, and those in academics, in particular, experience the dynamics of “twoness” as espoused by W. E. B. DuBois.

The following is a discussion of the psychology literature that provides the theoretical framework for this research. We further connect the psychology literature to diversity and mentoring research. Next is a description of the data collected from a group of underrepresented IS minority doctoral students and the guiding questions for this research. Our findings from the qualitative data and lessons learned from the mentoring process are presented. We conclude with implications for academics and practitioners, as well as our study’s limitations.

## CONCEPTUAL FRAMEWORKS

### Theoretical Foundations

Although the Boice’s (1992, 1999) framework focused on new and emerging academics (faculty) in general, we believe these theories lend a rich background to study the evolution of minorities from the doctoral level to faculty status. Our study, however, focuses on the experiences of underrepresented minority doctorates, who can seek faculty positions. It is common that most doctoral students in IS North American programs pursue faculty positions; hence, their doctoral processes could be viewed as a pre-faculty experience. In its use of grounded theories, Boice’s (1992, 1999) IRSS model is multidisciplinary and inclusive of majority and minority faculty experiences, and in light of minority doctoral students’ experiences, we discuss its components in the section that follows:

1. *Involvement*—Astin’s (1985) theory of involvement suggests that new and emerging academics must engross themselves in the university activities. Such immersion results in social networks that enable membership and active participation. In many cases, minority doctoral students (and junior faculty) face the challenge of where and how to allocate their time. Even more, the greater challenge is striking a balance between social and professional activities without being distracted from the main purpose—to earn a doctoral degree and supposedly tenure, respectively.
2. *Regimen*—Sternberg’s (1988) theory of regiment concludes that tacit skills are vital for the success of new and emerging academics, but often

instinctive rather than taught. That is, time management and balancing among teaching, research, and service is best served when new and emerging academics exercise temperance and efficiency. It is common for authorities at predominantly White universities to involve minority students and faculty in many service activities with the goal to showcase diversity in their institutions. While we believe that such moves are usually not ill-intended, we contend that this often affects time management, hence productivity.

3. *Self-Management*—Flower's (1990) self-management theory offers that new and rising academics lend themselves to a "more time" mode of thinking while addressing the wrong problem from the onset. The result is often misdirected effort and an inconsistent amount of time on any one task. Many minority students spend too much time on their teaching, which can translate to deprived research productivity in many cases (we realize that teaching is not required at some institutions). While teaching is (or at least should be) the focus of our jobs as academics, there is a dire need to help minority doctoral students to strike a good balance between teaching and other activities (especially research) that matter when it comes to completing their doctoral programs and receiving tenure. Here, we note that many doctoral assistantships are tied to teaching or teaching assistant requirements.
4. *Social Networks*—Creswell (1985) contends that sociality within one's field and building relationships on and off campus engenders teaching and scholarship efficiency. This is to advocate that thriving academic careers are not built exclusively on intellect. Rather, some degree of socialization is required. These "informal" relationships and networks have often alienated many minority doctoral students who often are unaware how and/or where to start building such networks.

While Boice (1992) found that all fresh and talented academics are challenged by the above theoretical foundation, underrepresented minorities, he concluded, often experience heightened degrees of isolation, rejection, and discrimination. Underrepresented groups, in general, and African Americans, in particular, are "reminded again and again of the dominant culture in academy to which they are expected to become socialized" (p. 257). That is, these minorities experience the complexities associated with being different and playing dual roles under the majority's accepted norms (i.e., the twoness articulated by DuBois and espoused in Weiser (1978).

The dominant culture is characterized by the presence of White American traditions that are viewed as the social and professional norm. This dominant culture is interwoven with the foremost academic politics that can be of detrimental to the survival of minorities in the academy. Beyond traditionally lacking mentors (including "the people in high places") who could help them in their journey through the academe, underrepresented groups often experience feelings of collectivism along with a sense of community. Prior mentoring research (Kelly & Llacuna, 2002; Lawrence, 2004) in academic domains and corporate settings

(Bell & Nkomo, 2001; Ragins, Cotton, & Miller, 2000; Thomas & Wetlaufer, 1996) has determined that aspects of White American culture are relevant to the experiences of underrepresented minorities in doctoral programs. Namely, understanding cultural differences and the unwritten politics often escape underrepresented minorities. The results can be of detriment to career advancements and unrealistic expectations among these groups.

