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"Can I work with your group?" Assessing Preferences Among the Washington University in St. Louis Undergraduate Community Towards International Students in Classroom Group Formation

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Abstract

Group formation is an integral component of the contemporary higher education experience. This begs the question of how students form groups: which aspects are most important, and what determines people's preferences for group members. Specific incidents have indicated that some students, particularly international students, are not sure if they will be welcome when asking to join a class group. In this study, undergraduate business students were surveyed to understand their preferences when selecting group members, using conjoint analysis to analyze the results. Overall, (i) results show that the most important factor for people's preferences is if a potential group member shows good behavior in class. There were five clusters of students created through conjoint analysis, each with varying preferences dependent on their makeup. The most significant takeaways are that (ii) groups of international students prefer to work with students with international accents, (iii) groups of American students prefer to work with students with American accents, but there are also groups without a single demographically identifying feature that also preferred students with American accents, and (iv) groups of males value knowing their group members as much as they value good behavior exhibited by the potential group members. Additionally, the results show that (v) despite people's biases towards wanting to work with Americans, non-American students can overcome the bias with other factors such as exhibiting good behavior or knowing the potential group members. Professors and students should also be aware of this bias to ensure international students do not struggle in group projects as well as consider helping international students integrate better with the American community at universities.

Overview and Introduction

"You may choose your own groups." As the professor says this, heads frantically turn around the room, students making eye contact with others signaling that they will be in a group together. Most classes in the Olin Business School have a group component in the curriculum. In many of these situations, students get to decide who will be in their group. However, what are the key deciding factors for who gets to be in a group? Specifically, does international student status affect being asked to be in a group? This specific question arose from a personal experience in which once a group was formed in class, an international student asked, "Are you okay with having two international students in your group?" This made us deduce that there may have been a problem in the past with group formation and international student status.

This research study is important for not only the Olin Business School, but also for all of Washington University in St. Louis as well as other colleges and universities, as diversity and inclusion are very important pillars for education centers. As stated in CollegeSimply, eight percent of undergraduate students are international students at Washington University in St. Louis (CollegeSimply, 2019); thus, if there is a bias against international students, this would affect a large portion of the university. As Seekings (2018) writes, there have been incidents of students using derogatory language and negatively calling out certain international racial groups on social media within the Washington University in St. Louis community, so there is reason to think that there could be hostile sentiment toward international students that this research study could help understand. This research can also be expanded into other areas such as acceptance into clubs, activities, and hiring practices. Class group formation and acceptance into clubs and activities run by students are both areas with little formal guidelines, so this research will specifically shed light on an everyday bias that occurs in situations with no formal guidelines.

Literature Review

Various other research has been done in the fields of Psychology, Education, and Economics that is relevant to our research. In the area of Psychology, two papers were primarily examined. The first, written by Olivas and Li (2006), discusses common stressors that international students face when coming to the U.S. Insights are based on research done by other authors and their papers. One of the common stressors was language skills because it can affect students' social and academic success. This is directly related to our research because we also looked at how language skills of international students, as perceived by Americans, influence how students choose groups. The second paper, written by Charles-Toussaint and Crowson (2010), discussed predictors of prejudice against international students, something that we too aimed to do through our research. This research used perceptions of international students as symbolic and real threats, right-wing authoritarianism, and social dominance orientation as the factors and ran a regression analysis. While our research looked at different factors than these, the purpose was still trying to explain prejudice and bias against international students.

In the area of Education, we wanted to better understand how our research could be helpful to professors and faculty in improving the learning experience for international students as well as American students. The first paper, written by Long and Porter (1985), argues that group work is a good way for international students to practice their English skills. However, this relies on the fact that the international students are in a group that uses English as the primary language. If a group is all international students from the same foreign country, it is not uncommon for them to speak in their native language rather than in English. This creates a cyclical issue because our research showed there was in fact a bias against international students, perhaps due to poor language skills. American students might not want to work with international students due to poor English skills, but if the international students are not given the opportunity to work with Americans in groups, then they are deprived of an opportunity to practice and improve their English skills so next time an American will be more willing to work with them. This helps support our suggestion that professors might want to consider assigning groups more often to help ensure that all students are included and international students are able to practice their English skills, thus breaking the cycle. The second paper, written by Quinton (2018), discusses

factors that cause prejudice against international students on college campuses. It looks more holistically at the college experience for students rather than specifically in a group formation setting. However, it helps bring broader context to our research. The findings indicate that domestic students with higher socialization with international students have less prejudice. This could directly tie to encouraging assigned groups to ensure international student and domestic student socialization and thus decrease prejudice.

Lastly, in the area of Economics, there is a paper that helped shape how we designed our survey. In an article written by Castillo, Petrie, and Torero (2012), research suggests the importance of physical appearance during group formation on racial biases. A survey was used as part of this research method as well, and it showed that appearance can mask racial prejudices. This helped us decide not to use photos of mock students in our survey because we did not want to introduce an opportunity for more bias.

Hypothesis

Interest in this research subject stemmed from a student asking if it was okay to join a group despite that she was an international student. We think there are a few explanations for this. First, the theory of ingroup bias could certainly be at play. Ingroup bias, according to the American Psychological Association, is defined as “the tendency to favor one’s own group, its members, its characteristics, and its products, particularly in reference to other groups” (American Psychology Association). This bias is likely implicit, but nonetheless still there. This is proven in a paper by Ben-Ner and Kramer (2006), who show that Midwestern students generally prefer people who are similar to them in one aspect or another, and while this research only involves Midwestern students, its results can still be applied to other groups and therefore to the students in our study. The desire to work with group members who share similar working cultures and languages could be a contributing factor in addition to prejudices. Other allegations of racism and bigotry floating around the country and at Washington University in St. Louis contributed to the hypothesis that American students would prefer working with other American students. Because ingroup bias is a commonly applicable theory, for the same reasons as stated above, we

hypothesize that international students would also prefer to work with other international students.

Additionally, we hypothesize that some students may be nervous about choosing their groups. This could be because they are nervous about being accepted and therefore are uncomfortable approaching other students. For example, if an international student thinks that American students do not want to work with them, group formation might make them nervous and therefore they would not ask to join a primarily American group, regardless of if a bias is actually there. People generally want to avoid rejection. As reported by Omodeo (2018) "[T]he fear of rejection is one of our deepest human fears. Biologically wired with a longing to belong, we fear being seen in a critical way. We're anxious about the prospect of being cut off, demeaned, or isolated. We fear being alone" (Omodeo, 2018). So if a student thinks other students will reject them, it makes sense that they would not ask to join the group.

Lastly, the third hypothesis is that students will favor working with other students that they know. This relates to the homophily principle, which, as studied by McPherson, Smith-Lovin, and Cook (2001), can be summarized as "similarity breeds connection," and these connections result in homogeneous personal networks that cause the strongest divides among people (McPherson, Smith-Lovin, and Cook, 2001). As the atmosphere in a classroom during the group formation process was described, many groups are formed by simply making eye contact with friends and acknowledging each other, as students want to work with the connections they have made. Reasons for preferring to work with students that know one another are comradery, friendship, successful previous group projects, and comfort. Additionally, students might not want to risk working with someone they do not know if they feel that it could put their grades at risk; an incohesive group that bickers often leads to an unsuccessful project, an obviously undesirable outcome for students. McPherson, Smith-Lovin, and Cook (2001) confirm this idea and its potential consequences, stating that "[h]omophily limits people's social worlds in a way that has powerful implications for the information they receive, the attitudes they form, and the interactions they experience" (McPherson, Smith-Lovin, and Cook, 2001).

Method

The analysis method we decided to use was conjoint analysis as it allows for easy comparison of the importance of various attributes about potential members when forming a group. Green and Srinivasan (1990) write that "conjoint analysis has received considerable academic and industry attention as a major set of techniques for measuring buyers' tradeoffs among mulitattributed products and services" (Green and Srinivasan, 1990). In this case, instead of a product or service, conjoint analysis is measuring the various attributes about a potential group member. Green and Srinivasan (1990) go on to say that conjoint analysis is no longer simply used for products and services but also for litigation, employee benefit packages, and personnel administration. This shows that conjoint analysis can be used to measure preferences about potential group members because it is not limited to only products and services.

The method works by having participants choose between different profiles of potential group members, and each profile has differing attribute levels. Attribute levels are the different options an attribute could be. For example, an attribute could be gender and the attribute levels would be male or female. Orme (2002) writes that "[t]he underlying theory of conjoint analysis holds that buyers view products as composed of various attributes and levels. Buyers place a certain utility (value) on each of those characteristics, and can determine the overall utility of any product by summing up the value of its parts (levels)" (Orme, 2002). Thus, as the respondents choose between different profiles, the analysis identifies part-worths, or preferences, of each attribute level for each respondent. As stated by Orme (2002), "[o]nce we learn respondents' preferences for the various attribute levels, we can predict how buyers might respond to any potential combination of levels in our study, whether or not that actual product was ever displayed" (Orme, 2002). In the case of our study, the buyers are the students and the product is the potential group member, but Orme's theories still hold.

