

# ***An Examination of Differences in Assessment Center Leadership Competency Rating Based on Gender and Academic Major***

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## **Abstract**

The study investigates whether there are differences in leadership competencies between gender and academic major. Fifty-two Penn State Schreyer Honors College students (46% Female, 54% Male) participated in a one day assessment center that included three interactive exercises and two written exercises. Assessors rated participants on several of Bartram's (2005) Great 8 competencies that were demonstrated during simulations of situations in which leaders often engage such as group discussion, a one-on-one meeting and a presentation to their boss. This study will focus on whether there are differences between male and female participants' ratings on the Leading & Deciding, Supporting & Cooperating, Organizing & Executing, Creating & Conceptualizing and Analyzing & Investigating competencies. In addition, ratings will be analyzed to determine if participants from various academic majors performed differently in terms of several of the Great 8 competencies. The results of this study will add to the understanding of how groups of students differ in terms of their leadership performance.

## **Introduction**

Leadership has been one of the most researched topics in the field of I/O psychology. Researchers have looked at styles of leadership for as long as the past 60 years; there have been nearly as many as 65 different classification systems for styles of leadership (Northouse, 2010). Differences in workplace styles between genders has been another study of interest in this field for as long as women and men were allowed to work with each other. Literature has been observed to help develop the argument of overall gender and academic differences in assessment center performance.

## **Assessment Centers**

Managerial assessment centers (ACs) continue to be a popular assessment method in both administrative and developmental contexts (Howard, 1997; Woehr, 2006). Assessment centers are known for their abilities to evaluate and predict certain aspects of worker behavior. Various techniques are used to allow for this procedure to evaluate an employee's ability to be promoted, selected or placed in management (Byham & Thornton III, 1982). The first assessment centers were used by AT&T to be considered for promotional purposes (Byham & Thornton III, 1982). Currently, assessment centers are acknowledged to be predictors of performance and they are considered to be one of the best research methodologies in industrial psychology (Woodruffe,

1990; Kriek, 1991; Cascio, 1991). Years later, the assessment center has become widely used in organizations as a tool to select and develop leadership talent (Spychalsky, Quinones, Gaugler, & Pohley, 1997). Assessment centers have been used for identifying and developing managerial talent (Moses & Boehm, 1975). Management development is attained most effectively in assessment centers to enhance effectiveness, specifically the job performance of the manager and the performance of the organization as a whole (Berry, 1990).

Some exercises that are used in the assessment center include paper and pencil intelligence and personality instruments, execution of job tasks, and structured interviews (Mueller-Hanson & Thornton III, 2004). Some techniques require participants to perform in simulations of work performance. Among these behavior based exercises are role-plays, leaderless group discussions, and in-basket exercises. Skills that are tested in an assessment center include communication skills, leadership, interpersonal skills, professionalism, and how participants are able to present themselves in managerial contexts (Mintzberg & Gosling, 2002; Pfeffer & Fong, 2002; Porter & Mckibbin, 1998; Waldman & Korbar; 2004). These exercises can help develop as well as assess leadership behaviors. Exercises such as role-plays may have teaching implications in helping students with Supporting & Cooperating competencies (Costigan & Donahue, 2009).

Assessment centers have developmental advantages for students as well. There is also some precedence for the use of assessment centers for developmental purposes in academic settings. The American Assembly of Collegiate Schools of Business (AACSB, 1989; Waldman & Korbar, 2004) has developed an assessment center to examine how well students operate in a business (Boyatzis, Stubbs, & Taylor, 2002). Assessment centers are normally used in industry and it is found that they have a high degree of success in terms of their predictability for success and developing talent in the workplace for managerial promotion and are used for the development of students (Gaugler, Rosenthal, Thornton, & Bentson, 1987). Three major factors influence the effect of feedback on performance, namely the source of the feedback, the characteristics of the feedback, and the characteristics of the recipient (Camp, Blanchard, & Huszco, 1986).

