Is Sexism Prevalent Among Students Studying Operations and Information Management?

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Abstract

Operations and information management are currently male dominated fields, with women accounting for 29.8% of general and operations managers, and only 20% of software developers, applications and systems software positions (Boston Globe, 2017). As we make strides to close this 20% to 30% gender gap, it is important to recognize the experiences that can make closing the gap difficult. One challenge Operations Management and Information Systems(OM&IS) departments must face regularly particularly interests the researcher and begs this question; How do university OM&IS departments prepare women for careers in a male dominated fields? The researcher aims to learn the answer to this question by completing this independent study.

The first part of the study will be to conduct literature research on the operations and information management field to understand how they became male dominated industries, and to evaluate the current situation on a societal level. This research will attempt to analyze the psychological reasons that cause women to feel uncomfortable and leave male dominated fields. After completing literature research, a survey will be sent out to junior and senior students in a midwestern public research university's OM&IS department.

The survey will provide all students with the Ambivalent Sexism Inventory, a scale used to measure the endorsement of ambivalent sexism in individuals. The students will be asked to indicate their level of agreement on 22 statements. If the student identified as a gender other than "male" in the demographic questions, they will be routed into another set of questions that relate to their experiences in operations and information management classes. This will

include questions to determine their confidence in their OM&IS classes, and their opinions on efforts to improve the experiences of women in OM&IS classes. Also included is a scale used in "Hostile and Benevolent Sexism and College Women's STEM Outcomes" that identifies how often they are subject to sexism in the classroom.

During the time that the survey is live, interviews will be conducted with female alumni at various stages of their careers. The alumni will help identify some of the struggles women in male dominated fields face and provide input on possible solutions.

After the data is collected and analyzed, it will be evaluated and aid in providing the midwestern public research university's OM&IS department with recommendations on how to better prepare women for their careers.

This information is incredibly important to make sure the university is providing female students with the experiences they need to be successful in operations and information management. By performing this evaluation, the researcher hopes to identify trends that positively and negatively affect students and provide answers on how to improve as a department and a college as a whole.

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Introduction

Background/literature review

Sexism and the Ambivalent Sexism Inventory

Glick and Fiske explain in their 1996 paper "The Ambivalent Sexism Inventory: Differentiating Hostile and Benevolent Sexism" the multidimensional structure of sexism. Hostile sexism is described by Glick and Fiske as "those aspects of sexism that fit Allport's(1954) classic definition of prejudice"(Glick and Fiske, 1996). This includes angry, negative opinions and behaviors. According to Glick and Fiske's 1996 article, Benevolent sexism is:

"a set of interrelated attitudes toward women that are sexist in terms of viewing women stereotypically in restricted roles but that are subjectively positive in feeling tone (for the perceiver) and also tend to elicit behaviors of prosocial (e.g., helping) or intimacy-seeking (e.g., self-disclosure)" (pg. 491).

While benevolent sexism may be interpreted positively by recipient, the "underpinnings lie in traditional stereotyping and masculine dominance", and the ramification is often just as damaging as hostile sexism.

Hostile and benevolent sexism are intertwined with social power, gender identity, and sexuality. From this, Glick and Fiske composed three components to sexism: paternalism,

gender differentiation, and heterosexuality. Each of the components have a hostile and benevolent facet.

Paternalism

Paternalism is to "relate to others in the manner of a father dealing with his children" (Glick and Fiske, 1996). Paternalism includes domination, and protection/affection. The hostile version of Paternalism is "Dominative Paternalism", which endorses the idea that women aren't fully competent adults and need a superordinate male to take care of them. The benevolent side is "Protective Paternalism", which stems from the thought process that since men rely on women for reproduction and to be wives, mothers, and lovers, they need to be protected and cherished. This is rooted in the idea that women are the weaker sex, and this weakness requires a male. Paternalism is often seen in very traditional gender roles in marriages, where a man takes on the provider and decision maker role, and the woman relies on the man to conserve her economic/social status.

Gender Differentiation

Cultures have used differences to make social distinctions for a long time. One of the oldest ways to differentiate people is by gender. Social Identity theory (Tajfel, 1981) explains

that the tendency to differentiate between groups may be strong when social status is bound

with group membership, which creates social ideologies that justify the status differences.

Competitive Gender Differentiation is "social justification for male power"(Glick and

Fiske, 1996). Men are often thought to be natural leaders, and therefore are thought to be the

only sex having the traits needed to lead important social institutions. This morphs into

downward correlations where women serve. These ideas enable men to enhance their self

esteem by association with a male social identity (Tajfel 1981).

However, women still have "dyadic power" (which is the power that comes from dependencies

in a two-person relationship) because they can reproduce. This forms the idea that women

have different traits that complement a man's, also known as complementary gender

differentiation. The traits that women are said to have revolve around the traditional gender

roles discussed earlier, where women take on more domestic roles. The traits are viewed as

complementary, where the woman "completes" the man. Women are also expected to have

traits that men stereotypically lack, like sensitivity and empathy.

Heterosexuality

Another reason for men's ambivalence is their heterosexual attraction towards women.

The dyadic dependency between men and women create an interesting situation; members of

a more powerful group are relying on the members of a subordinate group, posing a threat of

violence. As previously mentioned, women are labeled by society as the subordinate group through social identity theory and gender differentiation. Women may also be heterosexually attracted to men, but this does not relate to Glick and Fiske's ambivalent sexism due to the subordinate role society labels women.