This analysis method allows comparison from the individual respondent perspective as well as grouping respondents into different clusters. The clustering method places respondents into different clusters based on what attributes about potential members they view as most important, and part-worths for each cluster are shown. Thus, the clustering method shows major trends

regarding which attributes about potential members are most important to participants. By creating clusters, it becomes easier to interpret why respondents place more importance on certain attributes about potential members in a quantifiable manner.

When using the conjoint analysis method, two software programs were used to run the analysis. The first software, Sawtooth, creates a survey that allows respondents to participate in choice-based exercises. These choice-based exercises are showing the respondent three different profiles with various attribute levels about a potential group member and then the respondent chooses one of the profiles. Choice-based conjoint analysis was chosen because, according to Sawtooth Software Inc. (2017), it is not only the most widely used form on conjoint analysis, but by having respondents complete "[t]he task of choosing a preferred concept, [it] is similar to what buyers actually do in the marketplace" (Sawtooth Software Inc., 2017). Thus, choice-based conjoint analysis creates a similar situation that respondents would experience when forming groups in a classroom. Table 1 shows an example of what this choice-based exercise looked like to participants. The respondent is then shown a new set of three different profiles and this process continues until they have seen 48 different profiles. Sawtooth adapts to the respondent's choices in order to determine the respondent's part-worths on all the attribute levels in the profiles. For example, if a respondent always chooses a profile of male group members, then Sawtooth will recognize this and give options that are all female or all male, forcing the respondent to choose based on a different attribute. This mitigates the problem of a respondent only choosing profiles based on one attribute. Thus, two respondents likely will not see all identical sets of profiles. Sawtooth then produces part-worths on each attribute level for each respondent.

Table 1 - Survey Example

If these were your only options, which would you choose?

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Gender	Male	Female	Male
Know the Person	You do not know this person	You know this person	You know this person
Behavior During Class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Poor -This person sits towards the back of the class, does not participate, and is often on their cell phone during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class
Accent	Chinese Accent	Italian Accent	Korean Accent
	Select	Select	Select

Note: This table shows a sample of what each participant saw when taking the survey. Each attribute could vary between the attribute levels, and participants were forced to select one of the three to proceed through the study.

After all of the respondents submitted the survey, Sawtooth produced the raw data for each respondent's part-worths of each attribute level. This data needs to be manipulated so that comparison between respondents and grouping of respondents could occur. The data must be manipulated because when grouping and comparing based on part-worths, the analysis is comparing utilities of different people. A utility is the sum of a person's part-worths for a specific profile. Comparing utilities of different people cannot be done because each respondent's utilities have a different zero. The solution is to evaluate all part-worths relative to the same attribute level. Thus, chose one of the attribute levels for each attribute as the base case and compare all other attribute levels within that attribute to the base case. This program will group the respondents into different clusters based on similar attribute preferences. A multivariate k-clustering analysis where the starting seeds are the hierarchical clustering centers is then run. This analysis method uses the positives from both k-clustering and hierarchical

clustering and mitigates the disadvantages of the two methods. The disadvantage of k-clustering is the randomness of the starting point for creating clusters, and the disadvantage of hierarchical clustering is that clusters are not very compact. K-clustering creates compact clusters and hierarchical clustering does not have a random starting point as it combines the two closest points into one to make the initial cluster. Thus, this method has no randomness and has compact clusters.

After deciding that the conjoint method would result in the best analysis for determining which attributes respondents focus on when deciding who should be in their group, a survey was created on Sawtooth. The survey consisted of the choice-based exercises and demographic questions. The choice-based exercises can be used to determine what attributes about potential members respondents prefer when forming groups. The demographic questions will help answer why respondents have preferences toward various attributes about potential members when forming a group. The attributes for the choice-based exercises were Gender, Behavior, Relationship, and Accent. These specific characteristics were chosen because they are the attributes that are observable when choosing groups in class. International student status was not included because this status is not a physically observable trait that a student would know for sure without having already talked to the other student. This was a strategic decision to simulate the group formation process in classrooms as closely as possible.

Current Washington University in St. Louis students were then invited to take the survey at the Reuben C. Taylor Lab in the Olin Behavior Lab that is run through Washington University in St. Louis.

Participants

Because the survey was conducted in the Reuben C. Taylor Lab, the respondent pool consisted of students who are enrolled in at least one of the following classes: Management 100, Marketing 370, or Organizational Behavior 360 in the Olin Undergraduate Business School at Washington University in St. Louis. Students, however, were not necessarily primary business majors. There

was a total of 229 participants in the survey, all of whom were undergraduate students. The grade level breakdown is as follows: 45% first-years, 45% sophomores, 7% juniors, and 3% seniors. Thus, the majority of the participants were first-year or sophomore students; however there was representation from all grade levels and all colleges within the university. The reasoning for the trend toward first-year and sophomore students is because of the respondent pool. The three classes that make up the respondent pool are introductory business classes, thus, most students take these classes earlier in their academic career. In terms of academic school, 49% were in The College of Arts and Sciences, 41% were in The Olin Business School, 4% were in The Sam Fox School of Design and Visual Arts, and 5% were in The McKelvey School of Engineering. This survey was conducted during the second semester of the school year, and during this semester only non-business school primary majors take the class Management 100. This explains why there were more Arts and Sciences primary major respondents than Olin Business School respondents. In terms of ethnicity, 64% of participants identified as white, 28% Asian, 10% Hispanic, 7% black, 2% Native American, and 2% identified as other. We had an even breakdown by gender, with 114 males (49.8%) and 115 females (50.2%). Additionally, 8.3% of respondents were international students, which we believe is a fitting representative sample given that approximately 8% of Washington University in St. Louis undergraduates are international students.

Procedure

Participants were able to sign up for our study online through SONA systems, the program through which Olin research studies are housed. Upon arriving at the Taylor Lab in Simon Hall, participants signed in and were given course credit for completing the study. At the stated start time, a proctor led participants into the study room, assigned each a computer, and instructed the participants on how to complete the survey. Before beginning, participants were instructed to read and sign a consent form regarding the survey. (See Appendix A for copy of consent form.) Students then read the survey instructions and completed the survey. (See Appendix B for example of survey instructions.) After completing the study, participants were given a debrief form about the actual intentions of the study and were reminded to keep all survey information

confidential in order to maintain the integrity of the study. (See Appendix C for copy of debrief form.)

Design and Analysis

The survey consisted of two sections: the first had choice-based exercises to determine respondents' attribute preferences about potential members when forming a group and the second included demographic questions to help explain why respondents have these preferences. (See Appendix E - complete screenshots of survey.)

The first section of choice-based exercises consisted of sixteen questions where each question showed a respondent three different profiles of a potential group member, and the respondent had to choose out of the three which potential member the respondent would want to be in his or her group. The profile consisted of four attributes: Gender, Relationship, Behavior, and Accent. The Gender attribute had two attribute levels, either Male or Female; the Relationship attribute had two attribute levels, either You Know the Person or You Don't Know the Person; the Behavior attribute had two attribute levels, either Good or Poor; and the Accent attribute had five attribute levels, either American, Chinese, Korean, Indian, or Italian. The American accent was used because it is the base case of what the other accents are compared to, and, according to CollegeSimply, about 92% of the undergraduate population is American (non-International). Chinese, Korean, and Indian accents were chosen because, according to CollegeFactual, China, Korean, and India are the top countries where undergraduate international students at Washington University in St. Louis are from. Italian accent was chosen because the other major countries where international students are from are in Europe and there are a notable number of Italian students at Washington University in St. Louis. The Italian accent would also help determine if there was specifically a bias toward Asian accents or accents in general.

The respondents had to choose between three profiles because we wanted to be realistic in how many potential members that a respondent would have to choose from in a real classroom setting. There were sixteen sets of three different profiles because the number of sets is equal to

2*(1 + number of attribute levels - number attributes). Thus 16 = 2*(1+11-4) as per conjoint analysis standards.

The demographic questions were used to help determine why respondents have preferences towards certain attributes. Questions about whether or not the respondent is nervous when forming groups and if they prefer for groups to be assigned by the professor or to create their own groups help determine the reasoning behind respondents' preference toward people they know or do not know. For example, if a respondent prefers people they do not know, then they may prefer assigned groups (increasing the chances of working with someone they do not know) and may be more nervous when forming groups (harder to form groups if one does not know people); but if the respondents prefer people they know, then they may prefer creating their own groups (increasing the chances of working with people they know) and may be less nervous when forming groups (knowing that the people they know will form a group with them). In order to understand why respondents preferred a certain accent and whether it was for communication or cultural reasons, questions about similarity between cultures of the four countries, how well these countries spoke English, and which of the four languages was most similar to English were used.

