

**High-impact practices and student-faculty interactions for gender variant students**

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### Abstract

The vast amount of research on student success and engagement in college focuses on a narrative for majority student populations that does not account for unique experiences across social identities. This paper examines the experiences of gender variant students (i.e., students who do not identify as either cisgender men or women) regarding engagement in high-impact practices and student-faculty interactions using a large-scale, multi-institution quantitative data set. Although high-impact practice participation was similar for gender variant and cisgender students, positive student-faculty interaction was found to be a significant predictor for increased high-impact practice participation for gender variant students. Results from this study may also point to chillier climates of certain major fields for gender variant students. Implications for these findings focus on increasing gender variant students' participation in high-impact practices, creating more safe and positive learning environments for gender variant students, and advocating for the inclusion of different gender identities in surveys, institutional data, and higher education research.

*Keywords:* gender variant students, student engagement, high-impact practices, student-faculty interaction, gender diversity

### High-impact practices and student-faculty interactions for gender variant students

In recent years, higher education scholars and administrators have begun recognizing trans\* and gender non-conforming students, who we refer to as gender variant students, as a growing sub-population of marginalized students (Dugan, Kusel, & Simounet, 2012; Garvey & Rankin, 2015; Pryor, 2015). Although the visibility of this sub-population of students continues to increase, areas of research, scholarship, and support for these students has been severely neglected. As a community, higher education scholars and professionals have the ability and responsibility to serve students of all identities, though there is little insight into serving gender variant students in a culturally competent manner.

There has been a vast amount of scholarship generated toward student success through high-impact practices; however, there continues to be a void in research on trans\* and gender non-conforming students (Renn, 2010) because most student success scholarship operationalizes gender binarily (i.e., man/woman). Moreover, in higher education settings, trans\* and gender non-conforming students are underrepresented, disregarded, and continually ignored in educational programming, research, and co-curricular activities (Garvey & Inkelas, 2012; Garvey & Rankin, 2015; Renn, 2010). As such, these students can be left feeling isolated, lonely, and depressed (Rankin, Weber, & Garvey, 2014), which can hinder student success.

As Beemyn (2005) noted, transgender students repeatedly confront discrimination at the institutional level when enrolled in higher education. To confront and prevent ongoing discrimination and underrepresentation of gender variant students, scholars must develop deeper understandings of the unique experiences that lead to student success for these students. With greater research comes a heightened understanding of the most effective practices regarding student success and student engagement for gender variant students. Insight from research will

assist higher education practitioners in understanding how gender variant students can engage most effectively in their undergraduate experience. In this vein, our study takes a critical look at how gender variant students engage in high-impact practices.

### **Study Purpose**

The purpose of this study is to examine gender variant students' involvement in high-impact practices (HIP) as defined by the National Survey of Student Engagement (NSSE). Given the emphasis on academic experiences in NSSE's high-impact practices, we focus our examination on the relationships between participation in high-impact practices and student-faculty interactions for gender variant students.

### **Language Clarification**

Throughout our manuscript, we refer to our student population as gender variant students (i.e. students who do not identify as either cisgender man or woman). We include an array of gender identities for gender variant students, including trans\* and gender non-conforming students. Trans\* and gender non-conforming students include those who identify outside of the binaries of cisgender men/women and birth sexes of male/female. These students may identify as but are not limited to identifying as transgender, queer, gender fluid, or gender neutral (Rankin et al., 2014). When examining student write-in response on the NSSE survey, students indicating a non-binary identity most commonly identified as genderqueer, nonbinary, gender fluid, polygender, agender or gender neutral, or trans\*. When referring to previous scholarship, we honor authors' language choices with regards to gender identities.

### **Conceptual Framework**

This study is framed through NSSE's high-impact practices (Kuh, 2001). We operate with the premise that student engagement in high-impact practices leads to increased student

success (Kuh, 2009). NSSE's high-impact practices allow scholars and college administrators to determine the best practices for student success and engagement (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008). NSSE outlines 10 high-impact practices that most positively impact student engagement (Kuh, 2001; Kuh, 2008): (1) first year seminar courses, (2) common intellectual experiences, (3) residential learning communities, (4) writing-intensive courses, (5) collaborative assignments, (6) research alongside faculty members, (7) global learning initiatives, (8) service learning projects, (9) experiential learning, and (10) senior capstone courses.

Researchers have determined that high-impact practices are effective for college students as a whole (Finley, 2011; Kuh, 2009; Pascarella & Terenzini, 2005). Students who actively participate in high-impact practices have a more positive outlook regarding their undergraduate experiences (NSSE, 2013). Moreover, students experience greater amounts of success as they increase their involvement in high-impact practices (Kuh, 2009).

Kilgo, Sheets, and Pascarella (2014) found that students with higher rates of involvement in high-impact practices achieved higher educational outcomes, including higher retention rates and greater student engagement (Kuh, 2008; Kuh, 2009). Students also reported greater personal and social development through their involvement in high-impact practices (Finely, 2008). Student engagement in high-impact practices additionally facilitates student growth and development (Kuh, 2009). With greater personal, social, and academic gains, students become invested in their undergraduate experience. In turn, students are more able to relate personally to events and situations that occur on their campuses, which reinforces their commitment to their institution (Renn, 2007).

Students find success in academia namely through high-impact practices promoting student-faculty interaction. These interactions take place in the form of undergraduate research,

mentorship, and programs that encourage students and faculty to engage with each other in settings outside of the classroom. Student-faculty interactions have proven to increase student retention and improve student performance in the classroom (Ullah & Wilson, 2007; Kuh, 2009; Zaho, Carini, & Kuh, 2005).

### **Literature Review**

In the literature review, we analyze high-impact practices (Kuh, 2001) across student gender identities. We also provide a review of student-faculty interaction across students' gender identities through the lenses of student engagement and high-impact practices.