Heterosexual intimacy occurs when sex is viewed as a resource, and that women act as gatekeepers (Zillmann & Weaver, 1989). This power complex can stir up feelings of vulnerability that men may resent, due to gender differentiation telling men they shouldn't express their feelings. Heterosexual Intimacy is seen widely apparent in literature, where women are written as manipulative temptresses who can emasculate men. For some men, sexual attraction and the desire to dominate women can be inseparable. This issue falls under the category of "heterosexual hostility"(Glick and Fiske, 1996). There is a belief that women use their sexuality and allure to gain dominance over men, which is also associated with hostility, and is severely damaging.

Ambivalent Sexism Theory

	Benevolent	Hostile
Paternalism:	Protective Paternalism	Dominative Paternalism
Gender Differentation:	Complementary Gender Differentation	Competitive Gender Differentation
Sexuality:	Heterosexual Intimacy	Heterosexual Hostility

Figure 1.0 : Ambivalent Sexism Theory Visual Representation

With these three components; paternalism, gender differentiation, and sexuality, each with a hostile and benevolent element, Glick and Fiske created the Ambivalent Sexism Inventory; a collection of 22 statements that measure an individual's agreement regarding relationships between men and women. This scale can be used as a measure of overall sexism.

Hostile and Benevolent Sexism and College Women's STEM Outcomes

Kuchynka, Salomon, Bosson, El-Hout, Kiebel, Cooperman, Toomey investigate ambivalent sexism in STEM classes and how it affects women in their research article "Hostile and Benevolent Sexism and College Women's STEM Outcomes". Outcomes studied included women's intentions to major in STEM, their STEM self-efficacy, and their STEM GPA. They measured the ambivalent sexism attitudes of the students in the classroom with the Ambivalent Sexism Inventory, created by Glick and Fiske. After statistical analysis, researchers found that "women reported experiencing more protective paternalism and complementary gender differentiation than hostile sexism in their STEM classes" (Kuchynka et al., 2017). They also found male students "endorsed protective paternalism more strongly than hostile sexism" (Kuchynka, 2017), meaning women's perceptions of their gender-based treatment correspond to men's self-reported sexism attitudes. For women that were weakly STEM identified, frequent protective paternalism showed reports of lower STEM intention, GPA, and self-efficacy.

Overall, women who identified more strongly with STEM fields showed no associations between perceived sexism and STEM outcomes. In other words, the women who were insistent on going into the STEM field still faced sexism, but they persevered through it and their outcomes did not change; they still went into STEM. When women who were less confident in their decision to pursue a STEM career were exposed to protective paternalism, they were less likely to continue in STEM, received lower GPAs, and lacked self-confidence.

Current Attitudes in Operations Management and Information Systems

The current gender distribution in the operations and information management fields lack equality. From a survey by Procurement Leaders, "it was found that only 10% of the most senior supply chain management roles are filled by women; meaning there is a 9 to 1 imbalance of men to women in executive SCM roles (Forbes, 2017)." On the information systems side, "only 25% of IT jobs are held by women (Forbes, 2017)." This is troublesome, because even though women represent more than half of the US workforce, they are severely underrepresented in these fields. With the current unemployment rate at a low 3.7% (Bureau of Labor Statistics, 2019), and 627,000 unfilled positions in tech for 2017 (Bose, 2018) costing companies billions of dollars in lost productivity. 297,539 qualified women graduated with science and engineering bachelor's degrees in 2012 alone (National Science Foundation, 2014), which would cover only 38% of the 627,000 previously mentioned unfilled tech positions for

last year. Men received 291,791 science and engineering bachelor's degrees in 2012 (National

Science Foundation, 2014), which is 5,748 fewer degrees than women. This ratio is not

currently present in STEM fields: Women make up only 28% of the US science and engineering

workforce (National Girls Collaborative, 2018). In addition, companies that achieve diversity in

their management/corporate boards attain better financial results on average than companies

that do not (Forbes, 2017), so why aren't the open positions in these fields being filled by

women?

Culture could be a large reason as to why these fields continue to be so male

dominated. The industry is not recognizing the severity of the issue at hand. According to Bob

Davis, "Despite the fact that 40% of women believe that companies do not spend enough time

addressing diversity … 82% of men think that organizations spend too much time on it" (Forbes,

2018). In addition, a "recent study on White Men Leading Through Diversity and Inclusion

showed that most white male leaders aren't aware of how far they still need to go when it

comes to leading through diversity and inclusion (Forbes, 2013)." When men, who make up the

vast majority of the jobs and management positions in this field, don't understand just how

important the gender distribution is to their female managers, coworkers, and employees, it is

incredibly easy for women to feel unappreciated, burnt out, or unsatisfied with their current

job in operations or tech, causing them to leave the field at a 45% higher rate (Forbes, 2017)

than men.

Method

Alumni Interviews

Women alumni of the operations and information management department were suggested for interviews by a senior professor. Women were not randomly selected, but recruited for their interest in the topic and positive relationship with the university. The women were contacted via LinkedIn message. If the alumni were interested in participating in the study, a 30-minute-long phone interview was set up and recorded.

