ABSTRACT

EDUCATING ACROSS DIFFERENCE: UNDERREPRESENTED GROUPS, GRADUATE PROGRAM INTEGRATION, AND PERSISTENCE-RELATED ATTITUDES AMONG CLINICAL PSYCHOLOGY DOCTORAL STUDENTS

by Rachel Ann Hamilton

Drawing on Tinto’s (1975, 1987, 1993) interactionalist model of student attrition, this survey study examined students’ cultural differences from dominant graduate communities, integration in graduate programs, and attitudes towards educational persistence. Cultural differences were assessed by a measure of cumulative diversity, which summed students’ number of memberships across traditionally underrepresented demographic groups. Integration was assessed by measures of advisor/mentor satisfaction and sense of community in the graduate program. Data from 330 doctoral students in APA-accredited clinical psychology programs showed that cumulative diversity had different effects by sex. Whereas cumulative diversity was unrelated to integration or persistence-related attitudes for women, it was related to less favorable integration and persistence-related attitudes for men. Integration, particularly sense of program community, was an important predictor of persistence-related attitudes for both genders. Sense of program community mediated the relationship between cumulative diversity and persistence-related attitudes for men only. Implications for student retention are discussed.
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Introduction

Research suggests that 40% to 60% of students who begin doctoral programs do not complete the doctoral degree (Bair & Haworth, 1999; Bowen & Rudenstein, 1992; National Research Council, 1996). Furthermore, some evidence suggests that students from traditionally underrepresented groups in academia are disproportionately likely to depart without the doctorate (Denecke & Slimowitz, 2004; Lovitts, 2001; Zwick, 1991) and experience greater barriers to degree completion (Brus, 2006; Committee on Equal Opportunities in Science and Engineering, 2004; Widnall, 1988). As society and doctoral entrants are becoming more diverse (Williams, 2004, cited in Brus, 2006), it is important for educators to understand how student and educational cultures may interact to affect outcomes. Tinto’s (1975, 1987, 1993) interactionalist model of student persistence provides a promising framework for guiding research in this area. This model proposes that students’ integration—their sense of social and academic connection to central communities in the educational setting—is a key influence on student persistence. More specifically, Tinto’s model predicts that students who differ from central communities are likely to have poorer integration, which in turn will lead to less favorable attitudes towards persistence. Thus, Tinto’s model suggests a possible mechanism for elevated rates of attrition among underrepresented student groups: such students may experience greater difficulties with integration.

The current study examined selected predictions of Tinto’s (1975, 1987, 1993) model among doctoral degree-seeking pre-internship students in APA-accredited clinical psychology programs. It focused on the ways that integration and persistence-related attitudes relate to students’ membership in traditionally underrepresented groups in academia (older students, racial/ethnic minorities, international students, non-native English speakers, students with a working class or poverty family socioeconomic background, sexual minorities, students with caregiving responsibilities, and students with a history of physical or mental disabilities). This study aimed to capture difference from dominant graduate communities using the summed number of memberships in these traditionally underrepresented groups (cumulative diversity). Drawing from Tinto’s model, this study predicted that students with higher cumulative diversity would experience poorer integration, and that poorer integration would in turn be associated with less favorable attitudes towards persistence. Accordingly, the main purpose of this study was to test whether integration mediates the relationship between cumulative diversity and persistence-
related attitudes. If this is the case, integration may serve as a useful target for institutional efforts to retain diverse students.

The next sections of this paper examine the conceptual and empirical background for the predictions tested in this research in greater detail. As the basis for the current study, Tinto’s (1975, 1987, 1993) interactionalist model is reviewed with particular attention to its predictions for underrepresented students. Next, this paper presents evidence across graduate disciplines to demonstrate potential linkages between integration and graduate student persistence, between membership in underrepresented groups and integration, and between membership in underrepresented groups and persistence. The discipline of professional psychology is then examined in relation to these issues. Specific hypotheses of the current research are outlined, and the design for the testing these hypotheses is presented. Results from a sample of 330 doctoral students are presented and discussed with regard to their implications for student retention.

Tinto’s Interactionalist Model

Tinto’s (1975, 1987, 1993) interactionalist model of student attrition takes a person-environment fit approach, linking educational outcomes to the fit between the student and the educational institution (Braxton & Brier, 1989). The 1987 model, originally designed for undergraduates, suggests that students enter educational institutions with various background characteristics (i.e., family background [culture, finances], previous schooling experiences, academic ability) and initial commitments (i.e., investment in goals, such as degree attainment or a particular career, as well as investment in the particular educational institution). These phenomena set the stage for students’ interaction with the educational institution’s academic and social communities. Academic communities refer to the components of an educational system that concern its educational purpose (e.g., academic policies, courses, curricula, classroom interactions, extracurricular intellectual interactions), whereas social communities refer to components that concern the daily social interaction and non-academic needs of students (e.g., clubs, extracurricular activities, relationships with faculty and peers). Through their interactions with these communities, students develop a sense of membership in these social and academic communities, which Tinto termed academic and social integration.

The interactionalist model suggests that integration is a function of the interaction or “fit” between a student’s background characteristics and the characteristics of institutional
communities. Tinto (1987) argued that students who differ from central institutional communities are likely to have greater integration difficulties, for two main reasons. First, such students may have norms, values, and behaviors that deviate from those of central institutional communities. This incongruence may make it difficult for such students to feel part of the institution, and may also hinder their acceptance by its key communities. Secondly, because people tend to interact more frequently with others like themselves, students who differ from central institutional communities may experience lower levels of interaction within the institution. Such students may need to go outside of the university to interact with others like themselves, further limiting their interaction and investment in institutional communities. As higher education tends to be dominated by majority cultural groups, Tinto (1987) noted that “[i]n the ‘typical’ situation, this means that disadvantaged students, persons of minority origins, older students, and the physically handicapped are more likely to experience such problems than are other students” (p. 97).

The interactionalist model suggests that such problems in integration are likely to negatively influence student persistence through effects on persistence-related attitudes (students’ commitments and intentions to leave the institution). Specifically, when students feel incongruent or isolated from others in institutional communities, they are likely to reevaluate the costs and benefits continuing to pursue their original commitments. Students who perceive higher costs and lower benefits may lower their commitments to the institution and to their goals, and they may consider leaving to invest their energies elsewhere. The interactionalist predicts that if students’ commitments are sufficiently weak or their intention to leave is sufficiently strong, students will exit an institution.

Although Tinto’s original (1975, 1987) interactionalist model was designed for undergraduate students, Tinto (1993) suggested that this model can be adapted to the graduate school context. Unlike undergraduate education, graduate education is decentralized and discipline-specific (Hirt & Muffo, 1998). This means that graduate students interact primarily with the local graduate program/department community rather than with wider institutional communities, and that this interaction serves to socialize them to the discipline of study (Boyle & Boyce, 1998; Hirt & Muffo, 1998; Tinto, 1993). Accordingly, Tinto (1993) proposed that graduate students’ social and academic integration in communities within their program/department is a main influence on their persistence. Tinto (1993) argued that these two
aspects of integration are more related for graduate students than for undergraduate students:

Social membership within one’s program becomes part and parcel of academic membership, and social interaction with one’s peers and faculty becomes closely linked not only to one’s intellectual development, but also to the development of important skills required for doctoral completion. In a very real sense, the local community becomes the educational community for one’s career. (p. 232)

Due to this predicted overlap, the current study assessed students’ overall integration within their graduate programs rather than considering social and academic integration separately.

Unlike the undergraduate interactionalist model, Tinto (1993) suggested that the relative emphasis of students’ integration may change as students progress through graduate education. He outlined three stages of doctoral study: stage 1 (transition), comprising the first year of the program; stage 2 (building competencies), comprising the second year of the program until advancement to doctoral candidacy; and stage 3 (candidacy), comprising the student’s completion of the dissertation. Whereas students tend to interact with a wider range of students and faculty during the first two stages as they complete their coursework, they may interact primarily with their faculty advisor or mentor during the candidacy stage as they focus on the dissertation. Therefore, Tinto proposed that relationships with the broader department/program may be more salient at the earlier stages of doctoral study, whereas the advising/mentoring relationship may take precedence in the candidacy stage. Accordingly, the current study assessed students’ integration at the levels of both the program and the advising/mentoring relationship, as well as categorized each student’s location within Tinto’s stages of doctoral study.

Similar to the undergraduate interactionalist model, Tinto’s graduate interactionalist model includes prior schooling and abilities/skills at entry to the graduate program as influences on integration and persistence. The current study captured this educational background through assessing whether students entered their programs with a prior master’s degree. Abilities/skills were not measured in the current model because prior studies have demonstrated that academic ability indicators (GRE data, undergraduate grades) show little or no relationship with doctoral persistence, perhaps because doctoral students are already highly selected for these indicators.
Finally, it should be noted that Tinto’s (1993) graduate interactionalist model includes financial resources/support and external commitments (involvement with communities outside the graduate program, such as work or family) as factors that may affect students’ integration and persistence. These were not measured in the current study due to practical difficulties in assessing these factors across different students, programs, and years in the program.

Drawing from Tinto’s (1993) undergraduate and graduate interactionist models, the current study proposed a simplified model of graduate persistence, shown in Figure 1. The main purpose of this study was to examine two mediation models deriving from this model, shown in Figure 2. Both mediation models propose that when controlling for students’ prior degree status and stage of doctoral study, students with greater cultural differences from dominant graduate communities will exhibit less favorable attitudes towards persistence, and that this relationship will be mediated by student integration. Difference from dominant graduate communities was indexed by the number of traditionally underrepresented demographic groups into which each student fell (*cumulative diversity*). Persistence-related attitudes were assessed through students’ commitment to and satisfaction with doctoral study (*current commitment*), as well as the strength of their intentions to leave or transfer from the current program (*intention to quit*). Integration was measured through students’ relationships with both their faculty advisor/mentor (*advisor/mentor satisfaction*) and with the overall graduate program community (*sense of program community*). Because the latter is a new construct, the next section of the paper will briefly define it.

**Sense of Program Community**

Sense of program community was used in this research as a measure of Tinto’s (1975, 1987, 1993) constructs of social and academic integration within the graduate program. In doing so, this study follows Rovai and colleagues’ work on graduate students’ sense of social and learning community (Rovai, 2002; Rovai & Baker, 2005; Rovai & Ponton, 2005; Rovai, Wighting & Liu, 2005). Rovai, Wighting & Liu (2005) defined these terms as follows:

Social community, derived primarily from the work of McMillan and Chavis (1986) and McMillan (1996), represents the feelings of the community of students regarding their
spirit, cohesion, trust, safety, interactivity, interdependence, and sense of belonging. Learning community, on the other hand, consists of the feelings of community members regarding the degree to which they share group norms and values and the extent to which their educational goals and expectations are satisfied by group membership. (p. 364)

Rovai and colleagues have examined these two aspects of community within graduate classrooms and within the wider institution. However, because Tinto’s (1993) model suggests that communities at the level of the graduate program exert a stronger influence on persistence, the current study applied Rovai, Wighting & Liu’s (2005) constructs to students’ experiences within their graduate programs. As previously noted, since graduate students’ social and academic integration are proposed to be highly interconnected, the current research combined measures of social and learning community into an overall sense of program community.

Integration and Graduate Persistence

Research confirms that doctoral students’ relationships with their advisors and others in their graduate programs are important to persistence. In their review of 118 studies of doctoral attrition and persistence, Bair & Haworth (1999) note:

The single most frequently-occurring finding in this meta-synthesis was that successful degree completion is related to the degree and quality of contact between a doctoral student and her or his advisor(s) or other faculty in the student’s doctoral program. Simply put, where positive relationships between students and their advisors or other faculty members were present, students were significantly more likely to complete their doctoral degrees than students for whom such positive relationships did not exist. (p. 9)

Bair & Haworth (1999) also reported that “the interest in and support of doctoral students for each other” (p. 13) was positively related to students’ persistence in eleven studies, all but two of the studies that examined peer relationships. Qualitative studies of students who left their programs without completing a degree have highlighted a lack connectedness with peers and faculty as a major influence on student departure (Golde, 2000; Lovitts, 2001).

Although no quantitative research was found that examined the linkage between a sense
of program community and graduate student persistence, research does suggest that a sense of belonging in academia influences students’ commitment to pursuing a professional career. Churchwell (2006) studied 800 doctoral students’ commitment to becoming an academic, which she termed ‘vocational identity commitment’. She found that students’ sense of belonging in academia was the strongest predictor of their vocational identity commitment, accounting for 37% of the variance; other predictors were student confidence (9%), support from peers and staff (7%), advisor support (5%), general climate (4%), and positive environment for underrepresented groups (1%). Furthermore, students’ sense of belonging mediated the influence of each of these variables on vocational identity commitment, with the exception of support from peers and staff, which directly predicted vocational identity commitment. Churchwell concluded that social and academic experiences in graduate school “affect a students’ commitment to her field through their association with her sense that she belongs and is valued in her department and area of study” (p. 102).

In summary, extant research suggests that students’ connectedness to the academic environment and to advisors/mentors, faculty, and peers in their programs are important to their persistence and their attitudes towards persistence. This research supports the current contention that sense of program community and advising/mentoring relationships will relate to students’ attitudes towards persistence.

Underrepresented Groups and Integration

Existing theory and research support Tinto’s prediction that underrepresented students experience lower integration within graduate communities. Due to their underrepresented status in academia, such students may feel physically isolated from their communities of origin (Gay, 2004) and may have difficulty finding professional role models in their programs with whom they can identify (Widnall, 1988). Additionally, because majority social groups (e.g., White, middle-to-upper class, heterosexual, able-bodied, etc.) have numerically dominated higher education, they have exerted a dominant influence on the educational and disciplinary practices that have developed. Accordingly, underrepresented students may find that their own values, behaviors, or life situations conflict with the expectations held by graduate communities (see Brus, 2006; Herzig, 2004). Granados & Lopez (1999) note, “many minority students are marginalized or left out of the discussion about the way things are done and what is counted as
knowledge” (p. 136). This may contribute to underrepresented students being perceived or treated, as well as perceiving themselves, as outsiders to graduate communities.

Underrepresented students may also experience a “chilly” climate in academia that communicates to them that they have lower value and potential than do majority students (Hall and Sandler, 1982, cited in Morris, 2003). Although the concept of chilly climate, originated by Hall and Sandler (1982, cited in Morris, 2003) was originally intended to describe the experiences of women, it has since been applied to ethnic minority students of both genders. Additionally, Hall and Sandler (1984, cited in Morris, 2003) suggested that women who fall into other minority statuses (e.g., racial and ethnic minorities, older women, and women with disabilities) may be particularly likely to experience a chilly climate. Brus (2006) writes:

> While the insults that result from a chilly climate are most often small, unintentional, and difficult to identify as discriminatory, they are continuous and unrelenting, thereby sending a powerful message to those affected: if you are not part of the normative culture, you lack what it takes to be successful in graduate school (American Council on Education, 2005; Hansen and Kennedy, 1995; Kerber, 2005; Moody, 2005; Manz and Rossman, 2002; Widnall, 1988). (p. 37)

A significant amount of research exists in support of chilly climate effects in post-secondary institutions (Morris, 2003), particularly in science, technology, engineering, and mathematics fields (Ginorio, 1995; Thom, 2001, cited in Brus, 2006). The previously mentioned study by Churchwell (2006) found that women, racial or ethnic minorities, sexual minorities, lower-to-middle class students, and disabled students each reported more negative departmental climates than did students from corresponding majority groups, and students belonging to any underrepresented group reported more negative personal climates (the climate for other students like themselves) than did students who belonged only to majority groups.

Very little quantitative research has been conducted that looks specifically at graduate students’ sense of community. However, Rovai and colleagues have pursued a research program examining graduate students’ sense of social and learning community within traditional and online classrooms, and they have examined demographic
differences. Rovai and Ponton (2005) found that African American students experienced a significantly lower sense of both social and learning community than did Caucasian students. Rovai and Baker (2005) found that in courses in which female students outnumbered males, male students felt less of a sense of social and learning community. Although Rovai and colleagues measured sense of community within a single course (rather than within the larger graduate program) and did not study demographic differences other than race and gender, their studies provide preliminary evidence that students from underrepresented groups may experience a lower sense of community in graduate settings.

Relatively little research exists on the advising and mentoring relationships of underrepresented doctoral students. The research that has been done has generally concentrated on mentor-protegee matching by race and/or gender, and has been inconclusive as to whether similarity increases satisfaction (Davidson & Foster-Johnson, 2001). However, there are reasons to believe that students from a greater number of underrepresented groups may encounter greater barriers in advising/mentoring relationships. Wright & Wright (1987) reported that mentors are more likely to choose protégées with whom they identify based on race, gender, and social class; since there are often few faculty who share underrepresented students’ demographic characteristics, such students are at a greater disadvantage in finding mentors. Underrepresented students who find mentors are more likely than majority students to be mentored by faculty who differ culturally from themselves (Wright & Wright, 1987). Although cross-cultural relationships can provide excellent support and guidance, several problems may arise in such relationships as a result of cultural differences. First, faculty may be unfamiliar with the specific needs of various types of cultural minority students. Foster-Johnson (2001) note that academic mentoring tends to be based on the faculty member’s own training and work experiences, which may significantly vary from or be unsuitable to the career needs and experiences of culturally-different students. Compounding this issue, it may be difficult for faculty to obtain guidance on how to advise or mentor graduate students from underrepresented groups. Whereas mentoring literature is available for certain types of underrepresented groups (primarily, women, racial minorities, and international students), the literature on other groups is much more sparse or non-existent. Indeed, the current researcher found only two documents that covered advising/mentoring needs or strategies for at least four types of underrepresented groups, and
these were university-specific guides rather than widely published books or journal articles (University of Michigan, 2006; University of Washington, 2005). This lack of literature may render it difficult for advisors/mentors to attend to issues related to students’ multiple cultural identities. Secondly, misinterpretations may arise between advisors/mentors and culturally-different students due to culture-based variations in behavior, worldview, or communication (Davidson & Foster-Johnson, 2001). Such misunderstandings may arise not only with advisors/mentors, but also with students and administrators, and may interfere with relationship-building. Advisors/mentors who are familiar with these issues may be able to help their advisees and others in the program appropriately contextualize differences in expectations or behavior that are culturally-based. However, given that underrepresented students are, by definition, less common in the academic environment, advisors/mentors may have relatively little experience through which to become familiar with the expression of cultural variations in the academic environment (and potential misunderstandings) that occur for students from particular underrepresented groups. In combination with the lack of advising/mentoring literature on the needs and experiences of underrepresented students mentioned above, it seems reasonable to suppose that many advisors/mentors may not be well-prepared to recognize and address cultural differences. Finally, some research suggests that individuals identify more with, are more comfortable with, and perceive demographically similar others as more competent (Ragins, 1997, cited in Turban, Dougherty, & Lee, 2002). Clearly this could affect both students’ advising/mentoring relationships and their relationships with other faculty and peers. It would appear that students from a larger number of underrepresented groups are more likely to differ from potential faculty advisors/mentors and from others in the program, and therefore may be more likely to experience such culture-based barriers.

In summary, the literature suggests that students from underrepresented groups may experience incongruence, isolation, marginalization, more negative climates, lower feelings of classroom community, and barriers to finding and forming relationships with advisors/mentors, faculty, and students within graduate programs. Because such factors are antithetical to integration, it seems reasonable to expect that more cumulatively diverse students may experience a lower sense of community in their programs and lower satisfaction with advising/mentoring relationships.
Underrepresented Groups and Graduate Persistence

The literature examining connections between graduate student demographic characteristics and persistence is mixed. In a meta-synthesis of research, Bair & Haworth (1999) concluded that demographic variables (age, gender, number of dependents, and race/ethnicity) were not consistently related to degree completion. However, several other authors have reported elevated rates of doctoral attrition among ethnic minorities and women (Denecke & Slimowitz, 2004; Lovitts, 2001; Zwick, 1991), and one study has reported elevated rates of doctoral attrition among students with disabilities (National Science Foundation, 2003). More recent research shows strong relationships between increased family responsibilities (e.g., dependent children) and lower academic success (Curtis, 2004; Fogg, 2003; Sullivan, Hollenshead, and Smith, 2004; University of California, Berkeley, 2005; Williams, 2004; Younes and Asay, 1998, all cited in Brus, 2006), particularly for women and ethnic minority graduate students (Kerber, 2005; Mason and Goulden, 2002; Wagner, 2002, cited in Brus, 2006).

Research has demonstrated demographic differences in persistence-related attitudes. Cooke, Sims & Peyrefitte (1995) found that compared to White graduate students, ethnic minority graduate students had higher intentions to drop out of graduate school and rated themselves as less likely to complete their degree at the current university, the latter of which was correlated with actual attrition 18 months later. A recent report by the National Science Foundation (2003) found that of science and engineering doctoral students, ethnic minorities and students with disabilities were less likely than their majority counterparts to say that they would choose the same field of study if they had the choice to do it over.

In summary, the majority of research on student characteristics and doctoral persistence has focused on gender and race, and has found mixed results. It seems important to examine the influence of other forms of diversity, and of intersecting forms of diversity, on graduate students’ persistence-related attitudes. Additionally, due to wide variation between the norms and practices of different graduate disciplines, it appears useful to examine students’ experiences of integration within a single discipline. Restricting the sample to APA-accredited clinical psychology programs ensures that each program meets disciplinary standards, thereby providing some consistency across programs. This paper will now turn specifically to research and theory within professional psychology that relates to sense of program community, underrepresented groups, and educational persistence.
The Discipline of Professional Psychology

Integration and professional psychology. Disciplinary features may render relationships with peers and faculty particularly influential for students in professional psychology. Perhaps because psychotherapy relies on interpersonal processes (Andrews, 2001), interactions with other professionals are an important influence on psychotherapist development. Indeed, relationships with others may be as important or more important to therapist development than the formal content of training. In interviews with 100 therapists and counselors about sources of their professional development, Skovholt and Ronnestad (1992) reported “we thought that theory and research would be perceived of central importance… however, the participants talked most about the impact of people and least about empirical research results” (p. 512). The people who served as important influences on therapist development included clients, peers, colleagues, and professional elders (e.g., advisors/mentors, professors, supervisors, personal therapists)—many of whom are members of graduate program communities. Although these works do not discuss retention, they suggest that relationships within professional psychology graduate programs are an important aspect of students’ training experiences.

A qualitative study by Hoskins & Goldberg (2005) of doctoral students in counselor education provides further evidence for the importance of integration to persistence. In interviews with students who had graduated, students who were currently persisting, and students who had left their programs, Hoskins & Goldberg (2005) found that an important factor influencing persistence to degree completion was what they referred to as “student-program match”. Students reported that they considered their fit with the program in terms of both academic factors (whether their own goals, expectations, and needs matched those satisfied by the program curriculum and focus) and social factors (relationships with peers and faculty). All of the students in this study who left their programs reported a mismatch with their programs on at least one of these factors. This suggests the applicability of Tinto’s (1993) interactional model to graduate students in professional psychology-related fields.