#### **High-Impact Practices across Gender Identity**

Student engagement and participation in high-impact practices relies on students feeling safe and comfortable at their college or university. Exclusionary environments are not conducive or well suited to support students who identify as members of a marginalized group. As a result, students are reluctant to see their campus environment as inclusive, which decreases their engagement in high-impact practices (Garvey & Rankin, 2015).

Trans\* and gender non-conforming students, in particular, face ongoing institutional discrimination (Beemyn, 2005) which has a negative effect on their safety and involvement on campus (Rankin et al., 2014). A study completed by Dugan and colleagues (2012) documented transgender students' safety concerns as significantly higher than their peers. When students' personal safety is at risk, they are less likely to identify as a member of that campus community, and therefore more likely to disengage from programs and events where they might be at risk (Beemyn, 2005; Garvey & Rankin, 2015; Garvey, Taylor, & Rankin, 2014; Renn, 2010).

Students' gender identities have varying effects on their participation in high-impact practices. For example, peer relationships have a positive effect on women's academic

achievements and grade point averages but a negative effect for men (Ullah & Wilson, 2007). Gender identity may affect additional student outcomes and student success regarding participation in certain high-impact practices. Moreover, there may be high-impact practices that favor one gender identity over others, and lead to higher levels of student achievement and success (Ullah & Wilson, 2007; Kuh, 2009; Zhao, Carini, & Kuh, 2005).

### **Student-Faculty Interactions across Gender**

Student-faculty interactions lead to increased student motivation and achievement (Komarraju, Musulkin, & Bhattacharya, 2010). Past studies have documented differences in student-faculty interactions among race, class, gender, and first-generation status (Kim & Sax, 2009; Schneider, Bickel, & Morrison-Shetlar, 2015). These studies indicate that student-faculty interactions are beneficial to marginalized populations of students.

Students' gender identities have an influence on student-faculty interaction and, consequently, academic performance and personal growth. The primary research concerning differences for students across gender identities involves student participation in classroom settings, with a special attention toward women's participation and performance. Stout, Dasgupta, Husinger, and McManus (2011) found that women in science, technology, engineering, and mathematics (STEM) developed higher self-concepts when paired with classroom role models who were of the same gender. Findings from another study established that women had higher rates of interaction during a classroom lecture when assessing differences in gender (Kim & Sax, 2009). These differences expose the unique nature of the role gender plays when understanding student-faculty interactions. Although there have been improvements in research to assess how student-faculty relationships affect marginalized student populations, there is considerable research left to examine.

### **More Research Needed for Gender Variant Students**

The higher education community has detailed information about the effects of high-impact practices on student engagement, student development, and how they increase student success (Kuh, 2009). The vast amount of research surrounding high-impact practices is primarily based on a grand narrative for majority student populations that does not account for unique experiences across social identities. Limited research has been conducted to assess specific marginalized student populations who benefit from high-impact practices, such as women in STEM, first generation college students, and students of color (Finley & McNair, 2013; Kuh, 2009; Schneider et al., 2015; Ullah & Wilson, 2007; Zhao et al., 2005). However, gender variant students have not been addressed in student success research regarding engagement in high-impact practices, nor have scholars readily examined student-faculty interactions for gender variant students.

### **Methods**

This study investigates the relationships between participation in high-impact practices and student-faculty interaction for gender variant students (i.e. students who do not identify as either cisgender men or women) by asking the following research questions:

1. How does participation in high-impact practices vary for gender variant students?
2. How do student characteristics, institutional region, and student-faculty interaction relate to high-impact practice participation for gender variant students?

### **Data Source**

The data for this study come from the 2014 administration of the National Survey of Student Engagement (NSSE). NSSE was designed to measure the time and energy that students invest in activities that are known to relate to student learning and development. NSSE asks

students how often they engage in various effective educational practices, their perceptions of their college environment, and how they spend their time in and out of the classroom. NSSE was administered to first-year and senior students at over 710 four-year colleges and universities in the United States and Canada. More than 1.8 million first-year and senior students were invited to participate resulting in over 470,000 students responding to the survey.

### **Sample**

The sample for this study consists of responses from 376,076 first-year (FY) and senior (SR) students at 692 institutions who responded to the survey question about gender identity. A little less than half of the students in the sample (46%) were first-year students. Nearly two-thirds of students identified as women (64%), a third as men (35%), with the remaining students selecting that they prefer not to respond to the question about gender identity (2%) or selecting “Another gender identity” (0.3%). Early analyses in this study use the entire sample of students; later analyses use the 1096 students who selected another gender identity. The largest portions of the overall student sample majored in Social Sciences, Business, or Health Professions (13%, 14%, and 14% for first-years, respectively; 15%, 15% and 13% for seniors respectively). Around two-thirds of these students identified as White (51% from the U.S., 13% from Canada), and around two in five of these students were first-generation (FR: 42%, SR: 45%). Most of these students were traditional aged (less than 21 for first-years and less than 25 for seniors; FY: 89%, SR: 72%), and over half of first-years were living on campus (58%). Regionally, the largest portion of students in the overall sample were from Canada (FY: 30%, SR: 21%), the Southeast (FY: 20%, SR: 22%), and the Mid East (FY: 14%, SR: 13%). The average estimated GPA for first-years in the overall sample was 3.2 and 3.5 for seniors.

Students who identified as another gender identity had similar characteristics with a noticeable difference in majors. The largest portions of these students majored in Arts & Humanities and Social Sciences (29% and 16% for first-years respectively; 27% and 24% for seniors respectively). Around two-thirds of these students identified as White (47% from the U.S. and 15% from Canada for seniors), and around two in five of these students were first-generation (FY: 39%, SR: 42%). Most were traditional aged (FY: 84%, SR: 76%), and over half of first-years were living on campus (54%). The largest portion of students in the overall sample were from Canada (FY: 28%, SR: 24%), the Southeast (FY: 23%, SR: 22%), and the Mid East (FY: 13%, SR: 13%). The average estimated GPA for these students was 3.3 for first-years and 3.4 for seniors. For more details about these sample characteristics see Table 1.