The Interviews began by asking about their current position and years they were students in the department. The pre-college section asked how they became interested in operations/information management, and whether they were supported in their decision to pursue this degree path. This was followed by a general question about their college experience. Post-college questions consisted of a brief summary of their career timeline, any situations where they faced sexism in the workplace, and when they had seen other women experiencing sexism in the workplace. Next, alumni discussed surprises encountered once they entered the business world. If the interviewee thought the climate for women in these fields has changed, we discussed how. We covered thoughts about leaving the operations/technology field, and whether they had been a part of any successful initiatives to support women. Next, the researcher asked how we could help women prepare for what they may experience before they begin their careers in this field, followed by their ideas to reduce or eliminate the

frequency of sexism in the workplace/college classes. Mentors and Mentees were briefly

discussed, before any closing advice or suggestions for women and the department.

Student Surveys

Surveys were sent out via email to all undergraduate junior and senior OM&IS students.

This email was sent by the associate director and academic advisor of the department, in order

to attract attention from the students. The optional survey takes between 5 and 20 minutes to

complete, and students had the chance to win a $10 amazon gift card upon completion.

Students are first exposed to demographic questions, asking about age, gender,

ethnicity, and GPA. Next, they received the 22 statements described in Glick and Fiske's

Ambivalent Sexism Inventory. This scale identified individuals' opinions relating to women. If

the survey taker selected 'male' for their gender demographic question, they were routed to

the end of the survey, and had the option to complete a separate survey to provide their email

for a chance to win the $10 gift card. If the survey taker selected 'female' or 'other', they

received a questionnaire used in "Hostile and Benevolent Sexism and College Women's STEM

Outcomes" to identify the frequency in which students experienced sexism in their operations

and information management classes. Next, the survey assessed their confidence in their

operations and management courses, followed by questions asking if the student had/has

[i]mentors/mentees. The next question asks if the student has a faculty member they feel

comfortable enough to report gender discrimination to, and the last part of the survey includes

a text box for the survey taker to share anything they feel relevant to the study.

Results

Alumni Interviews

Four out of five alumni that were interviewed shared a story in response to the question "have you ever experienced sexism in the workplace?".

Of the stories shared, one expressed a benevolently sexist story. The remaining three were rooted in hostile sexism. Gender differentiation was identified in all four stories shared, and paternalism was present in three of the four.

Below are four stories of alumni experiencing sexism in the workplace:

Vendors wouldn't work with Kayla* when she got promoted. The vendor went over her head to a male superior, even though before her promotion the vendor had no issue speaking to the male employee in her same role.

This is an example of hostile sexism. The male vendors refused to work with Kayla* due to their opinions about women and their abilities. Specifically, this relates to dominative paternalism, where women are not thought of as fully competent adults and need a male superordinate figure. This also relates to competitive gender differentiation; where women and men are thought to have very different traits, leading to the assumption that men should be in structural roles of power. When Kayla* confronted her boss with the issue, her boss said,

ii"That's how business works." While Kayla's* boss may have been trying to preserve the

relationship he had with the vendor, this is damaging to Kayla* and the culture of the company.

This response allows the sexist behavior the employee experienced to continue, causing the

employee to feel unsupported and undervalued. Supporting this behavior, the boss is

reinforcing a culture that discriminates on the basis of gender, with little pushback from upper

management.

Dawn* had a similar experience. Her vendor went to her boss instead of her because he

was "uncomfortable talking to females". This is hostile sexism, and stems from dominative

paternalism and competitive gender differentiation as well. Situations like these prevent

women from performing their jobs, and cause women to feel that they are not appreciated or

needed, leading to women leaving technology jobs at 41%, which is twice as high as men's

turnover rate of 17% (Ashcraft et al., 2016).

Clients said Karen's* distribution center was the "cleanest" because she's a woman

manager. While this comment is presented as a compliment, Karen* immediately detected

sexism. This is a classic example of benevolent sexism and plays on gender differentiation; the

idea that men and women have different traits based on their sex, where women perform tasks

inside the house and are thought to be clean, organized, and empathetic. However, it is still a

damaging comment for a woman to hear while trying to perform at her best in a male

dominated career field. When experiencing this kind of sexist remark, women can feel as

though they are only being noticed for things they stereotypically exceed at. The skills needed

for positions in operations and information management are not often the ones stereotypically

tied to women. When women and men are gender differentiated and thought to only possess a certain group of skills according to their sex, we see career paths that become male or female dominated. This unfortunately creates barriers for both sexes.

Anna* brought up a new idea to her supervisor, and he gave her permission to test it out. When she told her male co-worker, he wouldn't implement her idea until her superior brought it up.

This is a common problem for women facing hostile sexism in the workplace, and stems from paternalism and gender differentiation. The co-worker is assuming, possibly unconsciously, that women are not decision makers, or capable of implementing change without a male superordinate figure. When Anna's* decision was backed by a male, her idea was no longer questioned, and implemented immediately. These situations rob women of recognition and respect. More than half of the women who enter STEM fields leave within a decade. This is close to twice the frequency of their male peers in those fields (Zazulia, 2016). When women feel the way Anna* did, they leave the field and the sexist culture continues to exist.