After all of the respondents submitted the survey, the data manipulation of creating base cases for each attribute to allow for cluster analysis must be conducted. For Gender, Relationship, and Behavior, the base case was the least popular attribute level, thus Male, Don't Know the Person, and Poor, respectively. For Accent, the base case was the most popular attribute level, which was American. Using American accent as the base case allowed for comparing every accent attribute level to American since the majority of the student population at Washington University in St. Louis is American. Once determining the base case for each attribute, the new part-worths were found by subtracting the base case attribute from the other attribute level. When there are more than two attribute levels, the base case is subtracted from each attribute level individually. Thus, the part-worths of each respondent that are uploaded to Radiant are the following: Female versus Male, Know the Person versus Don't Know the Person, Good versus Poor Behavior, Chinese versus American Accent, Korean versus American Accent, Indian versus American Accent, and Italian versus American Accent.

When using a k-clustering that starts with initial seeds from the hierarchical clustering center to create groups of respondents with similar part-worths, the number of ending groups is an input. Deciding the number of groups is a difficult process, so k-clustering was executed with four, five, and six groups to determine which group revealed the most information. Table 2 below shows the different outcomes with four, five, and six k-clusters. The five clustering was chosen because it appeared to be the option with the greatest differentiation between clusters without creating clusters too similar to each other. For example, the split from four to five clusters created one new cluster with noticeably different preferences than any of the others, but the split from five to six created one new cluster that had similar preferences to another.

Table 2 - K-clustering analysis (4, 5, and 6 clusters)

	Gender (F vs M)	Know vs Don't Know	Behavior (Good vs Poor)	Accent (Chinese vs American)	Accent (Korean vs American)	Accent (Indian vs American)	Accent (Italian vs American)	Size
1	5.95	65.44	251.35	20.79	19.96	12.42	25.09	30.57%
2	19.39	85.44	215.16	-43.01	-41.52	-25.2	-25.49	32.31%
3	0.53	54.12	207.92	96.5	-86.79	-77.77	-55.4	25.76%
4	-13.61	145.79	154.22	-3.98	-10.29	1.57	-0.28	11.35%

	Gender (F vs M)	Know vs Don't Know	Behavior (Good vs Poor)	Accent (Chinese vs American)	Accent (Korean vs American)	Accent (Indian vs American)	Accent (Italian vs American)	Size
1	32.85	67.62	232.32	11.14	13.11	10.13	32.18	18.34%
2	14.57	82.55	215.77	-51.87	-50.46	-32.18	-35.6	33.62%
3	0.77	49.4	205.25	-105.55	-92.64	-87.75	-55.75	19.65%
4	-17.95	70.01	257.6	21.31	19.59	12.96	12.22	17.90%
5	-11.33	149.9	150.96	-5.08	-15.11	-3.06	-0.35	10.48%

	Gender (F vs M)	Know vs Don't Know	Behavior (Good vs Poor)	Accent (Chinese vs American)	Accent (Korean vs American)	Accent (Indian vs American)	Accent (Italian vs American)	Size
1	21.23	14.11	297.24	25.93	10.41	10.66	32.21	7.42%
2	14.57	82.55	215.77	-51.87	-50.46	-32.18	-35.6	33.62%
3	0.77	49.4	205.25	-105.55	-92.64	-87.75	-55.75	19.65%
4	29.7	84.51	217.91	5.05	13.1	8.66	30.67	14.85%
5	-20.68	84.03	240.98	24.55	23.22	14.2	11.06	14.85%
6	-13.43	151.72	149.39	-10.35	-19.12	-3.42	-5.55	9.61%

Note: This table shows the 4, 5, and 6 k-clustering analysis.

Understanding how to read the data tables is vital to understanding our analysis. Table 3 is the main analysis table from which findings were pulled.

Table 3 - Five Cluster Analysis

Cluster	Gender (F vs M)	Know vs Don't Know	Behavior (Good vs Poor)	Accent (Chinese vs American)	Accent (Korean vs American)	Accent (Indian vs American)	Accent (Italian vs American)	Size
1	32.85	67.62	232.32	11.14	13.11	10.13	32.18	18.34%
2	14.57	82.55	215.77	-51.87	-50.46	-32.18	-35.6	33.62%
3	0.77	49.4	205.25	-105.55	-92.64	-87.75	-55.75	19.65%
4	-17.95	70.01	257.6	21.31	19.59	12.96	12.22	17.90%
5	-11.33	149.9	150.96	-5.08	-15.11	-3.06	-0.35	10.48%

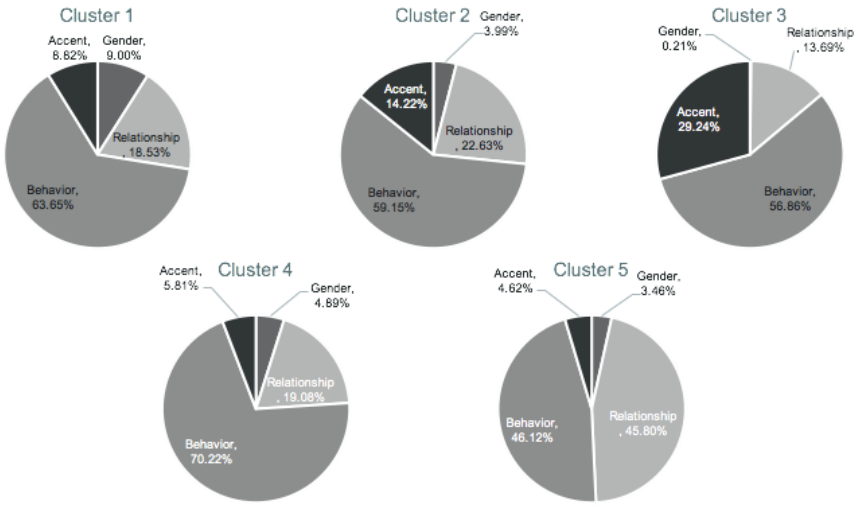
Note: Table 3 shows the relative preferences of each cluster for each attribute, color-coding them by column so that green prefers the first attribute level (for Gender, this would be Female) and red prefers the second attribute level (for Gender, this would be Male). The number shown is known as the number of "utils" a cluster has for that attribute, and util values may be compared to others in the same row and column, but not diagonally.

With conjoint analysis, tables can be compared easily and directly within their cluster and within the characteristic itself (that is to compare Cluster 1's preference of gender against knowing someone and to compare Cluster 1's gender preference with Cluster 2's, for example). To read the main analysis table by column, green means that this cluster prefers the first attribute level listed the most, while red means this cluster prefers the second attribute level listed the most. For example, under the Gender attribute, Cluster 1 prefers females the most and Cluster 4 prefers males the most. The results can also be read across the row to compare, in magnitude, the number of utils each cluster gives each attribute. For example, looking at Cluster 5's row, the Know the Person versus Don't Know the Person attribute level comparison and the Good Behavior versus Poor Behavior attribute level comparison have almost the same utils at 149.9 and 150.96, respectively. Thus, Cluster 4 places almost the same amount of importance on these two attributes.

The results from the conjoint analysis can also be displayed in importance pie charts as shown in Table 4. The importance weight pie chart shows how important each attribute is to the cluster when choosing a potential group member. For example, Cluster 1 has an importance weight of 64% for Behavior. Thus, when forming groups, 64% of the deciding factor goes to what behavior the potential group member is exhibiting. Another way to interpret it is if a person in a cluster

has 100 coins and can place any amount of coins to show which attributes are important, Cluster 1 would put sixty-four coins on the Behavior attribute.

Table 4 - Importance Weights Graphs



Note: These graphs show the importance weights of each attribute broken down by cluster.

Results

Table 3 - Five Cluster Analysis

Cluster	Gender (F vs M)	Know vs Don't Know	Behavior (Good vs Poor)	Accent (Chinese vs American)	Accent (Korean vs American)	Accent (Indian vs American)	Accent (Italian vs American)	Size
1	32.85	67.62	232.32	11.14	13.11	10.13	32.18	18.34%
2	14.57	82.55	215.77	-51.87	-50.46	-32.18	-35.6	33.62%
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Note: Table 3 shows the relative preferences of each cluster for each attribute, color-coding them by column so that green prefers the first attribute level (for Gender, this would be Female) and red prefers the second attribute level (for Gender, this would be Male). The number shown is known as the number of "utils" a cluster has for that attribute, and util values may be compared to others in the same row and column, but not diagonally.

Table 5 - Importance Weights Table

Importance Weights	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
Gender	9.00%	3.99%	0.21%	4.89%	3.46%
Relationship	18.53%	22.63%	13.69%	19.08%	45.80%
Classroom Behvaior	63.65%	59.15%	56.86%	70.22%	46.12%
Accent	8.82%	14.22%	29.24%	5.81%	4.62%

Note: This table shows the importance weights of each attribute by cluster. Importance weights sum to 100% in each column.