### **Measures**

A wide variety of demographic items were used to examine the experiences of gender variant students (Table 1). The primary independent measure examined in this study is students' gender identity. Students were asked "What is your gender identity?" and were given the following options: "Man", "Woman", "Another gender identity", and "I prefer not to respond". Students who selected "Another gender identity" were then given the opportunity to further specify with a write-in text box. Students wrote in varying responses to indicate another gender identity, including genderqueer, nonbinary, gender fluid, fluid, polygender, agender, gender neutral, transgender, trans, FTM, MTF, androgynous, androgyne, bi-gender, nonconforming, two spirit, third gender, and pangender, among others. A variety of student and institution characteristics were used as controls in this study. Student-level controls included age, grades, major field, racial/ethnic identification, living situation, and first-generation status. The institution-level control used is institutional region.

Another important independent measure is students' scores on the NSSE Engagement Indicator Student-Faculty Interaction (SF). SF is a scale summarizing students' interactions with faculty, more specifically how often they talk about career plans with a faculty member; work with a faculty member on activities other than coursework; discuss course topics, ideas, or concepts with a faculty member outside of class; and discuss their academic performance with a faculty member.

The outcome of this study is the number of high-impact practices in which students have participated. On NSSE, students indicate whether or not they have participated in a variety of high-impact practices including an internship, learning community, study abroad, a research project with faculty, and a culminating senior experience. Additionally, students are asked how many of their courses have included a service-learning project. For more details on the properties and coding of these variables see Table 2.

### **Analyses**

To answer our research questions a series of ordinary least squares (OLS) regressions were used to examine the differences in high-impact practice participation between gender variant students and the relationships between high-impact practice participation and student characteristics, institutional region, and student-faculty interaction. Because the vast majority of variance in participation in high-impact practices was at the student-level and very little at the institution-level, and parameter estimates tend to be similar between OLS and HLM when group level variance is small (Astin & Denson, 2009; Niehaus, Campbell, & Inkelas, 2013), we chose to focus our analysis on the behaviors of individual students. We did, however, conduct parallel analyses using HLM and our results were essentially the same with either method. Therefore, following the direction of previous researchers (Astin & Denson, 2009; Niehaus et al., 2013;

Park & Denson, 2009; Pascarella et al., 2006) we chose to use OLS regression to keep the focus of our study on student-level predictors. As recommended (Astin & Denson, 2009; Park, & Denson, 2009), a more stringent  $p$  value of .001 was used to interpret significance to account for possible clustering of the data when using OLS instead of HLM. In all models, the dependent measure was the number of high-impact practices in which students have participated, and SF was included as an independent measure. Student-level controls include age, grades, major field, racial/ethnic identification, living situation, and first-generation status. The institution-level control used is institutional region. All data were analyzed and results were reported separately for first-years and seniors to account for the different contexts.

To answer the first research question about how participation in high-impact practices varies for gender variant students, gender identity was included as an independent measure. To answer the second research question about how student characteristics, institutional region, and student-faculty interaction relate to high-impact practice participation for gender variant students, gender identity was removed as an independent measure and the model was only run for students that selected “Another gender identity” when indicating their gender identity. For more details on the properties and coding of all variables see Table 2.

### **Limitations**

Results from our study yield important information about gender variant students and their involvement in high-impact educational practices. Our sample population included nearly 1110 undergraduate gender variant students. Most scholarship on gender variant students is atheoretical and lacks empirical analyses, and those studies that do employ empirical analyses have smaller sample sizes (e.g., Dugan et al., 2012; Krum, Davis, & Galupo, 2013; Singh, Meng,

& Hansen, 2013). However, there may be differences within our sample population that we did not observe because of our sample size.

### **Results**

In this study's first research question, we asked how participation in high-impact practices varies for gender variant students. While controlling for various student and institution characteristics, very few differences in high-impact practice participation are found between gender variant students. For first-year students, coefficients for men ( $\beta=.005, p=.821$ ), women ( $\beta=.011, p=.615$ ), and students who prefer not to respond to gender identity ( $\beta=.005, p=.343$ ) were not significant. Similarly, for seniors, coefficients for men ( $\beta=.004, p=.817$ ) and students who prefer not to respond to gender identity ( $\beta=.004, p=.419$ ) were not significant. The coefficient for women, however, was significant albeit small ( $\beta=.059, p=.001$ ) indicating that women are participating in slightly more high-impact practices in their senior year.

In this study's second research question, we asked how student characteristics, institutional region, and student-faculty interaction relate to high-impact practice participation for gender variant students. A summary of the full model coefficients can be found in Table 3. Overall very few predictors for increased high-impact practice participation were found. For both first-year and senior students Student-Faculty Interaction was a significant and positive predictor for increased participation in high-impact educational practices. Additionally, for senior students, living on campus predicted increased high-impact practice participation. Other characteristics such as major field, racial/ethnic identification, and institutional region were not statistically significant predictors.

### **Discussion**

Study results reveal important information regarding engagement and success for gender variant students. The following section discusses key findings from our analyses, including student-faculty interaction, engagement, and major choice.

### **Student-Faculty Interactions**

The most illuminating finding from the study is the significant relationship between student-faculty interaction and participation in high-impact practices for gender variant students. Our findings complement previous studies that demonstrated the importance of student-faculty relationships on student success (Schneider et al., 2015; Ullah & Wilson, 2007).

Faculty in varying disciplines within higher education have written about new pedagogical approaches to making curricula more inclusive for gender variant students (Spade, 2011; Wentling, Windsor, Schilt, & Lucal, 2008). Yet, as a whole faculty are unprepared to support gender variant students in classroom settings and mentoring relationships (Beemyn, 2013). Rankin and Beemyn (2012) wrote that the vast majority of college faculty “have a tremendous amount to learn about gender diversity” (p. 2). Faculty are typically less educated about gender variant student success, and only become aware of the needs of these students when a crisis arises (Beemyn, 2003). Faculty relationships with students still reflect a pervasive normative environment that favors genderism (Bilodeau, 2009). Regarding transgender student interactions with faculty, Pryor (2015) discussed that many faculty have little understanding of how to create inclusive pedagogical approaches or generate appropriate responses to support gender variant students. Gender variant students can feel isolated and targeted when faculty misgender them or use incorrect names. Language is critically important in shaping overall campus climate perceptions for gender variant students, and faculty play a large role in using language that creates an environment that affirms students of all genders (Singh et al., 2013).