Student Surveys

The survey was distributed via university email to all undergraduate students studying operations and information management of a junior or senior standing. This is about 200 people. 50 people responded to the survey, but only 37 of 50 completed it fully. Demographic data** of those surveyed is included below in figure 1.1. Due to the male dominance of the major, males made up 80% of the sample. This reflects the current gender distribution accurately. There was also one non-binary student that participated in the survey, but to keep their answers anonymous throughout this study, the student's answers are not reflected in the data.

Demographic Data		
Age:	**Percent**	**Count**
18-24	81.63%	40
25-34	16.33%	8
35-44	2.04%	1
45 and older	0.00%	0
Gender:		
Male	80.43%	37
Female	19.57%	9
Ethnicity:		
White	57.14%	28
Hispanic or Latino	22.45%	11
Black or African American	4.08%	2
Native American or American Indian	0.00%	0
Asian/Pacific Islander	14.29%	7
Other	2.04%	1
GPA:		
2.49 or Lower	0.00%	0
2.50-2.74	12.50%	6
2.75-2.99	20.83%	10
3.00-3.24	16.67%	8
3.25-3.49	14.58%	7
3.50-3.74	14.58%	7
3.75 or Above	20.83%	10

Figure 1.1: Demographic Data from Student Survey

Female students were asked two questions about their self confidence in their OM&IS

classes. The first question asked them to rate their level of agreement to the statement "I am

confident that I could successfully complete the educational requirements for an OM&IS

major". 88.89% of women identified that they strongly agreed with this statement, and 11.11% said they agree somewhat. Please see figure 1.2 below.

"I am confident that I could successfully complete the educational requirements for an OM&IS major"

11.11%

88.89%

strongly agree   agree somewhat   slightly agree   slightly disagree   disagree somewhat   strongly disagree
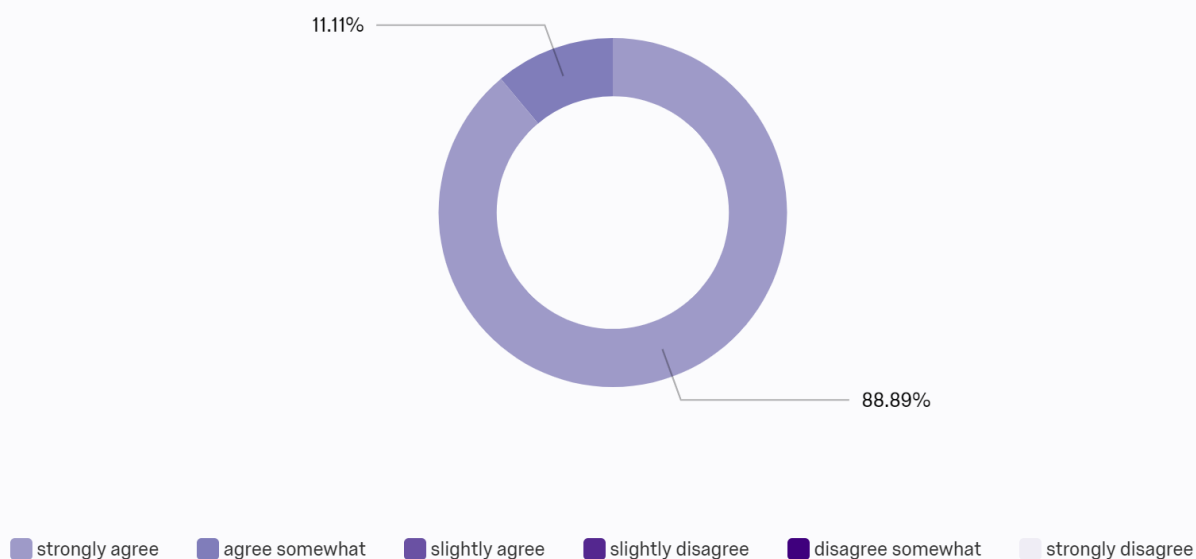
Figure 1.2: Confidence question 1 showing high levels of confidence from undergraduate women in the department.

However, the second question did not paint our female students in such confidence. When asked to rate their level of agreement to the statement "I feel like I have to work harder than other people in my OM&IS classes in order to do well", 22.22% of people selected "strongly agree", 44.44% said "agree somewhat", 11.11% said "slightly agree", and 22.22% said "slightly disagree", shown in Figure 1.3.

Not one person selected "somewhat disagree" or "strongly disagree". Ideally, the female individuals in the OM&IS department should feel as though they do not have to try harder than

others in the department to succeed as an OM&IS major and would have selected "strongly

disagree". The women in the department are confident they can complete the OM&IS major