The conjoint analysis method resulted in two forms of analysis that can be used together to determine results. Table 3 is the k-clustering analysis and Table 5 is the importance weights (same information shown in Table 4). There are a few general key takeaways.

First, looking at Table 3, it can be seen that Good Behavior is the most important attribute across clusters when forming a group. This is because the utils for Good Behavior versus Bad Behavior are above 200 utils for the first four clusters and 150 utils for the fifth cluster. This result can also

be seen in Table 5, as the largest amount of importance for each cluster is the Behavior attribute. There are a multitude of reasons that Good Behavior is most important for all clusters, such as being correlated with work ethic in a project. For example, Good Behavior could mean that the student is smart and therefore will help contribute to a higher mark on the project, or Good Behavior could mean that the student will be an active participant and hold responsibilities for the project. However, the exact reasoning for why all clusters value Good Behavior cannot be determined in this study and is a suitable topic for future research.

In addition to preference for Good Behavior, the other attribute that had agreement across clusters was Knowing the Person. Unlike the Behavior attribute, there is some variability in how much each cluster preferred the Relationship attribute. However, all of the clusters had a preference for Knowing the Person as all of the utils across the clusters are positive. Clusters 1, 2, and 4 all value Knowing the Person about the same amount, as their utils only differ by 15 and their importance weights are 19%, 23%, and 19%, respectively. From the importance weights it can also be seen that Cluster 3 views the Relationship attribute as 14% important, which is similar to Clusters 1, 2, and 4. Thus the only outlier is Cluster 5 for which the importance weight for Relationship is much higher at 46%. The reasoning as to why Cluster 5 is an outlier will be discussed in the Cluster 5 results section. The main takeaway is that all clusters prefer Knowing the Person and generally have the same view of how important the Relationship attribute is when forming a group.

When conducting comparative analysis on the cluster level, much discussion will be about Gender and Accent; however, Relationship and Behavior will still be covered. Because there are, overall, major trends about Relationship and Behavior, it may seem that the minute differences between Gender and Accent are not as important, especially considering that Relationship and Behavior have such large importance weights. However, these minute differences of Accent and Gender are what exemplify how these clusters differ. Further, some clusters even consider Accent as a very important attribute when forming groups. These differences between clusters are what ultimately determine how each chooses its preferred group members.

After looking at the individual clusters' results, we decided to allocate descriptive names for each to better identify the respondents in the clusters. Names were picked based on the composition of each cluster. Participants in Cluster 1 were named the International Connoisseurs because, of all the clusters, they preferred working with international students the most and also had the largest percentage of international students in the cluster itself. Cluster 2 was named the American Good Behavior Desirers because they had the second strongest preference for working with American students and highly valued good behavior in their group members. Cluster 3 was labeled as the American Idolizers because they had the strongest preference for working with American students. Cluster 4 was called the Work Ethic Admirers because, of all the clusters, they had the highest amount of utils for wanting good behavior in their group members. And lastly, Cluster 5 was labeled as the Relationship Lovers because they valued knowing their group members the most out of every group and had an almost equal amount of utils for Knowing the Person and Good Behavior, which is unique because all other clusters valued good behavior significantly more than any other characteristic. We felt that assigning these descriptive labels helped contextualize our research and describe the participants rather than just thinking of the clusters as random groups.

Cluster 1

Cluster 1, also known as the "International Connoisseurs" group, strongly prefers international accents, or non-American accents. This cluster is 12% international students, the largest percentage of international students in any cluster. Thus, a reason that this group prefers international accents is because people prefer to work with people who are similar to themselves, in keeping with Ingroup Bias Theory. Cluster 1 also has the largest percentage of females with 67% of the group identifying as female. The fact that International Connoisseurs favor Females over Males the most also follows the Ingroup Bias Theory. While the important highlights about Cluster 1 are the preferences for female and international accents, it is critical to point out that the International Connoisseurs only have a 9% importance weight for both Gender and Accent respectively. Thus, the main attributes that Cluster 1 focuses on are the Behavior and Relationship. However, given that Behavior and Relationship have large importance weights across clusters, it is Accent and Gender that reveal the main differences between clusters, and

these differences still impact what students each cluster will chose and will not chose to work with.

Cluster 2

Cluster 2, which is known as the "American Good Behavior Desirers," is the largest group with approximately 34% of the sample. They have the second-highest preference toward an American accent (after Cluster 3 as discussed in the next section). Cluster 2 prefers an American Accent over a Chinese or Korean Accent by approximately 50 utils and prefers an American Accent over an Indian or Italian Accent by approximately 30 utils. Further, they place 14% of their importance weight on the Accent attribute. Thus, when they are choosing people to be in their group, having or not having an American accent contributes to 14% of their decision. The American Good Behavior Desirers also have a strong preference for Good Behavior, with 216 utils for Good Behavior and a 59% importance weight for the Behavior attribute. Cluster 2 has a wide demographic mix regarding ethnicity, grade level, gender, and academic school. The American Good Behavior Desirers even have the largest number of international students of any cluster. It is important to note that a preference for the American accent exists even with such a wide demographic mix. Thus, the reasoning for a preference toward American accent may stem from the core of American culture rather than a demographic reason.

Cluster 3

Cluster 3, known as the "American Idolizers," has the strongest preference toward American Accent. The Accent attribute for Cluster 3 has the largest importance weight of all clusters. The American Idolizers places 29% of their decision about which potential group member to choose on Accent. Not only does Cluster 3 have the strongest preference for American Accent over all of the other clusters, but they also have the lowest util amounts on the other attributes when compared to the other clusters, except for Good Behavior where they have the second lowest utils. This means that the American Idolizers value the Accent attribute much more than the other attributes as compared to other clusters. When looking at the Accent attribute, Cluster 3 has much higher utils for preferring the American accent over a Chinese, Korean, or Indian accent, with the utils being -106, -93, and -88 utils, respectively. Thus, the utils for American over Chinese, Korean, and Indian accents average to approximately -96 utils. While the American

Idolizers strongly prefers American accents over all international accents, their preference for American over Italian accents is much lower than their preference over Chinese, Korean, and India accent. In fact, the American accent bias over the Chinese Accent is double that of the American accent bias over the Italian Accent. The preference for American Accent over Italian Accent is only -56 utils. The reason that there is significantly lower amount of util value for American Accent versus Italian Accent when compared to American Accent versus Chinese, Korean, and Indian Accents may stem from who this cluster views as foreign. The American Idolizers all agreed that Italians speak the best English, but this cluster could not come to an agreement on how Chinese, Koreans, and Indians ranked in who spoke the 2nd, 3rd, and worst English. Thus, to the American Idolizers, Chinese, Koreans, and Indians are viewed as foreign and cannot be distinguished regarding their English skills.

The American Idolizers do not have a preference on Gender and have only a slight preference on Relationship. They have a very small amount of value for Gender with just 0.77 utils, meaning they favor males and females almost equally. Their importance weight for Gender is actually 0% which aligns with the result of a low util value and means that gender does not impact their group formation decision. American Idolizers are also outliers in terms of preferring Know the Person the least. This reason could be that American Idolizers would rather work with someone that has an American accent than someone they know.

American Idolizers have a strong preference for American accent, and they make up approximately 20% of the sample population. A reason for this strong preference toward American Accent could be because this cluster is the least ethnically diverse with 73% of the cluster identifying as white. However, this cluster is also tied for the largest percentage of students who have worked with international students in the past. This can lead to the conclusion that this cluster has had negative experiences working with international students. Lastly, the American Idolizers have the most Olin primary undergraduate students compared to other clusters. Thus, the problem of preferring to work with American students may be greater in The Olin Business School than in other academic schools.

Cluster 4

Favoring Good Behavior the most and having a strong importance of the Behavior attribute in general, Cluster 4 is fittingly named "Work Ethic Admirers." As mentioned previously, all clusters prefer Good Behavior with most clusters having utils in the 200 util range. However, Cluster 4 favors good behavior the most with having the highest util value for Good Behavior at approximately 258 utils. The Work Ethic Admirers also place the Behavior attribute at a much higher importance weight than the other clusters. The Behavior attribute makes up 70% of the Work Ethic Admirers' decision when forming a group. Thus, Cluster 4 has a very large preference for good behavior.

Work Ethic Admirers also have strong preferences for non-American accents. In fact, Cluster 4 has the strongest preferences (highest utils) for Chinese, Korean, and Indian accents and has the second highest preference for Italian accents. Further, Work Ethic Admirers have the smallest range of utils on the Accent attribute. This means that Cluster 4 does not have any heavy preference towards one of the International accents. One reason for favoring International accents could be that Work Ethic Admirers have the largest percentage of Asian students with 37% identifying as Asian. The Accent attribute makes up only 6% of their decision when forming a group, while Relationship makes up 19% of their decision. Therefore, Work Ethic Admirers mainly focus on whether or not the person has Good Behavior, then they focus on if they Know the Person or not, and lastly they focus on what type of accent the potential group member has. Thus, Accent, is not a very important attribute to Work Ethic Admirers.