Although gender variant students likely find peer support within LGBTQ communities (Hart & Lester, 2011; Renn, 2007; Renn & Bilodeau, 2005), gender variant students must also foster meaningful relationships with faculty mentors. As with all students, mentoring relationships are developmentally important for transgender college students (Renn, 2007). Student-faculty interactions significantly relate to increased student motivation and achievement (Komarraju et al., 2010). Faculty mentorship also has significant impact on student retention and overall satisfaction with college (Salinitri, 2005; Strayhorn & Terrell, 2007). Mentoring is especially effective in improving retention for undergraduate students who have been historically underrepresented (Girves, Zepeda, & Gwathmey, 2005). However, as discussed by previous scholars, faculty mentoring is critically important but the arrangements within such relationships greatly matter (Mertz, 2004; Philip & Hendry, 2000; Strayhorn & Saddler, 2009). Faculty must attend to and improve upon the unique environments and learning contexts in which gender variant students experience colleges and universities.

### **Engagement**

Findings from the OLS regression determined that there is little difference in high-impact participation by gender identity. These results complement findings from Dugan and colleagues (2012) who found no significant variations in collegiate experiences for transgender students compared to their cisgender peers. Dugan and colleagues inferred that transgender student engagement was likely a function of students' own initiatives and not a result of institutionalized resources.

McKinney (2005) discussed that although higher education professionals are beginning to recognize the needs of LGBTQ students, "[l]ess acknowledged are the gender identity issues frequently faced by transgender students" (p. 64). The climate within colleges and universities is

unwelcoming for gender variant students (Bilodeau, 2009; Bilodeau & Renn, 2005; Garvey & Rankin, 2015; Hart & Lester, 2011). Policies and practices in higher education continue to marginalize gender variant students, and campus programs and services fail to serve gender variant students (Beemyn, 2003). Students who endure harassment and/or victimization on campus are less likely to have positive academic or social outcomes (Milem, 2003; Pascarella & Terenzini, 2005; Reason, Terenzini, & Domingo, 2006; Umbach & Kuh, 2006). Yet, results from our study demonstrate no differences in engagement with high-impact practices for gender variant students as compared to their peers. Despite barriers that gender variant students may face in higher education environments (Beemyn, 2005; Rankin et al., 2014), they are still participating in as many high-impact educational experiences as their peers.

### **Major Choice**

Although not part of our original research questions, of note in our results is the vast difference in majors for gender variant students as compared to students who identified as men or women in the sample population. In particular, there is a much higher percentage of gender variant students who majored in Arts & Humanities and Social Sciences, and fewer who majored in Business or Health Professions. Scholars have documented the unwelcoming climate for gender variant students in higher education (Bilodeau, 2009; Bilodeau & Renn, 2005; Hart & Lester, 2011). In a more recent study, Garvey and Rankin (2015) found that among LGBTQ students, gender non-conforming students perceived the classroom climate as less inviting than gender-conforming students. Gender non-conforming students' negative classroom experiences were heightened when students perceived the curricula as less inclusive and institutions as providing inadequate support. Based on our descriptive findings, there may be cause to consider the climate of certain major disciplines for gender variant students. Results from our study may

complement previous findings by demonstrating the chilliness of certain majors (i.e., Business, Health Professions) and warmth of others (i.e., Arts & Humanities, Social Sciences).

Results in our analyses demonstrate that gender variant students enroll at higher proportions in Arts & Humanities and Social Sciences majors. The framing of trans\* people in academia is changing, according to Boucher (2011), and professors in certain disciplines are beginning to incorporate the lived experiences of gender variant people in non-pathological ways within the curricula. In particular, researchers and faculty have begun advocating for a feminist pedagogy within Social Sciences and Humanities disciplines that includes transgender theory and narratives (Alexander, 2005; Norton, 2000). Courses which challenge traditional binaries of gender are instrumental in reducing discrimination among gender variant students and promoting empathy among all students (Abbott, 2009).

The differences in major enrollment for gender variant students is particularly troubling because as Mastekaasa and Smeby (2008) wrote, “Gender segregation in higher education is a major factor behind the uneven distribution of women and men across occupations, and thus also to gender differences in wages” (p. 190). Other scholars agreed that entrenched gendered patterns of major enrollment are concerning because they contribute both to occupational segregation and the gender gap in earnings (Bradley, 2000; Shauman, 2006). Such assertions hold true for gender variant students because not only must these individuals negotiate chilly academic climates, but they must also confront employment discrimination in the workforce (Boucher, 2011). Recent studies across race and class demonstrate that trans\* people have an unemployment rate that ranges from 35-50% unemployed (Clements-Nolle, Marx, & Katz, 2001), and as many as 59% transgender workers reported experiencing job discrimination (Make the Road New York, 2010).

### **Implications**

Results and subsequent discussions from our study yield important results for working with gender variant students in colleges and universities. In the following section, we outline key implications across both practice and research to glean insights into increasing the frequency and impact of high-impact practices on gender variant students.

#### **Practice**

Results illuminated vast differences in majors for gender variant students. These findings beget the question, what can or should be done to ensure that gender variant students have equal and open access to all major disciplines? Higher education staff and administration must facilitate warmer and more inviting climates for gender variant students in historically chilly disciplines, and in particular Business and Health Professions. A warmer climate can be achieved in several ways. Co-curricular student organizations with identity-specific outreach within academic departments may signal to gender variant students that they are welcome in all academic disciplines. Such groups can facilitate stronger sense of belonging and mentorship from both peers and faculty. Faculty instructors must actively foster inclusion and belonging in classroom climates, and ensure that students across all social identities feel affirmed and welcomed in all academic disciplines. Several authors have written about classroom interventions to improve the experiences of gender variant students (Beemyn, Domingue, Pettitt, & Smith, 2005; Boucher, 2011; Case, Stewart, & Tittsworth, 2009; Spade, 2011). We recommend that faculty instructors visit these resources to generate ideas for making their classroom environment more welcoming for students who identify as gender variant.