While Boice (1992) advocates for mentoring of all new and emerging academics, his framework does not account for collectivism and sense of obligation toward community. These phenomena have been shown to be significantly vital to underrepresented minorities even as they experience increased interactions with the dominant culture on personal and professional levels. Moreover, individualism is typically the accepted norm. While underrepresented groups often experience professional and social isolation, Gubitosi (1998) found that individualism “sanctions the avoidance of getting to know and helps one’s colleagues.” Simply put, individualism leads to majority doctoral students and faculty receiving more support than underrepresented groups (Gubitosi, 1998). Hence, the notion of collectivism can stand to influence each aspect of IRSS theory—*Involvement*, *Regimen*, *Self-Management*, and *Social Network* decisions among minority doctoral students. Decisions and/or outcomes include: (1) academic/professional (non)participation and engagement; (2) (im)balance among research, teaching, and service; (3) lack of understanding and/or awareness regarding departmental/university politics; and (4) lack of appropriate mentoring. Such decisions are largely influenced by cultural and social differences that can ultimately impact one’s doctoral experience.

Despite the efficacy of IRSS, *Ethnic America* (Weiser, 1978) offers that the experiences of minorities in the United States go beyond the dichotomy of inheritance and environment. Rather, factors influencing social dynamics are: (1) inheritance; (2) local conditions or the environment; (3) the melting pot or presences of other Europeans; (4) continued contact with Europeans including psychic intercourse and culture borrowing; (5) accident which is the luck of time and the accumulated weight of “happenstance”; (6) migration; (7) choices made by an individual, which are deliberate acceptance or rejection; and (8) repetition of established peculiarities (p. 23–25). These factors are further complicated among African Americans, as they have a unique immigrant experience (slavery) in comparison to other minority groups. Hence, foreign immigrants, in general, and African Americans, in particular, are subjected to a twoness characterized by social and cultural estrangement to exist within the mainstream majority’s accepted norms and their own cultural identities. We recognize these factors in our interpretation of our data.

Such assessment further complicates the experiences of minority doctoral students as they seek to (or should) engage in the IRSS framework. However, these groups should not engage without cognition of twoness and the conditions under which social dynamics are influenced (Weiser, 1978). Academic environments do not shield social dichotomies; if anything, the domain heightens the complexities of social, cultural, and ethnic differences as one attempts to fit in (Anderson, 1992). As we mentioned earlier, the theory base that the IRSS framework presented is largely dependent on the availability of mentors to help minority doctoral students

maneuver through successful academic careers. In the section that follows, we analyze mentoring frameworks for the presence of IRSS components.

### **Mentoring Frameworks in Academic Environments**

Prior works have documented the challenges of African Americans in their quest to ascend the corporate ladder and the need for different models to help in the success of breaking through the glass ceiling (Igbaria & Wormley, 1992, 1995; Thomas & Wetlaufer, 1996). In these cases, mentoring has proven to be desirable in career development of African Americans and other minorities in the corporate workforce (Thomas & Gabarro, 1999).

Further, Payton and Jackson (1999) found that mentoring was equally essential for the career growth of African and Hispanic Americans in the IS academic arena. Using a groupware application to collect the experiences and responses of 10 African and Hispanic American IS PhD students, these researchers determined that underrepresented minorities faced significant cultural and social barriers during their matriculation in doctoral programs. They concluded that underrepresented minority students desired increased mentorship from faculty of color and/or majority faculty who are responsive to cultural differences. IS doctoral students, however, rarely found these mentoring relationships because of the lack of minority faculty or majority faculty attuned to the students' concerns and/or an understanding of the social aspects of the academy. When faculty of color were present, oftentimes students found that these faculty were reluctant to assume mentorship roles because of the potential implications of institutional and cultural pressures associated with attaining tenure and experiencing faculty peer scrutiny.

### **Mentoring in Corporate Environments**

Thomas (2001) studied majority and minority professionals for 3 years to examine corporate advancement and career experiences. He found that persons of color who advanced and maneuvered the processes of upward mobility often shared a striking trait—"a strong network of corporate sponsors who nurture their professional development" (p. 99). Using a stage model to articulate his findings, Thomas (2001) described his results along three phases in one's corporate career. While minorities plateau habitually during later stages in their careers, the role of mentoring proved critical to overcoming the obstacles posed by race and racism. Although mentoring in the corporate environment is vital, the mentors, in general, and minority mentors of minority persons, in particular, are faced with several challenges. Thomas (2001) identifies cross-race quandaries, such as negative stereotypes, peer and organizational scrutiny, and peer resentment as severe barriers to the mentoring process. Thus, a compelling web of formal mentors, sponsors, role models, peers, and self-developed (informal) mentors is needed to foster career success.

Earlier works of Thomas and Wetlaufer (1996) have communicated the complexity surrounding the diversity debate where institutional racism, discrimination, and access paradigms continue to confront minorities at both the upper and lower management ranks. With these issues, mentoring becomes fundamental to the careers of people of color and has been found to elicit (in)tangible power with the organizational context (Ragins, 1997). Further, Ragins et al. (2000)

illustrated that mentoring can be influenced by type of mentor, quality of the mentor–mentee relationship, and career attitudes of the protege, such as time management for assignments, commitment, and motivation. More recent work (Kwak, 2003) concludes that diversity is an inescapable social fact that often results in negative business consequences unless preempted by substantial career development and training.