Cluster 5

The only cluster to have an importance weight that is equal to the importance weight of Behavior, Cluster 5 heavily values Knowing the Person and is therefore named "Relationship Lovers." Cluster 5 has 150 utils for Knowing the Person, which is 70 utils higher than the next cluster that favors Knowing the Person. Further, the utils for Good Behavior is 151. Thus, Relationship Lovers have nearly the same amount of utils for Knowing the Person and Good Behavior. The 151 utils for Good Behavior is actually the lowest amount of utils for the Behavior attribute, with the next lowest being 50 utils higher. Thus, Relationship Lovers are willing to sacrifice good behavior in order to have someone that they know in their group. These

almost identical utils explain why the Relationship Lovers have the same importance weight for both Behavior and Relationship. When Cluster 5 is deciding who should be in their group, 46% of their decision is about Behavior and 46% of their decision is about Relationship. Thus, Accent and Gender attributes do not play a major role in their decision-making about group formation.

Relationship Lovers place very little importance on Accent and Gender. They have the second smallest range of utils across the Accent attribute and are the middle of the five clusters in terms of preferring international versus American accents. Coupling these facts with the fact that only 5% of their decision is about accent, the Accent attribute does not play a major role in their decision making. Relationship Lovers do have the second highest preference toward the Male attribute level with -11 utils favoring a male team member. This aligns with the fact that 83% of the Relationship Lovers are male. However, when making decisions about group formation, Gender only has a 3% importance weight. Thus, Relationship Lovers prefer men; however, their main preference is having a group member that they know. Considering that 83% of this cluster is male it can be inferred that this cluster may have assumed that the people they know are most likely to be men, thus placing more importance on relationship and less importance on gender. This cluster also has the highest percentage of students in the McKelvey School of Engineering, a typically male-dominated area.

Hypotheses Results

The first hypothesis about students preferring to work with those who are similar to themselves is confirmed; however, other attributes about a potential group member may overcome this preference. The International Connoisseurs have the largest percentage of international students and have the second largest preference for international accents; and the American Idolizers have the largest preference for an American accent and are the least ethnically diverse. However, the American Good Behavior Desirers are a great example of how the bias toward working with people similar to themselves can become less significant if one exemplifies Good Behavior. Further, the Work Ethic Admirers truly exemplify how a bias can be overcome if other attributes are exhibited. In this cluster, the only main preference is about good behavior, and similarity of people is not a factor. Thus, people have a preference for working with others who are similar to themselves, however, for some clusters other attributes can overcome this bias.

The second hypothesis was that students are nervous when forming groups and would prefer to be assigned groups. One of the questions asked in the survey was how often the respondent is nervous when forming groups where they could chose on a scale of Never, Rarely, Sometimes, Often, or Always. Table 6 shows this question's results, broken down by international student Status, Ethnicity, Gender, and Cluster; where 1 is Never, 2 is Rarely, 3 is Sometimes, 4 is Often, and 5 is Always. It can be seen that across clusters, students state they are sometimes nervous when forming groups. This result holds true for international students, American students, Asians, African-Americans, Native Hawaiian or Other Pacific Islanders, Whites, and Females. Males, Hispanics, and Other Ethnicities are rarely nervous when forming groups. Thus, nervousness does not seem to be a major obstacle when forming groups, nor does nervousness seem to largely affect the group formation preferences about a potential group member.

The third hypothesis, that students favor working with people that they know, is confirmed. The Relationship attribute, except for one cluster, is the second most important attribute when forming a group. The Relationship Lovers is a great example of students who favor working with people that they know; their most important attribute is working with students that they know.

Table 6 - Nervousness by Different Groups

Nervousness by International Student Status	Raw Number	Scale*
International Students	3.00	Sometimes
American Students	2.61	Sometimes

Nervousness by Ethnicity	Raw Number	Scale*
Asian	2.69	Sometimes
African American / Black	2.73	Sometimes
Hispanic / Latino	2.27	Rarely
Native Hawaiian or Other Pacific Islander	2.60	Sometimes
White	2.69	Sometimes
Other Ethnicity	2.00	Rarely

Nervousness by Gender	Raw Number	Scale*
Male	2.44	Rarely
Female	2.84	Sometimes

Nervousness by Clusters	Raw Number	Scale*
1	2.64	Sometimes
2	2.58	Sometimes
3	2.71	Sometimes
4	2.68	Sometimes
5	2.63	Sometimes

Note: This table shows how nervous respondents are when forming groups broken down by international student status, ethnicity, gender, and clusters. This was a scale question where respondents could choose either Never (1), Rarely (2), Sometimes (3), Often (4) or Always (5). Respondents could not chose between each option, for example a respondent could not put 1.5 only 1 or 2. *The **Scale** column shows what each category would chose when rounding to nearest the whole number.

Forming one's own group versus being assigned a group does not seem to be a major factor when forming a group. Table 7 shows how each cluster views creating their own group and being assigned a group based on a scale question where 1 is Strongly Dislike, 2 is Dislike, 3 is Neutral, 4 is Like, and 5 is Strongly Like. The results show that all clusters chose Like when

forming their own group and Neutral when being assigned a group. Thus, there is little preference difference across clusters for either group formation option. Further, the difference between forming a group and being assigned a group is very small as the scale is only tipped very slightly to preferring to form a group. What is important to note is that this slight preference for forming their own group emphasizes the importance of this study; because there is a preference for forming a group, even though small, it is important to know the preferences of deciding who to work with as a potential group member. Lastly, this slight preference for forming one's own group aligns with the results about nervousness when forming groups.

Table 7 - Group Formation Preferences

Cluster	Create Own Group		Assigned Group	
	Number	Scale*	Number	Scale*
1	3.93	Like	3.17	Neutral
2	4.12	Like	3.04	Neutral
3	3.80	Like	3.13	Neutral
4	4.02	Like	3.00	Neutral
5	4.17	Like	3.29	Neutral

Note: This table shows respondent preferences when forming groups broken down by cluster. This was a scale question where respondents could choose either Strongly Dislike (1), Dislike (2), Neutral (3), Like (4) or Strongly Like (5). Respondents could not chose between each option, for example a respondent could not put 1.5, only 1 or 2. *The **Scale** column shows what each category would chose when rounding to the whole number.

Limitations

One limitation of this study is the relatively small number of responses. While 229 is a relatively large percentage of the Olin Business School, it does not reflect a significant percentage of collegiate-level students in the United States, and thus we cannot make any definitive conclusions about students across the nation. More studies would need to be conducted in order to conclude for certain that there is any sort of bias across the general college-student population.

Additionally, in working with Sawtooth and conjoint analysis in general, we have found that there is not an agreed upon way to find the statistical significance of the data collected, partly due to the qualitative nature of the method. It is generally agreed that data collected through this method is reliable.

There could also be some debate as to whether defining an international student as one who has an accent is acceptable. We decided to do so because it is an observable characteristic that often is applicable. We recognize that there are times where an international student will not have an accent as well as where an American, non-international student will have an accent. However, we believe that these examples are such a small fraction of the true population that our data is not heavily affected.

Some questions may have used vague language or at least have been interpreted incorrectly by participants. Specifically, in our “most preferred language” question, there were a significant number of participants who answered with two languages and some that completely misunderstood the question, believing that it referred to the list of languages in the previous questions. The wording of this question, and potentially others, should be clarified in any future studies on this topic as well as emphasizing the importance of reading the survey questions.

Lastly, another probe for further research would be to see if any of the clusters change if the representation of the population were to change. While every class year was represented in this sample population, there was a heavy skew toward first-year and sophomore students. In fact 91% of the sample population are first-year and sophomore students. This may explain one of the

findings that only 30% of the sample population has studied abroad. This is a significant difference from the 58% of Washington University in St. Louis Olin Business School undergraduate students that Shabani (2019) notes experiences studying abroad before graduation. A reason for this discrepancy is that the majority of students do not experience study abroad until their junior year, and 91% of the sample population are younger than juniors. Thus, the results may differ after a study abroad experience because these students would have then interacted with international students and other cultures for an entire semester or summer.

Conclusion and Practical Implications

Based on this study, approximately 50% of students (Clusters 2 and 3) will implicitly choose not to work with an international student. This is alarming for the overall quality of work done at the Olin Business School, as this group of excluded students will potentially not have their voices and opinions heard as much as other students. Students and faculty should provide ways to help better integrate international students into groups in order to overcome these implicit choices, because the simple fact of knowing the international student will make them more "acceptable" to work with to their peers. One potential way to do this is to enact a policy that professors should always randomly assign groups. This would allow for group formation without bias toward any group. Based on the results of our survey, we do not expect much student backlash from this policy as forming one's own group is only slightly more preferred than being assigned a group, and the preference for being assigned a group was ranked as neutral.