Study results also demonstrated the significant relationship between student-faculty interaction and participation in high-impact educational practices for gender variant students. We

suggest that in order to facilitate more engaged student-faculty relationships, faculty instructors must be trained on the importance of social identities and climate on student success. Such trainings may educate faculty on issues of power, privilege, and diverse others, which can have powerful effects on mediating a chilly classroom climate for gender variant students (Rankin & Reason, 2008). At the institutional level, department and college leadership must continue to advocate for more gender diverse faculty. Diversifying faculty is just as much about retention as it is recruitment (Parker, Clayton-Pedersen, Moreno, Teraguchi, & Smith, 2006), so academic leadership must create structures to help all faculty succeed in their roles. Hirshfield and Joseph (2012) described identify taxation as additional faculty responsibilities and obligations due to membership in a historically marginalized group, thus creating unfair burdens on minority faculty above-and-beyond what is expected from other faculty. Institutional leadership must create intentional support for minority faculty, especially in areas where these faculty are often over-taxed. For example, institutions should recognize and create a reward structure for faculty to encourage student mentorship and engaging with students in high-impact practices.

### **Research**

More research is needed in order to contribute to foundational knowledge regarding gender variant students in higher education. Specific questions emerged from this study relating to high-impact practices for gender variant students. For example, how does campus climate mediate participation in high-impact practices? How do faculty social identities influence faculty-student interactions?

Generally, researchers must continue to advocate for the inclusion of different gender identities in national and institutional datasets. Garvey (2014) conducted a study to identify the most widely used higher education survey instruments based on publication in tier-one journals.

Of the 10 most widely used survey instruments used in higher education, only two included genders other than man/woman as response options in demographic data collection. The general omission of different gender identities in national and institutional surveys is severely limiting the opportunities for more robust quantitative analyses and, consequently, limiting our ability to better understand gender variant students.

Even further, the utilization of two gender demographic questions should be considered. Asking two questions decreases the chances of missing data and creates more accurate cisgender and gender variant profiles (Tate, Ledbetter, & Youssef, 2013). Tate, Ledbetter, and Youssef suggest asking about gender identity and following with a second question specifically asking if a person identifies as transgender. They found that when only one gender question was asked, there was an increase percentage in missing data than valid responses from those who identified as transgender. Part of this may be due to that fact that some may find that more than one response option is applicable. For example, someone who has transitioned to and now identifies as a man, may feel that man, transgender or both options appropriately describe his gender identity. However, in not asking two questions, he may feel he is unable to answer the question, leading to missing data.

Methodologically, we advocate for an increase in outcome-based research for gender variant students. Renn (2010) identified three central strands to LGBTQ higher education scholarship: visibility, campus climate, and identity and experiences. Although we believe that all research on gender variant students is essential in filling a void, we contend that scholars should realign empirical studies to focus on academic and social outcomes (e.g., resiliency, health and well-being, academic success, retention, graduation, job placement) rather than mediating outcomes (Rankin & Garvey, 2015).

### **Conclusion**

Gender variant students are emerging in visibility across higher education practice, policy, and research. However, there is still much work to be done to fully support student success for these students. Our study examined engagement in NSSE's high-impact practices for students who identify as gender variant. Findings demonstrated key insights with regards to student-faculty relationships, engagement, and academic discipline. We encourage a continued emphasis on gender variant students across all facets of higher education to facilitate success for students with different gender identities.

## References

- Abbott, T. B. (2009). Teaching transgender literature at a business college. *Race, Gender & Class, 16*(1-2), 152-169.
- Alexander, J. (2005). Transgender rhetorics: (Re)composing narratives of the gendered body. *CCC: College Composition and Communication, 57*, 45-82.
- Association of American Colleges and Universities. (2011). *The LEAP vision for learning*. Washington, DC: Author. Retrieved from [http://leap.aacu.org/toolkit/wp-content/uploads/2010/12/LEAP-Vision\\_Summary.pdf](http://leap.aacu.org/toolkit/wp-content/uploads/2010/12/LEAP-Vision_Summary.pdf).
- Astin, A. W. & Denson, N. (2009). Multi-campus studies of college impact: Which statistical method is appropriate? *Research in Higher Education, 50*(4), 354-367.
- Beemyn, B. (2003). Serving the needs of transgender college students. *Journal of Gay and Lesbian Issues in Education, 1*(1), 33-50.
- Beemyn, B. G. (2005). Transgender issues on college campuses. *New Directions for Student Services, 111*, 49-60.
- Beemyn, G. (2013). Introduction. *Journal of LGBT Youth, 10*(1-2), 1-8.
- Beemyn, B. G., Domingue, A., Pettitt, J., & Smith, T. (2005). *Journal of Gay & Lesbian Issues in Education, 3*(1), 89-94.
- Bilodeau, B. (2005). Beyond the gender binary: A case study of two transgender students at a midwestern research university. *Journal of Gay and Lesbian Issues in Education, 3*(1), 29-43.
- Bilodeau, B. (2009). *Genderism: Transgender students, binary systems and higher education*. Saarbrücken, Germany: VDM Verlag.