### Leadership Competencies

The oldest form of leadership behavior taxonomy dates back to 1951 and the U.S. Air Force, Flanagan identified six primary managerial behaviors for U.S. Air Officers (Flanagan, 1951; Borman & Brush, 1993). Traits in leadership have generated much interest among researchers for its explanation of how traits influence leadership (Bryman, 1992). Traditionally known as personality variables, competencies are used for a more accurate analysis of predicted worker behavior (McClelland, 1973). Prior to the use of assessment centers, many businesses would use intelligence testing to find predictability of performance. It is better to test based on certain criteria and there is ample evidence that tests that sample job skills predict higher levels of proficiency on the job (McClelland, 1973). Stogdill, surveyed and analyzed over 124 trait studies from 1907 to 1947 and another 163 from 1948 to 1970 and found that there were a number of leadership traits that provide an understanding for what personality characteristics are typical in leaders (Northouse, 2010).

One of the most well known leadership behavior based research is the Ohio State University studies (Northouse, 2010). Like the developmental assessment centers used by the American Assembly of Collegiate Schools of Business, the Ohio State Studies studied students using the Leadership Behavior Description Questionnaire-XII (LBDQ) to assess leadership

behavior (Northouse, 2010). Studies show that initiating structure behaviors and consideration behaviors are fairly evident in these studies. Borman and Brush (1993) have used factor analysis with I/O Psychologists to find taxonomy of managerial behavior. At this time they felt that there was a lack of information on managerial behavior. As such Borman and Brush (1993) found an 18 factor solution for managerial behavior known as mega-dimensions. This taxonomy contributed to the overall understanding of finding common behaviors in managerial behavior; however it failed to agree with other taxonomies that have been made in the past. It has however broadened the overall performance domain than previous taxonomies (Borman & Brush, 1993).

Other than Borman and Brush’s taxonomies on managerial behavior, there are certain characteristics that are observed in an assessment center. Commonly researchers use the Big Five personality traits (Anderson, 2010). Considering past research has suggested that these personality characteristics have relationships with being a leader (Judge, Bono, Illies, & Gerhardt 2002; Northouse, 2010). Extraversion, conscientiousness, and openness to experience were considered to be the highest forms of important traits for effective leaders (Judge, Bono, Illies, & Gerhardt 2002; Northouse, 2010). Extraversion has been found to have the highest relations and to be the highest predictor of success (Waldman & Korbar, 2004).

In the late 20<sup>th</sup> century leadership research began to shift its focus to competencies which are associated with characteristics related to management skills and interpersonal communication (Boyatzis, Stubbs, & Taylor, 2002). Work competencies also include other traits, knowledge, skills and abilities (Boyatzis, Stubbs, & Taylor, 2002). This research shift has led to the common use of Bartram’s Great 8 Competencies.

While organizations develop their competency models that reflect its values and missions, Bartram sought to develop taxonomy of leadership competencies commonly included in organizations competency models. The Great 8 emerged from factor analyses and multidimensional scaling analyses of self and manager ratings of workplace performance. Definitions of Bartram’s Great 8 are seen here as cited from his research on Figure 1.

Bartram’s (2005) Great 8 Competencies, Figure 1.

Analyzing & Interpreting	Shows evidence of clear analytical thinking. Gets to the heart of complex problems and issues. Applies own expertise effectively. Quickly learns new technology. Communicates well in writing.
Interacting & Presenting	Communicates and networks effectively. Successfully persuades and influences others. Relates to others in a confident and relaxed manner.
Supporting & Cooperating	Supports others and shows respect and positive regard. Puts people first, working effectively with individuals and teams, clients and staff. Behaves consistently with clear personal values that complement those of the organisation.
Organizing & Executing	Plans ahead and works in a systematic and organised way. Follows directions and procedures. Focused on customer satisfaction and delivers a quality service or product to the agreed standards,
Creating & Conceptualizing	Open to new ideas and experiences, Seeks out learning opportunities. Handles situations and problems with innovation and creativity. Thinks broadly and strategically. Supports and drives organisational change.
Leading & Deciding	Takes control and exercises leadership. Initiates action, gives direction and takes responsibility.
Adapting & Coping	Adapts and responds well to change. Manages pressure effectively and copes well with setbacks.
Enterprising & Performing	Focuses on results and achieving personal objectives. Works best when work is related to results and the impact of personal efforts is obvious. Shows an understanding of business, commerce and finance. Seeks opportunities for self-development and career advancement.

His findings indicate that the competencies did have significant relations with ability and not so much personality. Other relations competencies have are general intelligence or “g” as well as mental ability in relations to Analyzing & Interpreting and Presenting and Interacting competencies. Competencies may be applied in various manners to test leadership assessment styles, and cultural frame works, most recently Bartram has currently been studying how competencies match transactional and transformational competencies to European leadership and gender styles.