Unlike Thomas and his peers (1996, 1999, 2001), Siebert, Kraimer, and Liden (2001) have examined career success for any individual in the context of social capital—defined as the social structure that creates value and facilitates action within a given structure. While not solely focusing on diversity and mentoring at the individual level, Siebert and his colleagues' model of career success is inclusive of access to information, access to resources, and career sponsorship. This model offers the field of an integrative approach to mentoring by defining network benefits mediating career success outcomes. That is, the mentor–mentee relationship largely influences these network benefits, and these scholars determined that high-level contacts tended to provide more career sponsorship. Surprisingly, their work suggested that those at higher organizational levels did not lead to access to resources. Siebert et al. (2001) determined that direct managers and peers could prove to be more significant in one's early stages within the social network of the organization, which is similar to Thomas and Gabarro's (1999) stage model of diversity. As in corporate settings, these findings directly link to the IRSS theory offered by Boice (1992)—given that new and emerging underrepresented academics are advised to adopt strategies of active participation, tacit skills for balance among career requirements, and guided self-management practices. Yet, these linkages are not always absolute. Social discourse reminds us of the influencing factors shaping these encounters (Weiser, 1978).

### **Linking the IRSS Theory to the Mentoring Literature**

While IRSS theory offers a psychological perspective, it implies that how individuals think about, experience, and feel or relate to phenomena are critical. We further suggest that IRSS theory is relevant to the doctoral student experience—given appropriate strategies needed to benefit from such a framework. Adopting from the IRSS theory, *Involvement* and *Social Networks* are the prominent concepts to our research domain. Cognition of and execution of these elements (*Involvement* and *Social Networks*) in the context of mentoring better enables underrepresented minorities to navigate the social, professional, and political landscapes of any academic setting. This is not to say, however, that cultural and professional barriers (including discrimination) will not be of issue (Payton & Jackson, 1999). More importantly, the relevance to the doctoral student's experience enables him/her to experience, better understand, and be cognizant of organizational accepted social and professional norms. We do contend, however, that *Involvement* and *Social Networks* in the absence of mentoring has greater negative consequences for underrepresented groups in the academe.

Moreover, these two theories (IRSS and mentoring) are linked via IRSS providing the dimensions that are needed to maneuver within the academe context while mentoring demonstrates the actions (the how) needed internally and

externally to the organization/department. Mentoring offers one decisive way to shift from conceptualization of the IRSS theory to implementation, (action) to address the barriers cited from underrepresented students who can potentially serve as a “new face” of the IT classroom (Payton, White, & Mbarika, 2005). Such linkages offer support for our research questions.

## **OPINIONS AND SUPPORTIVE ARGUMENTS**

### **History of the PhD Project**

In 1994, Bernie Milano, partner in charge of recruiting and personnel administration at KPMG Peat Marwick, observed an acute shortage of minorities in managerial positions in the corporate world. After much thought and research on reasons for this short supply of minority managers, he envisioned that diversifying the business classroom would be a major step to diversifying corporate management. Even further, according to Briley and Grier (1997), Milano believed that there were three ways to address this problem:

1. He felt that boosting the number of minority faculty would improve the career preparation and opportunities of minority students by providing them with a more substantial source of role models and mentors;
2. It was expected that a greater number of minority students could be attracted to the business discipline with more minority business faculty;
3. He thought that putting minority professors at the front of business classrooms would provide all students with the much needed exposure to minority men and women, and to their perspectives on important business-related issues.

With the assistance of Peter Thorp (Vice President of Citicorp), Milano decided to initiate a series of meetings to brainstorm on how corporate America could play a major role in addressing this dilemma in the business world. The result was The PhD Project. Launched in 1994, The PhD Project’s mission is to “To recruit and support qualified underrepresented minorities—African Americans, Hispanic Americans and Native Americans—to create diverse business school faculties.” (The PhD Project, 2003). It is an alliance of corporations and higher education institutions, founded and managed by the KPMG Foundation. The organization uses a holistic approach to improve workforce diversity by diversifying business school faculties. The PhD Project does not “accept” persons into PhD programs, nor does it directly influence the acceptance of applicants into PhD programs. The individuals targeted and recruited are qualified individuals who have already established successful careers and are often at the top of their professional fields. This is an intervention program that acts as an information clearinghouse for prospective PhD students. Once an individual enters a doctoral program, The PhD Project provides an admirable support system.