- Bilodeau, B., & Renn, K. (2005). Analysis of LGBT identity development models and implications for practice. In R. L. Sanlo (Ed.), *Gender identity and sexual orientation: Research, policy, and personal perspectives* (pp. 25-39). San Francisco, CA: Jossey-Bass.
- Boucher, M. J. (2011). Teaching “trans issues”: An intersectional and systems-based approach. *New Directions for Teaching and Learning*, 125, 65-75.
- Bradley, K. (2000). The incorporation of women into higher education: Paradoxical outcomes. *Sociology of Education*, 73, 1-18.
- Case, K. A., Stewart, B., & Tittsworth, J. (2009). Transgender across the curriculum: A psychology for inclusion. *Teaching of Psychology*, 36(2), 117-121.
- Clements-Nolle, K., Marx, R., & Katz, M. (2001). HIV prevalence, risk behaviors, health care and mental health status of transgendered persons: Implications for public health intervention. *American Journal of Public Health*, 91(6), 915–921.
- Dugan, J. P., Kusel, M. L., & Simounet, D. M. (2012). Transgender college students: An exploratory study of perceptions, engagement, and educational outcomes. *Journal of College Student Development*, 53(5), 719-736.
- Finley, A. (2008). *Assessment of high-impact practices: Using findings to drive change in the compass project*. Washington, DC: Association of American Colleges and Universities.
- Finley, A., & McNair, T. (2013). *Assessing underserved students’ engagement in high-impact practices*. Washington, DC: Association of American Colleges and Universities.
- Garvey, J. C. (2014). Demographic information collection in higher education and student affairs survey instruments: Developing a national landscape for intersectionality. In D. Mitchell, C. Simmons, & L. Greyerbiehl (Eds.), *Intersectionality and higher education: Research, theory, and praxis* (pp. 201-216). New York, NY: Peter Lang.

- Garvey, J. C., & Inkelas, K. K. (2012). Exploring relationships between sexual orientation and satisfaction with faculty and staff interactions. *Journal of Homosexuality*, 59(8), 1167-1190.
- Garvey, J. C., & Rankin, S. R. (2015). Making the grade? Classroom climate for LGBTQ students across gender conformity. *Journal of Student Affairs Research and Practice*, 52(2), 190-203.
- Garvey, J. C., Taylor, J. L., & Rankin, S. (2015). An Examination of Campus Climate for LGBTQ Community College Students. *Community College Journal of Research and Practice*, 39(6), 527-541.
- Girves, J. E., Zepeda, Y., & Gwathmey, J. K. (2005). Mentoring in a post-affirmative action world. *Journal of Social Issues*, 61(3), 449-479.
- Hart, J., & Lester, J. (2011). Starring students: Gender performance at a women's college. *NASPA Journal about Women in Higher Education*, 4, 193- 217.
- Hirshfield, L. E., & Joseph, T. D. (2012). 'We need a woman, we need a black woman': Gender, race, and identity taxation in the academy. *Gender and Education*, 24(2), 213-227.
- Kilgo, C. A., Sheets, J. K. E., & Pascarella, E. T. (2014). The link between high-impact practices and student learning: some longitudinal evidence. *Higher Education*, 69(4), 509-525.
- Kim, Y. K., & Sax, L. J. (2009). Student–faculty interaction in research universities: Differences by student gender, race, social class, and first-generation status. *Research in Higher Education*, 50(5), 437-459.
- Komaraju, M., Musulkin, S., & Bhattacharya, G. (2010). Role of student–faculty interactions in developing college students' academic self-concept, motivation, and achievement. *Journal of College Student Development*, 51(3), 332-342.

- Kuh, G. D. (2001). *The national survey of student engagement: Conceptual framework and overview of psychometric properties*. Bloomington, IN: Indiana University Center for Postsecondary Research, 1-26.
- Kuh, G. D. (2008). *Excerpt from high-impact educational practices: What they are, who has access to them, and why they matter*. Washington, DC: Association of American Colleges and Universities.
- Kuh, G. D. (2009). What student affairs professionals need to know about student engagement. *Journal of College Student Development*, 50(6), 683-706.
- Kuh, G. D., Cruce, T. M., Shoup, R., Kinzie, J., & Gonyea, R. M. (2008). Unmasking the effects of student engagement on first-year college grades and persistence. *The Journal of Higher Education*, 79(5), 540-563.
- Make the Road New York (2010). *Transgender need not apply: A report on transgender job discrimination*. New York, NY: Author.
- Mastekaasa, A., & Smeby, J. (2008). Education choice and persistence in male- and female-dominated fields. *Higher Education*, 55, 189–202.
- McKinney, J. S. (2005). On the margins: A study of the experiences of transgender college students. *Journal of Gay and Lesbian Issues in Education*, 3(1), 63- 75.
- Mertz, N. T. (2004). What's a mentor, anyway? *Educational Administration Quarterly*, 40(4), 541–560.
- Milem, J. F. (2003). The educational benefits of diversity: Evidence from multiple sectors. In M. J. Chang, D. Witt, J. Jones & K. Hakuta (Eds.), *Compelling interest: Examining the evidence on racial dynamics in higher education* (pp. 126–169). Stanford, CA: Stanford Press.

- National Survey of Student Engagement. (2013). *Promoting high-impact practices: Pushing boundaries, raising the bar*. Bloomington, IN: Indiana University Center for Postsecondary Research.
- Niehaus, E., Campbell, C. M., & Indelas, K. K. (2014). HLM behind the curtain: Unveiling decisions behind the use and interpretation of HLM in higher education. *Research in Higher Education*, 55(1), 101-122.
- Norton, J. (2000). (Trans)gendering English studies. In W.J. Spurlin (Ed.), *Lesbian and gay studies and the teaching of English: Positions, pedagogies, and cultural politics* (pp. 79-106). Urbana, IL: National Council of Teachers of English.
- Park, J. J. & Denson, N. (2009). Attitudes and advocacy: Understanding faculty views of racial/ethnic diversity. *The Journal of Higher Education*, 80(4), 415-438.
- Parker, S., Clayton-Pedersen, A., Moreno, J., Teraguchi, D., & Smith, D. (2006). *The revolving door for underrepresented minority faculty in higher education*. Claremont, CA: The James Irvine Foundation Campus Diversity Project.
- Pascarella, E. T., Cruce, T., Umbach, P. D., Wolniak, G. C., Kuh, G. D., Carini, R. M., Hayek, J. C., Gonyea, R. M., Zhao, C.-M. (2006). Institutional selectivity and good practices in undergraduate education: How strong is the link? *The Journal of Higher Education*, 77(2), 251-285.
- Pascarella, E. T., & Terenzini, P. T. (2005). *How College Affects Students: A Third Decade of Research*. San Francisco, CA: Jossey Bass.
- Philip, K., & Hendry, L. B. (2000). Making sense of mentoring or mentoring making sense? Reflections on the mentoring process by adult mentors with young people. *Journal of Community & Applied Social Psychology*, 10(3), 211-223.