### Gender

The differences in work styles between genders has been examined for a long period of time. As more women are occupying positions of leadership, questions as to whether they lead in a different manner from men are on the rise (Northouse, 2010). Research on gender differences and differences in the assessment center has existed for as long as the early 1960s. It has been found that using assessment centers are considered to be a logical means for providing equal opportunity to women for promotion into managerial positions and advancement within managerial levels (Moses & Boehm, 1975). Questions have risen whether women are skillful enough to perform well as a leader as well as in the workplace. Leadership role differences between men and women has increased as more women are entering leader like positions in industrialized nations (Eagly, Johannesen-Schmidt, & Engen, 2003). Moses and Boehm (1983) found that overall assessment rating was significantly related to progress in management and that the success rate for women was comparable to men (Moses & Boehm, 1983).

Studies have also used women to provide for the validity of assessment centers for leadership potential as well as eliminating workplace discrimination (Ritchie & Moses 1983). Gender roles have even taken place in gender leadership perceptions that men’s roles are more congruent with leadership roles than women has created prejudice against women leaders (Eagly & Karau, 2002; Ayman & Korabik; 2010).

Other differences that have been found in literature relate to gender differences in assessment centers related to leadership style behaviors and competencies. It has been thought that men may have life style advantages over women relative to their leadership behaviors due to conflicting social roles (Eagly & Karau, 1991). Gender role theory takes place in much of gender related leader research according to Eagly (1992). Gender role theory emphasizes society gender roles and the gender typing of the task oriented and socially oriented behaviors that follow from those roles (Eagly, 1987). Men are believed to have agentic task oriented qualities where as females are expected to have high levels of communal attributes which involve relationship orientations (Eagly & Karau, 1991). Literature has also found that in leaderless groups task and social leaders are often separately present (Bales & Slater, 1955; Eagly & Karau, 1991) Gender role theory would predict that men would emerge more than females and findings based on Eagly and Karau’s (1991) meta analysis on the emergence of leaders finds that men do emerge more frequently on measures of leadership as well as task oriented leadership. On the other hand women do emerge more frequently than men on measures of social leadership (Eagly & Karau, 1991).

Another observation of differences in behavioral style of women involves their performance in 360 degree feedback and their leadership styles in relation to transformational and transactional leadership styles. “Academic writers have presented a range of views concerning sex differences and similarities in leadership styles (Eagly & Johnson, 1990: Eagly, Johannesen-Schmidt & Engen, 2003).” Some have asserted that female leaders are more

transformational than male leaders (Eagly, Johannesen-Schmidt & Engen, 2003). These assertions are typically moderated by social role theory, which suggests that people model their leadership and workplace based on gender expectations (Eagly & Johannesen-Schmidt, 2001; Eagly & Johnson, 1990, Eagly & Karau, 2002; Eagly, Wood & Diekmann, 2000; Eagly, Johannesen-Schmidt, & Van Engen, 2003). Their ability to score higher on the MLQ study as examined by Eagly, et al. (2003) that finds that women score higher on the transformational and contingent reward aspect of transactional leadership where as men are higher on transactional aspects of leadership in management by exception active and passive. The findings from Eagly et al. (2003) meta-analysis study implies that they may also have higher levels of transformational competencies related to Bartram's Great 8.

Bartram however founded the contrast in his (2009) study on differences in performance based on gender and managerial experience. Bartram used an OPQ32i methodology of self reports in contrast to Eagly, et al.'s (2003) meta-analysis. The OPQ32i is an Observational Personality Questionnaire that assessed male and female workers in Europe based on their assessment of their work style. Findings show that across eleven European countries transformational competencies in leadership are higher in males contrasted to females, contrasted to Eagly et al. (2003) Meta-analysis findings. The current study may have a more contrasted opinion in relation to Bartram's Great 8 (2005) competencies.