ISDSA is one of five professional associations of underrepresented minority students that The PhD Project sponsors. The ISDSA provides an opportunity for

the students to sustain a high level and sense of connection among minority business doctoral students and provides networking, peer support, mentoring, and joint research opportunities. During the annual ISDSA meetings, experienced minority and majority researchers and academicians participate by giving presentations on topics, such as research strategies, the dissertation process, the job search process, and surviving as an emerging scholar. Journal editors offer advice on strategies for publishing in top IS journals, and the IS planning committee traditionally took the lead in identifying and soliciting the expertise of those experienced IS scholars with these activities. These meetings are held in conjunction with the Americas Conference on Information Systems (AMCIS). An important networking activity within the ISDSA is the creation of "buddy groups"; these groups are designed to keep students in contact with their peers as well as current IS faculty, provide encouragement, and offer research collaboration. Further, buddy groups, along with the 3-day association conferences, offer structure to facilitate one's understanding of how involvement, regimen, self-management, and social networks manifest themselves in the doctoral matriculation process.

### **Data Collection**

We collected data from a subset of 72 underrepresented minorities from 1996 to 2001 who attended The PhD Project IS Doctoral Student Association Conference, as sponsored by the KPMG Foundation. These data are based on open-ended questions (see Appendix) that asked students to respond to cultural, minority/majority, and mentoring concerns. These items were adapted from Hammond (1995) and Payton and Jackson (1999). To control for variance in responses and to ensure comparability, students were contacted each year as they matriculated in their perspective doctoral programs. In addition, we would meet with incoming doctoral students to understand why they opted for the PhD alternative and their expectations relative to the doctoral experience. Lastly, we maintained contact with The PhD Project staff at least twice each year prior to ISDSA annual conferences; this enabled us to identify any significant shifts in students' academic matriculations.

At the onset of this study, the average age of the group was 38.6 years with the most senior person being 57 years old. While the average matriculation in the various doctoral programs was slightly over 3 years, one student reportedly had been enrolled for 7.5 years. Moreover, the group had a significant amount of industry experience (Avg. = 7.05 years) with positions as programmers, consultants, and analysts, just to name a few. The gender distribution was evenly split with 50% males and females, respectively.

The data were collected via interviews, participant observation, informal discussions, records of meeting notes, and open-ended surveys during the annual ISDSA conferences. Additionally, views from these questions were collected informally through conversations as part of our interactions with the students. Using Boice (1992), we sought to answer the above questions in the context of IRSS theory and employed a grounded-theory approach to textual analysis as espoused

by Lacity and Janson (1994). This type of qualitative data offers “richness” beyond a survey method in terms of understanding the phenomena in question.

Hence, the description and interpretation of our results were modified and revised via an iterative process that included other members of the ISDSA planning committees, the KPMG Foundation, and those students participating in the association’s annual activities. In its initial stages, the IS planning committee was chaired by a tenured minority faculty member in accounting. This person brought the expertise from an existing PhD Project Accounting Doctoral Student Association along with the knowledge of previous mentoring efforts to attract and retain minority doctoral students to its field. Others on the committee included three untenured faculty: one in accounting and two in IS. An IS student who was active in the student association served as the final member of the committee. After 2 years, the accountants rotated off of the IS planning committee while a combination of newly seasoned PhDs along with a student led the effort. KPMG Foundation staff professionals played a vital role in the planning by providing coordination, meeting, and facilities expertise to support The PhD Project’s mission.

Data were collected from the doctoral students only. Serving as chairs, co-chairs, and members of the association, we sought to uncover recurrent themes evident in the discussions and responses to the survey questions. While we also served as mentors to the matriculating students, other majority and minority faculty served as mentors to the doctoral students. Simultaneously, we explored differences until consensus was reached. Any results deemed provisional, warranted additional investigation; these results were then discussed with student members of the association or other members of the planning committees and/or the KPMG Foundation to resolve any conflict. Our reactions and synthesis to the data are included below.

## Findings

As of Fall 2002, statistics collected by the KPMG Foundation indicated that 103 persons have come through and/or are currently in IS doctoral programs. At the time of this study, 28 members of the ISDSA had successfully completed their terminal degrees—20 African Americans and 8 Hispanic Americans. Association members included 72 students matriculating at 46 campuses. Of these 72 students, 50 were African Americans, 20 Hispanic Americans, and 2 Native Americans. Additional data collected from the Foundation showed that nine universities had two minorities in the IS program; two universities had three students in IS; and three universities had four, six, and eight minority students, respectively, in their IS program. Thus, the effectiveness of the ISDSA model can be seen in this increase in the student population, though data on promotion from assistant to associate with tenure have yet to be determined.