Underrepresented groups and professional psychology. The discipline of psychology has features that may pose particular stresses for racial and ethnic minorities, sexual minorities, international students, and students from other underrepresented groups (Guloz, 2001; Massey & Walfish, 2001). Psychology is concerned with understanding human behavior, which makes
cultural phenomena salient. Yet historically, psychology has focused on individual, etic explanations of behavior (Sue, 1997). Furthermore, psychology has been dominated by a Eurocentric worldview and research using majority cultural populations (Suinn et al., 2005; APA, 2003; Iijima Hall, 1997), and it has often failed to recognize the influence of majority culture on its own worldviews, values, and assumptions (Suinn et al., 2005; Sue, 1997). As noted in the Final Report of the APA Presidential Task Force on Enhancing Diversity (Suinn et al., 2005):

By using the norms of the dominant group, the behaviors of marginalized groups tend to be interpreted as pathological (because of not fitting the “norm”), or in ways that blame the victim, or as deficit-oriented. In other words, psychology continues to typically view differences, disabilities, and diversities as problematic. (p. 18)

Thus, the notion of difference may be charged within psychology, and perhaps particularly so in clinical psychology due to its focus on human normality and pathology. This disciplinary context may influence the ways that diverse students experience their relationships with others in clinical psychology programs.

Another major issue that may affect both the advising/mentoring and program experiences of underrepresented students is access to diverse faculty role models and to multicultural training and research. Such factors may aid underrepresented students in feeling that they belong and that cultural differences are valued within the program. Unfortunately, students in clinical psychology are likely to have access to few diverse faculty, little training in multicultural issues, and few experiences with multicultural research. Allison et al.’s (1994) survey of 191 graduates of counseling and clinical psychology programs found that during graduate school, respondents reported access to an average of 12.03 majority group faculty but only 2.75 culturally diverse faculty members (racial or ethnic minorities, sexual minorities, or individuals with sensory or motor impairments). Indeed, less than half of the sample reported being exposed to African American faculty, and less than 30% reported being exposed to faculty from any other ethnic minority group, faculty from sexual minority groups, or faculty with sensory or motor impairments. These students reported that diversity issues were also largely missing from their training; 46.3% of respondents indicated that their general graduate
coursework infrequently or never addressed issues relevant to diverse populations, whereas only 19.7% reported that multicultural issues were usually or always covered. Only 34.0% reported that there was a course in their training program that focused on providing services to diverse populations. Similarly, Quintana and Bernal’s (1995) survey of 104 APA-accredited clinical psychology training programs found that only 53.8% of programs reported having at least one ethnic minority faculty member, 52.8% reported that they had at least one faculty member conducting research on ethnic minority issues, and 61.5% reported offering at least one course in ethnic minority issues. Thus, it appears that within many clinical psychology programs, cultural diversity is underrepresented among faculty, research, and coursework. Such features may lead students in these programs to feel greater cultural alienation from the field, as well as from others in their program.

Multiple authors have suggested that the discipline of psychology as it currently stands may create an unwelcoming environment for underrepresented groups (Highlen, 1994; Iijima Hall, 1997; Nagayama Hall, 2006; Sue, 1997; Suinn et al., 2005). Indeed, similar themes of isolation, marginalization, cultural conflict, and a lack of belonging have been reported across professional psychology students and faculty from several underrepresented groups, including racial and ethnic minorities (Weaver, 2000; Vasquez et al., 2006), sexual minorities (Nilon, 1988), individuals with lower socioeconomic backgrounds (Nelson, Englar-Carlson, Tierney & Hau, 2006), and individuals with disabilities (Bethke, 2004). However, many of these articles are small qualitative research studies, and most lack a comparison between underrepresented and majority groups. Additionally, very few studies have examined the ways that students’ multiple identities intersect in terms of membership in majority and underrepresented groups.

One exception is a dissertation by Dorff (1997) that examined the stressors and coping resources of 291 students in APA-accredited clinical psychology doctoral programs. Dorff examined differences by demographic group, as well as the influence of intersecting minority statuses. Specifically, she coded “marginality points” to reflect students’ number of memberships in underrepresented groups (defined as male, below age 24 or above age 35, racial and ethnic minorities, sexual minorities, parents, international students, and non-native English speakers). Dorff found that overall, students identified social supports as the most helpful resources for helping them cope with stress. However, racial and ethnic minorities and students with 2 or more marginality points experienced peer support as significantly less helpful than did
other students. Indeed, older students, racial and ethnic minorities, sexual minorities, and students with 2 or more marginality points experienced relationships with peers as a source of stress, and as significantly more stressful than did majority students. Dorff (1997) observed:

The overwhelming result here is that students who are marginalized (especially based on race/ethnicity, sexual orientation, and age) have more difficulty in their relationships with peers than do students who are the norm in graduate school. This is most likely due to the discrimination that marginalized groups experience, making it harder for them to feel like they belong and are welcomed in graduate programs that are predominantly white, heterosexual, and composed of students under age 27. (p. 126)

Dorff also found that older students and students with children experienced relationships with faculty as significantly more stressful than did majority students. Overall, this study suggests that students from underrepresented groups in clinical psychology programs may experience less support and greater stress in graduate program relationships than do majority students. Given these findings, it seems reasonable to suggest that students from underrepresented groups may experience poorer advising/mentoring relationships and a poorer sense of program community in their graduate programs.

Gender underrepresentation and professional psychology. The interaction between student gender and membership in other underrepresented groups may be particularly interesting within clinical psychology because of a marked shift in the gender distribution of psychology graduate education. Goodheart & Markham (1992) report that since the 1970s, increasing numbers of women and decreasing numbers of men have been entering into psychology, and particularly into the clinical/counseling subfields. Whereas women constituted just over 20% of psychology PhD recipients in 1970, they made up nearly 72% of new psychology PhD and PsyD recipients in 2005 (Cynkar, 2007). The most recent data available indicates that 79% of applicants for professional psychology internships in 2008 were female (Association of Psychology Postdoctoral & Internship Center, 2008). Thus, although women have traditionally been considered an underrepresented group within academia, women constitute the numerical majority in clinical psychology programs and men might be considered an underrepresented group.
Although men are numerically underrepresented within clinical psychology programs, research suggests that the effects of being in the minority may be confounded with social status for men. Research from work settings indicates that whereas women in male-dominated fields often encounter a “glass ceiling” that limits their advancement, men in female-dominated fields may encounter a “glass escalator” that pushes them towards promotion (Williams, 1992). Williams (1992) suggested that this effect occurs because of the higher social status accorded to men, which may produce more favorable relationships with colleagues and (often male) supervisors. Although these findings have been found in work rather than educational settings, extended to the current study, they suggest that male graduate students may experience an inherent advantage over female students in their advising/mentoring relationships and sense of program community. Yet it is unclear whether such an enhancement effect would apply to all men. Williams (1992) noted that the sexual minority and racial minority men she interviewed did not experience as positive relationships with peers and colleagues as did majority men. Similarly, Wingfield (2008) argued that the “glass elevator” may be specific to White men. Extending these results to the current study, it seems possible that membership in underrepresented cultural groups may affect men and women differently. The study of clinical psychology students allows the opportunity to test how gender and membership in underrepresented groups interact to shape students’ experiences within a predominantly female field.

Graduate persistence and professional psychology. The relationship of student persistence to students’ demographic characteristics and integration has not yet been examined among clinical psychology students. In part, this is because there is a paucity of quantitative research on student persistence in graduate psychology programs. The only research I found was an older study by Lunneborg & Lunneborg (1973), who reported on attrition rates within a single psychology program. These authors found that attrition was 35% within four years of program entrance, that women were significantly more likely to leave programs, and that married students with children were more likely to complete the Ph.D. This study did not examine other demographic differences (e.g., race, socioeconomic status, country of origin, etc.). Thus, we simply do not know whether student persistence in clinical psychology programs varies by students’ demographic characteristics. The current study is designed to provide some preliminary information through examining clinical psychology students’ persistence-related attitudes across
students from multiple underrepresented groups.

Hypotheses

This study will first establish the validity and appropriateness of measures used in the study. Next, study hypotheses will be tested. This study hypothesizes the following relationships:

(1) Sex and cumulative diversity interact to predict (a) sense of program community, (b) advisor/mentor satisfaction, (c) current commitment and (d) intention to quit. No specific directionality is proposed for this hypothesis.

(2) Greater cumulative diversity predicts (a) lower sense of program community and (b) lower advisor/mentor satisfaction, over and above the influence of background covariates.

(3) Greater cumulative diversity predicts lower current commitment, over and above the influence of background covariates.

(4) When added to the equation for Hypothesis 3, (a) higher sense of program community and (b) higher advisor/mentor satisfaction predict higher current commitment. When these variables are added, (c) cumulative diversity will show a less significant relationship to current commitment than found in Hypothesis 3.

(5) Greater cumulative diversity predicts higher intention to quit, over and above the influence of background covariates.

(6) When added to the equation for Hypothesis 5, (a) higher sense of program community and (b) higher advisor/mentor satisfaction predict lower intention to quit. When these variables are added, (c) cumulative diversity will show a less significant relationship with intention to quit than found in Hypothesis 5.

Methods

Participants

The sample used for quantitative analyses (complete data sample) consisted of 330 respondents from 48 APA-accredited doctoral programs. This sample was restricted to students who (1) indicated that they entered the program with the intention of pursuing a doctoral degree, (2) indicated that they had not yet started internship, and (3) provided sufficient data for
regression analyses, as will be described subsequently in this paper.

The complete data sample was made up of 70.3% students in Ph.D. programs and 29.7% students in Psy.D. programs. Respondents came from programs that ranged in size from 21 to 210 pre-internship students. The mean program size across individual respondents (M = 64.39, SD = 57.29) differed considerably from the mean program size across programs (M = 42.71, SD = 29.44) due to confounding between the number of responses contributed by each program and program size. In terms of their number of years in the current program, 29.4% were first year students, 19.7% were in their second year, 21.8% were in their third year, 17.3% were in their fourth year, 7.3% were in their fifth year, 2.7% were in their sixth year, and the remaining 1.8% were in their seventh year or higher. Nearly all (98.8%) students reported full-time continuous enrollment during the past year, and 1.2% of the sample reported any part-time enrollment during the last year.

This sample was 81.5% female and 18.5% male. Reported age at entry to the current graduate program ranged from 20 to 49 years (M = 24.90, SD = 4.54), with 10.0% of the sample 30 years or older at program entry. The racial composition of the sample was 87.0% White, 3.9% Multiracial, 3.6% East or South Asian, 2.4% Black, 1.8% Hispanic or Latino, 0.6% Middle Eastern, 0.3% Native American or Alaska Native, and 0.3% Native Hawaiian or Pacific Islander. Reported membership in other underrepresented groups was as follows: 6.1% non-United States country of origin; 3.3% English as a second language; 21.5% working class or lower family socioeconomic background; 10.0% non-heterosexual; 7.6% current caregiver for a dependent child or adult; and 35.8% ever had a disability or serious disorder.

Measures

Permission was obtained from all authors of original scales prior to using or adapting their measures. Screenshots of each page of the survey battery, located Appendices B-1 through B-8, display the order and formatting of items. The survey battery included the following scales.

*Educational Characteristics Scale.* This measure, located in Appendix C-1, was constructed for the current study. The scale consisted of 20 items assessing students’ current academic status, academic background, graduate program characteristics, and experiences of the program. The following subscales and items were used in this investigation.

*Year in program.* This single-item measure was constructed the current study in
order to aid in identifying participants’ stage of doctoral study. Participants were asked to indicate their current year in the program. Answers were coded as 1 = “1st”, 2 = “2nd”, 3 = “3rd”, 4 = “4th”, 5 = “5th”, 6 = “6th”, 7 = “7th”, 8 = “8th year or higher”.

Program milestones. This measure was constructed for the current study in order to aid in identifying participants’ stage of doctoral study and to restrict the sample to participants who had not yet started internship. It consisted of 10 items, each designating a program milestone (e.g., proposed a thesis, completed comprehensive exams, started internship). Participants were asked to indicate their progress on each milestone. Answers were coded as 0 = “Not yet”, 1 = “I have done this”, or 2 = “Does not apply to my program”.

Prior degree status. This single-item measure was constructed the current study in order to identify participants who had prior experience with graduate study within the field, and as a result, could expect to have a shorter time until doctoral degree attainment. Participants were asked to indicate whether they entered their program with a prior master’s degree that exempted them from some requirements in their current program. Answers were coded as 0 = “No”, 1 = “Yes”.

Initial degree intentions. This single-item measure was constructed for the current study in order to restrict the sample to participants who initially intended to attain a doctoral-level degree from the current graduate program. Participants were asked to indicate the highest degree they intended to pursue in their current program when they first entered it. Response options included “Master’s degree”, “Ph.D.”, “Psy.D.”, and “Other: [free response]”. Answers were recoded as 0 = “Non-doctoral degree”, 1 = “Doctoral degree”.

Perceived program organization. This single-item measure was constructed the current study to assess whether program organization served as a confound for measures of integration and persistence. Participants were asked to rate the degree to which they feel their program’s organization is based around subdivisions within the program versus the broader program. Answers were provided along a 5-point Likert-type scale (from 1 = “Strongly emphasizes labs/individual areas” to 5 = “Strongly emphasizes the program-as-a-whole”).

Advisor/mentor satisfaction. This single-item measure was constructed the
The current study assessed integration at the level of the advising/mentoring relationship. Participants were asked to rate how satisfied they were with their relationship with their faculty advisor or mentor. Additionally, respondents were instructed that if they had more than one person they considered a faculty advisor/mentor, they should rate only the faculty advisor or mentor with whom they were most satisfied. Answers were provided along a 5-point Likert-type scale (from 1 = “Very Dissatisfied” to 5 = “Very Satisfied”). Participants were also given the option to indicate that they did not have a faculty advisor or mentor, which was scored as 0.

**Program climate.** This single-item measure was constructed in the current study to assess convergent validity with the integration measures. Participants were provided with a definition of organizational climate and used a feelings thermometer to rate the degree to which the program provides an environment in which people feel welcomed, valued, and supported, symbolically represented by greater warmth on the thermometer. Answers were provided along a 7-point Likert-type scale (from 1 = “Icy” to 7 = “Very Warm”).

**Student Demographics Scale.** This measure, located in Appendix C-2, was constructed for the current study to identify student characteristics and calculate a cumulative diversity score. It consisted of 10 items assessing students’ age at program entry, sex, race, country of origin, first language, family socioeconomic background, disability history sexual orientation, relationship status, and current caregiving responsibilities. Answers were given nominal codes.

**Sense of Program Community Scale.** This measure, located in Appendix C-3, was adapted from the Classroom Community Scale published in Rovai (2002). The Classroom Community Scale was designed to assess graduate students’ sense of classroom community, defined as including both a social dimension (i.e., students’ feelings of “connectedness, cohesion, spirit, trust, and interdependence” with others in the classroom; Rovai, 2002, p. 206) and a learning dimension (i.e., students’ feelings about “interaction with each other as they pursue the construction of understanding and the degree to which members share values and beliefs concerning the extent to which their educational goals and expectations are being satisfied”; Rovai, 2002, pp. 206-207). This measure consists of 20 items rated along a 5-point Likert-type scale (from “Strongly Disagree” to “Strongly Agree”, some items reverse-scored). A total score is calculated from these items, with higher scores indicating greater sense of
community. Rovai (2002) reported an alpha coefficient of .93 for this measure.

This measure was modified for the current study by changing the word “this course” to “my program” and specifically referring to “my program” in all items in order to assess sense of community within the graduate program rather than within the classroom. In this study, the adapted scale yielded an alpha coefficient of .93 for all respondents with complete data.

*Current Commitment Scale.* This unpublished measure, located in Appendix C-4, is the Career Commitment Scale used in Ülku-Steiner, Kurtz-Costes, and Kinlaw (2000). The Career Commitment Scale was designed to assess graduate students’ commitment to a graduate program and field of study, as well as their graduate program satisfaction. In the current study, we subsume these concepts under the term ‘Current Commitment’ and refer to this scale as the ‘Current Commitment Scale’. The scale consists of 15 items measured along a 5-point Likert-type scale (from “Strongly Disagree” to “Strongly Agree”, some items reverse-scored). A total score is calculated from these items, with higher scores indicating greater commitment. Ülku-Steiner, Kurtz-Costes, and Kinlaw (2000) reported an alpha coefficient of .90 for this measure. In this study, the scale yielded an alpha coefficient of .91 for all respondents with complete data.

*Intention to Quit Scale.* This unpublished measure, located in Appendix C-5, was adapted from the Intention to Quit Scale used in Cooke, Sims and Peyrefitte (1995), which they adapted from the Intention to Turnover Scale (Seashore, Lawler, Mirvis & Cammann, 1982). The Intention to Quit Scale was designed to assess students’ intentions to depart from their graduate program and host institution. The Intention to Quit Scale consists of 5 items measured on a 5-point Likert-type scale (from “Strongly Disagree” to “Strongly Agree”, some items reverse-scored). A total score is calculated from these items, with higher scores indicating a stronger intention to leave the current graduate program and institution. Cooke, Sims and Peyrefitte (1995) reported an alpha coefficient of 0.71 for this measure.

This measure was modified for the current study by changing the words “university” and “institution” to “program” in order to assess students’ intentions to quit their specific program rather than the host institution. In this study, the adapted scale yielded an alpha coefficient of .79 for all respondents with complete data.

*Free response items.* Two free-response items, located in Appendix C-6, were constructed for the current study. The first item was designed to elicit qualitative information about issues relevant to student retention and experiences in programs, and the second question
was designed to elicit students’ reactions to the survey design, measures, or content.

_Scales excluded from analysis in the current study._ Several scales and items that were included in the survey battery sent to students were not analyzed in the current study. These are reported here in order to properly credit authors of the original measures and to make readers aware of all items seen by respondents.

**Initial Commitment Scale.** This measure, located in Appendix C-7, was initially constructed for the current study, but was subsequently excluded for psychometric reasons. It was based on a single item used by Cooke, Sims and Peyrefitte (1995) to assess students’ commitment to complete a degree at their current university. Answers were provided along a 5-point Likert-type scale (from ‘Not at all likely’ to ‘Extremely likely’). Cooke, Sims and Peyrefitte (1995) report that this item was predictive of attrition 18 months later.

This item was modified for the current study into the Initial Commitment Scale. In accordance with Tinto’s (1987, 1993) conceptualization of commitments, Cooke, Sims and Peyrefitte’s (1995) item was expanded into three items to separately assess commitment to the program, to degree attainment, and to a career in the field. Students were asked to answer these items based on their feelings when they originally entered their graduate program. All items were rated along a 5-point Likert-type scale (from 1 = “Not at all likely” to 5 = “Extremely likely”). A total score was calculated from these items, with higher scores indicating greater initial commitment. In this study, the scale yielded an alpha coefficient of .66 for all respondents with complete data. The scale was excluded from further analysis due to inadequate reliability, problems with response variability (restricted range and a strong ceiling effect), and concerns about retrospective reporting bias.

**Identity Support and Work-Life Balance Scale.** This measure, located in Appendix C-8, was constructed for analysis in a future study. This measure was based on previous theoretical work by Egan (1989), Lovitts (1996), and Anderson & Swazey (1998). It included modifications of three items previously used by Anderson & Swazey (1998). These items were modified for the current study by changing the words “graduate school” to “this program” in order to assess the perceived effects of the specific graduate program. The Identity Support and Work-Life Balance Scale consisted of 12
items measured on a 5-point Likert-type scale (from “Strongly Disagree” to “Strongly Agree”, some items reverse-scored). A total score was calculated from these items, with higher scores indicating greater perceived support for the students’ identity and work-life balance. I intend to publish a separate study validating this measure and reporting its relation to other variables assessed in this study. In this study, the scale yielded an alpha coefficient of .92 for all respondents with complete data.

Construction of Summary Scores

*Stage of doctoral study.* A summary score was calculated reflecting each participant’s location within Tinto’s three stages of doctoral study, on the basis of their responses to items on the Educational Characteristics Scale assessing their year in the program and completion of program milestones. Participants in their first year at the current program were coded as being in stage 1 of doctoral study (transition). Participants in their second year or higher who reported having completed comprehensive examinations, proposed a dissertation, or applied for internship were coded as being in stage 3 of doctoral study (candidacy). Participants in their second year or higher who did not report having completed any of these three milestones were coded as being in stage 2 of doctoral study (building competencies). A dummy-coded variable was created for each stage. Stage 1 was chosen as the reference category so that comparisons would reflect the effects of greater experience and progress through the program.

*Cumulative diversity.* A summary score was created reflecting each participant’s cumulative membership in underrepresented groups, consistent with work by Dorff (2006) and Churchwell (1997). In the current study, participants’ responses to 8 items on the Student Demographics Scale were each recoded as reflecting membership in either a majority group (0) or underrepresented group (1). Each of the following were coded as members of underrepresented groups: participants aged 30 years or older at program entry; participants who reported a non-White or biracial race/ethnicity; participants who reported a non-US country of origin; participants who reported that English was their second language; participants who reported growing up in a family with a working class or poverty socioeconomic status; participants who reported a non-heterosexual sexual orientation; participants who reported current caregiving responsibilities for a dependent child or adult; and participants who reported ever having had a physical, sensory, cognitive, or mental disability/disorder or other serious
health condition. The number of underrepresented group memberships was summed within participants to yield a cumulative diversity score.

Procedure

Survey design and data collection. The survey was created using the Checkbox® v4.5.3.55 web-based survey software (Prezza Technologies, Inc., 2008). Separate websites hosting a copy of the survey were created for each program in order to permit calculation of program-specific response rates. The request for participation sent to students, located in Appendix D-1, included a link to the survey website designated for their individual program. Students who clicked on this survey link were forwarded to an informed consent page that described the purpose, format, risks, and benefits of the current study, as shown in Appendix B-1. In order to proceed to the survey, participants were required to electronically give consent and confirm their status as a current clinical psychology graduate student in an APA-accredited doctoral program.

All data was collected online using Checkbox® and hosted on a secure server maintained by the researcher’s host institution. Responses from each individual program were downloaded, assigned a random numerical program identifier by a research assistant, and were then combined into a single SPSS 16.0 file.

Sampling and recruitment. Figure 3 depicts the following sampling and recruitment procedure graphically. The reference population for this investigation was pre-internship graduate students in APA-accredited clinical psychology doctoral programs in the United States. At the initiation of the study in February 2008, the APA website listed 218 accredited clinical psychology doctoral programs in the United States. I was able to obtain contact information for DCTs from 191 of these programs. Of these, 21 programs had been contacted for initial pilot-testing of the survey, and were excluded from the present study. Eight programs were excluded from the present study due to concerns about potential confounds, as follows. Programs in two institutions focusing on a specific underrepresented cultural group (by race and disability) were excluded because it was thought that underrepresented group membership might have differential effects in these contexts. Programs in two institutions that had experienced school shootings in the last 5 years were excluded because it was thought that such events might influence students’ program experiences and attitudes about their programs. The three programs
labeled as “consortia” or “joint programs” were excluded because the lack of a centralized program location could confound students’ perceptions of program organization or sense of program community. The researcher’s present program was excluded due to the potential identifiability of individual responses to persons working with the data. Finally, two additional programs were not included because the researcher mistakenly excluded the DCT’s email address from the list of program contacts. The remaining 160 programs were selected as the program sample.