successfully, but they also believe they need to work harder than their peers to do well.
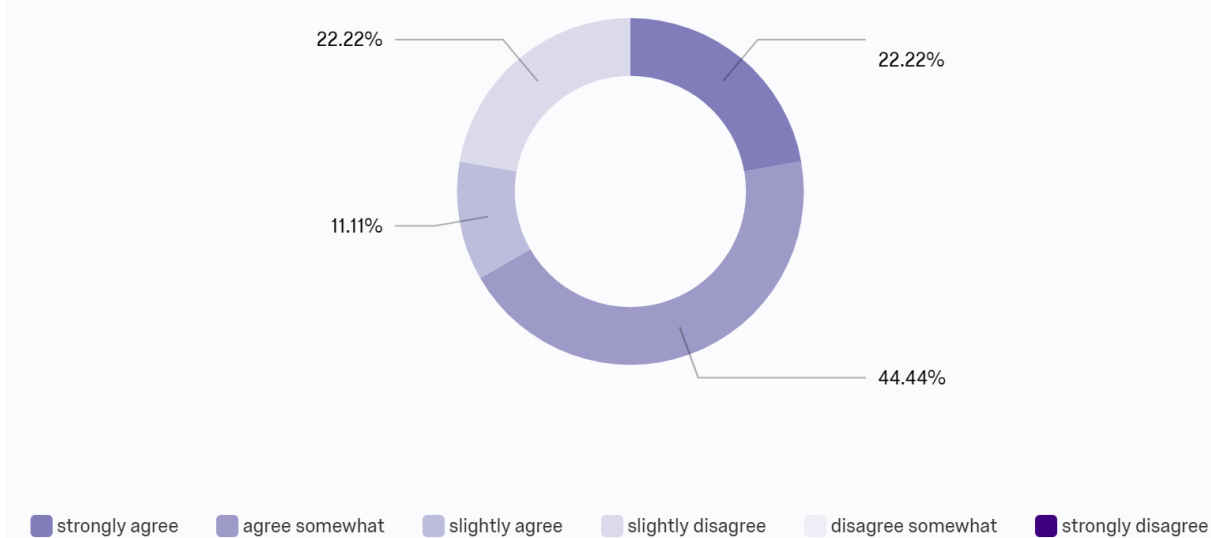

Figure 1.3: Confidence question 2 showing low levels of confidence from undergraduate women in the department

When asked if they had an OM&IS Faculty member they felt comfortable enough to

report gender discrimination situations to, 8 out of 9 women answered "yes". See figure 1.4

below.

Do you have an OM&IS faculty member you feel comfortable enough to report gender discrimination situations to?

11.11%

88.89%

Yes   No
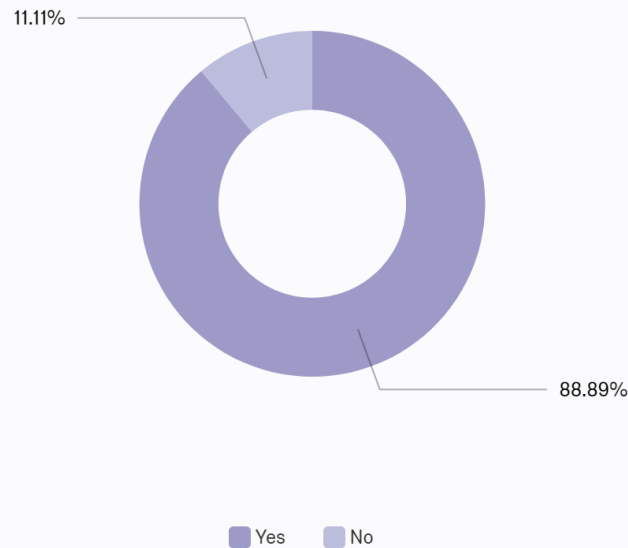
Figure 1.4: Women in the department feel comfortable reporting gender discrimination to faculty members

ASI measurements:

Individuals in the undergraduate OM&IS department had an average score of 2.188 for overall sexism, on a scale of 0 to 5, 0 being totally unbiased and 5 being sexist. Hostile sexism ranked slightly lower at 2.073, than benevolent sexism at 2.303. When benevolent sexism was broken down into the three subareas, paternalism received 2.575, gender differentiation received 2.305, and heterosexual intimacy received a 2.027.

	TOTAL
Overall Sexism Score:	2.188203463
Hostile Sexism Score:	2.073376623
Benevolent Sexism Score:	2.303030303
B: Paternalism:	2.576388889
B: Gender Diff:	2.305555556
B: Heterosexual Intimacy:	2.027777778

Figure 1.5: Overall Sexism survey data

When Glick and Fiske tested the ASI in 1996, they used 6 sample groups. The scores of these groups are pictured in Figure 1.6. Male participants' mean overall sexism scores were 2.96, 2.53, 2.46, 2.46, 2.52, and 2.45. This is not far off from the male participants' overall sexism score of 2.361 that was collected for the purpose of this study. The men's mean overall ASI scores have not seen significant changes in the 23 years between Glick and Fiske's 1996 ASI testing and the researcher's 2019 testing. This leads the researcher to believe that in general, students studying operations and information management are nearly as sexist as individuals were 23 years ago.

Table 6
ASI Scale Means for Men and Women Across Six Samples

ASI scale	Study					
	1	2	3	4	5	6
			Male respondents			
ASI						
M	2.96	2.53	2.46	2.46	2.52	2.45
SD	.88	.61	.61	.62	.63	.75
Hostile Sexism						
M	3.05	2.49	2.38	2.63	2.72	2.54
SD	1.04	.74	.78	.95	.97	.86
Benevolent Sexism						
M	2.87	2.58	2.53	2.31	2.33	2.36
SD	.97	.69	.74	.92	.95	.85
N	344	77	396	72	36	44
			Female respondents			
ASI						
M	2.41	1.85	1.97	1.82	1.78	2.07
SD	.82	.76	.72	.87	.89	.84
Hostile Sexism						
M	2.38	1.49	1.73	1.67	1.66	1.87
SD	.95	.88	.84	1.03	1.05	.98
Benevolent Sexism						
M	2.43	2.21	2.20	1.98	1.90	2.27
SD	.96	.83	.84	1.01	.94	.92
N	467	94	541	72	76	41

Note. Each scale ranged from 0 (*disagree strongly*) to 5 (*agree strongly*).