While approximately 54% of the sample has a bias against international students, we concluded from the study that international students can partially, if not completely, overcome the bias many students have against working with international students. Behavior is by far the most important attribute for any cluster when forming groups. Thus, if international students can portray good behavior in class, then they can partially overcome the bias of being an international student. Secondly, many clusters value Relationship more than Accent and thus international students can once again partially overcome bias by knowing people in the class.

There are also other intangible variables that were not tested in this study that can help international students overcome potential bias against them as well.

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Appendix

Appendix A – Survey Consent Form

INFORMED CONSENT DOCUMENT

Principal Investigator: Bernardo Santos Da Silveira

Research Team Contact: **Aneesha Bandarpalle - 972 571 9730**
Hank Michalski - 630 470 3246
Marisa Ippolito - 440 591 7301

This consent form describes the research study and helps you decide if you want to participate. It provides important information about what you will be asked to do during the study, about the risks and benefits of the study, and about your rights and responsibilities as a research participant. By signing this form you are agreeing to participate in this study.

You should read and understand the information in this document including the procedures, risks and potential benefits.

If you have questions about anything in this form, you should ask the research team for more information before you agree to participate.

You may also wish to talk to your family or friends about your participation in this study.

Do not agree to participate in this study unless the research team has answered your questions and you decide that you want to be part of this study.

WHAT IS THE PURPOSE OF THIS STUDY?

This is a research study. We invite you to participate in this research study because you are taking an undergraduate business class at the Olin Business School and are over the age of 18.

WHAT WILL HAPPEN DURING THIS STUDY?

You will go into the computer lab in the Taylor Lab, and will be asked to take a seat at one of the computers. You will have 30 minutes to complete the survey. The survey will include questions about choosing a team member for a group project. Once you are finished you will receive a debrief document, and then are free to exit. No further work is required for completion.

Will you save my research information to use in future research studies?

- Your private information will NOT be used for future research studies or shared with other researchers for their studies, even if we remove identifiers.

HOW MANY PEOPLE WILL PARTICIPATE?

Approximately 250 people will take part in this study conducted by investigators at Washington University.

HOW LONG WILL I BE IN THIS STUDY?

If you agree to take part in this study, your involvement will last for 30 minutes.

WHAT ARE THE RISKS OF THIS STUDY?

One risk of participating in this study is that confidential information about you may be accidentally disclosed. We will use our best efforts to keep the information about you secure. Please see the section in this consent form titled *"How will you keep my information confidential?"* for more information.

WHAT ARE THE BENEFITS OF THIS STUDY?

You may or may not benefit from being in this study. We hope that, in the future, other people might benefit from this study because results from this survey will be beneficial for more amicable and productive classroom environments. Additionally, students may receive class credit for survey completion.

WHAT OTHER OPTIONS ARE THERE?

Instead of being in this research study, you have other options for receiving credit for your enrolled course. Please refer to your class syllabus or contact your professor to learn about other options.

WILL IT COST ME ANYTHING TO BE IN THIS STUDY?

You will not have any costs for being in this research study.

WILL I BE PAID FOR PARTICIPATING?

You will not be paid for being in this research study.

WHO IS FUNDING THIS STUDY?

The University and the research team are not receiving payments from other agencies, organizations, or companies to conduct this research study.

HOW WILL YOU KEEP MY INFORMATION CONFIDENTIAL?

Other people such as those indicated below may become aware of your participation in this study and may inspect and copy records pertaining to this research. Some of these records could contain information that personally identifies you. We will keep your participation in this research study confidential to the extent permitted by law.

- Government representatives (including the Office for Human Research Protections) to complete federal or state responsibilities
- University representatives to complete University responsibilities
- Washington University's Institutional Review Board (a committee that oversees the conduct of research involving human participants) and Human Research Protection Office. The Institutional Review Board has reviewed and approved this study.
- Any report or article that we write will not include information that can directly identify you. The journals that publish these reports or articles require that we share your information that was collected for this study with others to make sure the results of this study are correct and help

develop new ideas for research. Your information will be shared in a way that cannot directly identify you.

To help protect your confidentiality, we will not ask for any personally identifiable information, and all other information will be password protected and only members of the research team will have regular access.

IS BEING IN THIS STUDY VOLUNTARY?

Taking part in this research study is completely voluntary. You may choose not to take part at all. If you decide to be in this study, you may stop participating at any time. Any data that was collected as part of your participation in the study will remain as part of the study records and cannot be removed.

If you decide not to be in this study, or if you stop participating at any time, you won't be penalized or lose any benefits for which you otherwise qualify.

What if I decide to withdraw from the study?

You may withdraw by telling the study team you are no longer interested in participating in the study.

If you decide to leave the study early, we will ask you to inform the lab moderator.

WHAT IF I HAVE QUESTIONS?

We encourage you to ask questions. If you have any questions about the research study itself, please contact anyone on the research team (contact information listed at the top of the document.) If you feel that you have been harmed in any way by your participation in this study, please contact the research team as well.

If you have questions, concerns, or complaints about your rights as a research participant please contact the Human Research Protection Office at 1-(800)-438-0445, or email hrpo@wustl.edu. General information about being a research participant can be found on the Human Research Protection Office web site, http://hrpo.wustl.edu. To offer input about your experiences as a research participant or to speak to someone other than the research staff, call the Human Research Protection Office at the number above.

This consent form is not a contract. It is a written explanation of what will happen during the study if you decide to participate. You are not waiving any legal rights by agreeing to participate in this study.

Your signature indicates that this research study has been explained to you, that your questions have been answered, and that you agree to take part in this study. You will receive a signed copy of this form.

Do not sign this form if today's date is after $STAMP_EXP_DT.

_____ _____
(Signature of Participant) (Date)

_____
(Participant's name – printed)

Statement of Person Who Obtained Consent

The information in this document has been discussed with the participant or, where appropriate, with the participant's legally authorized representative. The participant has indicated that they understand the risks, benefits, and procedures involved with participation in this research study.

_____ _____
(Signature of Person who Obtained Consent) (Date)

_____
(Name of Person who Obtained Consent - printed)

Appendix B – Survey Instructions

First section instructions:

Thank you for taking this survey. We value your thoughts and your feedback on your preferences.

You may begin the survey by clicking the NEXT button.

Back Next

0% 100%

Second section instructions:

In the next section you will be presented with a 18 sets of profiles about potential team members in an undergraduate business class for a team project worth 30% of your grade. Each set has three profiles. Your task is to choose which team member of the profiles shown that you would most prefer to be on your team. You do not know if this potential team member will agree to work with you. Please read below the following characteristics that will be provided about potential team members.

Gender: The only options will be Male or Female

Familiarity: This characteristic will tell you if you know the person or not

Behavior During Class: A person will either add thoughtful comments to discussion and remain engaged during class time or a person will not participate in class and is distracted during class time.

Accent: When the person speaks he/she has an accent of the following: American, Chinese, Korean, Indian, and Italian.

To chose a profile click the SELECT button and to then proceed to the next set of profiles click the NEXT button.

You may now proceed to view your first set of profiles by clicking the NEXT button.

Appendix C – Debrief Form

Group Formation and Bias Against International Students Debrief

Thank you for your participation in our survey. The purpose of our survey was to collect data for an Honors in Management Thesis we are writing. The thesis is exploring if there is a bias against international students in the Olin undergraduate community when forming groups for group work in class projects. We decided to explore this after an experience one of our team members had when an international student asked to join their marketing group and said "Is it ok if I join even though I'm an international student and you already have one in your group?" We thought this indicated a potentially problematic trend of people not wanting to work with international students for group projects, which is why we thought this could be an impactful study for our senior thesis.

If you have any questions about this study, please feel free to contact us at:

Aneesha Bandarpalle – 972 571 9730

Marisa Ippolito – 440 591 7301

Hank Michalski – 630 470 3246

Again, this data will remain completely anonymous and password protected.

Thank you for your time!

Appendix D – Standard Errors for Five Cluster Analysis

Note: The values under each colored cell include the Standard Error for the value in the above colored cell.

Cluster	Gender (F vs M)	Know vs Don't Know	Behavior (Good vs	Accent (Chinese vs	Accent (Korean vs	Accent (Indian vs	Accent (Italian vs	Size
1	32.85	67.62	232.32	11.14	13.11	10.13	32.18	18.34%
Standard Error	2.62689615	6.08015983	5.10660668	6.01286141	4.50864742	4.85343705	5.19159523	
2	14.57	82.55	215.77	-51.87	-50.46	-32.18	-35.6	33.62%
Standard Error	2.22535125	2.70869124	1.86172213	3.84827374	3.91661039	3.348065	3.31128666	
3	0.77	49.4	205.25	-105.55	-92.64	-87.75	-55.75	19.65%
Standard Error	3.71430254	4.22602013	4.33372946	5.09084446	6.4677552	5.50704705	5.23971271	
4	-17.95	70.01	257.6	21.31	19.59	12.96	12.22	17.90%
Standard Error	3.3633341	5.34607949	6.58584861	5.20069882	4.52053823	3.98240416	4.3179435	
5	-11.33	149.9	150.96	-5.08	-15.11	-3.06	-0.35	10.48%
	4.6527227	6.02996114	5.4100128	8.38692092	9.23599335	11.0636475	9.20797602	

Appendix E – Full Survey

Q1

Thank you for taking this survey. We value your thoughts and your feedback on your preferences.