Given that the focus of this study is students’ own graduate programs, the researcher felt that sending the invitation to participate to students through DCTs might suggest pressure to participate or respond in particular ways. Instead, the researcher decided to send the invitation to participate to students through a student representative in their own program, who was identified by the program DCT. This was accomplished using a three-step recruitment procedure involving, respectively, the researcher contacting program DCTs, the researcher contacting student representatives, and the student representatives contacting potential doctoral student participants.

Between 04/01/2008 and 04/15/2008, DCTs from the 160 sampled APA-accredited clinical psychology doctoral programs were sent an initial contact email, located in Appendix D-2, that provided a description of the study and a request for their assistance. DCTs were asked to respond with (1) the number of pre-internship students currently in their program and (2) contact information for a current student representative so that the researcher could ask him/her to distribute the request for participation to students. DCTs who did not respond were sent a follow-up email one week later, located in Appendix D-3.

Responses were received from DCTs from 74 programs. DCTs from 65 programs agreed to assist with this study and followed the research protocol (i.e., they provided the number of pre-internship students in the program and agreed to put the researcher in contact with a student representative in the program¹). DCTs from four programs declined to assist with this study, indicating that doing so would require DRB approval through their own university (n = 2), that

¹ Several DCTs were unwilling to release student representatives’ email addresses directly to the researcher, and indicated that they would invite the student representatives to contact the researcher themselves. These DCTs were considered to consent and follow research protocol, even though representatives from 4 of these programs ultimately did not contact the researcher. This accounts for the discrepancy between the number of programs in which DCTs consented to participate (n = 65) and the number of programs in which student representatives were asked to forward along a request for participation to students (n = 61).
they did not allow students to participate in such surveys (n = 1), or that did not wish to send the request through student representatives (n = 1). DCTs from five programs violated the research protocol by mistakenly sending the researcher’s initial email directly to students rather than putting the researcher in contact with a student representative (n = 3), posting the request for participation on a Blackboard site rather than emailing it to individual students (n = 1), or failing to provide the number of pre-internship students in the program (n = 1).

When I received contact information for a student representative, I sent an email to the student representative, located in Appendix D-4, that included (1) a request that the student representative forward an invitation to participate and survey link to all students in the program and (2) a request that the student representative reply to inform me after they had sent the invitation had to students. Student representatives who did not respond were sent a follow-up email one week later, located in Appendix D-5.

I was able to obtain contact information for student representatives in 61 programs, either through the DCT providing an email address or the student representative initiating contact with me. Student representatives from these 61 programs were sent the email request for their assistance described above. Responses were received from student representatives in 50 of these programs. All responding student representatives agreed to assist with this study and followed research protocol. Data collection was capped on 05/15/2008.

In summary, requests for participation were sent to students in 50 of the 160 doctoral clinical psychology programs initially contacted. Summing the current number of pre-internship students reported by DCTs in each of these programs, a total of 2111 pre-internship students should have received a request for participation and survey link emailed to them by their student representative.

**Respondent selection and missing data.** Figure 4 depicts the procedure of respondent selection and missing data handling. A total of 454 responses to the survey were received from students in 48 programs (two programs had a 0% response rate). Eligibility criteria were then applied to restrict the sample to the population of interest (pre-internship, doctoral students). Responses were considered eligible only if the respondent (1) consented to participate on the informed consent page, (2) indicated that s/he entered the current program with the intention of pursuing a doctoral degree, and (3) indicated that his/her current status was pre-internship.

Of the 454 responses received, 78 responses did not meet eligibility criteria for the survey
(two for declining consent to participate, 24 for not indicating that they entered their program with the intention of completing a doctoral degree, 65 for not indicating a pre-internship status; these numbers add to more than the total number of excluded respondents because individuals could be excluded for multiple reasons). These respondents were excluded from further quantitative analysis, although their open-ended responses were retained for qualitative analyses. This resulted in a sample of 376 eligible respondents, or 17.8% of all 2111 pre-internship students sent the request for participation and survey link. Response rates from individual programs ranged from 0.0% to 44.8% (M = 18.2%, SD = 9.0%).

Of this sample of 376 eligible respondents, 21.0% were missing data for one or more item required for data analysis (n = 79). In terms of the number of missing values, 17.8% of all eligible respondents were missing data for one required item (n = 67), 1.6% were missing data for two required items (n = 6), 1.1% were missing data for 3 required items (n = 4), 0.3% were missing data for 13 required items (n = 1), and 0.3% were missing data for 21 required items (n = 1). Inspection of the patterns of missingness revealed that the highest frequencies of missing values for required items were for the item about prior or current disabilities (7.2% missing; n = 27), followed by the item assessing student’s consideration of transferring to another program (1.9% missing; n = 7). All other items were missing values for 5 or fewer respondents, and were not further examined. To identify non-random patterns of missing data, non-response to the disability history and transferring items were checked for relations with several other variables. Using SPSS 16.0, correlations were calculated between item-level non-response and each of the following: prior degree status; initial degree intentions; perceived program organization; advisor/mentor satisfaction; program climate; sex; underrepresented group membership for age, race, country of origin, first language, family socioeconomic background, disability history, sexual orientation and current caregiving responsibilities; cumulative diversity; and total scores for sense of program community, current commitment, and intention to quit. Non-response to the item on disability history was significantly correlated only with membership in a racial minority group (r = .163; p = .002). Accordingly, data for this item was deemed to be missing

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2 Items required for data analysis included the following: prior degree status, initial degree intentions, perceived program organization, advisor/mentor satisfaction, program climate, age at program entry, sex, race, country of origin, first language, family socioeconomic background, disability history, sexual orientation, current caregiving responsibilities, all 20 items on the Sense of Program Community Scale, all 15 items on the Current Commitment Scale, all 5 items on the Intention to Quit Scale, and all 3 items on the Initial Commitment Scale. Respondents were also required to provide sufficient information to classify their stage of doctoral study on the basis of their combined responses to year in the program and program milestones.
not at random for this item, and results should be interpreted cautiously. Non-response to the item about transferring was not significantly correlated with any other examined variables.

Several of the missing values occurred on multi-item scales (the Sense of Program Community Scale, Current Commitment Scale, and Intention to Quit Scale), which precluded obtaining a total score for these scales. Of the sample of eligible respondents, 10.6% were missing values for one or more items on multi-item scales (n = 40). To identify non-random patterns of missing data, scale-level non-response (missing one or more item on each multi-item scale) was checked for relations with several other variables. Using SPSS 16.0, correlations were calculated between scale-level non-response and each of the following: prior degree status; initial degree intentions; perceived program organization; advisor/mentor satisfaction; program climate; sex; underrepresented group membership for age, race, country of origin, first language, family socioeconomic background, disability history, sexual orientation and current caregiving responsibilities; cumulative diversity; and total scores for sense of program community, current commitment, and intention to quit. Missing data at the scale level for the Sense of Program Community Scale, Current Commitment Scale, and Intention to Quit Scale was not significantly correlated with any other examined variables. Participant non-response at the scale level was judged to be missing completely at random, and therefore appropriate for imputation.

In order to increase power and preserve data with few missing values, the researcher decided to impute data on the multi-item scales. To enhance the accuracy of prediction, respondents were required to have answered at least 60% of the scale items in order to impute their missing values for the scale. The application of this criterion resulted in a loss of 0.5% of the sample (n = 2).

Data from the remaining sample of 374 eligible participants was subjected to two-way imputation for missing test data using factor loadings. Missing values for each of the multi-item scales were imputed using the SPSS syntax tw-fl.spv provided by Van Ginkel and Van der Ark (2008; www.datatheory.nl/pages/ginkel.htm) and previously tested in Van Ginkel, Van der Ark & Sijtsma (2007). This syntax first estimates missing values using the mean of all available item scores for the individual respondent, the mean of all available scores on the missing item across the sample, the overall scale mean, and a random residual; it then applies principal components analysis with varimax rotation to the completed data set, and uses these factor loadings to perform a factor-weighted imputation of the missing value. This syntax allows for multiple data
sets to be imputed using random residuals. Multiple imputation helps increase confidence in the imputed values. For this study, five data sets were imputed for each scale, resulting in five imputed values for each item missing. Imputed values were averaged across data sets, and the mean response was rounded to the nearest whole number. This number was used to replace the missing value for each item.

A total of 33 respondents had missing values replaced using imputation. For each of the scales, the number of participants with imputed values were as follows: 22 respondents for the Program Community Scale (n = 19 with one item imputed and n = 3 with two items imputed), 12 respondents for the Current Commitment Scale (n = 12 with one item imputed), and 8 respondents for the Intention to Quit Scale (n = 7 with one item imputed and n = 1 with two items imputed).

Following imputation of data for multi-item scales, 44 participants remained with missing categorical data or missing responses to single-item measures. Because this data could not be imputed and was necessary for subsequent data analyses, these participants were excluded from further analysis.

These procedures resulted in a sample of 330 respondents with complete data on all items used in this analysis. Any subsequent data manipulations and quantitative analyses were performed on this sample of 330 respondents with complete data.

Results

Measure Validity

Prior to conducting inferential analyses, the researcher sought to establish the validity and appropriateness of the measures of integration and persistence-related attitudes.

Integration. The Sense of Program Community Scale and Advisor/Mentor Satisfaction item were intended to assess student integration at different levels (at the level of the program, including many students and faculty, and at the level of the student’s relationship with an individual faculty advisor/mentor). Because the faculty advisor/mentor is an influential member of a student’s graduate community, it was expected that responses to both measures would be modestly positively related. Results confirm that greater sense of program community was moderately positively associated with greater advisor/mentor satisfaction, r(328) = .35, p < .001. This result suggests that it is reasonable to conceptualize both scales as measures of integration.
Due to theoretical overlap between students’ relational experiences in programs and their sense that the program is supportive and welcoming, it was expected that responses to both measures of integration would be positively associated with the responses to the measure of program climate. Since both program climate and sense of program community assess feelings at the level of the program, it was expected that program climate would relate more strongly with sense of program community than with advisor/mentor satisfaction. Results confirm that program climate was strongly positively associated with sense of program community, $r (328) = .69$, $p < .001$, and moderately positively associated with advisor/mentor satisfaction, $r(328) = .35$, $p < .001$. These results add support to the idea that students’ responses reflect a differentiation between feelings at the level of the program and at the level of their advising/mentoring relationships.

The Sense of Program Community Scale was also checked for a potential threat to validity posed by the wording of the measure. Because the scale asks respondents to evaluate how they feel towards “the program” and “others in my program”, measurement might be biased against students whose programs are structured around subdivisions of the program (e.g., labs, individual areas) rather than the whole program. Advisor/mentor satisfaction could also conceivably be confounded with program organization, as students have relatively more intense contact with their faculty advisor/mentor in lab- or area-focused programs. Results show that neither sense of program community nor advisor/mentor satisfaction was related to perceived program organization, $r(328) = .06$, $p = .321$ and $r(328) = -.01$, $p = .809$, respectively. These results suggest that the integration measures are appropriate regardless of the ways that individual programs are structured.

**Persistence-related attitudes.** The Current Commitment Scale and Intention to Quit Scale were intended to assess the strength of attitudes associated with continuing and with departing from a graduate program, respectively. Accordingly, it was expected that responses to both measures would be significantly negatively related. Results confirm that greater current commitment was strongly negatively associated with lower intention to quit, $r(328) = -.75$, $p < .001$. This result suggests that it is reasonable to conceptualize both scales as measures of persistence-related attitudes.

Both measures were checked for a potential threat to validity caused by the organization of programs. It is possible that program organization may impact persistence-related attitudes, or
that students may select programs with a greater focus on labs/areas (rather than the program as a whole) because they have a stronger commitment to working with a particular advisor, research program, or area. If this is the case, perceived program organization could be confounded with measures of persistence-related attitudes. Results show that a program organization favoring the whole program showed a non-significant trend towards higher current commitment, \( r(328) = .10, p = .076 \), and it was unrelated to intention to quit, \( r(328) = -.07, p = .227 \). These results suggest that the measures of persistence-related attitudes are appropriate regardless of the ways that individual programs are structured.

Sample Characteristics

Using SPSS 16.0, means and standard deviations were calculated for each variable used in further analyses. Descriptive statistics for the complete data sample (n = 330) are reported in Table 1. For continuous variables, results can be interpreted as follows. In terms of cumulative diversity, respondents on average were members of one underrepresented group. On the Sense of Program Community Scale, the mean scale score corresponds to a response slightly less positive than “Agree” to all items a positive sense social and learning community in the program. This suggests that on average, respondents experienced a somewhat positive sense of community in their programs. On the single-item scale of advisor/mentor satisfaction, respondents rated themselves as slightly less positive than “Satisfied” with their advising/mentoring relationships. On the Current Commitment Scale, the mean scale score corresponds to a response slightly less positive than “Agree” to all items expressing a positive sense of commitment to and satisfaction with graduate study. This suggests that on average, respondents experienced a somewhat positive sense of career commitment and program satisfaction. On the Intention to Quit Scale, the mean scale score corresponds to a response between “Strongly Disagree” and “Disagree” to all items expressing an intention to quit the current graduate program. This suggests that on average, respondents experienced little or no intention to quit their graduate programs.

Students’ ratings of perceived program organization and program climate were used for measure validation only, and are reported for descriptive purposes. On the rating of perceived program organization, respondents on average reported that their programs placed a marginally greater emphasis on individual labs/areas than on the program as a whole (\( M = 2.69, SD = 1.50 \)). On the rating of program climate, respondents on average reported a program climate just above
“Mild” (M = 5.26, SD = 1.36). This suggests that on average, respondents felt their programs were modestly welcoming and supportive towards program members. Neither of these two measures were used in further analyses because they are not aspects of Tinto’s (1975, 1987, 1993) model.

Students’ qualitative responses to the two free response questions were used in the discussion section to elaborate upon quantitative models. Overall, 54.5% of students responded to at least one free response question. Of the sample, 50.0% responded to the question regarding what students would want faculty or administrators to know in order to improve the experiences of future students, and 29.1% responded to the question for additional comments or feedback about the study.

Interactions between Sex and Cumulative Diversity

Hypothesis 1 proposed that there would be an interaction between sex and cumulative diversity for (a) sense of program community, (b) advisor/mentor satisfaction, (c) current commitment and (d) intention to quit. To test these hypotheses, a 2 (male vs. female) x 3 (members of no vs. one vs. multiple underrepresented groups) between-subjects factorial ANOVA was run for each variable using SPSS 16.0. Cumulative diversity was split into three categories rather than examining it as a continuous variable in order to permit between-group comparisons with adequate sample sizes in each cell. Type III sum of squares was used in order to accommodate the unequal sample sizes in different cells.

Assumptions of normality and homoscedasticity were tested by examining normal Q-Q plots and Levene’s test for homogeneity of variance. Although sense of program community and current commitment met ANOVA assumptions, advisor/mentor satisfaction and intention to quit both violated assumptions of normality, and advisor/mentor satisfaction also violated assumptions of homoscedasticity. Data transformations were attempted to correct these issues. Advisor/mentor satisfaction was not improved by any attempted transformation; accordingly, analyses were conducted on the original scale, and should be interpreted cautiously. Intention to quit was improved by performing a fourth-root transformation after anchoring the lowest value at 1. The ANOVA was conducted on this transformed variable.

Table 2 displays the ANOVA results, and Table 3 displays the means and standard deviations for each sex * cumulative diversity subgroup. In order to illustrate the interaction,
Figures 5, 6, 7, and 8 show the pattern of means by respondent sex and level of cumulative diversity for sense of program community, advisor/mentor satisfaction, current commitment, and the fourth root of intention to quit, respectively. All graphs are displayed with y-axis showing the possible range in scores for the scale (or for intention to quit, the possible range for the transformed scale) in order to illustrate the magnitude of effects.

Results indicate that there was a significant interaction between sex and cumulative diversity for both measures of integration, but not for either measure of persistence-related attitudes. Specific results are as follows.

**Sense of program community.** Results support Hypothesis 1(a). There was a significant interaction between sex and cumulative diversity for sense of program community, $F(2, 324) = 6.38, p = .002$. Tukey post-hoc comparisons show that men who were members of no underrepresented groups reported higher sense of program community than did men from multiple underrepresented groups ($p < .001$) or women from one underrepresented group ($p = .023$). Women who were members of no underrepresented groups reported higher sense of program community than did men from multiple underrepresented groups ($p = .01$). No other differences were significant at $p \leq .05$.

Secondary findings reveal a significant main effect of cumulative diversity, $F(2, 324) = 9.02, p < .001$, but no main effect of sex, $F(1, 324) = 0.12, p = .732$. Tukey post-hoc comparisons indicate that across sex, members of no underrepresented groups reported higher sense of program community than did members of multiple underrepresented groups ($p = .016$).

**Advisor/mentor satisfaction.** Results provide qualified support for Hypothesis 1(b). There was a just significant interaction between sex and cumulative diversity for advisor/mentor satisfaction, $F(2, 324) = 3.02, p = .050$. Due to violation of the assumption of equal variance, Games-Howell post-hoc comparisons were used instead of Tukey tests. When the interaction was decomposed, pairwise comparisons showed no significant differences at the $p < .05$ level. However, the difference between men who were members of no underrepresented groups and men from multiple underrepresented groups approached significance ($p = .060$), with men from no underrepresented groups expressing higher advisor/mentor satisfaction.

Secondary findings reveal a significant main effect of cumulative diversity, $F(2, 324) = 6.14, p = .002$, but no main effect of sex, $F(2, 324) = 1.49, p = .223$. Games-Howell post-hoc comparisons show that across sex, members of no underrepresented groups expressed higher
advisor/mentor satisfaction than did members of multiple underrepresented groups (p = .028).

Current commitment. Results do not support Hypothesis 1(c). There was no significant interaction between sex and cumulative diversity for current commitment, although results approached significance, F(2, 324) = 2.98, p = .052. Secondary findings show no significant main effect of sex, F(1, 324) = 1.38, p = .241. There was also no significant main effect of cumulative diversity, although results approached significance, F(1, 324) = 2.88, p = .057. Post-hoc comparisons were not conducted because no group differences were indicated.

Intention to quit (fourth root). Results do not support Hypothesis 1(d). There was no significant interaction between sex and cumulative diversity for the transformed intention to quit variable, F(2, 324) = 1.33, p = .265. Secondary findings show no significant main effect of either sex, F(1, 324) = 0.77, p = .382, or cumulative diversity, F(2, 324) = 0.59, p = .557. Post-hoc comparisons were not conducted because no group differences were indicated.

Assessing the Comparability of the Male and Female Samples

The ANOVA analyses described above suggest that there were no overall sex differences in integration or persistence-related attitudes, but there was an interaction between sex and cumulative diversity in predicting integration. Because an interaction was indicated, subsequent mediation analyses were conducted separately by sex. However, prior to doing so, follow-up analyses were conducted to assess whether the male and female samples differed in the distribution of background covariates, as well as in issues related to the measurement of cumulative diversity. Sex differences in sample characteristics could help illuminate the interaction found above, and could aid interpretation of subsequent analyses conducted separately by sex.

Comparisons were conducted using SPSS 16.0 to determine whether the male and female samples differed in the distribution of the background covariates and cumulative diversity. A two-tailed Fisher’s exact test was used for variables with two levels, and a two-tailed Pearson’s Chi-square was used for variables with more than two levels. Table 4 shows that there were no sex differences in the distribution of prior degree status (p = .531), stage of doctoral study (p = .690), or cumulative diversity (p = .707). These results suggest that the male and female samples were similar along these characteristics, and that the interaction between sex and cumulative diversity cannot be explained by different distributions of these variables between men and
women.

Next, comparisons were conducted to determine whether there were sex differences in the distributions of specific underrepresented groups. Two-tailed Fisher’s exact tests were used to compare the distribution of individuals who fell into underrepresented vs. dominant groups for each characteristic used to calculate a cumulative diversity score. Table 4 shows that the only significant sex difference was that men were more likely to identify themselves as current caregivers for a dependent child or adult (p = .002). This sex difference suggests that the interaction between sex and cumulative diversity may be influenced by sex differences in current caregiving responsibilities. However, this does not represent a likely explanation for the interaction between sex and cumulative diversity, since cumulative diversity measured the number of memberships across multiple underrepresented groups.

Accordingly, analyses were conducted to determine whether there were sex differences in the loadings of specific underrepresented groups on cumulative diversity scores. For example, if being a current caregiver loaded higher on cumulative diversity for men than for women, this would indicate that cumulative diversity scores reflect different phenomena for men and women. To evaluate this possibility, Pearson product-moment correlations between each type of underrepresented group and cumulative diversity were computed separately for men and women using SPSS 16.0. Sex differences were examined through calculating a difference of correlations z-score using software provided by Preacher (2002; http://www.people.ku.edu/~preacher/corrttest/corrttest.htm). Table 5 displays the correlation values and difference of correlations z-scores. Results show no significant sex differences in the loadings of specific underrepresented groups on cumulative diversity. This suggests that cumulative diversity scores represent similar phenomena for men and women, and the interaction between sex and cumulative diversity cannot be attributed to measurement differences in cumulative diversity.

Overall, the pattern of results suggests that sex differences in sample characteristics cannot explain the interaction between sex and cumulative diversity found previously. Furthermore, results from these comparisons and from the ANOVAs conducted previously suggest that the male and female samples were similar along all variables included in the proposed mediation models. This implies that men’s and women’s results from subsequent sex-specific mediation analyses can be compared.
Relationships between Cumulative Diversity, Integration, and Persistence-Related Attitudes

The primary aim of this study was to determine whether, when controlling for background covariates, students’ cumulative membership in underrepresented groups predicts their persistence-related attitudes, as well as whether this relationship is mediated by students’ integration.

Hypotheses 2-6 concerned pathways proposed in two mediation models, shown in Figure 2. For both mediation models, cumulative diversity was defined as the predictor, the two integration measures (sense of program community and advisor/mentor satisfaction) were defined as potential mediators, and one of the two measures of persistence-related attitudes was defined as the outcome (current commitment for Model 1, and intention to quit for Model 2). For both mediation models, three background covariates (prior master’s degree, stage 2 of doctoral study, stage 3 of doctoral study) were defined as control variables; path relationships are tested controlling for the influence of these covariates. In order to establish mediation, several steps are necessary.