A T-Test was done to identify if male and female students answered the questions on the Ambivalent Sexism Inventory differently. See figure 1.7.

Ambivalent Sexism Inventory Data								
Sexism Types	MALE AVG	MALE Stdev	variance	FEMALE AVG	FEMALE Stdev	variance	t values	p-value
Overall Sexism Score:	2.361	0.374	0.140	1.700	0.659	0.434	2.897	0.020
Hostile Sexism Score:	2.334	0.305	0.093	1.400	0.417	0.174	6.318	0.000
Benevolent Sexism Score:	2.388	0.447	0.200	2.000	0.735	0.540	1.518	0.168
B: Paternalism:	2.712	0.380	0.144	2.225	0.810	0.657	1.755	0.117
B: Gender Diff:	2.244	0.080	0.006	2.167	0.643	0.413	0.358	0.729
B: Heterosexual Intimacy:	2.173	0.544	0.296	1.650	0.780	0.609	1.901	0.094
samplesize	37			9				

Figure 1.7: T-Tests showing significant difference in how women answered hostile sexism question compared to men

The only variables providing a P-value less than .05 were Hostile Sexism and Overall Sexism. This means there was a significant difference in how women answered compared to men when the questions related to hostile sexism. The difference was so large in the hostile sexism questions that the overall sexism score was also significant. However, benevolent sexism did not show any significance when looking at how men and women answered.

Sexism Frequency:

Below is the data from the sexism frequency part of the survey. These questions were only seen and answered by individuals that identified as "female".

Women were asked to identify how often they were subject to specific sexist situations, and if they had witnessed other women experiencing these same situations. The top 5 highest averages are the same for both sets of questions.

The highest occurring situation was an example of complimentary gender differentiation: "being treated as if others expect you to be sweet and friendly". This happened with a frequency of 1.67. As pointed out in *Hostile and Benevolent Sexism and College Women's STEM Outcomes*, this does not negatively impact women's STEM outcomes. In fact, complimentary gender differentiation was "a positive predictor of women's STEM self-efficacy" (Kuchynka, 2017, pg 83). However, this is still a situation rooted in sexism, and can

cause issues down the line. When women are nurtured in the corporate space, they often do not get the kind of feedback they need to advance in their careers. Other high frequency events are similar; "been treated as if you are more morally pure than men" and "been treated as if you are a 'nice girl'" are both complimentary gender differentiation. Both of these situations may not damage women's confidence while they are in college, but they can manifest themselves in situations in the business world. For example, gender biases are common in performance reviews. When women are gender differentiated in performance reviews for jobs requiring tasks that are labeled more "masculine", they do not get the accurate, unbiased feedback they need to advance in their careers, or get a raise they may deserve, leading to unequal gender distributions in management roles.

   Women are also being "treated as if you need a man's help" and "been treated as if you need more assistance than men do", at frequencies of 1.33. These are more damaging events for women currently in the department because they stem from protective paternalism, which is a negative indicator of women's STEM outcomes.

Chart 1: Results to "How often have you experienced … in your OM&IS classes?"

#	Field	the event has never happened to you	the event happens rarely (2 – 3 times per semester)	the event happens sometimes (4 – 7 times per semester)	the event happens often (8 – 14 times per semester)	the event happens frequently (15 – 21 times per semester)	the event happens very frequently (more than 21 times per semester)	Total
1	Been subjected to offensive comments	77.78% 7	11.11% 1	11.11% 1	0.00% 0	0.00% 0	0.00% 0	9
2	Been treated in an insulting manner	88.89% 8	11.11% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	9
3	Been harassed or threatened	100.00% 9	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	9
4	Been the target of obscene sexual comments or gestures	100.00% 9	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	9
5	Been the target of insulting jokes	88.89% 8	11.11% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	9
6	Been accused of using your gender to your advantage	88.89% 8	11.11% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	9
7	Been treated in an angry manner	88.89% 8	11.11% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	9
8	Been treated as if you need more assistance then men do	77.78% 7	11.11% 1	11.11% 1	0.00% 0	0.00% 0	0.00% 0	9
9	Been treated as if you were weaker than men	88.89% 8	11.11% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	9
10	Been treated as if you need a man's help	77.78% 7	22.22% 2	0.00% 0	0.00% 0	0.00% 0	0.00% 0	9
11	Been treated as if you are more vulnerable than men	88.89% 8	11.11% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	9
12	Been treated as if you cannot take care of yourself	88.89% 8	0.00% 0	11.11% 1	0.00% 0	0.00% 0	0.00% 0	9
13	Been treated as if you are a "nice girl"	44.44% 4	44.44% 4	11.11% 1	0.00% 0	0.00% 0	0.00% 0	9
14	Been treated as if you are innocent	55.56% 5	22.22% 2	11.11% 1	11.11% 1	0.00% 0	0.00% 0	9
15	Been treated as if others expected you to be sweet and friendly	44.44% 4	33.33% 3	11.11% 1	11.11% 1	0.00% 0	0.00% 0	9
16	Been treated as if you are more morally pure than men	77.78% 7	11.11% 1	11.11% 1	0.00% 0	0.00% 0	0.00% 0	9

Showing rows 1 - 16 of 16

Chart 2: Results to "How often have you witnessed other women ... in your OM&IS classes?