You may begin the survey by clicking the NEXT button.

Next

Q2

In the next section you will be presented with a 18 sets of profiles about potential team members in an undergraduate business class for a team project worth 30% of your grade. Each set has three profiles. Your task is to choose which team member of the profiles shown that you would most prefer to be on your team. Please read below the following characteristics that will be provided about potential team members.

Gender: The only options will be Male or Female

Familiarity: This characteristic will tell you if you know the person or not

Behavior During Class: A person with good work ethic will sit near the from of the class, add thoughtful comments to discussion and remain engaged during class time. A person with poor work ethic will sit in the back of the classroom, not participate in class and is on their cellphone during class time.

Accent: When the person speaks he/she has an accent of the following: American, Chinese, Korean, Indian, and Italian.

Reciprocity: There will be two options either you know the person will want to work with you, or you are not sure the other person will want to work with you.

To chose a profile click the SELECT button and to then proceed to the next set of profiles click the NEXT button.

You may now proceed to view your first set of profiles by clicking the NEXT button.

Back Next

0% 100%

CBC1_Rating1

Please rate the following attributes in terms of what you prefer when deciding on a group member.

	Not Preferable	Preferable	Very Preferable	No Opinion
Male	CBC1_Rating1_r1=1	CBC1_Rating1_r1=2	CBC1_Rating1_r1=3	CBC1_Rating1_r1=4
Female	CBC1_Rating1_r2=1	CBC1_Rating1_r2=2	CBC1_Rating1_r2=3	CBC1_Rating1_r2=4

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CBC1_Rating4

Please rate the following attributes in terms of what you prefer when deciding on a group member.

	Not Preferable	Preferable	Very Preferable	No Opinion
American Accent	CBC1_Rating4_r1=1	CBC1_Rating4_r1=2	CBC1_Rating4_r1=3	CBC1_Rating4_r1=4
Chinese Accent	CBC1_Rating4_r2=1	CBC1_Rating4_r2=2	CBC1_Rating4_r2=3	CBC1_Rating4_r2=4
Korean Accent	CBC1_Rating4_r3=1	CBC1_Rating4_r3=2	CBC1_Rating4_r3=3	CBC1_Rating4_r3=4
Indian Accent	CBC1_Rating4_r4=1	CBC1_Rating4_r4=2	CBC1_Rating4_r4=3	CBC1_Rating4_r4=4
Italian Accent	CBC1_Rating4_r5=1	CBC1_Rating4_r5=2	CBC1_Rating4_r5=3	CBC1_Rating4_r5=4

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0% 100%

CBC1_Choice1

If these were your only options, which would you choose?

1 / 18

Gender	Male	Female	Male
Know the Person	You do not know this person	You know this person	You know this person
Behavior During Class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Poor -This person sits towards the back of the class, does not participate, and is often on their cell phone during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class
Accent	Chinese Accent	Italian Accent	Korean Accent
Reciprocity	This person will want to work with you	You are unsure if this person will want to work with you	This person will want to work with you
	CBC1_Choice1	CBC1_Choice1	CBC1_Choice1
	Select	Select	Select

Back Next

0% 100%

CBC1_Choice2

If these were your only options, which would you choose?

2 / 18

Gender	Male	Male	Female
Know the Person	You know this person	You know this person	You do not know this person
Behavior During Class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Poor -This person sits towards the back of the class, does not participate, and is often on their cell phone during class
Accent	Indian Accent	Korean Accent	Indian Accent
Reciprocity	This person will want to work with you	This person will want to work with you	You are unsure if this person will want to work with you
	CBC1_Choice2	CBC1_Choice2	CBC1_Choice2
	Select	Select	Select

Back Next

0% 100%

CBC1_Choice3

If these were your only options, which would you choose?

3 / 18

Gender	Male	Male	Female
Know the Person	You know this person	You know this person	You do not know this person
Behavior During Class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class
Accent	Italian Accent	Chinese Accent	Korean Accent
Reciprocity	This person will want to work with you	This person will want to work with you	You are unsure if this person will want to work with you
	CBC1_Choice3 Select	CBC1_Choice3 Select	CBC1_Choice3 Select

Back Next

0% 100%

CBC1_Choice4

If these were your only options, which would you choose?

4 / 18

Gender	Male	Male	Male
Know the Person	You know this person	You know this person	You know this person
Behavior During Class	Poor -This person sits towards the back of the class, does not participate, and is often on their cell phone during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class
Accent	Chinese Accent	Indian Accent	Italian Accent
Reciprocity	This person will want to work with you	This person will want to work with you	This person will want to work with you
	CBC1_Choice4 Select	CBC1_Choice4 Select	CBC1_Choice4 Select

Back Next

0% 100%

CBC1_Choice5

If these were your only options, which would you choose?

5 / 18

Gender	Female	Male	Male
Know the Person	You know this person	You do not know this person	You know this person
Behavior During Class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Poor -This person sits towards the back of the class, does not participate, and is often on their cell phone during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class
Accent	Indian Accent	Chinese Accent	American Accent
Reciprocity	You are unsure if this person will want to work with you	This person will want to work with you	This person will want to work with you
	CBC1_Choice5 Select	CBC1_Choice5 Select	CBC1_Choice5 Select

Back Next

0% 100%

CBC1_Choice6

If these were your only options, which would you choose?

6 / 18

Gender	Male	Male	Female
Know the Person	You know this person	You know this person	You do not know this person
Behavior During Class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Poor -This person sits towards the back of the class, does not participate, and is often on their cell phone during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class
Accent	Italian Accent	Indian Accent	American Accent
Reciprocity	This person will want to work with you	This person will want to work with you	You are unsure if this person will want to work with you
	CBC1_Choice6 Select	CBC1_Choice6 Select	CBC1_Choice6 Select

Back Next

0% 100%

CBC1_Choice7

If these were your only options, which would you choose?

7 / 18

Gender	Male	Male	Female
Know the Person	You know this person	You know this person	You know this person
Behavior During Class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class
Accent	Italian Accent	Korean Accent	Chinese Accent
Reciprocity	This person will want to work with you	This person will want to work with you	This person will want to work with you
	CBC1_Choice7 Select	CBC1_Choice7 Select	CBC1_Choice7 Select

Back Next

0% 100%

CBC1_Choice8

If these were your only options, which would you choose?

8 / 18

Gender	Male	Male	Male
Know the Person	You do not know this person	You know this person	You know this person
Behavior During Class	Poor -This person sits towards the back of the class, does not participate, and is often on their cell phone during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class
Accent	American Accent	Italian Accent	Indian Accent
Reciprocity	You are unsure if this person will want to work with you	This person will want to work with you	This person will want to work with you
	CBC1_Choice8 Select	CBC1_Choice8 Select	CBC1_Choice8 Select

Back Next

0% 100%

CBC1_Choice9

If these were your only options, which would you choose?

9 / 18

Gender	Male	Female	Male
Know the Person	You know this person	You do not know this person	You know this person
Behavior During Class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Poor -This person sits towards the back of the class, does not participate, and is often on their cell phone during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class
Accent	Chinese Accent	Italian Accent	Indian Accent
Reciprocity	You are unsure if this person will want to work with you	This person will want to work with you	This person will want to work with you
	CBC1_Choice9 Select	CBC1_Choice9 Select	CBC1_Choice9 Select

Back Next

0% 100%

CBC1_Choice10

If these were your only options, which would you choose?

10 / 18

Gender	Male	Female	Male
Know the Person	You know this person	You know this person	You do not know this person
Behavior During Class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Poor -This person sits towards the back of the class, does not participate, and is often on their cell phone during class
Accent	American Accent	Chinese Accent	Korean Accent
Reciprocity	This person will want to work with you	This person will want to work with you	You are unsure if this person will want to work with you
	CBC1_Choice10 Select	CBC1_Choice10 Select	CBC1_Choice10 Select

Back Next

0% 100%

CBC1_Choice11

If these were your only options, which would you choose?

11 / 18

Gender	Male	Male	Female
Know the Person	You know this person	You know this person	You do not know this person
Behavior During Class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Poor -This person sits towards the back of the class, does not participate, and is often on their cell phone during class
Accent	American Accent	Indian Accent	American Accent
Reciprocity	This person will want to work with you	This person will want to work with you	This person will want to work with you
	CBC1_Choice11 Select	CBC1_Choice11 Select	CBC1_Choice11 Select

Back Next

0% 100%

CBC1_Choice12

If these were your only options, which would you choose?