Table 1 outlines our findings from ISDSA students over a 6-year period. Each of the recommended actions has been undertaken by the KPMG Foundation and was implemented via the ISDSA. Compared to retention rates of IS doctoral students, in general, the results of such a hands-on mentoring model have resulted in increased retention and graduation rates among African, Hispanic, and Native

**Table 1:** Inconsistent students' comments relative to IRSS.

Students' Comments	Addendum to IRSS Theory	Theory Justification
<i>"My age posed a problem for me with students who were young enough to be my children and faculty were my age but would not associate with me because I was a student. Ergo, I did not fit anywhere."</i>	One's current station in life (along the factors of ethnicity, gender, and age)	Gooden, Leary, & Childress (1994) in considering doctoral students' needs, include age (to avoid ageism) along with those offered by the researchers noted above (ethnicity, gender, department assignment, home state/country, and years of matriculation).
<i>"I want to give back; we need to help our people understand that need to help each others. The youth need to understand what it means to get a PhD in this Information Age."</i>	Importance of collectivism (similar to obligation towards community)	The norm of individualism can be defined as the difference between the job interview experience (or initial interaction) and the beginning of work experiences (Gubitosi-White, 1998).
<i>"I think that we need to make youth aware of academia opportunities. We don't have a lot of role models in our homes, churches and neighborhoods."</i>	(See prior comments also HBCUs, Tribal Colleges and HSIs)	Here, the dichotomy of community service competes with the role of student scholar. Gubitosi-White (1998) described this as the duality of community service and faculty scholar.
<i>"Things changed once I hit campus. It appears that the sales pitch is over; now, I feel like a commodity."</i>		

*Note:* HBCU = Historically Black Colleges and Universities; HSI = Hispanic Serving Institutions.

American doctoral students. We note here that 9 out of 72 students withdrew from their respective programs between 1996 and 2001. This results in a 12.5% dropout rate over a 6-year period—thus, roughly 2–3% annually; this metric demonstrates the strength of the initiative in comparison to dropout rates reported in double figures for *all* doctoral candidates by AACSB (2002), National Science Foundation (2003), and American Council on Education (2002).

While several reasons such as personal and medical reasons, were cited regarding termination of matriculation by the nine candidates, follow-up data revealed that in six of the nine cases, students noted failure to overcome major milestones in their programs. These included passing qualifying exams after more than one attempt, lack of economic stability, starting business ventures (entrepreneurship), and returning to the IS corporate environment. Though these former students had

attended prior ISDSA conferences and established mentoring relationships with other students and/or faculty mentors, several students summed up their rationale for departing:

“I never understood the process. It is not for me. I am too old and simply do not need a PhD to work in corporate IS. The process is analogous to servitude of some sort. I was busy working and making money already in corporate.”

“I opted to get another Master’s. These people here don’t want to see me succeed. I worked within the system; I followed the rules; I played the game. But . . . there was no support. I come from a background where community matters, but not at this level.”

“I underestimated the task at hand. I want to teach at an HBCU and give back. This is not something that I should have openly stated to my advisors and others. They want everyone to be like them and serve at a Research I institution.”

## IMPLICATIONS TO RESEARCH AND PRACTICE

Several key themes emerged from our interpretivist approach and are enumerated below. We organized these themes around the IRSS framework to identify the absence or presence of the four components (*Involvement*, *Regiment*, *Social Networks*, and *Self-Management*) in the qualitative data. Items one through four represent viewpoints drawn from student comments.

1. *Number of Minority Students and Valuing Diversity*: There are several schools that only have a single underrepresented minority in the IS program. Schools that have more minorities in the IS program have a built-in support network. While we by no means imply that schools with few or no minority students do not value diversity, we contend that such support networks tie directly to *Involvement* and *Social Networks* in the IRSS framework.

In the presence of other underrepresented doctorates, students feel that they have other minorities that they can connect with on cultural and social dimensions, and cohesiveness of the group provides feelings of belonging and value. Yet, feelings of loneliness and isolation appear prominent and can be attributed to the larger, antisocial, and competitive culture(s) of institution(s). Students are not included in the social clique thereby missing a critical, yet social aspect of how the doctoral process works, which is learned through (in)formal interactions. Students offered the following insights:

“It is lonely for me here in the program because I am it. I thank God that I have my family here with me. I don’t see how some do it without family and established networks before coming to this city. I personally do not feel comfortable to attend departmental functions but feel pressure to do so . . . for political reasons . . . I guess that we do what we have to but I do not feel welcome even when I attend.”

“I am so glad that (doctoral students names withheld) are there. I can vent with and to them and do so in confidentiality. There is a sense of trust among us, and we help each other along academically, spiritually and socially. While we

work well with our majority peers, we as African-American students share a sense of cohesiveness.”