Mediation analysis. The original Baron & Kenny (1986) method requires testing four paths to establish mediation with a single mediator. In the first step, the mediator is regressed on the predictor variable in order to establish that the predictor significantly predicts the mediator (a-path). In the second step, the outcome variable is regressed on the predictor variable to establish that the predictor has a significant effect on the outcome that could be mediated (c-path). In the third step, the mediator and predictor variables are both simultaneously regressed on the outcome variable in order to establish that the mediator predicts the outcome when controlling for the predictor variable (b-path). The latter equation is used for the last step to show that the predictor variable no longer predicts the outcome or has a less significant relationship with the outcome when controlling for the effects of the mediator (c’-path). Mediation is shown when the a-path, c-path, and b-path are all significant and the c’-path is 0 (full mediation) or significantly reduced from the c-path.

Modifications to the Baron & Kenny (1986) method suggested by MacKinnon (2008) and Kenny (2008) were used for the present study in order to accommodate the background covariates and two potential mediators. To establish mediation in a model with multiple mediators and covariates, the following paths are tested. In the first step, each mediator is
regressed on the predictor variable and all covariates to establish that the predictor significantly predicts that mediator, over and above the covariates (a-paths). In the second step, the outcome variable is regressed on the predictor variable and all covariates to establish that the predictor has a significant effect on the outcome, over and above the covariates (c-path). In the third step, all mediators, the predictor, and all covariates are simultaneously regressed on the outcome variable in order to establish that each mediator predicts the outcome when controlling for the predictor variable and all covariates (b-paths). This latter equation is used for the last step to show that the predictor no longer predicts the outcome or has a less significant relationship with the outcome when controlling for the effects of all mediators and covariates (c’-path). Mediation is shown for each mediator in which the corresponding a- and b-paths are significant and the c’-path is 0 (full mediation) or significantly reduced from the c-path.

In order to demonstrate mediation, this study applied these criteria to the two mediation models depicted in Figure 2. To test paths in each model, several multiple regression analyses were run using SPSS 16.0. Additionally, Aroian Sobel tests were conducted on obtained path coefficients using an online calculator provided by Preacher & Leonardelli (2001; http://www.people.ku.edu/~preacher/sobel/sobel.htm). The Sobel test calculates the significance of mediated (a*b) paths directly, and therefore provides a more powerful test of mediation than does the Baron & Kenny (1986) method. The Aroian version is the most stringent version of the Sobel test versions, and is used to establish definitive evidence of mediation. All analyses were conducted separately for men and women.

First, the paths for Model 1 were tested. The a-paths (Hypotheses 2a and 2b) were tested through multiple regressions on sense of program community and advisor/mentor satisfaction, respectively. In both regressions, cumulative diversity and the three background covariates (prior master’s degree, stage 2 of doctoral Study, stage 3 of doctoral study) were entered as predictors. The remaining paths for Model 1 were tested through a hierarchical multiple regression on current commitment. Cumulative diversity and the three background covariates (prior master’s degree, stage 2 of doctoral Study, stage 3 of doctoral study) were entered as predictors in block 1 to test the c-path (Hypothesis 3). Sense of program community and advisor/mentor satisfaction were added as predictors in block 2 to test the b-paths (Hypotheses 4a and 4b) and c’-path (Hypothesis 4c).

Next, the paths for Model 2 were tested. Model 2 proposes the same predictor and
potential mediators as does Model 1; accordingly, the a-path coefficients obtained for Model 1 apply to Model 2, and were not retested. The remaining paths for Model 2 were tested through a hierarchical multiple regression on the fourth root of intention to quit, after anchoring the lowest value at 1. The fourth root transformation was used rather than the original scale due to violations of multivariate normality demonstrated in previous analyses. Cumulative diversity and the three background covariates (prior master’s degree, stage 2 of doctoral Study, stage 3 of doctoral study) were entered as predictors in block 1 of the hierarchical regression to test the c-path (Hypothesis 5). Sense of program community and advisor/mentor satisfaction were added as predictors in block 2 of the hierarchical regression to test the b-paths (Hypotheses 6a and 6b) and c’-path (Hypothesis 6c).

For all analyses, regression assumptions were tested by examining normal probability plots of residuals and scatter diagrams of observed versus predicted residuals. No major violations of multivariate normality, linearity, or homoscedasticity were detected for regressions on sense of program community, current commitment, or the fourth root of intention to quit for either males or females. However, the regression on advisor/mentor satisfaction demonstrated violations of multivariate normality and homoscedasticity for both men and women, and this was not improved by attempts to transform the data. Analysis is conducted on the original scale, and results should be interpreted with caution.

The following sections review these path results, then detail any significant effects found from the background covariates. To better illustrate relationships between variables, descriptive statistics and variable correlations are presented for men and women in Tables 6 and 7, respectively.

Model 1 for men. For men, the relative sizes and relations of Model 1 paths, controlling for background covariates, are depicted graphically in Figure 9. Tables 8, 9, and 10 display the total variance accounted for, standardized coefficients, and specific variance accounted for by each variable in the regressions on sense of program community, advisor/mentor satisfaction, and current commitment, respectively.

As shown in Tables 8 and 9, results support Hypotheses 2a and 2b for men. Cumulative diversity significantly predicted men’s sense of program community ($\beta = -.52, p < .001$) and advisor/mentor satisfaction ($\beta = -.41, p = .002$), over and above the background covariates. These results indicate that for men, greater membership in underrepresented groups was
associated with less of a sense of community in the program and lower satisfaction with their advising/mentoring relationships, after accounting for the effects of their stage of doctoral study and prior degree status. Graphically illustrated in Figure 9, these results meet the first criterion of Baron & Kenny’s (1986) procedure by establishing significant a-paths to both potential mediators.

As shown in Table 10, results from block 1 of the hierarchical regression support Hypothesis 3 for men. Cumulative diversity significantly predicted men’s current commitment ($\beta = -.34, p = .011$), over and above the background covariates. These results indicate that for men, membership in a greater number of underrepresented groups was associated with feeling less committed to and less satisfied with graduate study, after accounting for the effects of their stage of doctoral study and prior degree status. Graphically illustrated in Figure 9, this result meets the second criterion of Baron & Kenny’s (1986) procedure by establishing a significant c-path.

As shown in Table 10, results from block 2 of the hierarchical regression support Hypothesis 4a, but not Hypothesis 4b, for men. Sense of program community significantly predicted men’s current commitment ($\beta = .72, p < .001$), over and above cumulative diversity and the background covariates. Although there was a trend in the predicted direction, advisor/mentor satisfaction did not significantly predict men’s current commitment ($\beta = .18, p = .097$), over and above cumulative diversity and the background covariates. These results indicate that for men, stronger feelings of community in the program, but not satisfaction with their advising/mentoring relationship, were associated with feeling more committed to and more satisfied with graduate study, after accounting for the effects of their membership in underrepresented groups, stage of doctoral study, and prior degree status. Graphically illustrated in Figure 9, these results partially meet the third criterion of Baron & Kenny’s (1986) procedure by establishing a significant b-path from one of the potential mediators.

Also shown in Table 10, results from block 2 of the hierarchical regression support Hypothesis 4c for men. Although results from block 1 demonstrated that cumulative diversity significantly predicted men’s current commitment ($\beta = -.34, p = .011$) over and above the background covariates, cumulative diversity no longer significantly predicted men’s current commitment ($\beta = .11, p = .306$) once sense of program community and advisor/mentor satisfaction were added in block 2. These results indicate that membership in underrepresented
groups was unrelated to men’s feelings of commitment to and satisfaction with graduate study, after accounting for the effects of their sense of community in the program and satisfaction with their advisor/mentor relationships. Graphically illustrated in Figure 9, these results meet the fourth criterion of Baron & Kenny’s (1986) procedure by demonstrating that the c’-path ($\beta = 0.11$, $p = 0.306$) was less significant than the c-path ($\beta = -0.34$, $p = 0.011$); indeed, the c’-path was not significantly different than 0. It should be noted that the degree of change in the c- and c’-path coefficients was rather large, and the coefficients reversed sign. This suggests that taking men’s integration into account completely eliminated the earlier negative relationship found between men’s membership in underrepresented groups and their commitment to and satisfaction with graduate study.

The pattern of results derived from the four Baron & Kenny (1986) criteria partially supports the proposed mediational model. This pattern suggests that for men, the effect of cumulative diversity on current commitment was fully mediated by sense of program community, but not mediated by advisor/mentor satisfaction, above and beyond the background covariates. Results from the Sobel test confirm that there was a significant mediated effect through sense of program community (Aroian Sobel statistic = 3.66, $p < 0.001$) but not through advisor/mentor satisfaction (Aroian Sobel statistic = 1.44, $p = 0.148$). These results provide clear evidence that the effect of cumulative diversity on current commitment was fully mediated through sense of program community. This means that the fact that men from a greater number of underrepresented groups were less committed to and less satisfied with graduate study was fully accounted for by their lower feelings of community in their graduate programs.

**Model 1 for women.** For women, the relative sizes and relations of Model 1 paths, controlling for background covariates, are depicted graphically in Figure 10. Tables 11, 12, and 13 display the total variance accounted for, standardized coefficients, and specific variance accounted for by each variable in the regressions on sense of program community, advisor/mentor satisfaction, and current commitment, respectively.

As shown in Tables 11 and 12, results do not support Hypothesis 2a or 2b for women. Cumulative diversity did not significantly predict women’s sense of program community ($\beta = -0.04$, $p = 0.474$) or advisor/mentor satisfaction ($\beta = -0.05$, $p = 0.424$), over and above the background covariates. These results indicate that women’s number of memberships in underrepresented groups was unrelated to their sense of program community or satisfaction with their
advising/mentoring relationships, after accounting for the effects of their stage of doctoral study and prior degree status. Graphically illustrated in Figure 10, these results indicate non-significant a-paths for both potential mediators, and fail to meet the first criterion of Baron & Kenny’s (1986) procedure. Since mediation is not supported, no further steps of Baron & Kenny’s (1986) procedure are reported; however, remaining paths are reported for comparison with the male sample.

As shown in Table 13, results from block 1 of the hierarchical regression do not support Hypothesis 3 for women. Cumulative diversity did not significantly predict women’s current commitment ($\beta = -.05, p = .439$), over and above the background covariates. These results indicate that women’s number of memberships in underrepresented groups was unrelated with their feelings of commitment to and satisfaction with graduate study, after accounting for the effects of their stage of doctoral study and prior degree status. These results are illustrated graphically through a non-significant c-path in Figure 10.

As shown in Table 13, results from block 2 of the hierarchical regression support Hypotheses 4a and 4b for women. Sense of program community ($\beta = .58, p < .001$) and advisor/mentor satisfaction ($\beta = .26, p < .001$) each significantly predicted women’s current commitment, over and above cumulative diversity and the background covariates. These results indicate that for women, stronger feelings of community in the program and greater satisfaction with their advising/mentoring relationship were each associated with greater commitment to and satisfaction with graduate study, after accounting for the effects of their membership in underrepresented groups, stage of doctoral study, and prior degree status. Graphically illustrated in Figure 10, these results indicate significant b-paths from both potential mediators.

Also shown in Table 13, results from block 2 of the hierarchical regression support Hypothesis 4c for women. Although results from block 1 demonstrated that cumulative diversity did not significantly predict women’s current commitment ($\beta = -.05, p = .439$) over and above the background covariates, cumulative diversity was slightly less associated with women’s current commitment ($\beta = -.01, p = .845$) once sense of program community and advisor/mentor satisfaction were added in block 2. These results are illustrated graphically through non-significant c- and c’-paths in Figure 10. It should be noted that the degree of change in the path coefficients was very small; furthermore, because cumulative diversity was not related with sense of program community or advisor/mentor satisfaction, this does not represent a
mediational effect. Rather, results simply indicate that women’s membership in underrepresented groups remained unrelated to their commitment to and satisfaction with graduate study, both when their integration was taken into account and when it was not.

The pattern of results indicates that for women, cumulative diversity had no effect on sense of program community, advisor/mentor satisfaction, or current commitment above and beyond the background covariates, and therefore the proposed mediational model is not supported. The Sobel test confirmed that there were no significant mediated effects through sense of program community (Aroian Sobel statistic = 0.72, p = .473) or through advisor/mentor satisfaction (Aroian Sobel statistic = 0.78, p = .434).

**Model 2 for men.** For men, the relative sizes and relations of Model 2 paths, controlling for background covariates, are depicted graphically in Figure 11. Table 14 displays the total variance accounted for, standardized coefficients, and specific variance accounted for by each variable in the hierarchical regression on the fourth root of men’s intention to quit.

The previous section established significant paths from cumulative diversity to men’s sense of program community ($\beta = 5.52, p < .001$) and advisor/mentor satisfaction ($\beta = 5.41, p = .002$), over and above the background covariates. Graphically illustrated in Figure 11, these results meet the first criterion of Baron & Kenny’s (1986) procedure by establishing significant $a$-paths to both potential mediators.

As shown in Table 14, results from block 1 of the hierarchical regression do not support Hypothesis 5 for men. Cumulative diversity did not significantly predict the fourth root of men’s intention to quit ($\beta = .21, p = .113$), over and above the background covariates. These results indicate that for men, membership in a greater number of underrepresented groups was unrelated to their intentions to quit the program, after accounting for the effects of their stage of doctoral study and prior degree status. Graphically illustrated in Figure 11, these results indicate a non-significant $c$-path and fail to meet the second criterion of Baron & Kenny’s (1986) procedure. However, some authors have suggested that this criterion is not necessary for mediation, and that significant $a$- and $b$-paths are sufficient to demonstrate mediation (Kenny, 2008). Therefore, further steps of Baron & Kenny’s (1986) procedure are reported.

As shown in Table 14, results from block 2 of the hierarchical regression support Hypotheses 6a and 6b for men. Both sense of program community ($\beta = -.46, p = .002$) and advisor/mentor satisfaction ($\beta = -.27, p = .037$) significantly predicted the fourth root of men’s
intention to quit, over and above cumulative diversity and the background covariates. These results indicate that for men, stronger feelings of community in the program and greater satisfaction with their advising/mentoring relationship were associated with lower intentions to quit the program, after accounting for the effects of their membership in underrepresented groups, stage of doctoral study, and prior degree status. Graphically illustrated in Figure 11, these results meet the third criterion of Baron & Kenny’s (1986) procedure by establishing significant b-paths from both potential mediators.

Also shown in Table 14, results from block 2 of the hierarchical regression support Hypothesis 6c for men. Although the results from block 1 demonstrated that cumulative diversity did not significantly predict the fourth root of men’s intention to quit (β = .21, p = .113) over and above the background covariates, cumulative diversity was less associated with the fourth root of men’s intention to quit (β = -.14, p = .279) once sense of program community and advisor/mentor satisfaction were added in block 2. Graphically illustrated in Figure 11, these results meet the fourth criterion of Baron & Kenny’s (1986) procedure by demonstrating that the c’-path (β = -.14, p = .279) was less significant than the c-path (β = .21, p = .113). It should be noted that the degree of change in the c- and c’-path coefficients was rather large, and the coefficients reversed sign. The results suggest that taking men’s integration into account completely eliminated any association between greater membership in underrepresented groups and greater intentions to quit the program.

As previously noted, this pattern of results did not meet all of Baron & Kenny’s (1986) criteria for demonstrating mediation due to the failure to demonstrate a significant c-path; however, the remaining paths were all significant. The Sobel test was used to more clearly demonstrate whether a mediated effect was present. Results from the Sobel test indicate that there was a significant mediated effect through sense of program community (Aroian Sobel statistic = 2.59, p = .009) but not through advisor/mentor satisfaction (Aroian Sobel statistic = 1.73, p = .084). These results strongly suggest that the effect of cumulative diversity on the fourth root of intention to quit was mediated through sense of program community, even though not all of Baron & Kenny’s (1986) criteria were satisfied. Results of these two methods of testing the mediated effect may differ because the sign of the mediated effect, a*b, is positive, whereas the sign of the c’-path is negative. This leads to a situation called “inconsistent mediation” (MacKinnon, Fairchild & Fritz, 2007) in which the mediator acts as a suppressor
variable, and therefore mediation occurs without producing a significant c-path. In the present case, results suggest that the lower sense of program community that more diverse men experienced slightly elevated their intentions to quit their programs above those of less diverse men; without this effect, more diverse men would have had slightly lower intentions to quit their programs than did less diverse men.

Model 2 for women. For women, the relative sizes and relations of Model 2 paths, controlling for background covariates, are depicted graphically in Figure 12. Table 15 displays the total variance accounted for, standardized coefficients, and specific variance accounted for by each variable in the hierarchical regression on the fourth root of women’s intention to quit.

The previous section established that cumulative diversity did not significantly predict women’s sense of program community (β = -.04, p = .474) or advisor/mentor satisfaction (β = -.05, p = .424), over and above the background covariates. Graphically illustrated in Figure 12, these results indicate non-significant a-paths for both potential mediators, and fail to meet the first criterion of Baron & Kenny’s (1986) procedure. Since mediation is not supported, no further steps of Baron & Kenny’s (1986) procedure are reported; however, remaining paths are reported for comparison with the male sample.

As shown in Table 15, results from block 1 of the hierarchical regression do not support Hypothesis 5 for women. Cumulative diversity did not significantly predict the fourth root of women’s intention to quit (β = -.03, p = .587), over and above the background covariates. These results indicate that for women, membership in a greater number of underrepresented groups was unrelated to their intentions to quit the program, after accounting for the effects of their stage of doctoral study and prior degree status. These results are illustrated graphically through a non-significant c-path in Figure 12.

As shown in Table 15, results from block 2 of the hierarchical regression support Hypotheses 6a and 6b for women. Both sense of program community (β = -.50, p < .001) and advisor/mentor satisfaction (β = -.19, p < .001) significantly predicted the fourth root of women’s intention to quit, over and above cumulative diversity and the background covariates. These results indicate that for women, stronger feelings of community in the program and greater satisfaction with their advising/mentoring relationship were each associated with lower intentions to quit the program, after accounting for the effects of their membership in underrepresented groups, stage of doctoral study, and prior degree status. Graphically illustrated
in Figure 12, these results indicate significant b-paths from both potential mediators.

Also shown in Table 15, results from block 2 of the hierarchical regression do not support Hypothesis 6c for women. Although the previously reported results demonstrated that cumulative diversity did not significantly predict the fourth root of women’s intention to quit ($\beta = -.03, p = .587$) over and above the background covariates in block 1, cumulative diversity was more (but still not significantly) associated with the fourth root of women’s intention to quit ($\beta = -.07, p = .183$) once sense of program community and advisor/mentor satisfaction were added in block 2. These results are illustrated graphically through non-significant c- and c’-paths in Figure 12. It should be noted that the degree of change in the path coefficients was very small, and furthermore, because cumulative diversity was not related with sense of program community or advisor/mentor satisfaction, this does not represent a mediational effect. Rather, results simply indicate that women’s membership in underrepresented groups remained unrelated to their intentions to quit their programs, both when their integration was taken into account and when it was not.

The pattern of results indicates that for women, cumulative diversity had no effect on sense of program community, advisor/mentor satisfaction, or the fourth root of intention to quit above and beyond the background covariates, and therefore the proposed mediational model is not supported. The Sobel test confirmed that there were no significant mediated effects through sense of program community (Aroian Sobel statistic = 0.71, $p = .475$) or through advisor/mentor satisfaction (Aroian Sobel statistic = 0.76, $p = .448$).

*Secondary findings for men.* Results indicate that few of the background covariates were related to men’s integration. Table 8 shows that for men, being in stage 3 (candidacy) of doctoral study predicted lower feelings of program community ($\beta = -.28, p = .041$). Table 9 shows that none of the background covariates were significant predictors of men’s satisfaction with their advising/mentoring relationships.

Results suggest that stage of doctoral study was unrelated to men’s persistence-related attitudes, but having entered the program with a prior master’s degree appeared to have a positive influence. Table 10 shows that for men, having entered the program with a prior master’s degree predicted higher commitment to and satisfaction with doctoral study on block 1 ($\beta = .26, p = .037$); however, this association became insignificant once the integration variables were added on block 2 ($\beta = .13, p = .146$). Table 14 shows for men, having entered the program
with a prior master’s degree predicted lower intentions to quit the program on both block 1 (β = -.36, p = .005) and block 2 (β = -.27, p = .014).

**Secondary findings for women.** Results indicate that the background covariates were unrelated women’s integration. Tables 11 and 12 show that neither stage of doctoral study nor prior master’s degree status were significant predictors of women’s feelings of program community or satisfaction with their advising/mentoring relationships.

In contrast, results suggest that the background covariates were associated with women’s persistence-related attitudes. Table 13 shows that for women, having entered the program with a prior master’s degree predicted higher commitment to and satisfaction with doctoral study on block 1 (β = .16, p = .009) and block 2 (β = .18, p < .001). Additionally, being in stage 2 of doctoral study (building competencies) predicted lower commitment to and satisfaction with doctoral study on block 1 (β = -.19, p = .010) and block 2 (β = -.15, p = .003). Table 15 shows that for women, having entered the program with a prior master’s degree predicted lower intentions to quit the program on both block 1 (β = -.18, p = .003) and block 2 (β = -.20, p < .001). Additionally, though stage 3 of doctoral study (candidacy) was not a significant predictor of women’s intention to quit on block 1 (β = -.12, p = .109), it became significant on block 2 (β = -.12, p = .037). These results suggest that having entered the program with a prior master’s degree consistently exerted a positive influence on women’s attitudes towards persistence. For women, the building competencies stage of doctoral study was associated with less favorable attitudes towards persistence, whereas the candidacy stage was associated with more favorable attitudes towards persistence.

**Discussion**

This survey study provides evidence for Tinto’s (1993) interactionalist model of student attrition among clinical psychology doctoral students. The associations of sense of program community and advisor/mentor satisfaction with students’ persistence-related attitudes strongly support the main contention of Tinto’s interactionalist model: that students’ integration (sense of connectedness and membership in doctoral communities) is strongly related to their motivation to persist. Other proposals of Tinto’s model were partially supported.

Specifically, the main linkage that this study sought to test—Tinto’s suggestion that students with greater cultural differences from dominant graduate communities would have
poorer integration, and accordingly, less favorable attitudes towards persistence—was supported for men but not for women. This finding raises intriguing questions about how students’ gender, membership in underrepresented groups, and the field of study may interactively influence students’ relationships in graduate programs. Overall, this study contributes to the understanding of student attrition by demonstrating the utility of considering students’ multiple cultural identities as well as their sense of community in graduate programs.

The Importance of Integration

In every analysis conducted in this study, students’ sense of program community (feelings of connectedness to others, as well as the extent to which membership in the graduate program fits their goals and expectations) was strongly associated with their commitment to and satisfaction with graduate study and their intentions to quit the program. In most cases, students’ satisfaction with their advising/mentoring relationship was also significantly related to these outcomes, although it showed a lesser relationship. These findings concur Tinto’s (1993) interactionalist theory and considerable qualitative research suggesting that students’ integration or “fit” with communities in the educational setting is linked to their educational persistence (Golde, 2000; Hoskins & Goldberg, 2005; Lovitts, 2001).