### Major

Major and overall interests have an effect on how we relate to other people. "The conventional wisdom of industrial and organizational (I/O) psychology is that interests and values reflect affective responses to specific people, events, and activities (Hogan & Blake, 1996)." Interests may also have a predictive expectation on how one chooses their own major, activity and or occupation (Hogan & Blake, 1990). There is congruence between career and overall interests and behavior type (Niles & Bowsbey, 2009). As a result of this understanding we are to use the Holland (1973) codes RIASEC (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) to predict how one may choose a major. The Holland hexagonal model has shown that there are themes that are reflective of the Five-Factor Model which shows that there is a framework for organizing and relationships between personality and interest domains (Hogan & Blake, 1996). Holland theory also assumes that there are person-environment assumptions related to work skills. Holland states that "People search for environments that will let them exercise their skills and abilities and that a person's behavior is determined by an interaction between their personality and characteristics of their environment (Holland, 1973; Niles & Bowsbey, 2009)." Assessment center performance may be moderated by these assumptions as we are to investigate in our examination of differences by major.

### Hypotheses

The present study involves understanding differences in measures of competency potential. The data to find these differences are provided using an assessment center from the Pennsylvania State University Schreyer Honors College Program. Based on literature it may be possible that there are differences in the leadership competencies based on major and gender.

Literature may imply that there may be differences in performance related to interests and personality. Presently the second hypothesis wishes to predict differences in interest in this

developmental assessment center. “Female leaders compared with male leaders sometimes are considered to be less hierarchical, more cooperative and collaborative and more oriented to enhancing others self –worth (Eagly, Johannesen-Schmidt, & Engen, 2003).” This observation by Eagly, et al. (2003) may also have relations with the Supporting & Cooperating competency as found by David Bartram’s (2005) Great 8 Competencies. Explanations for comparisons of gender differences in overall competency performance, and relations to the Great 8 may be found in Table 1.

These findings lead to our first hypothesis which deals with student based assessment center performance ratings and differences in gender:

Hypothesis 1: Based on are differences in overall assessment center performance in the assessment center due to gender.

Hypothesis 1: Predicted Differences in Gender based Performance in the Assessment Center (Figure 2)

Competencies	Male	Female
Leading & Deciding	+	-
Supporting & Cooperating	-	+
Interacting & Presenting	=	=
Analyzing & Interpreting	+	-
Creating & Conceptualizing	=	=
Organizing & Executing	=	=

- *Note* Leading& Deciding and Adapting & Coping were not observed in the Schreyer Honors College Assessment Center.

### Rationale for Hypothesis 1

I expect the differences for the Leading & Deciding and the Analyzing & Interpreting Domain find that males will outperform females in assessment center performance. I was able to predict this due to Eagly’s (1987) gender role theory which emphasizes that there are gender roles and gender typing of social and task oriented behaviors that follow from certain characteristics.

Bartram did studies in 2009 and found gender differences in transformational and transactional competencies. The Supporting & Cooperating, Interacting & Presenting, Analyzing & Interpreting competencies are considered to be transactional competencies. Where as Creating & Conceptualizing, Leading & Deciding, as well as Analyzing & Interpreting are considered to be Transformational competencies. His findings show that amongst the Transformational competencies that females outperform males and amongst the transactional competencies that

males outperform females. As previously stated in literature, Eagly et al. (2003)'s literature stated otherwise.

I believe that there should not be any competency differences between the Interacting & Presenting, Creating & Conceptualizing and Organizing & Executing. Contrary to the Gender Roles Theory and Research done by Eagly et al. and Bartram I predict differences may not exist due to lack of experience. However on the Analyzing & Interpreting as well as the Supporting & Cooperating competencies I believe that differences will exist based on gender role theory as founded by Eagly (1987). Men are typically more analytical and task oriented than females where as females are more relationship oriented which has been guided by Eagly's (1987) theory.

While understanding the relationships between the Five Factor Model and relationships between interests as founded by Hogan and Blake (1990), as well as the person-environment interactions as found by Holland (1973) the current study should find that the relations between the Five Factor Model and the Great 8 Bartram (2005) would create findings of differences in OAR in assessment center performance.

Hypothesis 2: There are differences in overall assessment center performance in the assessment center due to developmental interests and major.