“Thank goodness for The PhD Project IS Student Association; now, I know minority faculty and peers that I can connect with face-to-face once annually and anytime electronically. I do not want to imagine going through this process without “you guys”.”

Lastly, retention is just as critical as recruitment. While some schools offer fellowships and assistantships to minority graduate students as part of their recruitment incentives, we do not want to inflate the notion that financial incentives result in a substantive retention plan. As noted in the IRSS model, much of the success for doctoral candidates (who may or may not opt to become new faculty) lies within the social networks, involvement, and understanding the delicate balance of academic achievement (Boice, 1992). One solution is for universities to partner with organizations, such as The PhD Project’s associations, who understand the importance of mentoring and social networks. In these organizations, students are able to more easily discuss issues of diversity and establish networks to help them maneuver the matriculation process.

2. *Cultural and Lifestyle Differences*: Minority students have cultural concerns often related to family and social issues. There is particularly a governing theme of collectivism and giving back to one’s community. This theme links directly to *Self-Management* within the IRSS framework.

Substantial time outside of class is devoted to others who are not part of the PhD environment (Payton & Jackson, 1999). These family and social obligations provide underrepresented minorities with a sense of wholeness and value but can sometimes prove greater than the gravity of the politics associated with the doctoral process. The embedded desire to give back to one’s ethnic or cultural community raises a critical question for doctoral matriculation: how do these drivers impact the guidance or experience that these students receive in doctoral programs?

Other factors that can impact cultural and lifestyle differences are age, marital status, absence/presence of children, educational and generational background, and place of birth of the doctoral students themselves. While we did not collect the exact demographics from the sample, we identified that the most senior student was approaching 60 and the youngest participant was roughly 25–26 years old; several students were parents with multiple children while an estimated 40% were married; places of birth varied from across the country; and more than 60–70% were first-generation doctoral and/or Masters educated. Students offered the following:

“I think many of us are unaware of the opportunities in academia. We don’t have a lot of PhD role models in our homes, churches, neighborhoods, etc. We need to explain to kids that getting a PhD is more than just being in school and broke for 4 years.”

“I plan to teach at an HBCU (Historical Black College/University). I can make an impact there and frankly, I have a greater sense of responsibility to African-American students.”

“I plan to teach at a Hispanic-serving school. Those kids need me and there are so few Hispanics blessed to have a PhD . . . let alone a PhD in a technical

discipline. I can relate and when they see me, then they will know that they can do it.”

Moreover, secondary data (American Council on Education, 2003; Anderson, 1992; National Science Foundation, 2003) indicate that underrepresented groups continue to struggle with successful and judicious completion of PhD programs. In its annual 2002–2003 report, the American Council on Education determined a decline in the number of doctoral degrees awarded to minority groups. The National Science Foundation data show that minority PhD students are typically 2–3 years older than their White peers upon doctoral program completion—with 31.4 years reported as the average age for most recipients and 33 years being reported for African and Hispanic Americans and 34 years for Native Americans. Likewise, 43% of White doctorate recipients reported that their fathers had completed master’s degrees or higher levels of education. This figure, however, sharply declined for underrepresented minorities with figures ranging from 25% to 35%. Moreover, Whites were less likely to have dependents (38%) in comparison to Native Americans (55%) with African Americans and Hispanics ranging from 44% to 48%. Prior work by Anderson (1992) reported similar findings. While he views the additional years as an economic penalty for underrepresented minorities, Anderson terms these age gaps, in particular, as “arrested development” (p. 74) where the newly blossomed PhD must break the cocoon of dependency and emerge as an economic, productive citizen.

Relative to IRSS, these findings clearly point to self-management in the model. Underrepresented minorities must delicately balance cultural/social aspects while determining mechanisms to enhance tacit knowledge—thereby, leading to improved productivity.

3. *Perceptions of Racism*: Racism appears to be an embedded part of the matriculation process. This notion is associated with one’s (in)ability to be included (*Involvement*) and navigate the organizational norms, expectations, and social systems.

Over the past 6 years, students continued to confront racism, prejudices, stereotypes, and sexism. Some majority faculty and nonminority peers have often suggested that minority students are not qualified to be in IS programs and/or perhaps enrollment is a result of affirmative action. Subtle manifestations of racism occur and have been described by “surprise that a person of color is analytical”—thereby making assumptions of incompetence. The perceptions of some doctoral students (indirectly) reflect such race-based attitudes:

“I have to be three times better than white students to demonstrate my abilities.”

“Some think that Affirmative Action got me here and not my own effort.”

“We are all getting along helping each other survive . . . some people are envious of our KPMG stipend. They see it as some special, minority privilege.”

“While people are supportive, I have been used based on my race and gender to garner research grants to help a white male professor with his personal agenda. How racist is that?”