The significance of integration within the program was highlighted in students’ responses to open-ended questions at the end of the survey. Students were asked what they would like faculty and administrators to know to improve the experiences and retention of future students, as well as invited to share any other comments they had on the topic or survey. Although students gave a large range of responses, their comments very often centered on their social and academic interactions with faculty and other students. Some students explicitly connected these interactions to their own persistence in the program and field:

I think my current dissatisfaction has more to do with a shift in my priorities over the past year, than with my particular program. However, I do feel that my advisor has been absent to a higher degree than most, and my lab environment (including fellow lab mates) is often hostile, making it difficult to enjoy my program. The courses have also been disappointing, not providing the type of in depth material I had expected from graduate level courses. I think overall, these factors have fostered my doubt that the sacrifices
necessary to obtain a doctorate in clinical psychology are outweighed by the benefits and opportunities provided. [Female majority student\textsuperscript{3}]

Although I have had some excellent supervisors and mentors over the years and have build wonderful relationships with fellow students, experiences with some supervisors and other faculty early on (in the first two years) were so negative that I strongly considered leaving the program and the field of psychology entirely. I've never recovered from these experiences and as a result have difficulty seeing my program in a positive light. I've very often felt that my opinion was not valued and that faculty as a whole were not to be trusted, particularly with any weaknesses or concerns. [Female minority student]

I enjoy the faculty and classes, but am transferring to another university because of personal issues which include the other students being unwilling to make friends with each other. [Female minority student]

Students’ open-ended responses, in combination with the quantitative data, support several of the main contentions of Tinto’s (1993) interactionalist theory. Most importantly, they confirm that students’ motivation to persist is connected to the interactions they experience with others in the program environment. Secondly, results show that both academic and social interactions within graduate programs are associated with students’ attitudes towards persistence. Finally, results illustrate that interactions with the entire graduate program community—including peers, faculty, advisors, and supervisors—are related to students’ global feelings about the program and field, including the desirability of persisting within them.

It is important to note the limitations on causal interpretations of these findings as a result of the cross-sectional, correlational design of this study. The analyses in this study indicate that integration and persistence-related attitudes are strongly linked; however, because all measures were taken concurrently, it is impossible to establish which preceded the other. Nevertheless, it should also be noted that in their open-ended responses, students described interactions in the

\textsuperscript{3} Students’ comments are identified only by gender and by whether they were members of any underrepresented group. This reflects a desire to protect students’ privacy. The researcher felt that providing information about individual students’ number of memberships in underrepresented groups could render students identifiable given the low base rates of multiply underrepresented students.
program as *leading to* their attitudes towards persistence or suggested that improved interactions would *lead to* increases in student persistence, motivation, or satisfaction with their program experiences. Although causality must be empirically established in longitudinal or experimental studies, this implies that graduate programs may be able to influence students’ attitudes towards persistence through the types of interactions they structure into their program.

*Advising and mentorship matter.* One critical type of interaction incorporated in the structure of most graduate programs is advising/mentoring by faculty. Both quantitative and qualitative data in this study confirm that satisfaction with advising/mentoring relationships played a significant role in students’ program experiences and attitudes towards persistence. Students’ open-ended responses illustrate the ways that advising/mentoring impacted them, as well as the qualities students valued in their relationships with faculty advisors/mentors:

A good relationship with a mentor is very important. Mentor characteristics such as supportive, gets along with others, and a genuine interest in students facilitates good working mentor-student relationships. Such characteristics should also be considered for new faculty hires. Frequent praise and recognition from mentors for hard work is essential. [Female minority student]

[A]dvisors/mentors should work toward *facilitating* students' progress, and this should be considered to be a worthwhile part of being a professor. Not answering emails, not getting back to students in a timely manner on paper drafts, and not giving guidance re: research and department policies slows down our progress through the program. [Female minority student]

It is important to be present and involved with your student. As a first year student with no other students in my lab, I feel alone and lost much of the time. It would be helpful if my mentor were more involved in my experience. [Female majority student]

These comments illustrate that students’ advising/mentoring experiences were affected by both psychosocial (e.g., support, encouragement, interest) and instrumental (e.g., provision of information, feedback, practical guidance) aspects of the relationship, consistent with prior
literature (Forehand, 2008). Such findings also support Tinto’s (1993) suggestion that social and academic integration is highly interrelated for graduate students.

Interestingly, several students noted that their relationship with a faculty advisor/mentor played a critical role in buffering the negative effects of interactions with others in the program:

MENTORSHIP is vital to a graduate student's experience and to the development of self-efficacy. In my case, my first major professor was 98% administrator who wanted to deal with me and my professional development via e-mail only. I could have never imagined in my wildest dreams the kind of disrespectful treatment that I received. It was truly a horrible experience. I have recently changed major professors and this is the ONLY reason why I am still in this program. I am very satisfied with my new professor and because of this relationship, many aspects of the program have changed for the better. [Female minority student]

One of the professors has been a supportive and challenging mentor. He has encouraged great personal and professional growth in me and has encouraged me to grow into a confident professional I feel is consistent with who I am as a person. Another professor and her attitude toward pushing her preferred agenda and approach in both classes and clinical work has contributed to my burn out (several times) and has led to concerns about whether I was in the right field and contributed to my feelings of insecurity and feeling belittled. On the whole, the department is impersonal and not supportive of students, so my mentor was the only one who helped me deal with these difficult issues. [Female majority student]

My comments here have been largely driven by a negative social environment in my first year class. My school's academic standards and faculty are very good. In terms of my thoughts of leaving the program, I am staying for one reason - my mentor. [Female majority student]

Remarkably, all three students identified their mentor as the sole person who changed their attitudes about persisting in the program. These quotations raise the possibility that relationships
with advisors/mentors may have stronger effects when students experience difficulties relating with other students or faculty, a possibility that has been raised in prior theoretical writings on advising and mentoring (Forehand, 2008; Redmond, 1990). The current study did not assess this possibility of such an interaction, and it remains a question for future research.

Together, the quantitative and qualitative data in this study clearly indicate that advising/mentoring relationships with faculty matter to students’ satisfaction with their program, and in some cases, made the difference between persisting in and leaving the program. Yet should be noted that students’ sense of program community was at least twice as strongly associated with their persistence-related attitudes as was advisor/mentor satisfaction. Furthermore, in their open-ended responses, students mentioned their experiences with peers, faculty in general, administrators, or “the program” much more frequently than they mentioned advisors/mentors. Such findings depart from prior reports that doctoral students’ relationship with their mentor/advisor is one of the most, if not the most important influence on student persistence (Bair & Haworth, 1999). Perhaps this is because prior studies have not quantitatively assessed students’ sense of program community or integration at the level of the program. The present study provides preliminary evidence that although advisors/mentors play significant and sometimes decisive roles in student persistence, in general, students’ integration at program level may have a stronger role. This appears reasonable, given that advisors/mentors are one key member within the context of a larger community with whom students interact when forming attitudes about the graduate program and the desirability of persisting within it.

Nevertheless, several measurement issues in this study may have obscured or attenuated the effects of advising/mentoring. First, advising/mentoring relationships were assessed by a single-item, global rating of relationship satisfaction. Such a measure cannot capture the variability of individual advising/mentoring relationships in terms of frequency of interaction, quality of interaction, and functions served by the relationship. Furthermore, individual respondents may have rated their global satisfaction with the advising/mentoring relationship based on different criteria. These issues may have led to greater measurement error and lowered likelihood of detecting clear effects. Secondly, students may receive formal or informal advising/mentoring from multiple sources (e.g., faculty, supervisors, peers, and external sources), each of which may impact students. By asking students to focus on their relationship with one faculty member, the measure used in this study may have underestimated the overall
effects of advising/mentoring. Finally, perhaps related to these measurement issues, students’ responses for advising/mentoring satisfaction violated statistical assumptions. This may have resulted in unstable regression coefficients that under- or overestimate the true effects of this variable. Together, these issues suggest that further research is required to determine the relative influence of sense of program community and advising/mentoring relationships on students’ persistence-related attitudes. In any case, findings of this study suggest the need for future studies of student persistence to consider students’ integration at both the advising/mentoring relationship and the program community levels.

*It takes a community to raise a graduate student.* As previously noted, quantitative findings suggest that students’ social and academic interactions across the graduate program community are highly salient to students’ commitment to, satisfaction with, and persistence in their programs. Students’ open-ended responses reinforce the quantitative data; of all of the comments respondents provided, the majority centered on ways that program interactions affected them or could be altered to improve student retention and experiences.

Specifically, most of students’ open-ended responses were concerned with ways that graduate programs enact members’ relationships, roles, and responsibilities to one another. These comments seemed to reflect students’ perspectives on how positive graduate communities function and how they can be created through program structure, culture, and practices. The following specific suggestions were given repeatedly: provide opportunities for social and academic interactions within and between cohorts, as well as between students and faculty; reduce class size; foster a collaborative and collegial rather than competitive working environment; treat students with professionalism and respect; provide positive feedback to students; support students’ individual needs and interests; promote self-care and work-life balance; ensure that expectations for workload and timelines acknowledge students’ other responsibilities and the availability of program resources; provide clear information and structure for navigating the program; hold students to consistent standards; improve or advocate for better student funding; invite student feedback and involvement in department decision-making; provide persons for students to approach confidentially to discuss problems; ensure accountability for quality learning experiences and mentorship; and implement similar standards for professional and ethical behavior across students, faculty, and administrators. Students
seemed to believe that attention to these aspects of their program would improve students’ satisfaction, motivation, development, and retention in programs.

One major theme highlighted by students was the degree of interactivity and cohesion they felt in their programs. Students desired for their programs to foster greater connectedness and engagement between members:

Integration among different cohorts is so very important for learning about professional and educational expectations; requiring a mix of classes that encourages students of different years to interact would have been very beneficial to me during my first year. [Female majority student]

Help students be connected to other students, encourage them to talk about their relationships with one another and to engage one another. Competition among students, while necessary and often beneficial, can have undesirable effects to isolate students rather than encourage collegiality. [Male minority student]

I wish more faculty/professors would reach out to students on a personal level, especially students in a tight-knit group like small [degree type] programs. Simple things like checking in with them and asking how they are managing the workload or planning events for the cohort to get together with them would be very helpful. [Female majority student]

Try to make the program more of a community by reducing conflict between faculty members and involving students in department decision making. [Male minority student]

Students seemed to wish for relationships that extend beyond simple academic requirements, and create deeper personal and professional connections between graduate program members. Their examples show that students feel such relationships would enhance their professional development and program experiences.

A second major theme expressed by students was the degree to which they felt their graduate program valued students. Based on program interactions they experienced and
observed, students seemed to infer whether students’ needs, perspectives, and development were important to their programs:

Be more student-focused and listen to students needs. Pay attention to how faculty are treating students and make changes accordingly. [Female minority student]

The program needs to value students more, be more in tune with what students will need from the program to fulfill their future career goals, and build better mentoring relationships between students and faculty. [Female majority student]

To be more willing to listen to feedback from students and at least attempt to negotiate ways to approach problems that might be mutually satisfactory. Also, some faculty and administration have a very superior attitude toward students rather than the collaborative one I had expected. [Female minority student]

Treat students as colleagues rather than subordinates. [Male minority student]

Students’ comments suggest that they see themselves as part of graduate communities, and they have expectations for ways they should be treated as members. In particular, students wanted faculty/administrators to convey greater respect for students and concern for their experiences in the program. In accordance with this theme, a large number of students expressed the desire for faculty/administrators to invite student feedback or take student feedback more seriously. Many students seemed to feel that their perspectives were not valued, and by extension, that students had a marginal role within the program community. This appeared to negatively impact their satisfaction and investment in the program.

Clinical psychology graduate students appear to be saying that they are affected by the ways their program defines its interaction as a community, as well as the place they are accorded within this community. For some students, these issues combine to produce an overarching sense of the degree to which their program community cared about them:
It would help to feel like the faculty really care about the student’s needs, professional and personal development, by such means as striving for competitive placements/stipends, offering diverse and quality courses, and being available to students, fostering an atmosphere of genuine care. The program as a whole is good, but the faculty differ widely. [Female minority student]

Classes have been geared toward getting people through or weeding people out, rather than facilitating critical thinking, learning, and growth. The atmosphere overall de-emphasizes differences to the extent that individuals do not feel welcome or comfortable to be themselves and express their opinions. For improvement, I strongly recommend smaller class sizes, more discussion based courses, and community building by decreasing our emphasis on cold professionalism and increasing our emphasis on personal/professional relationships. [Female majority student]

I think it is important to establish a sense of professionalism throughout the program. As students, it is easy to understand that we act in a professional manner towards our clients. Yet, we often forget that learning empathy, understanding, and respect should apply, not only with clients, but also with our family, friends, coworkers, fellow students and colleagues. The lack of application of this idea has made it very hard for me to identify closely with my classmates and become part of the ‘whole’. [Female majority student]

As alluded to by the last respondent, a sense of care may be particularly important to students within clinical psychology because “caring” is a salient professional behavior (Schaefer & Schaefer, 1993). Indeed, many of students’ open-ended suggestions in this study were very similar to those found in Schaefer & Schaefer’s (1993) qualitative study of clinical psychology graduate students; however, rather than asking students about how programs could improve student retention and experiences, Schaefer & Schaefer asked students to identify faculty and student behaviors that communicate a sense of care for students. In other words, it appears that clinical psychology students have similar visions of program communities that care and those that promote student retention/satisfaction.
Overall, qualitative results suggest that students feel more invested in programs that communicate investment in them—through helping them feel connected, valued, and cared about within the program community. A few students indicated how their graduate program’s structure, culture, or practices conveyed this message to them:

One of the biggest supports to me has been the open-door policy of the core faculty at [graduate program]. The faculty, so far have all been willing to spend time addressing any concern brought to them by a student. [Male minority student]

The first two years of my program, I felt completely immersed in work, with little to no social life. My program was young and attempting to earn APA accreditation at the time. Luckily, the program listened to student feedback and made some changes that resulted in a more well-rounded first and second year experience… The small student/professor ratio has been extremely positive for allowing students to receive personalized training and making the program feel like a "family." [Female minority student]

I can think of nothing [to improve student experiences or retention]. There is a very supportive atmosphere in an APA award winning junior colleague model. New students are assigned a graduate "buddy" who contacts them prior to their arrival and helps them with everything from course questions to where the best restaurants can be found. The Department sponsors regular social events that all of the 4 program areas participate in. Office assignments also mix up the program areas so that we get to know each other. We also take classes taught by faculty in the different areas. [Female minority student]

Students’ comments help to shed light on what being socially and academically integrated in a program means to clinical psychology graduate students, as well as how it is and is not accomplished. With this grounding, we now turn to the main concern of this study, that of how students’ membership in underrepresented groups influences their experiences of integration and persistence-related attitudes in clinical psychology programs.

Difference as a Detriment?
The major purpose of this study was to test Tinto’s (1987, 1993) assertion that students
with greater cultural differences from dominant graduate communities would exhibit decreased
integration in graduate communities, and that this would account for less favorable attitudes
towards graduate persistence among such students. This study conceptualized these cultural
differences in terms of cumulative diversity, students’ number of intersecting memberships in
traditionally underrepresented groups in academia. Perhaps the most interesting finding of this
study is that cumulative diversity was associated with a lower sense of community in the
graduate program, lower satisfaction with the advising/mentoring relationship, and lower
commitment to and satisfaction with graduate study—but strikingly, only for men. Mediation
analyses indicate that more diverse men’s lower commitment to and satisfaction with graduate
study was fully accounted for by the lower sense of program community they experienced.
Additionally, more diverse men’s intentions to quit the program were indirectly increased by the
lower sense of program community they experienced. Although results of this cross-sectional
study cannot not establish causality, they suggest that problems in integration—and more
specifically, in sense of program community—may constitute a potential mechanism through
which more diverse male students develop negative attitudes towards graduate persistence.

Findings among men support Tinto’s (1987, 1993) proposals about relationships between
students’ cultural differences, integration, and attitudes towards persistence. Yet findings among
women challenge Tinto’s theory, as women’s membership in underrepresented groups was
unrelated to their integration or persistence-related attitudes. To this researcher’s knowledge,
this is the first quantitative study to report greater disadvantages for more diverse men than for
diverse women, and therefore this finding merits further theorizing and discussion.

A glass slide for diverse men. Results challenge the idea of a universal ‘glass escalator’
for men. Overall, male students did not experience a significant advantage in their integration or
persistence-related attitudes over female students. Yet sex and membership in underrepresented
groups appear to interact in complex ways to affect the experiences and attitudes of clinical
psychology graduate students. Although few group differences reached significance, the pattern
of means is important to note. As shown in Figures 5 through 8, majority men (those from no
underrepresented groups) consistently averaged the most favorable integration and persistence-
related attitudes among all groups, and multiply diverse men (those from two or more
underrepresented groups) consistently averaged the least favorable integration and persistence-
related attitudes across all groups. With scores falling in between these levels, majority women and multiply diverse women tended to score similarly to one another. This suggests that compared to same-sex majority peers, more diverse men experience a greater decrement in their integration and persistence-related attitudes than do more diverse women. One might characterize this effect as a ‘glass slide’ for men as their membership in underrepresented groups increased. That a similar result did not occur for women is particularly surprising given the ‘chilly climate’ reported by women and minorities in academia, as well as prior studies suggesting particular disadvantages for underrepresented women (Hall and Sandler, 1984, cited in Morris, 2003). How can we account for such findings?

Perhaps the simplest explanation of the interaction between sex and cumulative diversity is some form of sampling or response bias. Because this sample was self-selected, students with different characteristics measured in this study may have chosen to participate for different reasons, and this may influence the pattern of responses received. Yet it should be noted that the invitation for study participation did not mention students’ gender or membership in underrepresented groups. Therefore, it is unclear why self-selection would produce differential results along these variables.

Differences in sample size by sex and cumulative diversity may produce a more concerning form of sampling bias. The sample of men in this study was much smaller than the sample of women, and a low proportion of each sample were at the higher levels of cumulative diversity (as would be expected due to low base rates of men and students from underrepresented groups in clinical psychology programs). This means that results for men and for students at higher levels of cumulative diversity—and most particularly, for men at the higher levels of cumulative diversity—are subject to greater influence by outliers and by the particular individuals who responded. Accordingly, it is possible that the association of cumulative diversity with men’s integration and persistence-related attitudes was produced by an unusual male sample.

Although an unusual male sample cannot be ruled out without replication of findings, some features of the data discount this explanation. Comparisons of the male and female samples demonstrated that they did not differ along any of the variables used in mediation analyses. Visual inspection of the distributions of integration variables and persistence-related attitudes by sex and levels of cumulative diversity suggested that results were not attributable to
outliers. This indicates that the male sample was neither unusual with respect to women, nor was it unduly influenced by unusual individual scores. Nevertheless, future replication of the findings in this study, preferably in samples that overrepresent men and students at higher levels of cumulative diversity, will be able to more definitely establish whether results reflect actual population differences.

If there are true population differences by sex and cumulative diversity, one possible explanation may relate to the numerical underrepresentation of male students within modern clinical psychology programs. Approximately 21% of 2008 applicants to professional psychology internships were male (Association of Psychology Postdoctoral & Internship Center, 2008), which is close to the 18.5% male respondents in the current investigation. Such gender imbalances in clinical psychology doctoral programs are likely to result in a relatively small total number of men within a given doctoral program, particularly within smaller programs. As a result of these smaller base rates of male students, it may be relatively more difficult for male than for female students from underrepresented groups (and in particular, from multiple underrepresented groups) to find culturally similar others within their graduate program with whom they can identify and form relationships. In other words, consistent with Tinto’s (1993) theory, perhaps diverse men experience greater barriers to integration because they differ more from dominant graduate communities than do diverse women.

The pattern of results in this study presents two main challenges to this explanation. Most notably, overall men and women do not differ in their integration, even though men are considerably underrepresented in clinical psychology program communities whereas women are considerably overrepresented. Secondly, multiply diverse women are likely to be highly underrepresented in clinical psychology program communities, yet they reported similar integration to majority women. This suggests that underrepresentation in program communities cannot fully account for the pattern of results found in this study. The role of underrepresentation in this difference could be better defined through future studies across different graduate program fields that are female-dominated, male-dominated, or have approximate equal gender distributions.

It must also be noted that underrepresentation explanations imply that students can integrate only with others in their programs who share all of their demographic characteristics. Certainly, this is neither necessary, desirable, or in many cases possible. Although student
integration may be facilitated by demographic similarity, interactions within graduate programs can and should provide all students—regardless of their demographic characteristics—with a similar sense of support and membership in their programs. The current findings suggest that more diverse women are encountering such experiences in their programs, whereas more diverse men are not, although the mechanism for this difference remains unclear.

A final potential explanation for the current findings is male gender role conflict as it relates to the intersection of gender, cultural, and disciplinary norms. Wester & Vogel (2002) suggest that male students may experience particular problems within the field of clinical psychology, not only because men are underrepresented, but also because psychology graduate training emphasizes traditionally feminine behaviors that conflict with traditional male gender role socialization. Accordingly, male students’ expression of their gender socialization may be perceived by others within psychology graduate programs as pathological or inappropriate behavior for aspiring therapists (Wester & Vogel, 2002). It certainly seems possible that such judgments could result in traditionally socialized men feeling a decreased sense of membership and connectedness in clinical psychology programs. Furthermore, the specific content of some traditional male gender norms (e.g., an emphasis on dominance, competition, and emotional constriction) may lead to difficulties for male clinical trainees in building relationships with clients (Wester & Vogel, 2002); it seems reasonable to suppose that these same norms might also result in greater difficulties forming relationships with others in the graduate setting.

Yet why should more diverse men experience such problems, whereas majority men experience similar outcomes to women? The literature on gender role conflict suggests that because gender role norms are culturally-specific, gender role conflict takes different forms depending on memberships in other cultural groups (Wester, 2008). Research indicates that some men from minority groups struggle not only with conflict between male gender norms and situational expectations, but also with conflict between male gender norms for their minority culture and the dominant culture (Wester, 2008). Accordingly, perhaps more diverse men must negotiate a greater variety of gender and cultural norms, thereby increasing the chances that these norms may conflict with each other and/or with the norms of clinical psychology programs. Such conflicts could produce stresses for more diverse male students that are not experienced by their female and majority group colleagues, potentially resulting in feelings of disconnection and isolation. Furthermore, intersections between gender role norms and culture may render more
diverse men particularly unlikely to seek support from others within clinical psychology programs. Traditional male gender norms emphasize avoiding expression of feelings and maintaining status in the eyes of others (Wester, 2008; Wester & Vogel, 2002). In addition, cultural minorities may have difficulty trusting majority group members due to power imbalances and historical oppression (Brinson & Kottler, 1993). Perhaps these two sets of norms combine to render more diverse men particularly wary of expressing vulnerability to others in their programs, and therefore less likely to experience supportive program relationships. Of course, these explanations are purely speculative and should be explored in future research. Replicating this study using measures of gender role conflict, cultural conflict, and help-seeking would help to assess whether gender role conflict represents a potential explanation.