Hypothesis 2: Predicted Differences in Academic Major based performance Assessment Center Performance. (Figure 3)

Competencies	Smeal College of Business (E)	Eberly College of Sciences (IR)	College of Engineering (IR)	College of Liberal Arts(S&E)
Leading & Deciding	+	=	-	-
Supporting & Cooperating	+	-	-	+
Interacting & Presenting	+	-	-	+
Analyzing & Interpreting	=	+	=	-
Creating & Conceptualizing	+	=	+	-
Organizing & Executing	+	-	+	=

## Rationale for Hypothesis 2

According to the Holland Occupations Finder I found that Enterprising was present in the majors from the Smeal College of Business as well as the College of Liberal Arts. In relation to the Holland codes Enterprising is the ability to have a managerial outlook towards work life as cited by Hogan and Blake (1990). With that in mind, I believed that the Smeal College of Business would outperform the other colleges in the Leading & Deciding, Supporting & Cooperating, Interacting & Presenting, Creating & Conceptualizing as well as the Organizing & Executing competencies. I predict that the College of Liberal Arts was the second strongest due to their strengths in Social as well as the enterprising domain. In regards to the Analyzing & Interpreting domain I predict that the Eberly College of Science would have the highest level of performance in regards to this competency. I believed this to be true considering that most students in this college were rated as Investigative and Realistic (IR). As far as the College of Engineering, I did not find them to be high performers of most of these competencies except for the Creating & Conceptualizing and Organizing & Executing competencies because of their course work as well as their Holland code ratings which were also Investigative and Realistic. The current study provides an investigation of how these differences exist amongst these four colleges at The Pennsylvania State University.

### Methods

#### Participants

The sample for the current study consisted of 52 Schreyer Honors College students; most students were in the Colleges of Liberal Arts (25%), College of Engineering (17%), Smeal College of Business (23%) and Eberly College of Science (7%). The gender of the sample of students were 46% Female and 54% Male. The class standing of the participants were sophomores (14%), juniors (28%), and seniors (58%). Self-reported SAT scores were an average of 690 on Math and 660 on Verbal (SD- 80+/-). According to the self-report measures the mean GPA was 3.68 on a 4.0 scale (SD-.10+/-).

#### Procedure

The Schreyer Honors College Leadership Assessment Center (SHCLAC) has been conducted eight times between October 2008 and March 2010. The overall purpose of this procedure is to prepare students for career goals and to create opportunities for development and research. Prior to their assessment day, students were prompted by email and course instructors to participate in the SHCLAC. Then, students are to meet administrators two weeks prior to being assessed for orientation, to receive their WAVE self report survey. After applying, students met with a member of the assessment center team to learn about the process, and receive instruction for completing pre-assessment center work, this work included completion of a personality assessment, demographic survey, and a written response to a case study. The demographic included Grade Point Average, Gender, Major, SAT scores, and class standing.



Fifty four students volunteered to participate from the Schreyer Honors College at Pennsylvania State University. Assessments took place twice per semester in the 2008-2009 and 2009-2010 academic years. Approximately, five and twelve students appeared at the Bank of America Career Services Center (located on the University Park campus of Pennsylvania State University) to be assessed. Each center was held Saturday morning; students spent six hours participating in various exercises.

On the day of assessment participants find that they are given three exercises and two written exercises were given to participants to test for participants' competency behaviors. In the beginning of their day, students are given thirty minutes to be assessed for a role play exercise that lasts approximately fifteen minutes. The role play exercise analyzes Great 8 Competency abilities that find competencies in the communication and person domain (Leading & Deciding, Interacting & Presenting, Supporting & Cooperating, and Organizing & Executing). Secondly, they are given a chance to be simulated in a presentation where they must create a fundraising and advertisement program; these skills are used to find strength in the developing and success domain (Analyzing & Interpreting & Leading & Deciding). The final and last exercise is a leaderless group discussion (LGD) which is a meeting with other participants involving a development of ideas to develop a plan to advertise for a campaign. The LGD is used to assess the following competency behaviors; Interacting and Presenting, Leading & Deciding, Supporting & Cooperating, & Organizing & Executing). The two written exercises were used to assess analyzing and interpreting, Leading & Deciding and Supporting & Cooperating. Written exercises were used to assess how well students would be able to solve workplace problems. Overall, the exercises and competencies were used on a 7 point scale to create an Exercise x Competency matrix that was used for grading the participants in the study.