12 / 18

Gender	Male	Male	Male
Know the Person	You know this person	You know this person	You know this person
Behavior During Class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class
Accent	Korean Accent	Chinese Accent	Italian Accent
Reciprocity	You are unsure if this person will want to work with you	This person will want to work with you	This person will want to work with you
	CBC1_Choice12 Select	CBC1_Choice12 Select	CBC1_Choice12 Select

Back Next

0% 100%

CBC1_Choice13

If these were your only options, which would you choose?

13 / 18

Gender	Male	Female	Male
Know the Person	You do not know this person	You know this person	You know this person
Behavior During Class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Poor -This person sits towards the back of the class, does not participate, and is often on their cell phone during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class
Accent	American Accent	Chinese Accent	Indian Accent
Reciprocity	You are unsure if this person will want to work with you	This person will want to work with you	This person will want to work with you
	CBC1_Choice13 Select	CBC1_Choice13 Select	CBC1_Choice13 Select

Back Next

0% 100%

CBC1_Choice14

If these were your only options, which would you choose?

14 / 18

Gender	Male	Female	Male
Know the Person	You know this person	You know this person	You do not know this person
Behavior During Class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Poor -This person sits towards the back of the class, does not participate, and is often on their cell phone during class
Accent	Italian Accent	Italian Accent	American Accent
Reciprocity	This person will want to work with you	This person will want to work with you	You are unsure if this person will want to work with you
	CBC1_Choice14 Select	CBC1_Choice14 Select	CBC1_Choice14 Select

Back Next

0% 100%

CBC1_Choice15

If these were your only options, which would you choose?

15 / 18

Gender	Male	Male	Female
Know the Person	You know this person	You know this person	You do not know this person
Behavior During Class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Poor -This person sits towards the back of the class, does not participate, and is often on their cell phone during class
Accent	Indian Accent	Korean Accent	Indian Accent
Reciprocity	This person will want to work with you	This person will want to work with you	You are unsure if this person will want to work with you
	CBC1_Choice15 Select	CBC1_Choice15 Select	CBC1_Choice15 Select

Back Next

0% 100%

CBC1_Choice16

If these were your only options, which would you choose?

16 / 18

Gender	Male	Male	Male
Know the Person	You know this person	You know this person	You know this person
Behavior During Class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class
Accent	Korean Accent	Italian Accent	American Accent
Reciprocity	This person will want to work with you	This person will want to work with you	This person will want to work with you
	CBC1_Choice16 Select	CBC1_Choice16 Select	CBC1_Choice16 Select

Back Next

0% 100%

CBC1_Choice17

If these were your only options, which would you choose?

17 / 18

Gender	Male	Female	Male
Know the Person	You know this person	You do not know this person	You know this person
Behavior During Class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Poor -This person sits towards the back of the class, does not participate, and is often on their cell phone during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class
Accent	Indian Accent	Italian Accent	Chinese Accent
Reciprocity	This person will want to work with you	You are unsure if this person will want to work with you	This person will want to work with you
	CBC1_Choice17 Select	CBC1_Choice17 Select	CBC1_Choice17 Select

Back Next

0% 100%

CBC1_Choice18

If these were your only options, which would you choose?

18 / 18

Gender	Male	Male	Female
Know the Person	You know this person	You know this person	You do not know this person
Behavior During Class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Good - This person sits near the front of the class, adds thoughtful comments during class discussion, and is engaged during class	Poor -This person sits towards the back of the class, does not participate, and is often on their cell phone during class
Accent	American Accent	Korean Accent	Italian Accent
Reciprocity	This person will want to work with you	This person will want to work with you	You are unsure if this person will want to work with you
	CBC1_Choice18 Select	CBC1_Choice18 Select	CBC1_Choice18 Select

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0% 100%

Q24

Do you ever get nervous about people not wanting to be in groups with you?

Never	Rarely	Sometimes	Often	Always
Q24_r1=1	Q24_r1=2	Q24_r1=3	Q24_r1=4	Q24_r1=5

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0% 100%

Q26

On average, how many group projects do you have per semester? If you have multiple projects with one group count that as one.

Q26=1 No Group Projects

Q26=2 One to Two Group Projects

Q26=3 Three to Four Group Projects

Q26=4 Five to Six Group Projects

Q26=5 Seven or More Group Projects

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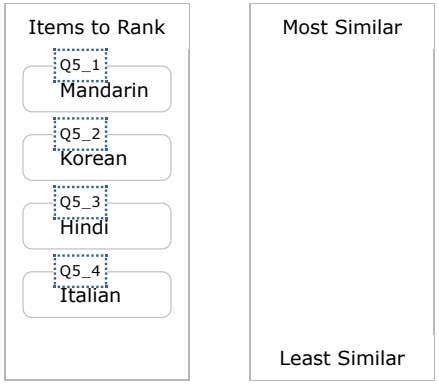
0% 100%

Q5

Which languages are most similar to English? Please rank with 1 being most similar, and 4 being least similar.



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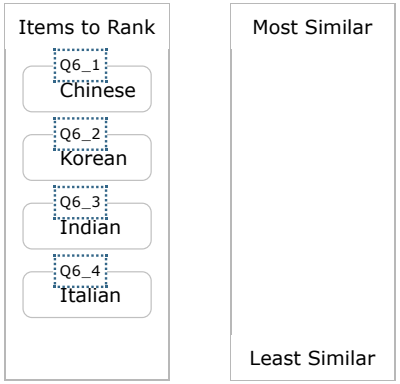
0% 100%

Q6

Which cultures are most similar to American culture? Please rank with 1 being most similar, and 4 being least similar.



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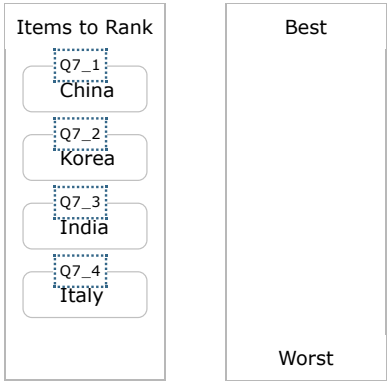
Q7

Which countries speak the best English? Please rank with 1 being the best, and 4 being the worst.



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0% 100%

Q18

In which languages are you at least proficient? Check all that apply.

- Q18_1 English
- Q18_2 Mandarin
- Q18_3 Korean
- Q18_4 Vietnamese
- Q18_5 Hindi
- Q18_6 Spanish
- Q18_7 Arabic
- Q18_8 Malay
- Q18_9 Russian
- Q18_10 Bengali
- Q18_11 Portuguese
- Q18_12 French
- Q18_13 Italian
- Q18_14 Q18_14_other Other

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0% 100%

Q19

What is your preferred language? Please select one.

- Q19=1 English
- Q19=2 Mandarin
- Q19=3 Korean
- Q19=4 Vietnamese
- Q19=5 Hindi
- Q19=6 Spanish
- Q19=7 Arabic
- Q19=8 Malay
- Q19=9 Russian
- Q19=10 Bengali
- Q19=11 Portuguese
- Q19=12 French
- Q19=13 Italian
- Q19=14 Q19_14_other Other

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0% 100%

Q8

Are you an international student?

Q8=1 Yes

Q8=2 No

Back Next

0% 100%

Q9

Where are you from?

Back Next

0% 100%

Q3

Have you worked with international students before? (Regardless of if you are international or not)

Q3=1 Yes

Q3=2 No

Back Next

0% 100%

Q4

Why have you worked with international students before?

Back Next

0% 100%

Q21

Why have you not worked with international students before?

Back Next

0% 100%

Q23

Have you ever lived abroad?

Q23=1 Yes

Q23=2 No

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0% 100%

Q22

What country did you live abroad and for how long?

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0% 100%

Q16

What is your ethnicity? Check all that apply.

- Q16_1 American Indian/Alaska Native
- Q16_2 Asian
- Q16_3 African American/Black
- Q16_4 Hispanic/Latino
- Q16_5 Native Hawaiian or Other Pacific Islander
- Q16_6 White
- Q16_7 Q16_7_other Other

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0% 100%

Q11

What is your gender?

- Q11=1 Male
- Q11=2 Female
- Q11=3 Non-binary
- Q11=4 Q11_4_other Prefer to self describe
- Q11=5 Prefer not to say

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0% 100%

Q10

What year are you?

- Q10=1 First Year
- Q10=2 Sophomore
- Q10=3 Junior
- Q10=4 Senior

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0% 100%

Q13

What is your primary school at WashU?

- Q13=1 The Olin Business School
- Q13=2 The College of Arts and Sciences
- Q13=3 The Sam Fox School of Design and Visual Arts
- Q13=4 The McKelvey School of Engineering

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0% 100%

Q20

Thank you for taking our survey

0% 100%