Experiences of difference. Unfortunately, students’ responses to open-ended questions did not clarify the sex differences found in the effects of cumulative diversity. Although underrepresentation was mentioned or alluded to by a few male and female students, male gender role conflict was not mentioned by any student. Indeed, men and women mentioned diversity, cultural difference, or specific underrepresented groups in their responses at roughly equal rates, and they expressed similar themes. Students’ responses about diversity issues reflected a desire for greater support, sensitivity, and value for their experiences as cultural minorities:

Multicultural awareness and competency extends to how students are taught and related to in the classroom, not just how therapists sit with clients. Applying multiculturalism in education has no "everytime you have Situation A, do Intervention B" type of answer; it involves personal introspection of attitudes and values, as well as building knowledge and incorporating a variety of skills. [Male minority student]

I think that if the faculty is interested in creating and cultivating diversity in the program that there should be some type of support set up for minorities. [Male minority student]

I think it would be important to ask questions about whether or not individuals with other ethnic identities feel that their cultural differences/perspective are valued or even noted
within their program. My program does not at all and it is a great disservice to the students and the program in general. [Female minority student]

[Pay more attention to the dynamics that are going on in between students and offer support, especially between minority and non-minority groups. I think every program should make an effort to address the concerns of minority students in a safe atmosphere. [Female minority student]

Other themes mentioned by multiple students included feeling isolated from other students, craving more experiences with and acknowledgement of diversity, and desiring a more accepting environment. These comments provide some support for Tinto’s (1987, 1993) suggestion that underrepresented students may experience incongruence and isolation from dominant graduate communities. Such comments are also consistent with difficulties reported by minority students in prior literature (e.g., Brus, 2006; Gay, 2004; Vasquez et al, 2006). Finally, it also worth noting students’ comments echo the themes identified in the previous section on sense of program community—a desire for greater connectedness, value, and care—as applied to students’ cultural identities rather than to students as a group. This suggests that students would like more attention paid to the place of both students and culture within graduate program communities.

Interestingly, several students commented on differences that they did not tie specifically to culture. Most, but not all of these comments were provided by students from at least one underrepresented group. Across such comments, students expressed the belief that differences—including differences in personal traits, beliefs, or career interests—were unwelcome in their own clinical psychology programs:

I think that having a different perspective in my program is a detriment. Meaning, that if you come from a different background or have a different worldview, your perspective is not valued. There are some students who are favored because they do certain things in a certain way. Students who complete their work in a slightly different way are trouble makers, even if the quality of their work is the same. [Female minority student]
I wish administrators and faculty celebrated and encouraged our unique viewpoints and characteristics, rather than making us feel that those parts of ourselves are liabilities. [Female minority student]

I think it's sad that faculty discourage the pursuit of any areas of interest outside of their own. [Male minority student]

They have forced students to conceal their true feelings out of fear. If you do not toe the line of expected beliefs then you will be ostracized by staff and students. [Male minority student]

These comments indicate that a number of students experience conflict between their identities and the expectations of clinical psychology programs. This seems to bear on students’ integration in terms of student-program match, a factor previously found to relate to persistence among counseling education students (Hoskins & Goldberg, 2005). Such comments may also reflect upon disciplinary characteristics, insofar as they support the conclusion of the Final Report of the APA Presidential Task Force on Enhancing Diversity that “psychology continues to typically view differences, disabilities, and diversities as problematic” (Suinn et al., 2005, p. 18).

Secondary Findings

While the background covariates were not a focus of this study, it should be noted that results from these variables partially support and partially disconfirm Tinto’s (1993) predictions. Contrary to Tinto’s (1993) theory, prior degree status and stage of doctoral study were generally unrelated with students’ integration. The only exception was that male students in the candidacy stage of doctoral study felt less of a sense of program community than did their peers at other stages of progress through the program. This is consistent with Tinto’s (1993) suggestion that students in the candidacy stage may have lower interaction with the wider program, yet it does not explain why the same effect did not occur for women.

In accordance with Tinto’s (1993) theory, prior degree status and stage of doctoral study were associated with some significant differences in students’ persistence-related attitudes. Men
and women who entered their current program with a prior master’s degree were more committed to and satisfied with their program, as well as less likely to express intentions to quit the program. Compared to same-sex peers at other stages of progress through the program, women in the building competencies stage (post-first year, pre-candidacy) expressed lower satisfaction with and commitment to their programs, and both men and women in the candidacy stage expressed lower intentions to quit the program.

The beneficial effects of a prior master’s degree on students’ persistence-related attitudes are interpretable through Tinto’s (1993) suggestion that prior schooling, and the skills and abilities developed through it, may directly contribute to positive persistence-related attitudes. Furthermore, this finding makes sense with regard to Tinto’s (1993) suggestion that students weigh the costs and benefits of persisting within and leaving their programs. Students who enter doctoral programs without a prior master’s degree gain some benefit by leaving early with a nonterminal master’s degree; however, this is of little benefit for students who entered the program already holding a master’s degree. Similarly, because students in the candidacy stage are close to completion, they may perceive relatively higher benefits of persisting and higher costs of leaving than do students in earlier stages; this may account for candidacy students’ lower intentions to quit their programs. Tinto’s (1993) theory does not provide a ready explanation for why female students in the building competencies of doctoral study experienced lower satisfaction and commitment than did other students. Further study is necessary to establish whether this effect will be found in other studies, as well as to illuminate factors leading to this outcome.

Implications for Student Retention

Findings of this study suggest that it may be useful to conceptualize persistence as resulting from the dynamic interplay between students and their graduate program communities—a “fit” to which graduate programs contribute through the enactment of program structure, culture, practices, and relationships. Students’ interactions with their advisors/mentors and wider program communities appear to be critical to students’ satisfaction, commitment, and desire to persist within their programs. This suggests that that all members of graduate programs (students, faculty, advisors/mentors, and administrators) may contribute to student persistence.
through the community they co-create, and the degree to which this community integrates individual students. In this way, student retention is truly a shared responsibility.

Taking this idea seriously has several implications for the ways that students and programs interact. For program administrators and faculty, this suggests the value of intentionally structuring the program in ways that foster connection between members, show value for students, and convey a sense of care. Students’ suggestions provide a starting point for ways that programs might alter their structure, culture, and practices to this end. Work in the areas of community psychology, organizational psychology, and educational psychology may also be helpful in providing evidence-based suggestions for program, classroom, and extracurricular strategies to build community. Faculty members should recognize the significant impact they can have on students, particularly when students experience difficulties feeling a sense of connection with others in the program. It may be helpful for faculty to regularly initiate discussions with advisees/mentees about their social and academic experiences within the program, and to offer support, guidance, or advocacy when necessary to help students address problems. However, perhaps the strongest implication of these results is for students. The importance of integration to persistence-related attitudes suggests that prospective students should carefully consider their social and academic fit not only with a particular advisor/mentor, but with the wider community of the particular program. Students who are already in a graduate program should recognize that it may be important to sustaining their own motivation for them to actively cultivate relationships and connections to the program. Students should also be aware that their interactions may support or hinder the motivation of their peers, and should be encouraged to see themselves as responsible to each other as members of a common community. For all parties, results point to the importance of recognizing the social aspects of professional socialization rather than treating graduate school as a purely academic endeavor.

Results suggest that multiply diverse men in clinical psychology doctoral programs are particularly at risk for unfavorable persistence-related attitudes that are linked with a low sense of community in the program. Accordingly, whereas overall program retention seems likely to benefit from explicit efforts to enhance sense of program community, multiply diverse men may be most in need of efforts in this regard. For instance, faculty might offer a gender and diversity discussion group, include course content and class discussions specific to issues of diverse men, or specifically make efforts to build relationships with diverse male students who seem less
connected with others in the program. It may be useful for individual clinical psychology
graduate programs to review their own program attrition data in order to determine whether
diverse men are departing from programs at higher rates than other students. If this is the case, it
would confirm a need for better outreach or support services to diverse men in order to retain
them in programs. Further research is needed to understand the specific factors that led multiply
diverse men to have more negative experiences of advising/mentoring relationships, sense of
program community, and persistence-related attitudes than did other students, as well as to
establish whether this effect will be found in other studies.

Although more diverse women did not report poorer integration or persistence-related
attitudes, this does not necessarily indicate that programs are adequately incorporating diverse
female students. That the theme of a negative environment for difference was expressed by a
number of male and female students, and particularly by students from underrepresented groups,
should be of concern to directors of clinical training and program administrators. Such an
atmosphere may negatively impact not only student integration and persistence-related attitudes,
but also students’ ability to develop into culturally competent clinicians, educators, and
researchers (Sanchez & Fried, 1997). It may also violate the Guidelines and Principles for the
Accreditation of Programs in Professional Psychology (APA Council of Accreditation, 2000,
2008):

Domain A: Eligibility.

(5) The program engages in actions that indicate respect for and understanding of cultural
and individual diversity. Throughout this document, the phrase “cultural and individual
diversity” refers to diversity with regard to personal and demographic characteristics.
These include, but are not limited to, age, color, disabilities, ethnicity, gender, language,
national origin, race, religion, sexual orientation, and socioeconomic status... (p. 9)

Domain D: Cultural and Individual Differences and Diversity.

(1) The program has made systematic, coherent, and long-term efforts to attract and
retain students and faculty from differing ethnic, racial, and personal backgrounds into
the program. Consistent with such efforts, it acts to ensure a supportive and encouraging learning environment appropriate for the training of diverse individuals and the provision of training opportunities for a broad spectrum of individuals. Further, the program avoids any actions that would restrict program access on grounds that are irrelevant to success in graduate training. (p. 14)

It should be noted that the characteristics of cultural and individual diversity listed in Domain A (with the exception of caregiver status) were the same demographic groups included in this study’s measure of cumulative diversity, and that all respondents in this study were students in APA-accredited doctoral programs. The fact that greater cumulative diversity for male respondents was consistently related to poorer sense of program community, poorer relationships with advisors/mentors, and lower satisfaction with and commitment to the program suggests that at least some currently accredited programs are failing to meet APA guidelines. Additionally, both male and female minority students’ open-ended responses clearly reflect some concerns about whether programs are successful in “act[ing] to ensure a supportive and encouraging learning environment” for diverse students (APA Council of Accreditation, 2000, 2008, p. 14).

Limitations and Suggestions for Further Study

Causality. The most important limitation of this study is that its cross-sectional, correlational design cannot establish causality. It is possible that the form of the mediation model was misspecified or that other important variables were excluded that might change relations in the model. Future studies can more clearly establish causality through using a longitudinal design, manipulating variables of interest, and including more measures or controls to rule out alternative explanations.

Generalizability. The generalizability of this study is limited by the lack of random selection at both the program and student levels, and by low response rates at each of these levels. The recruitment process used in this study required the assistance of both program DCTs and student representatives; unfortunately, only 31.3% of initially contacted programs ultimately distributed the request for participation, primarily because the researcher’s requests for assistance received a low response from contacted DCTs. DCTs/student representatives who chose to assist with this study may have come from programs with different characteristics than did those who
did not, and the programs sampled may reflect this bias. Furthermore, respondents were a self-selected group of students who chose to read and respond to a request for participation sent to them through their student representative. Only 17.8% of eligible students sent the request for participation chose to participate, which constitutes a quite low response rate. Students who chose to participate may have had different characteristics, attitudes towards retention, and experiences in their programs than those who chose not to participate, thereby biasing the pattern of results attained. Thus, results obtained in this study may not generalize to nonparticipating clinical psychology doctoral students or programs.

Missing data in this study also affect study generalizability. Students were instructed to skip any item that made them uncomfortable, and a number of respondents were eliminated from analysis because they chose to skip items required for analysis. Nonresponse rates to the item on disability history were notably higher than to any other item on the survey, and were correlated with students’ membership in racial minority groups. As a result, the pattern of results obtained in this study may underrepresent the perspectives of racial minorities and respondents who were uncomfortable responding to the item on disability history.

Finally, generalizability is also limited by the characteristics of the samples obtained. As noted previously, the sample included a low percentage of male students and students at higher cumulative diversity scores. This is to be expected, as both men and students from other underrepresented groups (and particularly, from multiple underrepresented groups) would be expected to occur at low frequencies within clinical psychology graduate programs. Nevertheless, the relatively small number of respondents who were male and or from higher cumulative diversity scores may produce results that do not reliably generalize to similar populations who were not sampled.

Several suggestions may improve the generalizability of future studies in this area. First, program-level selection biases may be eliminated by purchasing a random sample of the APA’s mailing addresses for current graduate students and contacting them directly, rather than recruiting students through DCTs and student representatives. Secondly, response rates may be enhanced through offering respondents compensation or other incentives to participate. Thirdly, the reliability of results would be enhanced through targeted recruitment efforts designed to oversample men and students from known underrepresented groups.

Measurement. Most of the measures used in this survey were created or adapted for this
study, and none had previously been used with clinical psychology doctoral students. Accordingly, the measures used in this study require further validation with this population in order to increase confidence in results. Specific measures in this study may also benefit from further refinement. In particular, a multi-item, validated scale of advisor/mentor relationships may be helpful for future studies. Additionally, it would be useful to measure students’ perceived differences from their graduate program community along both demographic and non-demographic (e.g., clinical versus research focus, professional interests, work style, personality traits, etc.) variables in addition to the more objective measure of cumulative diversity.

Excluded variables. Funding and financial resources are aspects of Tinto’s (1993) model for graduate students that were not included in the present study due to practical limitations. However, a large number of respondents raised the issue of funding and financial strain in their open-ended responses. The frequency with which students raised this response suggests that future studies or student persistence or retention would benefit from including measures of these variables.

Conclusion

This survey study contributes to research on doctoral student persistence, student diversity, and clinical psychology training. Findings confirm the importance of advising/mentoring relationships and connection to the graduate program community to students’ attitudes towards persistence, and suggest that such relationships may be particularly difficult for more diverse men to establish. This research underscores the need to consider students’ multiple cultural identities as well as their sense of community in graduate programs. Students appear more satisfied and invested in programs in which they feel connected to others, valued as members, and a sense of care for their needs and experiences. Clinical psychology graduate programs may be able to reduce attrition through attending to these psychosocial elements of the program community.
References


Golde, C. M. (2000). Should I stay or should I go? Student descriptions of the doctoral attrition


University of Washington. (2005). Mentoring: How to mentor graduate students – A faculty


Table 1

*Descriptive Statistics for the Whole Sample*

<table>
<thead>
<tr>
<th>Variable Used for Model</th>
<th>Statistics for Categorical Variables</th>
<th>Statistics for Continuous Variables</th>
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<tr>
<td>Variables Used for Model</td>
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<tr>
<td>Sex†</td>
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<tr>
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<td>1.04</td>
</tr>
<tr>
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<td>Advisor/mentor satisfaction</td>
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<tr>
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†Dummy-coded variable.

• Used as the reference category for the dummy-coded variable.
Table 2

ANOVA of Integration and Persistence-Related Attitudes by Sex and Levels of Cumulative Diversity

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<th>MS</th>
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<td>973.75</td>
<td>6.38**</td>
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<td>10.24</td>
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<td>133.19</td>
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* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$
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<td>330</td>
<td>74.83</td>
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<td></td>
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<td>2+ underrepresented groups</td>
<td>20</td>
<td>66.25</td>
<td>15.80</td>
<td>2.80</td>
<td>1.74</td>
<td>55.10</td>
<td>12.36</td>
<td>1.39</td>
<td>0.30</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 underrepresented groups</td>
<td>98</td>
<td>76.56</td>
<td>12.71</td>
<td>3.90</td>
<td>1.12</td>
<td>58.93</td>
<td>9.44</td>
<td>1.38</td>
<td>0.26</td>
<td></td>
</tr>
<tr>
<td>1 underrepresented group</td>
<td>97</td>
<td>73.16</td>
<td>11.93</td>
<td>3.77</td>
<td>1.32</td>
<td>56.95</td>
<td>9.82</td>
<td>1.41</td>
<td>0.26</td>
<td></td>
</tr>
<tr>
<td>2+ underrepresented groups</td>
<td>74</td>
<td>74.55</td>
<td>12.93</td>
<td>3.65</td>
<td>1.32</td>
<td>58.32</td>
<td>9.89</td>
<td>1.34</td>
<td>0.26</td>
<td></td>
</tr>
</tbody>
</table>
Table 4

Sex Differences in Sample Characteristics

<table>
<thead>
<tr>
<th>Category</th>
<th>% Men (n = 61)</th>
<th>% Women (n = 269)</th>
<th>Comparison Statistic‡</th>
<th>p (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior degree status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did not enter with prior master’s degree</td>
<td>86.9%</td>
<td>87.4%</td>
<td>FET</td>
<td>.531</td>
</tr>
<tr>
<td>Prior master’s degree</td>
<td>13.1%</td>
<td>12.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage of doctoral study</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage 1 of doctoral study</td>
<td>27.9%</td>
<td>29.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage 2 of doctoral study</td>
<td>29.5%</td>
<td>33.5%</td>
<td>$\chi^2 = .741$</td>
<td>.690</td>
</tr>
<tr>
<td>Stage 3 of doctoral study</td>
<td>42.6%</td>
<td>36.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative diversity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 underrepresented groups</td>
<td>27.9%</td>
<td>36.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 underrepresented group</td>
<td>39.3%</td>
<td>36.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 underrepresented groups</td>
<td>21.3%</td>
<td>16.4%</td>
<td>$\chi^2 = 2.154$</td>
<td>.707</td>
</tr>
<tr>
<td>3 underrepresented groups</td>
<td>8.2%</td>
<td>8.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 underrepresented groups</td>
<td>3.3%</td>
<td>2.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underrepresented Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 years or older age at program entry</td>
<td>16.4%</td>
<td>8.6%</td>
<td>FET</td>
<td>.094</td>
</tr>
<tr>
<td>Racial minority</td>
<td>18.0%</td>
<td>11.9%</td>
<td>FET</td>
<td>.208</td>
</tr>
<tr>
<td>Non-US country of origin</td>
<td>4.9%</td>
<td>6.3%</td>
<td>FET</td>
<td>1.000</td>
</tr>
<tr>
<td>English as a second language</td>
<td>3.3%</td>
<td>3.3%</td>
<td>FET</td>
<td>1.000</td>
</tr>
<tr>
<td>Lower family SES background</td>
<td>16.4%</td>
<td>22.7%</td>
<td>FET</td>
<td>.307</td>
</tr>
<tr>
<td>Sexual minority</td>
<td>9.8%</td>
<td>10.0%</td>
<td>FET</td>
<td>1.000</td>
</tr>
<tr>
<td>Caregiver (current)</td>
<td>18.0%</td>
<td>5.2%</td>
<td>FET</td>
<td>.002</td>
</tr>
<tr>
<td>Disability (ever)</td>
<td>32.8%</td>
<td>36.4%</td>
<td>FET</td>
<td>.658</td>
</tr>
</tbody>
</table>

‡ Fisher’s exact test (FET) was used for 2 x 2 contingency tables and Pearson Chi-squared was used for other contingency tables. FET yields a p-value but does not yield a critical value.
**Table 5**

*Sex Differences in Loading of Underrepresented Groups on Cumulative Diversity Score*

<table>
<thead>
<tr>
<th>Underrepresented Group</th>
<th>Correlation with Cumulative Diversity Score</th>
<th>Difference of Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men $r(61)$</td>
<td>Women $r(269)$</td>
</tr>
<tr>
<td>30 years or older age at program entry</td>
<td>.39</td>
<td>.50</td>
</tr>
<tr>
<td>Racial minority</td>
<td>.36</td>
<td>.38</td>
</tr>
<tr>
<td>Non-US country of origin</td>
<td>.25</td>
<td>.42</td>
</tr>
<tr>
<td>English as a second language</td>
<td>.23</td>
<td>.39</td>
</tr>
<tr>
<td>Lower family SES background</td>
<td>.64</td>
<td>.50</td>
</tr>
<tr>
<td>Sexual minority</td>
<td>.26</td>
<td>.34</td>
</tr>
<tr>
<td>Caregiver (current)</td>
<td>.36</td>
<td>.44</td>
</tr>
<tr>
<td>Disability (ever)</td>
<td>.44</td>
<td>.41</td>
</tr>
</tbody>
</table>
Table 6
Descriptive Statistics and Correlations for Men

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Prior master’s degree</td>
<td>0.13</td>
<td>0.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Stage 1 of doctoral study‡</td>
<td>0.28</td>
<td>0.45</td>
<td>-0.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Stage 2 of doctoral study</td>
<td>0.30</td>
<td>0.46</td>
<td>0.07</td>
<td>-0.40**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Stage 3 of doctoral study</td>
<td>0.43</td>
<td>0.50</td>
<td>0.06</td>
<td>-0.54***</td>
<td>-0.56***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Cumulative diversity</td>
<td>1.20</td>
<td>1.05</td>
<td>0.07</td>
<td>-0.15</td>
<td>-0.19</td>
<td>0.32*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Sense of program community</td>
<td>75.05</td>
<td>13.36</td>
<td>0.10</td>
<td>0.28*</td>
<td>0.07</td>
<td>-0.32*</td>
<td></td>
<td>-0.59***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Advisor/mentor satisfaction</td>
<td>3.52</td>
<td>1.55</td>
<td>0.03</td>
<td>0.15</td>
<td>-0.08</td>
<td>-0.06</td>
<td>-0.39**</td>
<td>0.54***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Current commitment</td>
<td>59.64</td>
<td>10.67</td>
<td>0.22</td>
<td>0.15</td>
<td>-0.01</td>
<td>-0.12</td>
<td>-0.33*</td>
<td>0.74***</td>
<td>0.52***</td>
<td></td>
</tr>
<tr>
<td>9. Intention to quit (4th root)</td>
<td>1.35</td>
<td>0.29</td>
<td>-0.34***</td>
<td>-0.08</td>
<td>0.07</td>
<td>0.01</td>
<td>0.17</td>
<td>-0.52***</td>
<td>-0.46***</td>
<td>-0.76***</td>
</tr>
</tbody>
</table>

‡ This dummy-coded variable was the reference category, and therefore was not entered as a predictor in analyses.