- Pryor, J. T. (2015). Out in the classroom: Transgender student experiences at a large public university. *Journal of College Student Development, 56*(5), 440-455.
- Rankin, S. & Beemyn, G. (2012). Beyond a binary: The lives of gender-nonconforming youth. *About Campus, September-October*, 2-10.
- Rankin, S., & Garvey, J. C. (2015). Identifying, quantifying, and operationalizing queer spectrum and trans-spectrum students: Assessment and research in student affairs. In D. Stewart, K. A. Renn, & G. B. Brazelton (Eds.), *New directions for student services, no. 152: Lesbian, gay, bisexual, trans\*, and queer students in higher education: An appreciative inquiry* (pp. 73-84). San Francisco, CA: Jossey-Bass.
- Rankin, S., & Reason, R. (2008). Transformational tapestry model: A comprehensive approach to transforming campus climate. *Journal of Diversity in Higher Education, 1*(4), 262–274.
- Rankin, S., Weber, G., & Garvey, J. C. (2014). From invisibility to visibility: Queer spectrum and trans-spectrum college students. In P. Sasso & D. Joseph (Eds.), *Today's College Students: A Reader* (pp. 165-182). New York, NY: Peter Lang.
- Reason, R. D., Terenzini, P. T., & Domingo, R. J. (2006). First things first: Developing academic competence in the first year of college. *Research in Higher Education, 47*(2), 149–175.
- Renn, K. A. (2007). LGBT student leaders and queer activists: Identities of lesbian, gay, bisexual, transgender, and queer identified college student leaders and activists. *Journal of College Student Development, 48*, 311-330.
- Renn, K. A. (2010). LGBT and queer research in higher education: The state and status of the field. *Educational Researcher, 39*(2), 132-141.

- Renn, K. A., & Bilodeau, B. (2005). Queer student leaders: An exploratory case study of identity development and LGBT student involvement at a Midwestern research university. *Journal of Gay and Lesbian Issues in Education, 2*(4), 49-71.
- Salinitri, G. (2005). The effects of formal mentoring on the retention rates for first-year low achieving students. *Canadian Journal of Education, 28*(4), 853–873.
- Schneider, K. R., Bickel, A., & Morrison-Shetlar, A. (2015). Planning and implementing a comprehensive student-centered research program for first-year STEM undergraduates. *Journal of College Science Teaching, 44*(3).
- Shauman, K. A. (2006). Occupational sex segregation and the earnings of occupations: What causes the link among college-educated workers? *Social Science Research, 35*, 577-619.
- Singh, A. A., Meng, S., & Hansen, A. (2013). “It’s already hard enough being a student”: Developing affirming college environments for trans youth. *Journal of LGBT Youth, 10*(3), 208-223.
- Spade, D. (2011). Some very basic tips for making higher education more accessible to trans students and rethinking how we talk about gendered bodies. *Radical Teacher, 92*(3), 57- 62.
- Stout, J. G., Dasgupta, N., Hunsinger, M., & McManus, M. A. (2011). STEMing the tide: Using ingroup experts to inoculate women's self-concept in science, technology, engineering, and mathematics (STEM). *Journal of Personality and Social Psychology, 100*(2), 255.
- Strayhorn, T. L., & Terrell, M. C. (2007). Mentoring and satisfaction with college for Black students. *The Negro Educational Review, 58*(1–2), 69-83.

- Strayhorn, T. L., & Saddler, T. N. (2009). Gender differences in the influence of faculty-student mentoring relationships on satisfaction with college among African Americans. *Journal of African American Studies, 13*, 467-93.
- Ullah, H., & Wilson, M. A. (2007). Students' academic success and its association to student involvement with learning and relationships with faculty and peers. *College Student Journal, 41*(4), 1192.
- Umbach, P. D., & Kuh, G. D. (2006). Student experiences with diversity at liberal arts colleges: Another claim for distinctiveness. *Journal of Higher Education, 77*(1), 169-192.
- Wentling, T., Windsor, E., Schilt, K., & Lucal, B. (2008). Teaching transgender. *Teaching Sociology, 36*, 49-57.
- Zhao, C. M., Carini, R. M., & Kuh, G. D. (2005). Searching for the peach blossom Shangri-La: Student engagement of men and women SMET majors. *The Review of Higher Education, 28*(4), 503-525.

Table 1  
 Select Student and Institution Characteristics for the Overall Sample and for Students Who Report “Another gender identity”

		“Another gender identity”		Overall		
		percentages (%)		percentages (%)		
		First-Year	Senior	First-Year	Senior	
Number of high-impact practices	None	46	16	42	14	
	One	38	22	42	23	
	Two	12	21	12	22	
	Three	2	19	3	20	
	Four	<1	13	1	13	
	Five	1	6	<1	6	
	Six	1	3	<1	2	
Gender identity	Man	-	-	34	35	
	Woman	-	-	64	63	
	Another gender identity	100	100	<1	<1	
	Prefer not to respond	-	-	1	2	
Major field	Arts & Humanities	29	27	11	12	
	Biological Sciences, Agriculture, & Natural Resources	9	11	12	10	
	Physical Sciences, Mathematics, & Computer Science	9	7	6	5	
	Social Sciences	16	24	13	15	
	Business	5	6	14	15	
	Communications, Media, & Public Relations	2	3	4	4	
	Education	3	2	7	7	
	Engineering	6	7	8	7	
	Health Professions	6	4	14	13	
	Social Service Professions	3	3	5	5	
	All Other	4	5	3	6	
	Undecided, undeclared	8	1	4	1	
	Racial/ethnic identification	US: Asian, Native Hawaiian, or Other Pacific Islander	6	3	6	5
		US: Black or African American	4	3	6	6
US: Hispanic or Latino		2	2	6	6	
US: White		38	47	43	51	
US: American Indian, Alaska Native, Other, Multiracial		17	16	7	7	
US: I prefer not to respond		6	5	2	4	
CAN: White		14	15	16	13	
CAN: Non-white		13	9	13	8	
Living on campus	54	19	58	16		
First-generation	39	42	42	45		
Traditional age (<21 for FY, <25 for SR)	84	76	89	72		
Institution region	New England	8	6	6	5	
	Mid East	13	13	14	13	
	Great Lakes	11	12	10	11	
	Plains	5	3	5	6	
	Southeast	23	22	20	22	
	Southwest	3	3	5	7	
	Rocky Mountains	1	4	3	5	
	Far West	9	11	7	9	
	Outlying Areas	<1	<1	1	<1	
	Canada	28	24	30	21	