### Measures

Assessors in the assessment center are a diversified group of graduate students, professors, and professional alumni of Pennsylvania State University who are skilled in the Human Resources, Labor Employment Relations and Industrial Organizational Psychology fields. Training for their assessment was performed by Dr. Greg Loviscky, professor of Industrial/Organizational Psychology. Assessors received a training manual to explain the assessors' procedure during the developmental assessment center. They are to provide feedback and ratings using a 7-point scale, for each of Bartram's (2005) Great 8 Competencies. Afterwards, they were provided with an overall background of the goal of the SHCLAC, then they are provided with information involving logistics, how to evaluate performance of students relative to the Great 8 competencies and understanding what procedures are necessary for the SHCLAC. Then after getting an understanding of the exercises and overall program the assessors were directed to participate in a mock session so that they would have a better understanding of the process of the SHCLAC.

The three teams were split to assess the participants and were trained to use tools to properly analyze and critique students on their leadership behaviors relative to Bartram's Great 8 using a competency exercise matrix. After independently rating each participant based on the matrix they speak in pairs to make a discussion upon their scores, then every pair of assessors meets together to discuss overall ratings on each participant. Lastly, feedback is provided to each participant for approximately 60 to 90 minutes based on the participant's performance.

## Results

The first examination of data was on the demographic differences based on self reports of the Schreyer Honors College students. Demographic data was examined were based on GPA and SAT scores (Math) and (Verbal). Using PASW statistics program and ANOVA was performed using the data. Findings show that there was a significant difference in Math SAT scores between males and females. ANOVA findings indicated no significant differences between males and females in terms of Verbal SAT scores and GPA, as can be seen in Figure 4.

ANOVA based Differences in Self Report Data on Schreyer Honors Students in Assessment Centers, (Figure 4)

Gender	SAT(MATH) M	SAT(VERBAL)M	GPA	F	Significance
Male	729.57	659.09	3.78	20.132(Math)	.000(Math)
Female	644.78	664.35	3.80	.052(Verbal)	.821(Verbal)
				.141(GPA)	.709(GPA)

*Note* Data on Significant differences based on ANOVA findings state that the highest level of differences are in SAT Math scores in male.

After finding differences on self-reported information, we started to use ANOVA for differences in Gender based performance in regards to the Great 8 Competencies. A significant difference between men and women was found for Organizing & Executing. However, there were no significant differences between men and women for Supporting & Cooperating, Leading & Deciding, Interacting & Presenting, Creating & Conceptualizing, and Analyzing & Interpreting. This fails to support Hypothesis 2 in regards to gender. Although the differences were not significant, female participants had higher average competency ratings, as can be seen in Figure 5.

Differences in Assessment Center Performance According to Major (Figure 5)

Variable	Gender	N	M	F	Significance
Analyzing & Interpreting	Male	28	4.79	.764	.370
	Female	23	5.04		
Creating & Conceptualizing	Male	28	5.14	1.672	.203
	Female	24	5.50		
Interacting & Presenting	Male	27	4.72	.041	.843
	Female	24	4.77		
Leading & Deciding	Male	28	4.48	1.034	.320
	Female	24	4.71		
Supporting & Cooperating	Male	28	4.64	.970	.324
	Female	23	4.89		
Organizing & Executing	Male	28	4.02	5.886	.018
	Female	23	4.67		

*Note* Significant differences are seen in Organizing & Executing, over all differences in performance find that females outperform males in the competencies.

To test for our second hypothesis we examined data on overall differences in assessment center performance in regards to academic major. ANOVA findings show that there was a significant difference among the Majors in Creating & Conceptualizing. Post hoc analyses indicated that the difference between the Creating & Conceptualizing ratings for Business majors

and Engineering majors was statistically significant. Overall, students in the Smeal College of Business had higher average competency ratings than the other students in other Colleges, with the exception of Interacting & Presenting, although the differences were not significant. The ANOVA results are summarized in Figure 6.

Differences in Assessment Center Performance according to Major (Figure 6)

Variable	College	N	Mean Scores	F	Significance
Analyzing & Interpreting	Liberal Arts	12	4.58	.493	.141
	Eberly College of Science	4	5.13		
	College of Engineering	9	4.89		
	Smeal College of Business	11	4.99		
Creating & Conceptualizing	Liberal Arts	12	5.42	2.945	.057
	Eberly College of Science	4	5.25		
	College of Engineering	9	4.44		
	Smeal College of Business	11	5.50		
Interacting & Presenting	Liberal Arts	12	4.50	2.945	.160
	Eberly College of Science	4	4.25		
	College of Engineering	9	5.06		
	Smeal College of Business	11	5.00		
Leading & Deciding	Liberal Arts	12	4.25	.730	.352
	Eberly College of Science	4	4.75		
	College of Engineering	9	4.67		
	Smeal College of Business	11	4.71		
Supporting & Cooperating	Liberal Arts	12	4.63	1.572	.196
	Eberly College of Science	4	4.50		
	College of Engineering	9	4.56		
	Smeal College of Business	11	5.27		
Organizing & Executing	Liberal Arts	12	4.38	.320	.771
	Eberly College of Science	4	4.38		
	College of Engineering	9	4.00		
	Smeal College of Business	11	4.46		
<b>Total</b>		<b>36</b>			