#	Field	the event has never been witnessed by you	the event happens rarely (2 – 3 times per semester)	the event happens sometimes (4 – 7 times per semester)	the event happens often (8 – 14 times per semester)	the event happens frequently (15 – 21 times per semester)	the event happens very frequently (more than 21 times per semester)	Total
1	Being subjected to offensive comments	88.89% 8	11.11% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	9
2	Being treated in an insulting manner	77.78% 7	22.22% 2	0.00% 0	0.00% 0	0.00% 0	0.00% 0	9
3	Being harassed or threatened	88.89% 8	11.11% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	9
4	Being the target of obscene sexual comments or gestures	100.00% 9	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	9
5	Being the target of insulting jokes	77.78% 7	22.22% 2	0.00% 0	0.00% 0	0.00% 0	0.00% 0	9
6	Being accused of using your gender to your advantage	77.78% 7	22.22% 2	0.00% 0	0.00% 0	0.00% 0	0.00% 0	9
7	Being treated in an angry manner	100.00% 9	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	9
8	Being treated as if they need more assistance then men do	66.67% 6	33.33% 3	0.00% 0	0.00% 0	0.00% 0	0.00% 0	9
9	Being treated as if they were weaker than men	88.89% 8	11.11% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	9
10	Being treated as if they need a man's help	66.67% 6	33.33% 3	0.00% 0	0.00% 0	0.00% 0	0.00% 0	9
11	Being treated as if they are more vulnerable than men	88.89% 8	11.11% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	9
12	Being treated as if they cannot take care of themselves	88.89% 8	11.11% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	9
13	Being treated as if they are a "nice girl"	66.67% 6	22.22% 2	11.11% 1	0.00% 0	0.00% 0	0.00% 0	9
14	Being treated as if they are innocent	77.78% 7	22.22% 2	0.00% 0	0.00% 0	0.00% 0	0.00% 0	9
15	Being treated as if others expected them to be sweet and friendly	55.56% 5	33.33% 3	0.00% 0	11.11% 1	0.00% 0	0.00% 0	9
16	Being treated as if they are more morally pure than men	77.78% 7	11.11% 1	0.00% 0	11.11% 1	0.00% 0	0.00% 0	9

Showing rows 1 - 16 of 16

Recommendations

The Ambivalent Sexism Inventory (ASI) covers a wide variety of ideas relating to gender. Since the overall average score for students in the department was a 2.188, the researcher recommends students are provided information on what constitutes as sexism. Feminism vs. Chivalry is a different conversation, but sometimes people will excuse an ambivalently sexist comment or event with a claim to chivalry. The researcher recommends providing education on topics such as systematic beliefs, gender roles, femininity and status. This will further educate students on what constitutes as chivalry, and what would be considered sexism. This education could be viewed as something similar to the ethics program the university currently havs through the College of Business.

Educating on different types of sexism will help both men and women identify sexism in the business world. Providing women with the knowledge they need to be able to identify sexism with confidence may lower the number of unreported sexual harassment situations. One of the most common themes the researcher heard from alumni interviews was the importance of confidence. The researcher believes educating female students on this topic will help retain OM&IS majors.

Lastly, the researcher recommends a retest. The survey should be sent out to the junior and senior level OM&IS students again in August of 2021. In August 2021, most of the students that took the 2019 version will have graduated, and the department will have had significant time to try to implement the above recommendations. The researcher expects the Overall

Sexism average to rise in the years immediately following the tests, due to participants gaining a better understanding of what sexism is. After a small spike, the researcher would expect the scores to be lower than the 2.188 collected from the 2019 students.

Limitations

This research was limited by small sample size and self-reported data. This research also does not recognize data from non-binary students.

More research is needed in this area of study. Many topics that can be related to this research but were outside the scope of this project include and are not limited to: domestic abuse, rape culture, ASI outcomes for female-dominated fields, ASI comparisons for technology companies, Sexism in the LGBTQIA community, Women's vs. Men's self-confidence in STEM.

Acknowledgements

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Appendix A

Alumni Interview Questions

General:
- What is your name?
- When were you a student in NIU's OM&IS department? (answer in range of years)
- What is your current position?
- What company/organization are you currently working for?

Pre-College:
- How did you become interested in operations and information management?
- Were you supported in this career decision? If so, by who?

College Years:
- What was your experience with the NIU OM&IS department?

Post College:
- Please briefly outline your career timeline.
- Did you ever have any experiences with sexism in the workplace? What happened?
- Did you ever notice other women around you experiencing sexism?
- What surprises did you encounter once you entered "the real world"?
- Has the climate for women working in operations and information management changed? How so?
- Have you ever considered leaving the operations/tech field? Why or why not? Did you end up leaving?
- Is there anything that could help women prepare for what they may experience before they begin their careers in this field?
- Do you think there are any solutions to reduce or eliminate the frequency in which women face ambivalent sexism in work or in college classes?
- Do/did you have mentors? Mentees?
- Do you have any advice/suggestions for women in the department currently?
  - Can NIU help?
- What are your thoughts on these attempts to help women in operations and information management?
  - Mentorship Program
  - Special events
  - Student organizations specifically for OM&IS
  - Other ideas
  - Do you have anything else to share with us today?
    - Experiences
    - Stories
    - Words of encouragement/advice