Relative to the IRSS model, racism lends itself to *Involvement*. That is, Boice (1992) contends that racism and discrimination undermine underrepresented scholars' credibility and competence. These attitudes tend to result in exclusion of minority doctoral students from social networks that are needed to effectively engage in the academic process.

4. *Institutional Culture*: There is a strong need for minority mentors on campuses. Interestingly, this theme tends to encompass each of the components of the IRSS framework—as it appears that appropriate and effective mentoring helps to reduce the barriers associated with minority life in the academe.

While mentors enable students to maneuver professional and social networks, ideally mentors would be tenured and know the directives of the departmental culture. During the past 6 years, students have expressed a bona fide desire to have minority faculty as mentors, but given that less than 3% of all business faculty are African, Hispanic, and Native American, finding this(these) person(s) of color would be an anomaly (Payton & Jackson, 1999).

“The lack of mentors may be attributed to the lack of faculty of color and students of color. Until we get more students into the pipeline, this problem will persist. Additionally, we need faculty who are already out there to be supportive and encouraging.”

“It is important that we feel that we have a strong mentoring pool and colleagues who not only understand our academic focus but our cultural backgrounds as well.”

“I started in Computer Science, and at that time, there were 400 students in the program (at the Masters level). Only 2 were of color. Of the 50 people that finished, both of us were African American. But . . . it was a long dry spell between seeing another face (of color). Is this an institutional commitment to minority recruitment and retention? At the doctoral level, I see that things are even worse. The environment does not embrace us culturally.”

“I am in a multidisciplinary program, and I find myself having to run from department to department. I take classes and tie them together myself. It is very loose. You must be motivated and figure things out on your own. This further creates a greater sense of loneliness; it is lonesome.”

The lack of minority mentors is complex and ties to a number of dimensions in the IRSS framework. Boice (1992) suggests that African American doctoral students are often not involved either by personal choice or failure to be invited into the social networks. The demanding balance of regimen and self-management often precludes African American doctoral students as they attempt to discern the (un)written rules and culture of academe. One typical result of these complexities is for underrepresented doctoral students to depart academe for other opportunities.

While Boice's framework offers a solid foundation for understanding the experiences of new and emerging academics, in general, we would like to discuss rationale for augmenting the model, particularly in the case of underrepresented groups. While Boice (1992) would applaud the efforts of junior underrepresented

groups that assume mentoring roles, the IRSS framework should be augmented to caution against these activities relative to regimen. While the tacit skills can be underdeveloped among minority academics, additional service can result in a “saddling” effect. We identified several comments from our data set, which appear to be inconsistent with Boice’s framework. We group these in Table 2 and offer theoretical justification for the enhancement of the current body of knowledge. Moreover, PhD programs can typically be characterized as being supportive of “like minds,” according to the students in this study. Thus, positive and acceptable orientations towards underrepresented cultural communities and/or differences in life’s stations are not captured in institutional culture and dynamics.

We also recognized how Weiser’s (1978) work heightens our understanding of the above dynamics. Hence, doctoral students’ voices speak to the compromises among (dis)association, (ex)inclusion, and retaining individual culture. They also address the influencing factors on the experiences denoted throughout the themes. The views below illustrate consistency among themes of:

1. inheritance (one’s socio-economic, educational, and ethnic background);
2. the melting pot (presence of the majority along with other cultures);
3. continued contact with the majority particularly via psychic discourse;
4. the presence of choice, of lack thereof, to exercise will to accept or reject social culture; and
5. repetition (established peculiarities that are tried often in a social context and “typical” implies the accepted norms of the environment).

Lastly, we suggest that the Boice’s framework is absent of types of mentoring relationships that are desirable to support underrepresented doctoral minority students. Our data indicated that a myriad of mentoring approaches are being used by student members of The PhD Project ISDSA and its conference planning committee. Among these are (1) peer-to-peer, (2) minority junior/tenured faculty-to-student, and (3) majority tenured faculty-to-student. Within each of these mentoring forms, there exists same gender, cross-gender, same race, mixed race, just to name a few. While formal mentoring relationships had been attempted, the students determined that informal relationships work best. That is, these relationships tended to evolve and be largely voluntary—thereby engendering psychosocial support, such as role modeling, friendship, acceptance, and confirmation and counseling (Friday, Friday, & Green, 2004). Our observations uncovered that these informal mentoring relationships begin with some initial degree of trust between the student and mentor and migrates to cultivation of ideas and psychosocial provision. Hence, in studying the experiences of minority IS doctoral students, we conclude that IRSS serves as a foundation to build upon. Our data, however, indicate that the inclusion of the factors in Table 2 along with a diversity of mentoring models is suitable in order for successful completion of the terminal degree. Table 2 lists students’ comments to illustrate nature of these mentoring relationships used by the group. Our interactions demonstrated that students’ use a web-approach to defining their mentoring relationships. That is, a single student encounters multiple interactions