*  \( p \leq .05 \)

**  \( p \leq .01 \)

***  \( p \leq .001 \)
Table 7
*Descriptive Statistics and Correlations for Women*

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Prior master’s degree</td>
<td>0.13</td>
<td>0.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Stage 1 of doctoral study ‡</td>
<td>0.30</td>
<td>0.46</td>
<td>-0.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Stage 2 of doctoral study</td>
<td>0.33</td>
<td>0.47</td>
<td>-0.06</td>
<td>-0.46***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Stage 3 of doctoral study</td>
<td>0.37</td>
<td>0.48</td>
<td>0.08</td>
<td>-0.50***</td>
<td>-0.54***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Cumulative diversity</td>
<td>1.04</td>
<td>1.04</td>
<td>0.12*</td>
<td>0.03</td>
<td>0.03</td>
<td>-0.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Sense of program community</td>
<td>74.78</td>
<td>12.54</td>
<td>-0.05</td>
<td>0.03</td>
<td>-0.06</td>
<td>0.04</td>
<td>-0.05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Advisor/mentor satisfaction</td>
<td>3.78</td>
<td>1.25</td>
<td>0.02</td>
<td>0.02</td>
<td>0.01</td>
<td>-0.03</td>
<td>-0.04</td>
<td>0.30***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Current commitment</td>
<td>58.05</td>
<td>9.70</td>
<td>0.16**</td>
<td>0.11</td>
<td>-0.17**</td>
<td>0.06</td>
<td>-0.03</td>
<td>0.66***</td>
<td>0.44***</td>
<td></td>
</tr>
<tr>
<td>9. Intention to quit (4th root)</td>
<td>1.38</td>
<td>0.26</td>
<td>-0.20**</td>
<td>0.04</td>
<td>0.11</td>
<td>-0.15*</td>
<td>-0.05</td>
<td>-0.55***</td>
<td>-0.34***</td>
<td>-0.79***</td>
</tr>
</tbody>
</table>

‡ This dummy-coded variable was the reference category, and therefore was not entered as a predictor in analyses.

* $p \leq 0.05$
** $p \leq 0.01$
*** $p \leq 0.001$
Table 8
Regression on Sense of Program Community for Men

<table>
<thead>
<tr>
<th>Predictor Statistics</th>
<th>Model Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
</tr>
<tr>
<td>Model</td>
<td></td>
</tr>
<tr>
<td>Background covariates</td>
<td></td>
</tr>
<tr>
<td>Prior master’s degree</td>
<td>.17</td>
</tr>
<tr>
<td>Stage 2 of doctoral study</td>
<td>-.19</td>
</tr>
<tr>
<td>Stage 3 of doctoral study</td>
<td>-.28</td>
</tr>
<tr>
<td>Cumulative diversity</td>
<td>-.52</td>
</tr>
</tbody>
</table>

*  p ≤ .05  
** p ≤ .01  
*** p ≤ .001
Table 9

*Regression on Advisor/Mentor Satisfaction for Men*

<table>
<thead>
<tr>
<th>Predictor Statistics</th>
<th>Model Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
</tr>
<tr>
<td>Model</td>
<td>3.02*</td>
</tr>
<tr>
<td>Background covariates</td>
<td></td>
</tr>
<tr>
<td>Prior master’s degree</td>
<td>.07</td>
</tr>
<tr>
<td>Stage 2 of doctoral study</td>
<td>-.18</td>
</tr>
<tr>
<td>Stage 3 of doctoral study</td>
<td>-.03</td>
</tr>
<tr>
<td>Cumulative diversity</td>
<td>-.41</td>
</tr>
</tbody>
</table>

* p ≤ .05
** p ≤ .01
*** p ≤ .001
### Table 10

**Hierarchical Regression on Current Commitment for Men**

<table>
<thead>
<tr>
<th>Predictor Statistics</th>
<th>Model Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
</tr>
<tr>
<td><strong>Block 1</strong></td>
<td></td>
</tr>
<tr>
<td>Background covariates</td>
<td></td>
</tr>
<tr>
<td>Prior master’s degree</td>
<td>.26</td>
</tr>
<tr>
<td>Stage 2 of doctoral study</td>
<td>-.16</td>
</tr>
<tr>
<td>Stage 3 of doctoral study</td>
<td>-.13</td>
</tr>
<tr>
<td>Cumulative diversity</td>
<td>-.34</td>
</tr>
<tr>
<td></td>
<td>3.15*</td>
</tr>
<tr>
<td><strong>Block 2</strong></td>
<td></td>
</tr>
<tr>
<td>Background covariates</td>
<td></td>
</tr>
<tr>
<td>Prior master’s degree</td>
<td>.13</td>
</tr>
<tr>
<td>Stage 2 of doctoral study</td>
<td>.01</td>
</tr>
<tr>
<td>Stage 3 of doctoral study</td>
<td>.08</td>
</tr>
<tr>
<td>Cumulative diversity</td>
<td>.11</td>
</tr>
<tr>
<td>Sense of program community</td>
<td>.72</td>
</tr>
<tr>
<td>Advisor/mentor satisfaction</td>
<td>.18</td>
</tr>
</tbody>
</table>

* *p ≤ .05
** **p ≤ .01
*** ***p ≤ .001
Table 11

*Regression on Sense of Program Community for Women*

<table>
<thead>
<tr>
<th>Predictor Statistics</th>
<th>Model Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>β</strong></td>
</tr>
<tr>
<td>Model</td>
<td>0.54</td>
</tr>
<tr>
<td>Background covariates</td>
<td></td>
</tr>
<tr>
<td>Prior master’s degree</td>
<td>-0.04</td>
</tr>
<tr>
<td>Stage 2 of doctoral study</td>
<td>-0.06</td>
</tr>
<tr>
<td>Stage 3 of doctoral study</td>
<td>0.00</td>
</tr>
<tr>
<td>Cumulative diversity</td>
<td>-0.04</td>
</tr>
</tbody>
</table>

* * p ≤ .05
** ** p ≤ .01
*** *** p ≤ .001
Table 12
Regression on Advisor/Mentor Satisfaction for Women

<table>
<thead>
<tr>
<th>Predictor Statistics</th>
<th>Model Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
</tr>
<tr>
<td>Model</td>
<td>0.26</td>
</tr>
<tr>
<td>Background covariates</td>
<td></td>
</tr>
<tr>
<td>Prior master’s degree</td>
<td>.03</td>
</tr>
<tr>
<td>Stage 2 of doctoral study</td>
<td>-.01</td>
</tr>
<tr>
<td>Stage 3 of doctoral study</td>
<td>-.04</td>
</tr>
<tr>
<td>Cumulative diversity</td>
<td>-.05</td>
</tr>
</tbody>
</table>

*  \( p \leq .05 \)
** \( p \leq .01 \)
*** \( p \leq .001 \)
Table 13

Hierarchical Regression on Current Commitment for Women

<table>
<thead>
<tr>
<th>Predictor Statistics</th>
<th>Model Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>β</strong></td>
<td><strong>F</strong></td>
</tr>
<tr>
<td><strong>t</strong></td>
<td><strong>sr^2</strong></td>
</tr>
</tbody>
</table>

**Block 1**

Background covariates

- Prior master’s degree: .16, 2.64**, .02
- Stage 2 of doctoral study: -.19, -2.59**, .02
- Stage 3 of doctoral study: -.06, -0.77, .00
- Cumulative diversity: -.05, -0.76, .00

**Block 2**

Background covariates

- Prior master’s degree: .18, 4.19***, .03
- Stage 2 of doctoral study: -.15, -2.97**, .02
- Stage 3 of doctoral study: -.05, -0.95, .00
- Cumulative diversity: -.01, -0.20, .00
- Sense of program community: .58, 13.22***, .30
- Advisor/mentor satisfaction: .26, 5.89***, .06

*  *  \( p \leq .05 \)  
**  **  \( p \leq .01 \)  
***  ***  \( p \leq .001 \)
Table 14

Hierarchical Regression on the Fourth Root of Intention to Quit for Men

<table>
<thead>
<tr>
<th>Predictor Statistics</th>
<th>Model Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
</tr>
<tr>
<td>Block 1</td>
<td></td>
</tr>
<tr>
<td>Background covariates</td>
<td></td>
</tr>
<tr>
<td>Prior master’s degree</td>
<td>-.36</td>
</tr>
<tr>
<td>Stage 2 of doctoral study</td>
<td>.17</td>
</tr>
<tr>
<td>Stage 3 of doctoral study</td>
<td>.05</td>
</tr>
<tr>
<td>Cumulative diversity</td>
<td>.21</td>
</tr>
<tr>
<td>Block 2</td>
<td></td>
</tr>
<tr>
<td>Background covariates</td>
<td></td>
</tr>
<tr>
<td>Prior master’s degree</td>
<td>-.27</td>
</tr>
<tr>
<td>Stage 2 of doctoral study</td>
<td>.03</td>
</tr>
<tr>
<td>Stage 3 of doctoral study</td>
<td>-.08</td>
</tr>
<tr>
<td>Cumulative diversity</td>
<td>-.14</td>
</tr>
<tr>
<td>Sense of program community</td>
<td>-.46</td>
</tr>
<tr>
<td>Advisor/mentor satisfaction</td>
<td>-.27</td>
</tr>
</tbody>
</table>

*  p ≤ .05  
** p ≤ .01  
*** p ≤ .001
Table 15

*Hierarchical Regression on the Fourth Root of Intention to Quit for Women*

<table>
<thead>
<tr>
<th>Predictor Statistics</th>
<th>Model Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>β</td>
<td>t</td>
</tr>
<tr>
<td>Block 1</td>
<td></td>
</tr>
<tr>
<td>Background covariates</td>
<td>4.08**</td>
</tr>
<tr>
<td>Prior master’s degree</td>
<td>-.18</td>
</tr>
<tr>
<td>Stage 2 of doctoral study</td>
<td>.04</td>
</tr>
<tr>
<td>Stage 3 of doctoral study</td>
<td>-.12</td>
</tr>
<tr>
<td>Cumulative diversity</td>
<td>-.03</td>
</tr>
<tr>
<td>Block 2</td>
<td></td>
</tr>
<tr>
<td>Background covariates</td>
<td>29.13***</td>
</tr>
<tr>
<td>Prior master’s degree</td>
<td>-.20</td>
</tr>
<tr>
<td>Stage 2 of doctoral study</td>
<td>.01</td>
</tr>
<tr>
<td>Stage 3 of doctoral study</td>
<td>-.12</td>
</tr>
<tr>
<td>Cumulative diversity</td>
<td>-.07</td>
</tr>
<tr>
<td>Sense of program community</td>
<td>-.50</td>
</tr>
<tr>
<td>Advisor/mentor satisfaction</td>
<td>-.19</td>
</tr>
</tbody>
</table>

* *p ≤ .05
** *p ≤ .01
*** *p ≤ .001
Figure 1. Proposed model of graduate student persistence.
Figure 2. Proposed mediation models.

Mediation Model for Current Commitment

Predictor:
Cumulative Diversity

Mediator 1:
Sense of Program Community

Mediator 2:
Advisor Satisfaction

Outcome 1:
Current Commitment

Outcome 2:
Intention to Quit

Mediation Model for Intention to Quit

Predictor:
Cumulative Diversity

Mediator 1:
Sense of Program Community

Mediator 2:
Advisor Satisfaction

Outcome 1:
Current Commitment

Outcome 2:
Intention to Quit

All path coefficients are controlling for stage of doctoral study and prior degree status.

Expected Significant Path

Expected Non-significant Path
Figure 3. Sampling and recruitment method.

Excluded at This Step | Continued to Next Step | Step Description
--- | --- | ---
Program excluded from study | All APA-accredited U.S. doctoral clinical psychology programs 218 programs | Reference Population

-31 programs

Non-response/other response | Able to obtain DCT email 191 programs | Program Selection

-95 programs

Non-response | DCT agreed to assist and to put researcher in contact with student representative 65 programs | Step 1 Recruitment: Directors of Clinical Training

-4 programs

Non-response | Emailed DCT with request for assistance 160 programs | Step 2 Recruitment: Student Representatives

-11 programs

Non-response/other response | Student representative agreed to assist and send request for participation 50 programs comprising 2111 pre-internship students | Step 3 Recruitment: Eligible Students Sent Request for Participation

-11 programs

Non-response/other response | |
Figure 4. Respondent selection and missing data handling.

<table>
<thead>
<tr>
<th>Excluded at This Step</th>
<th>Continued to Next Step</th>
<th>Step Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>All responses received 454 respondents</td>
<td>Eligible students sent request for participation 2111 pre-internship students</td>
<td>Invited to participate</td>
</tr>
<tr>
<td>Did not meet eligibility criteria</td>
<td>Met eligibility criteria 376 respondents</td>
<td>Eligible Sample</td>
</tr>
<tr>
<td>- Declined consent (n = 2)</td>
<td>Missing value on at least one key variable 79 respondents</td>
<td>Missing Data Handling</td>
</tr>
<tr>
<td>- Did not indicate entering program with intention of pursuing doctoral degree (n = 24)</td>
<td>Complete data on all key variables 297 respondents</td>
<td>Complete Data Sample</td>
</tr>
<tr>
<td>- Did not indicate status as pre-internship student (n = 65)</td>
<td>Imputed missing values for multi-item scales 33 respondents</td>
<td></td>
</tr>
<tr>
<td>- 78 respondents</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Complete data 330 respondents</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Key categorical data remained missing that could not be imputed -44 respondents</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Missing ≥60% of items on one or more multi-item scales -2 respondents</td>
<td></td>
</tr>
</tbody>
</table>
Figure 5. Mean sense of program community by sex and level of cumulative diversity.
Figure 6. Mean advisor/mentor satisfaction by sex and level of cumulative diversity.
Figure 7. Mean current commitment by sex and level of cumulative diversity.
Figure 8. Mean fourth root of intention to quit by sex and level of cumulative diversity.
Figure 9. Mediation model for current commitment for men.

Men (n = 61)

Cumulative Diversity \[ \beta = -0.34 \] \( c \) \( \rightarrow \) Current Commitment

 Cumulative Diversity \( \beta = -0.52 \) \( a_1 \) \( \rightarrow \) Sense of Program community \( \beta = 0.11 \) \( c' \) \( \rightarrow \) Current Commitment

Cumulative Diversity \( \beta = -0.41 \) \( a_2 \) \( \rightarrow \) Advisor Satisfaction \( \beta = 0.18 \) \( b_2 \) \( \rightarrow \) Current Commitment

All path coefficients are controlling for stage of doctoral study and prior degree status

Path Statistics

- \( a_1 \) \( sr^2 = 0.24, t(56) = -4.67, p < .001 \)
- \( b_1 \) \( sr^2 = 0.26, t(54) = 6.01, p < .001 \)
- \( a_2 \) \( sr^2 = 0.15, t(56) = -3.24, p = .002 \)
- \( b_2 \) \( sr^2 = 0.02, t(54) = 1.69, p = .097 \)
- \( c \) \( sr^2 = 0.10, t(56) = -2.62, p = .011 \)
- \( c' \) \( sr^2 = 0.01, t(54) = 1.03, p = .306 \)
Figure 10. Mediation model for current commitment for women.

Women (n = 269)

Cumulative Diversity $\rightarrow$ Current Commitment

Cumulative Diversity $\rightarrow$ Sense of Program community $\beta = .04$
Cumulative Diversity $\rightarrow$ Advisor Satisfaction $\beta = .05$
Sense of Program community $\rightarrow$ Current Commitment $\beta = .58$
Advisor Satisfaction $\rightarrow$ Current Commitment $\beta = .36$

All path coefficients are controlling for stage of doctoral study and prior degree status

Path Statistics

- $a_1$ $s^2 = .00$, $t(264) = -0.72$, $p = .474$
- $b_1$ $s^2 = .30$, $t(262) = 13.22$, $p < .001$
- $a_2$ $s^2 = .00$, $t(264) = -0.80$, $p = .424$
- $b_2$ $s^2 = .06$, $t(262) = 5.89$, $p < .001$
- $c$ $s^2 = .00$, $t(264) = -0.78$, $p = .439$
- $c'$ $s^2 = .00$, $t(262) = -0.20$, $p = .845$
Figure 11. Mediation model for intention to quit for men.

Men (n = 61)

Cumulative Diversity $\beta = .21$ \rightarrow Intention to Quit (Fourth Root)

Sense of Program community $\beta = -.46$

Cumulative Diversity $\beta = -.52$

Cumulative Diversity $\beta = -.41$

Advisor Satisfaction $\beta = .27$

Intention to Quit (Fourth Root) $\beta = .14$

Path Statistics

All path coefficients are controlling for stage of doctoral study and prior degree status.

- $a_1$ $sr^2 = .24, t(56) = -4.67, p < .001$
- $b_1$ $sr^2 = .11, t(54) = -3.19, p = .002$
- $a_2$ $sr^2 = .15, t(56) = -3.24, p = .002$
- $b_2$ $sr^2 = .05, t(54) = -2.14, p = .037$
- $c$ $sr^2 = .04, t(56) = 1.61, p = .113$
- $c'$ $sr^2 = .01, t(54) = -1.09, p = .279$

Significant Path $\Rightarrow$ Non-significant Path
Figure 12. Mediation model for intention to quit for women.

Women (n = 269)

Intention to Quit (Fourth Root)

Cumulative Diversity

β = .03

c

Intention to Quit (Fourth Root)

Cumulative Diversity

Sense of Program community

β = .07

c’

Advisor Satisfaction

β = .04

β = .07

β = .05

β = .19

All path coefficients are controlling for stage of doctoral study and prior degree status.

Significant Path

Non-significant Path

Path Statistics

a₁  \( sr^2 = .00, t(264) = -0.72, \ p = .474 \)
b₁  \( sr^2 = .23, t(262) = -9.93, \ p < .001 \)
a₂  \( sr^2 = .00, t(264) = -0.80, \ p = .424 \)
b₂  \( sr^2 = .03, t(262) = -3.84, \ p < .001 \)
c  \( sr^2 = .00, t(264) = -0.55, \ p = .587 \)
c’  \( sr^2 = .00, t(262) = -1.33, \ p = .183 \)
Appendix A. Department Review Board Approval

Department Review Board

Date: March 10, 2008

To: Rachel Hamilton & Bill Stiles

From: Heather M. Claypool
Chair, Psychology DRB Subcommittee of the Miami University Institutional Review Board for Human Subjects

Re: Underrepresented Groups, Sense of Community and Persistence-Related Attitudes Among Clinical Psychology Doctoral Students

Thank you for submitting the above-referenced protocol to the Institutional Review Board for Human Subjects Research Subcommittee in the Psychology Department. The committee has reviewed and approved your proposal.

Your proposal approval number is: 07-055 PSY

Approval of this project is in effect until: March 9, 2009

Should you decide to change your procedures relating to the use of human subjects in the above project, you must obtain approval from the Committee prior to instituting any changes.

Miami University policy requires periodic review of human subjects for all ongoing projects. If your project will continue beyond the approval date mentioned above, you will need to submit an Application for Continuing Review so that the committee may review your application in a timely fashion.

Please submit your next application for continuing review by: February 9, 2009

On behalf of the committee and the University, I thank you for your efforts to conduct your research in compliance with the federal regulations that have been established for the protection of human subjects.

Thank you for your attention to this matter, and best wishes for the success of your project.
*This survey examines the experiences of current students in APA-accredited clinical psychology doctoral programs. Little is known about how students with different characteristics experience these programs, nor about what factors promote program retention and completion. Your perspective as a student provides important information that may help improve the training experiences of future students.

This survey should take 8-15 minutes to complete. You will be asked to provide information about your characteristics as a student, your attitudes related to persistence, and your experiences in relation to your current program. You are free to skip any question, and you are also free to withdraw your participation at any time.

This survey is hosted on a firewalled server, and your data will be stored at a secure storage location. IP addresses will not be investigated. No one other than the current experimenter, her advisor, and a research assistant will have access to your data. In order to analyze between-program differences, each program has been sent a link to a separate survey website. A random numerical code will be assigned to each website by a research assistant who does not have access to program names. Neither the primary researcher nor the research assistant will be able to link these codes with program names.

The potential risks associated with participation in this study are minimal. It is possible that reflecting on your experiences in your program may evoke emotions about your experiences; however, it is likely that you encounter similar emotions in your daily life. The responses you provide today are being collected with online survey software that is designed to secure your data and provide you with confidentiality. Nevertheless, despite these safeguards, there is always a remote possibility of hacking or other security breaches that could compromise the confidentiality of the information you provide. Thus, you should remember that you are free to decline to answer any question that makes you uncomfortable for any reason.

The benefits of this study are primarily to future students. Your perspective will contribute to greater understanding of clinical psychology graduate students’ needs and experiences. Should you request a copy of the results of this survey, knowledge of the experiences of other clinical psychology graduate students may be useful to contextualizing your own experiences and discussing such issues within your own program.

You may contact the experimenter, Rachel Hamilton (hamilr2@muohio.edu or 513-280-1748) if you have any questions or would like further information about this research. You may also contact the Miami University Office for the Advancement of Scholarship and Research (OARS) at 513-529-3600 for questions about your rights as a research participant.
By clicking the 'I agree' button on this form, you certify the following:

- I am hereby granting my consent for inclusion in this study. I am also verifying that I have read this Consent Form (Screen) for this project and am aware that my participation is voluntary. I am aware that I may decline to answer any questions, and I have been given the opportunity to ask any questions that I may have about the project.

- I verify that I am at least 18 years of age or older and a student currently in an APA-accredited clinical psychology program.

☐ I agree
☐ I do not agree
During the period from September 2007 to the present, what was your enrollment status in your current graduate program?

(Please mark all that apply)

☐ Enrolled full-time during all of this period
☐ Enrolled part-time during some or all of this period
☐ Not enrolled during some or all of this period

This is my ___ year in this program.

☐ 1st
☐ 2nd
☐ 3rd
☐ 4th
☐ 5th
☐ 6th
☐ 7th
☐ 8th or higher

Please note the milestones you have **currently completed** in this program.

<table>
<thead>
<tr>
<th>Milestone</th>
<th>I have done this</th>
<th>Not yet</th>
<th>Does not apply to my program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completed at least one semester in this program</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Started thesis</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Completed and defended thesis (or had a thesis you did in a prior program accepted by your current program)</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Started preparing for comprehensive examination</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Completed comprehensive examination</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Proposed dissertation</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Completed and defended dissertation</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Applied to internship sites</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Accepted to internship</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Started internship</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
Did you enter your current program with a Master’s degree that exempted you from some program requirements?

☐ Yes
☐ No
When you first enrolled in your current program, what was the highest degree you intended to pursue in this program?
- Master's
- Ph.D.
- Psy.D.
- Other: ____________

When you first enrolled in this program, how likely did you feel it was that:

<table>
<thead>
<tr>
<th>Extremely likely</th>
<th>Not likely at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

- You would stay in the program to complete your intended degree
- You would complete a doctoral degree in this field, whether in your current program or not
- You would ultimately pursue a career in this field

Please rate your current agreement with the following statements.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have considered leaving my program within the past year.</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>I feel satisfied with my program overall.</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>I feel confident that this is the right field for me.</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>This program meets my short-term goals.</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>I have every intention of pursuing this area after program completion.</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>I intend to complete this program.</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>I feel satisfied in my role as a graduate student.</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>This program meets my long-term goals.</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>I would recommend this particular program to others interested in this field.</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>If I had to do it again, I would enroll in this program again.</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
</tr>
<tr>
<td>Statement</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Neutral</td>
<td>Disagree</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>----------------</td>
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<td>---------</td>
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</tr>
<tr>
<td>I am less satisfied with this program than when I came here.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I have become less certain of my career goals since beginning this</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>program.</td>
<td></td>
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</tr>
<tr>
<td>This program provides me with what I need (tools, knowledge etc.)</td>
<td></td>
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<tr>
<td>to be successful in my field.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There are very few things about my program that need changing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall, this is a terrific program.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I often think about quitting my graduate program.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I often think about transferring to another program.</td>
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</tr>
<tr>
<td>I will probably quit school in the next year.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I am actively searching for another program to transfer to.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>If I had to drop out of school for a while, I would return to this</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>program to complete my degree.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Please tell me a little bit about your program.