*Note:* Overall significant difference is seen amongst the Creating & Conceptualizing Domain the highest level of strength is found by the Smeal College of Business students.

## Discussion

The results of the current study did not support our hypotheses. Hypothesis 1 predicted that we would find many differences in leadership competencies based on gender. However, the findings indicate that there was a difference between males' and females' Organizing & Executing assessment center ratings, with females earning higher ratings. We did not find any significant differences across the other competencies, although female participants were consistently rated higher than male participants. These results support neither Eagly et al.'s (2003) findings nor Bartram's (2009) results.

One possibility is that there were little to no differences whatsoever in males' and females' assessment center performance. Moreover, it may be possible that men and women are not so different at all when it comes to competencies as well as abilities. The Gender Similarities hypothesis as investigated by Hyde (2005) states that "males and females are similar on most, but not all psychological variables" (p. 581). Hyde's meta-analysis results indicated that there are very few large differences between genders, and those differences were limited to variables such as throwing velocity, whereas differences between males and females in terms of verbal and mathematical abilities are relatively small. These results may explain why there was only one significant difference between males and females in the current study. Of course, the differences in the other competency ratings may have been non-significant due to the small sample size. Another possible reason for the lack of support for our hypotheses is a lack of participants' workplace experience. The socialization process at work might contribute to significant differences between genders. Not having the experience and corresponding socialization towards gender roles, could have also contributed to the lack of support for our hypotheses.

The second set of hypotheses, concerning differences in leadership competencies among participants from different Majors, was also not supported. While none of the differences were statistically significant, Smeal College of Business students had higher competency ratings, on average, than students from other majors with the exception of Interacting & Presenting. This trend may be explained by research conducted by Holland (1970). He used the Holland codes to develop the Occupations Finder which assigns behavioral interests to academic majors and professional occupations. According to this finder, we are to observe that Enterprising is most related to Business related careers as well as academic majors. Enterprising is also related to two of the Big Five personality factors, Extraversion and Conscientiousness. This may account for why the Smeal College of Business students outperformed students from the other colleges.

## Limitations/Conclusion

The lack of support for the hypotheses may be due to some methodological issues. The lack of a large sample size may be a reason why we were only able to find significant differences in only Interacting and Presenting. Also, our sample may have been unrepresentative of majors in general considering that we only observed four of the thirteen colleges at The Pennsylvania State University. If we were able to have a larger sample size we would have higher variance in majors which may produce different results.

In addition to sampling issues, our measures of leadership competencies were different than those studies on which our hypotheses were based. Bartram assessed his participants based on self-report using the OPQ32 (Occupational Personality Questionnaire) and Eagly et al.'s (2003) study was a meta-analysis. Our measures of leadership competencies were competency

ratings provided by assessors during an assessment center. These different methodologies may be reasons why the results of each study have varied.

Factors associated with assessment center ratings may have also contributed to our non-significant findings. For instance, the duration of training that our assessors received was shorter than what is generally received in industry. Also, the majority of our assessors were female. It is possible that gender bias may have been attributed to the results of our current study in regards to our gender hypotheses. In addition, some assessor teams may also have been more harsh or more lenient than others, which may have produced less reliable measures of the competencies.

Despite the various possible explanations for the lack of support for our hypotheses, there are reasons for optimism for testing these hypotheses in the future. For instance, analyses can be conducted to determine the reliability of the assessment center ratings. Furthermore, the assessment center will continue to be held for the next several years, greatly increasing the sample sizes for future analyses. The current research provided a crucial first step in examining the SHC developmental assessment center ratings, but subsequent data collection and analyses may be able to provide more conclusive evidence regarding whether differences exist between genders and students from various majors.

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