**Table 2:** Mentoring models and supporting quotes.

Type of Mentoring Used by the Students	Student Comments
One-on-One Same Gender	<i>"My mentor is a female; she understands what it is like in this isolated field; she offers advice and counseling."</i>
Group Support	<i>"I am thankful for the ISDSA. It is family for me. You guys keep me going. I look forward to being here at the conference every year."</i>
Cross-Race/Ethnicity	<i>"ISDSA has facilitated me meeting leaders in the field. Albeit, they are largely white. These people work with me and offer me support. I am glad to have help wherever I can get it. We (African Americans) better learn to accept this help."</i>
Peer-to-Peer	<i>"I know that I can count on X; he lives away from me, but with email, we encourage one another. We share research ideas. We help each other and cannot let the other one down (with failure or quitting in the process). It is easier to communicate with a peer and another Black male that knows what I am going through."</i>

from a hub (The PhD Project ISDSA) and branches to several mentors (spokes) to reach milestones during the matriculation process.

## CONCLUSION

In this study we address two main research questions:

1. How applicable is Boice's theory to the experiences of minority IT/IS doctoral students?
2. What types of mentoring relationships are used by these students?

As corporate IT environments continue to experience a void among under-represented groups, business schools face a similar dilemma. The use of formal and informal mentoring (as depicted in our mentoring models) and social networks (as depicted in the IRSS framework) seems to be a very plausible approach to address this dilemma. We, therefore, suggest that similar techniques and models would greatly improve the recruitment, matriculation, and placement processes of IS doctoral students. African, Hispanic, and Native Americans hold few IS faculty posts in the United States. IS departments, in general, and universities, in particular, should assess their degree of responsiveness to minority students to determine if and how diversity plays a role in the organizational culture and strategy. (In)formal networks ultimately can enhance career development and success among all groups.

However, in developing these strategies, universities and departments leaders must be educated on the influencing factors offered by Weiser (1978) and recognize differences associated with twoness.

This research adds to the diversity and mentoring literature by offering lessons learned pertaining to minority students matriculating in the IS doctoral process—students who will enter the IS workforce, in academia or the corporate arena. The results of our research provide insights to academicians as well as managers in organizations who value diversity and are compelled to implement inclusionary methodologies that improve the organization's bottom line. We have discussed the need for developing formal and informal networks to maneuver the career process of minorities in the IS field.

Though our work only focuses on IS doctoral students, the IRSS model and mentoring models could be generalizable to minority students in other high-tech disciplines with limited numbers of underrepresented minorities, such as engineering and computer science. Future studies should examine IS doctoral graduates' supply and demand as well as other disciplines in schools of business using both qualitative and quantitative methodologies to study mentoring and networking as they relate to academic career development. In addition, an extensive study of this nature involving underrepresented doctoral students should investigate what parts of IRSS are fitting.

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## APPENDIX: INTERVIEW INSTRUMENT

1. Demographic Data
  - a. Your Age
  - b. Ethnic Group (African, Hispanic, or Native American)
  - c. Number of Years Enrollment in Your Doctoral Program
  - d. Prior Work Experience with IS Organizations
2. How did you decide to pursue a PhD in Information Systems?
3. How are you financing your PhD program (e.g., loans, scholarships/grants, teaching/research assistantship, parental support, self/spouse support)?
4. How old were you when you started your PhD program?
5. Prior to the PhD Project Information Systems Doctoral Student Association/ICIS Conference in 1996, had you met a minority information systems PhD? If so, did you meet this(these) person(s) prior to your decision to pursue your PhD?
6. Is your primary interest teaching, research, or consulting? Do you have plans to re(enter) a corporate IS environment after completing your PhD?
7. What are your main research interests?
8. Are you interested in doing research on uniquely underrepresented minority (African, Hispanic, or Native American) issues? Explain.
9. Do you feel that your experience in your PhD program is different from that of white students because of your race? Explain.

10. Have you had any mentors in your pursuit? If so, what are the ethnic backgrounds and areas of expertise of your mentors (assuming these mentors are in academe)?
11. Describe how accepted you feel in your PhD program by other doctoral students and faculty.
12. Describe your ability to select your desired research topic(s).
13. Discuss the feedback you have received from faculty concerning your progress in your pursuit.
14. What barriers, if any, do you believe have impacted your progress in your PhD program?
15. What are your suggestions in reducing and/or eliminating the barriers that were mentioned in Question #14?
16. Provide any comments that you feel are important when discussing under-represented minorities and their pursuit of PhDs in Information Systems?
17. What social, professional, and climate changes have you experienced since last year?

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