- Suggestions for the department

Appendix B

Current Student OM&IS Department Survey

Survey for everyone:

How old are you?
18-24 years old
25-34 years old
35-44 years old
+45 years old

What is your gender?
Male
Female
Other (please specify):

What is your ethnicity?
White
Hispanic or Latino
Black or African American
Native American or American Indian
Asian/Pacific islander
Other

In what range does your cumulative GPA fall?
2.49 or lower
2.50 - 2.74
2.75 - 2.99
3.00 - 3.24
3.25 - 3.49
3.50 - 3.74
3.75 or above

_____

Please rate your agreement of the following statements.
{strongly disagree, disagree somewhat, slightly disagree, slightly agree, agree somewhat, strongly agree}

[ ]   No matter how accomplished he is, a man is not truly complete as a person unless he has the love of a woman.

[ ]   Many women are actually seeking special favors, such as hiring policies that favor women over men, under the guise of asking for "equality".
[ ]   In a disaster, women ought not necessarily to be rescued before men.
[ ]   Most women interpret innocent remarks or acts as being sexist.
[ ]   Women are too easily offended.
[ ]   People are often truly happy in life without being romantically involved with a member of the opposite sex.
[ ]   Feminists are not seeking for women to have more power than men.
[ ]   Many women have a quality of purity that few men possess.
[ ]   Women should be cherished and protected by men.
[ ]   Most women fail to appreciate fully all that men do for them.
[ ]   Women seek to gain power by getting control over men.
[ ]   Every man ought to have a woman who he adores.
[ ]   Men are complete without women.
[ ]   Women exaggerate problems they have at work.
[ ]   Once a woman gets a man to commit to her, she usually tries to put him on a tight leash.
[ ]   When women lose to men in fair competition, they typically complain about being discriminated against.
[ ]   A good woman should be set on a pedestal by her man.
[ ]   There are actually very few women who get a kick out of teasing men by seeming sexually available and then refusing male advances.
[ ]   Women, compared to men, tend to have a superior moral sensibility.
[ ]   Men should be willing to sacrifice their own well-being in order to provide financially for the women in their lives.
[ ]   Feminists are making entirely reasonable demands of men.
[ ]   Women, as compared to men, tend to have a more refined sense of culture and good taste.

If selected male on gender question, survey ends here. Option to enter to win gift card follows. If answered a gender other than "male" on gender demographic question, they will be routed through this survey:
_____

How often have you…in your OM&IS courses?
Scale:
1 = the event has never happened to you, 2 = the event happens rarely (2 – 3 times per semester), 3 = the event happens sometimes (4 – 7 times per semester), 4 = the event happens often (8 – 14 times per semester), the event happens frequently (15 – 21 times per semester), 6 = the event happens very frequently (more than 21 times per semester).

-   Been subjected to offensive comments

- Been treated in an insulting manner
- Been harassed or threatened
- Been the target of obscene sexual comments or gestures
- Been the target of insulting jokes
- Been accused of using your gender to your advantage
- Been treated in an angry manner
- Been treated as if you need more assistance then men do
- Been treated as if you were weaker than men
- Been treated as if you need a mans help
- Been treated as if you are more vulnerable than men
- Been treated as if you cannot take care of yourself
- Been treated as if you are a "nice girl"
- Been treated as if you are innocent
- Been treated as if others expected you to be sweet and friendly
- Been treated as if you are more morally pure than men

_____

How often have you witnessed other women …. In your OM&IS courses?
Scale:
1 = the event has never been witnessed by you, 2 = the event happens rarely (2 – 3 times per semester), 3 = the event happens sometimes (4 – 7 times per semester), 4 = the event happens often (8 – 14 times per semester), the event happens frequently (15 – 21 times per semester), 6 = the event happens very frequently (more than 21 times per semester).

Being subjected to offensive comments
Being treated in an insulting manner
Being harassed or threatened
Being the target of obscene sexual comments or gestures
Being the target of insulting jokes
Being accused of using your gender to your advantage
Being treated in an angry manner
Being treated as if they need more assistance then men do
Being treated as if they were weaker than men
Being treated as if they need a man's help
Being treated as if they are more vulnerable than men
Being treated as if they cannot take care of themselves
Being treated as if they are a "nice girl"
Being treated as if they are innocent
Being treated as if others expected them to be sweet and friendly
Being treated as if they are more morally pure than men

STEM confidence questions:

- I am confident that I could successfully complete the educational requirements for an OM&IS major. Strongly agree, agree somewhat, slightly agree, slightly disagree, disagree somewhat, strongly disagree.
- I feel like I have to work harder than other people in my OM&IS classes in order to do well. Strongly agree, agree somewhat, slightly agree, slightly disagree, disagree somewhat, strongly disagree.

- Do/did you have a mentor within the OM&IS department? yes, no
- Do/did you have a mentee within the OM&IS department? yes, no
- Do you have an OM&IS faculty member that you feel comfortable enough to report any gender discrimination situations to? Yes, no

Do you have anything else to share with us today? (any situations/stories, or ideas/suggestions for the department pertaining to experiences of women in OM&IS are welcome) Text box: optional.

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*= Denotates name was changed for privacy

**GPA data was self-reported