Table 2

## Student- and Institution-Related Variable Information

Number of high-impact practices	Number of high-impact practices marked “Done or in progress” for learning community, research with faculty, internship, study abroad, or culminating senior experience; or marked “All,” “Most,” or “Some” for how many of their courses include service-learning.
Student-faculty Interaction (SF)	An aggregate scale summarizing students’ interactions with their faculty. Students respond “Very often”=4, “Often”=3, “Sometimes”=2, “Never”=1 to “During the current school year, how often have you done the following?” Items include: 1) Talked about career plans with a faculty member; 2) Worked with a faculty member on activities other than coursework (committees, student groups, etc.); 3) Discussed course topics, ideas, or concepts with a faculty member outside of class; 4) Discussed your academic performance with a faculty member. The SF scale ranges from 0-60.
Gender identity	In group=1; Not in group=0; Man, Woman, I prefer not to respond. Another gender identity served as reference group.
Age	Traditional age (less than 21 years old for first-years, less than 25 for seniors)=1; Not traditional age=0
Grades	Estimated GPA from students’ response to what most of their grades have been up to now at their institution
Major field	In group=1; Not in group=0; Arts & Humanities; Biological Sciences, Agriculture, & Natural Resources; Physical Sciences, Mathematics, & Computer Science; Social Sciences; Business; Communications, Media & Public Relations; Education; Health Professions; Social Service Professions; All Other; Undecided, undeclared. Engineering served as reference group.
Racial/Ethnic identification	In group=1; Not in group=0; Asian, Native Hawaiian, or Other Pacific Islander; Black or African American; Hispanic or Latino; American Indian, Alaska Native, Other, Multiracial; I prefer not to respond; Canadian Non-White. White served as reference group.
Living situation	Student lives in a dormitory, other campus housing, or a fraternity or sorority house=1; student lives in a residence (house, apartment, etc.) within walking or driving distance=0
First generation status	The highest level of education completed by either parent (or those who raised the student) is less than a bachelor’s degree=1, the highest level of education completed by either parent (or those who raised the student) is a bachelor’s degree=0
Institution region	In group=1; Not in group=0; New England, Great Lakes, Plains, Southeast, Southwest, Rocky Mountains, Far West, Outlying Areas, Canada. Mid East served as reference group.

Table 3  
Summary of Regression Analysis for Variables Predicting Participation in High-Impact Practices

	First-year				Senior			
	B	SE	$\beta$	Sig	B	SE	$\beta$	Sig
(Constant)	.502	.276			1.260	.337		
Student-Faculty Interaction	.022	.003	.344	***	.035	.004	.382	***
Traditionally aged	-.150	.147	-.055		.208	.150	.056	
Major field								
Engineering			<i>Reference group</i>					
Arts & Humanities	-.215	.204	-.099		-.239	.262	-.068	
Biological Sciences, Agriculture, & Natural Resources	-.307	.239	-.090		-.074	.297	-.015	
Physical Sciences, Mathematics, & Computer Science	-.432	.237	-.125		-.204	.328	-.034	
Social Sciences	-.014	.216	-.005		-.114	.265	-.031	
Business	.125	.301	.024		-.141	.355	-.020	
Communications, Media & Public Relations	.018	.350	.003		.130	.441	.013	
Education	.198	.320	.034		.193	.452	.019	
Health Professions	-.133	.256	-.033		-.059	.408	-.007	
Social Service Professions	-.240	.315	-.042		.344	.438	.035	
All other majors	-.022	.302	-.004		-.238	.361	-.033	
Undecided majors	.116	.248	.030		.565	.874	.026	
Racial/Ethnic identification								
US: White			<i>Reference group</i>					
US: Asian, Native Hawaiian, or Other Pacific Islander	-.059	.213	-.014		-.162	.389	-.017	
US: Black or African American	.507	.261	.093		.303	.390	.031	
US: Hispanic or Latino	.596	.345	.085		-.113	.455	-.010	
US: American Indian, Alaska Native, Other, Multiracial	.134	.135	.051		.018	.186	.004	
US: I prefer not to respond	.168	.196	.041		.281	.271	.042	
CAN: Non-white	.278	.179	.090		.074	.267	.013	
Living on campus	.026	.108	.013		.695	.165	.173	***
First-generation status	-.072	.096	-.035		-.070	.127	-.022	
Institutional Region								
Mid East			<i>Reference group</i>					
New England	.062	.201	.017		-.113	.310	-.017	
Great Lakes	.201	.190	.063		-.114	.250	-.024	
Plains	-.167	.246	-.036		.295	.368	.035	
Southeast	.064	.157	.027		-.369	.221	-.097	
Southwest	.103	.266	.020		-.073	.368	-.009	
Rocky Mountains	-.608	.453	-.065		-.403	.378	-.048	
Far West	.021	.201	.006		.312	.258	.064	
Outlying Areas	-.111	1.003	-.005		-1.049	1.047	-.040	
Canada	-.054	.189	-.024		-.352	.249	-.094	
R <sup>2</sup>		.182				.233		

Note. \*\*\* $p < .001$ .