What type of program are you in?
- University-based program
- Professional school
- Other: [ ]

In some programs, students work primarily with others inside their individual lab/area and have little contact with students in other areas. Other programs emphasize the program as a whole, and students work and interact together across different areas/labs.

How is your program organized?
- Strong emphasis on individual labs/areas
- Slight emphasis on individual labs
- Equal emphasis on individual labs/areas and the program as a whole
- Slight emphasis on the program as a whole
- Strong emphasis on the program as a whole

Do you have a faculty advisor or mentor?
- Yes, faculty member(s) in my program
- Yes, faculty member(s) outside my program
- Yes, faculty in my program and outside my program
- No

How satisfied are you with this advising/mentoring relationship?

If more than one faculty member advises or mentors you, please choose the relationship with which you are most satisfied.
- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied
- I do not have a faculty mentor or advisor
Organizational climates can range from feeling warmly supportive and welcoming, to feeling coldly detached or even hostile.

A "chilly climate" refers to a climate in which people feel unwelcome, not supported, or not valued by the organization.

Where does your program’s climate fall?
I would like to know more about how you experience your program.

Please rate your current agreement with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I feel that students in my program care about one another.</td>
<td></td>
<td></td>
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<tr>
<td>I feel that I am encouraged to ask questions in my program.</td>
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<tr>
<td>I feel connected to others in my program.</td>
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<tr>
<td>I feel that it is hard to get help when I have a question in my program.</td>
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</tr>
<tr>
<td>I do not feel a spirit of community in my program.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I feel that I receive timely feedback in my program.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>I feel that my program is like a family.</td>
<td></td>
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<tr>
<td>I feel uneasy exposing gaps in my understanding in my program.</td>
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<tr>
<td>I feel isolated in my program.</td>
<td></td>
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<tr>
<td>I feel reluctant to speak openly in my program.</td>
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</tr>
<tr>
<td>I trust others in my program.</td>
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<td></td>
</tr>
<tr>
<td>I feel that my program results in only modest learning.</td>
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<td></td>
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<tr>
<td>I feel that I can rely on others in my program.</td>
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</tr>
<tr>
<td>I feel that other students in my program do not help me learn.</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>I feel that members of my program depend on me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel that I am given ample opportunities to learn in my program.</td>
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<td></td>
</tr>
<tr>
<td>I feel uncertain about others in my program.</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>I feel that my educational needs are not being met in my program.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel confident that others in my program will support me.</td>
<td></td>
<td></td>
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<tr>
<td>I feel that my program does not promote a desire to learn.</td>
<td></td>
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</tr>
<tr>
<td>Statement</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Neutral</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
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<tr>
<td>I feel free to express my identity in this program.</td>
<td>○</td>
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<tr>
<td>In this program, I have felt negatively about parts of myself that I</td>
<td>○</td>
<td>○</td>
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<tr>
<td>previously valued.</td>
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<tr>
<td>This program supports me to pursue both the personal and professional</td>
<td>○</td>
<td>○</td>
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<tr>
<td>goals I have for myself.</td>
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<tr>
<td>My knowledge and experience are viewed as resources in this program.</td>
<td>○</td>
<td>○</td>
<td>○</td>
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</tr>
<tr>
<td>Faculty expect my responsibilities to this program to come before all</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>other responsibilities.</td>
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<tr>
<td>In this program, I feel pressure to downplay, neglect, or give up parts</td>
<td>○</td>
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<td>of my identity.</td>
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<tr>
<td>Faculty support me to attend to important parts of my life outside the</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>program.</td>
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<tr>
<td>This program has positively reinforced my prior values, self-image, and</td>
<td>○</td>
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<td>○</td>
<td>○</td>
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<tr>
<td>way of thinking about the world.</td>
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</tr>
<tr>
<td>This program has negatively impacted my feelings of self-worth.</td>
<td>○</td>
<td>○</td>
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</tr>
<tr>
<td>The program is structured in a way that allows me to balance my</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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</tr>
<tr>
<td>professional and personal life.</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To succeed in this program, I have needed to make greater changes</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>to myself than I expected.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This program is changing me in ways I do not like.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
You are almost finished with this survey!

How old were you when you first entered your current program?

Sex:
- Female
- Male
- Transgendered / Intersex

Race/ethnicity:
(Please mark all that apply)
- Asian
- Middle Eastern
- White
- Black or African American
- Native American or Alaskan Native
- Other: 
- Hispanic or Latino(a)
- Native Hawaiian or Pacific Islander

Country of origin:
- United States
- Other country: 

What was the first language that you learned?
- English
- English and another language (bilingual)
- Another language

When you were growing up, what was your family's socioeconomic background?
- Generational poverty
- Situational poverty
- Lower class or blue collar
- Middle class or white collar
- Upper class
Have you ever experienced any of the following types of conditions?

(Please mark all that apply)

- Systemic disability (e.g., lupus, diabetes, cancer, HIV, chronic fatigue)
- Physical disability (e.g., blind, deaf, sensory impairment, orthopedic or motor disability)
- Learning or cognitive disability
- Psychological disorder or emotional disability (excluding learning or cognitive disabilities covered above)
- None of these
- Other health condition: ____________________________

Sexual orientation:

- Heterosexual
- Homosexual / Gay / Lesbian
- Bisexual
- Other: ____________________________

Current relationship status:

(Please mark all that apply)

- Single or casually dating
- Married or domestic partnership
- In a serious relationship (that is not a marriage or domestic partnership)
- Divorced or separated
- Widowed

Are you currently responsible for the care of a dependent child or adult?

- Yes, and I am the primary caregiver
- Yes, and I share at least half of the caregiving responsibilities with someone else
- No

What is your primary theoretical orientation?

(Please pick only one orientation that is closest to your own.)

- Behavioral
- Cognitive
- Cognitive Behavioral
- Feminist
- Humanistic
- Interpersonal
- Multicultural
- Psychoanalytic
- Psychodynamic
- Systems
- Eclectic / Integrative
- Undecided
- Other: ____________________________

- Spiritual or Religious-Centered

<< Back  Next >>
What would you want program administrators or faculty to know in order to help improve the experiences and retention of future clinical psychology graduate students?

Do you have any other feedback you'd like to share, either about this survey or about this topic?
Appendix B-8. End Page Screenshot

[Individuals who participated in the survey are forwarded to this end message after choosing the ‘Finish’ button]

Thank you for adding your perspective to this research.

Please feel free to contact the experimenter at hamiltr2@muohio.edu or 513-280-1748 if you have any questions or feedback about this study, or if you would like to be appraised of the final results of this study. You may also contact the Miami University Office for the Advancement of Scholarship and Research (OARS) at 513-529-3600 for questions about your rights as a research participant.

[Individuals who do not consent to participate in the survey on the first page are forwarded immediately to this end message]

Based on your response, I will not be able to include you in this study. However, your interest and effort is very much appreciated. If you have any questions or would like to be appraised of the final results of this study, please contact the experimenter at hamiltr2@muohio.edu or 513-280-1748.
Appendix C-1. Educational Characteristics Scale

1. During the period from September 2007 to the present, what was your enrollment status in your current graduate program?

(Please mark all that apply)

☐ Enrolled full-time during all of this period
☐ Enrolled part-time during some or all of this period
☐ Not enrolled during some or all of this period

2. This is my ___ year in this program.

☐ 1st
☐ 2nd
☐ 3rd
☐ 4th
☐ 5th
☐ 6th
☐ 7th
☐ 8th or higher

Please note the milestones you have currently completed in this program.

<table>
<thead>
<tr>
<th>Response Options</th>
<th>I have done this</th>
<th>Not yet</th>
<th>Does not apply to my program</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Completed at least one semester in this program</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>4. Started thesis</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>5. Completed and defended thesis (or had a thesis you did in a prior program accepted by your current program)</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>6. Started preparing for comprehensive examination</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>7. Completed comprehensive examination</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>8. Proposed dissertation</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>9. Completed and defended dissertation</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>10. Applied to internship sites</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>11. Accepted to internship</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>12. Started internship</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
13. Did you enter your current program with a Master’s degree that exempted you from some program requirements?
   ○ Yes
   ○ No

14. When you first enrolled in your program, what was the highest degree you intended to pursue?
   ○ Master’s
   ○ Ph.D.
   ○ Psy.D.
   ○ Other: [open-ended response]

15. What type of program are you in?
   ○ University-based program
   ○ Professional school
   ○ Other: [open-ended response]

16. In some programs, students work primarily with others inside their individual lab/area and have little contact with students in other areas. Other programs emphasize the program as a whole, and students work and interact together across different areas/labs.

   How is your program organized?
   ○ Strong emphasis on individual labs/areas
   ○ Slight emphasis on individual labs/areas
   ○ Equal emphasis on individual labs/areas and the program as a whole
   ○ Slight emphasis on the program as a whole
   ○ Strong emphasis on the program as a whole

17. Do you have a faculty advisor or mentor?
   ○ Yes, faculty member(s) in my program
   ○ Yes, faculty member(s) outside my program
   ○ Yes, faculty in my program and outside my program
   ○ No
18. How satisfied are you with this advising/mentoring relationship?
If more than one faculty member advises or mentors you, please choose the relationship with which you are most satisfied.

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied
- I do not have a faculty advisor or mentor

19. Organizational climates can range from feeling warmly supportive and welcoming, to feeling coldly detached or even hostile.

A “chilly climate” refers to a climate in which people feel unwelcome, not supported, or not valued by the organization.

Where does your program’s climate fall?

- Very warm
- Warm
- Mild
- Lukewarm
- Cool
- Chilly
- Icy

20. What is your primary theoretical orientation?

(Please pick only one orientation that is closest to your own.)

- Behavioral
- Cognitive
- Cognitive Behavioral
- Feminist
- Humanistic
- Interpersonal
- Multicultural
- Psychoanalytic
- Psychodynamic
- Spiritual or Religious-Centered
- Systems
- Eclectic / Integrative
- Undecided
- Other: [open-ended response]
Subscales Used in this Study:

Year in Program: Item 2
Program Milestones: Item 3-12
Prior Degree Status: Item 13
Initial Degree Intentions: Item 14
Perceived Program Organization: Item 16
Advisor/Mentor Satisfaction: Item 18
Program Climate: Item 19
Appendix C-2. Student Demographics Scale

1. How old were you when you first entered your current program?
   [open-ended response]

2. Sex:
   ○ Female
   ○ Male
   ○ Transgendered/Intersex

3. Race/ethnicity:
   (Please mark all that apply)
   □ Asian
   □ Black or African American
   □ Hispanic or Latino(a)
   □ Middle Eastern
   □ Native American or Alaskan Native
   □ Native Hawaiian or Pacific Islander
   □ White
   □ Other: [open-ended response]

4. Country of origin:
   ○ United States
   ○ Other country: [open-ended response]

5. What was the first language that you learned?
   ○ English
   ○ English and another language (bilingual)
   ○ Another language

6. When you were growing up, what was your family’s socioeconomic background?
   ○ Generational poverty
   ○ Situational poverty
   ○ Lower class or blue collar
   ○ Middle class or white collar
   ○ Upper class
7. Have you ever experienced any of the following types of conditions?
(Please mark all that apply)
- ☐ Systemic disability (e.g., lupus, diabetes, cancer, HIV, chronic fatigue)
- ☐ Physical disability (e.g., blind, deaf, sensory impairment, orthopedic or motor disability)
- ☐ Learning or cognitive disability
- ☐ Psychological disorder or emotional disability (excluding learning or cognitive disabilities covered above)
- ☐ None of these
- ☐ Other health condition: [open-ended response]

8. Sexual orientation:
- ☐ Heterosexual
- ☐ Homosexual / Gay / Lesbian
- ☐ Bisexual
- ☐ Other: [open-ended response]

9. Current relationship status:
(Please mark all that apply)
- ☐ Single or casually dating
- ☐ Married or domestic partnership
- ☐ In a serious relationship (that is not a marriage or domestic partnership)
- ☐ Divorced or separated
- ☐ Widowed

10. Are you currently responsible for the care of a dependent child or adult?
- ☐ Yes, and I am the primary caregiver
- ☐ Yes, and I share at least half of the caregiving responsibilities with someone else
- ☐ No
Appendix C-3. Sense of Program Community Scale

Please rate your current agreement with the following statements.

1. I feel that students in my program care about one another.
2. I feel that I am encouraged to ask questions in my program.
3. I feel connected to others in my program.
4. I feel that it is hard to get help when I have a question in my program.
5. I do not feel a spirit of community in my program.
6. I feel that I receive timely feedback in my program.
7. I feel that my program is like a family.
8. I feel uneasy exposing gaps in my understanding in my program.
9. I feel isolated in my program.
10. I feel reluctant to speak openly in my program.
11. I trust others in my program.
12. I feel that my program results in only modest learning.
13. I feel that I can rely on others in my program.
14. I feel that other students in my program do not help me learn.
15. I feel that members of my program depend on me.
16. I feel that I am given ample opportunities to learn in my program.
17. I feel uncertain about others in my program.
18. I feel that my educational needs are not being met in my program.
19. I feel confident that others in my program will support me.
20. I feel that my program does not promote a desire to learn.

Rated along the following scale:

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Reverse score items = 4, 5, 8, 9, 10, 12, 14, 17, 18, 20

All items adapted from the Classroom Community Scale printed in Internet and Higher Education, 5(3), Alfred P. Rovai, “Development of an instrument to measure classroom community,” pp. 197-211, © 2002 Elsevier Science Inc. The adapted scale shown here is reprinted with kind permission of Elsevier and the measure author.
Appendix C-4. Current Commitment Scale

Please rate your current agreement with the following statements.

1. I have considered leaving my program within the past year.
2. I feel satisfied with my program overall.
3. I feel confident that this is the right field for me.
4. This program meets my short-term goals.
5. I have every intention of pursuing this area after program completion.
6. I intend to complete this program.
7. I feel satisfied in my role as a graduate student.
8. This program meets my long term goals.
9. I would recommend this particular program to others interested in this field.
10. If I had to do it again, I would enroll in this program again.
11. I am less satisfied with this program than when I came here.
12. I have become less certain of my career goals since beginning this program.
13. This program provides me with what I need (tools, knowledge etc.) to be successful in my field.
14. There are very few things about my program that need changing.
15. Overall, this is a terrific program.

Rated along the following scale:

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Reverse score items: 1, 11, 12

All items taken from the Career Commitment Scale referenced in *Journal of Educational Psychology, 92*(2), Beril Ülku-Steiner, Beth Kurtz-Costes, and C. Ryan Kinlaw, “Doctoral student experiences in gender-balanced and male-dominated graduate programs,” pp. 296-307, 2000. The Career Commitment Scale is an unpublished measure created by Beril Ülku-Steiner and Beth Kurtz-Costes and obtained from the authors. It is reprinted here with kind permission of the authors.
Appendix C-5. Intention to Quit Scale

Please rate your current agreement with the following statements.

1. I often think about quitting my graduate program.
2. I often think about transferring to another program.
3. I will probably quit school in the next year.
4. I am actively searching for another program to transfer to.
5. If I had to drop out of school for a while, I would return to this program to complete my degree.

Rated along the following scale:

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Reverse score item 5

All items adapted from the Intention to Quit Scale referenced in *Journal of Psychology, 129*(6), Donna K. Cooke, Randi L. Sims, and Joseph Peyrefitte, “The relationship between graduate student attitudes and attrition,” pp. 677-688, 1995. The original Intention to Quit Scale is an unpublished measure obtained from the authors. The adapted scale shown here is reprinted with kind permission of the authors.
Appendix C-6. Free Response Items

1. What would you want program administrators or faculty to know in order to help improve the experiences and retention of future clinical psychology graduate students?
   [open-ended response]

2. Do you have any other feedback you’d like to share, either about this survey or about this topic?
   [open-ended response]
Appendix C-7. Initial Commitment Scale

When you first entered this program, how likely did you feel it was that:

1. You would stay in this program to complete your degree
2. You would complete a doctoral degree in this field, whether in your current program or not
3. You would ultimately pursue a career in this field

Rated along the following scale:

<table>
<thead>
<tr>
<th>Extremely likely</th>
<th>Not likely at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td></td>
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<tr>
<td>3</td>
<td></td>
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<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

All items adapted from a single-item scale referenced in *Journal of Psychology, 129*(6), “The relationship between graduate student attitudes and attrition,” Donna K. Cooke, Randi L. Sims, & Joseph Peyrefitte, pp. 677-688, 1995. The original item is an unpublished measure obtained from the authors. The adapted scale shown here is reprinted with kind permission of the authors.
Appendix C-8. Identity Support and Work-Life Balance Scale

1. I feel free to express my identity in this program.
2. In this program, I have felt negatively about parts of myself that I have previously valued.
3. This program supports me to pursue both the personal and professional goals I have for myself.
4. My knowledge and experience are viewed as resources in this program.
*5. Faculty expect my responsibilities to this program to come before all other responsibilities.
6. In this program, I feel pressure to downplay, neglect, or give up parts of my identity.
7. Faculty support me to attend to important parts of my life outside the program.
*8. This program has positively reinforced my prior values, self-image, and way of thinking about the world.
9. This program has negatively impacted my feelings of self-worth.
10. The program is structured in a way that allows me to balance my professional and personal life.
11. To succeed in this program, I have needed to make greater changes to myself than I expected.
*12. This program is changing me in ways I do not like.

Rated along the following scale:

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Reverse score items: 2, 5, 6, 9, 11, 12

* Items adapted from the Divestiture Subscale printed in Research in Higher Education, 35(3), Melissa S. Anderson and Karen Louis Seashore, “The graduate student experience and subscription to the norms of science,” pp. 273-299, © 1994 Human Sciences Press, Inc. The adapted items shown here are reprinted with kind permission of Springer Science and Business Media and the authors.
Appendix D-1. Request for Student Participation

Dear student,

Hello! My name is Rachel Hamilton and I am a graduate student at Miami University of Ohio. Like you, I am a clinical psychology graduate student. Perhaps, like me, you’ve wondered how other clinical psychology students experience their graduate programs, as well as why some students persist in programs while others depart. I am asking you to share your perspective in an Internet survey of clinical psychology graduate students.

This survey will ask you about your characteristics as a student, your experiences of community and identity in your program, and your attitudes towards remaining in your program and in the field. The survey should take 8-15 minutes of your time.

To view the informed consent page for this survey and participate in this research, please go to the following website:

https://survey.muohio.edu/Checkbox/ClinicalPrograms.aspx

I truly appreciate your help in this project. If you have questions about this research, please feel free to contact the experimenter at hamiltr2@muohio.edu.
Appendix D-2. Email Request to Directors of Clinical Training

Dear Director of Clinical Training,

I am contacting you to ask for help in distributing a request for participation in my research. This research examines clinical psychology students’ characteristics, experiences of community and identity in their programs, and attitudes towards graduate school persistence. Students’ participation in this research may lead to information relevant to improving the educational experiences and retention of future clinical psychology students.

Because my research involves students’ experiences and perceptions of their own programs, I was advised not to distribute the request to participate through Directors of Clinical Training in order to avoid any unintentional influence on responses. I would like to contact student representatives to ask them to forward a request to participate to the current students in their programs.

I am asking for your help by providing:

1. the email address of the CUDCP student representative or a graduate student representative for your clinical psychology doctoral program, and
2. the number of students currently in your clinical psychology doctoral program (not including those who have completed internship or are currently on internship), which will be used to calculate overall response rates for the survey.

This survey has been approved by the DRB of Miami University. If you would like to read the informed consent page describing this survey in more detail, you may access it at: https://survey.muohio.edu/Checkbox/IC.aspx

I truly appreciate your help in this project. If you would like more information about this study or would like to be apprised of the results, please contact me by email at hamiltr2@muohio.edu.
Appendix D-3. Follow-Up Email to Directors of Clinical Training

Dear Director of Clinical Training,

I am the student researcher from Miami University who emailed you a week ago to ask for your assistance with my research on clinical psychology graduate students. Because I have not heard back from you yet, I wanted to ask once more whether you would be willing to provide me with (1) the email address for a student representative in your doctoral clinical psychology program and (2) the number of students currently in your clinical psychology program (not including those who have completed internship or are currently on internship). If you do not wish to do so, please disregard this email. Thank you so much for your help!

The original email I sent out was as follows:

[Insert forwarded text of prior request from Appendix D-2]
Dear Student Representative,

Hello! My name is Rachel Hamilton and I am a graduate student from Miami University of Ohio. I am contacting you because your Director of Clinical Training (DCT) has identified you as a student representative. I am asking for your help in forwarding a request for research participation to students in your program (see the request below for more information about the research).

You can help me by cutting and pasting the text below into an email, and sending it along to all current students in your doctoral clinical psychology program. After doing so, please reply to this email to confirm that you have sent out the request for participation (you can simply place the word ‘Yes’ in the subject line). This is important so that I can add the number of students in your program (obtained from your DCT) into the total number of students contacted when I calculate response rates.

As your fellow student, I know that you have many responsibilities and truly appreciate you helping me with my research. If you have any questions or would like to be apprised of the results of this study, please feel free to contact me at hamiltr2@muohio.edu.

Please forward the following message to all students in your program:

Dear student,

Hello! My name is Rachel Hamilton and I am a graduate student at Miami University of Ohio. Like you, I am a clinical psychology graduate student. Perhaps, like me, you’ve wondered how other clinical psychology students experience their graduate programs, as well as why some students persist in programs while others depart. I am asking you to share your perspective in an Internet survey of clinical psychology graduate students.

This survey will ask you about your characteristics as a student, your experiences of community and identity in your program, and your attitudes towards remaining in your program and in the field. The survey should take 8-15 minutes of your time.

To view the informed consent page for this survey and participate in this research, please go to the following website:

https://survey.muohio.edu/Checkbox/ClinicalPrograms.aspx

I truly appreciate your help in this project. If you have questions about this research, please feel free to contact the experimenter at hamiltr2@muohio.edu.
Dear Student Representative,

I am the student researcher from Miami University who emailed you a week ago. I wanted to confirm with you as to whether you sent out the email request for participation to doctoral students in your program. This information is crucial for me to calculate response rates to my survey. If you previously sent out this request or send it out now to students, please reply to this email and place the word ‘Yes’ in the subject line. Otherwise, please disregard this email. Thank you so much for your help!

The original email I sent out was as follows:

[Insert forwarded text of prior email request from Appendix D-4]