Gender and the Architectural Lighting Design Team

A Study into the Real and Perceived

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GENDER AND THE ARCHITECTURAL LIGHTING DESIGN TEAM

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ABSTRACT

Studies suggest that diversity is advantageous to group work. As lighting design teams become increasingly diverse, there is an increased opportunity for innovation as well as miscommunication. In an effort to improve communication and inter-team empathy, this master’s thesis explores the implications of gender on the architectural lighting design collaborative team.

Based on previous research, a survey was conducted of architectural lighting designers of any gender located in the US.

This thesis concludes that a gap exists in the gendered perceptions among colleagues in a lighting design environment. In addition, it cannot be assumed that tendencies seen in the general public are representative of architectural lighting designers. This research culminates in the conclusion that increased diversity within teams strengthens and supports design problem solving, in line with previous work done on this topic.

Key Words: Diversity, gender, lighting design, collaborative team

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Although interest in light research and scientific theory dates back to 1500 B.C., the profession of architectural lighting design began its development in the early 1900s (Muro 2011).

Unlike many older technical and design professions, lighting design’s recent birth as a discipline allowed space for a more diverse workforce, reflecting societal developments of the time. An early example of this is Lesley Wheel (1929-2004), who became one of the first women to start a career in architectural lighting design, establishing herself as a founding member of the field. Furthermore, she served as a fellow and president of IALD, pioneering the way for increased diversity in the field (Tamulonis 2007), a path the industry is still on today.

Today women make up about 34% of the lighting designer workforce in the US and continued efforts are being made to understand better gender diversity and its implications (Zippia, Inc. 2021). Equity in Lighting Design, established in 2020, looks to understand and ultimately increase diversity in the NYC lighting market (Equity in Lighting 2020). Women in Lighting is a global digital platform that focuses on inclusivity to benefit the profession as a whole (Women in Lighting n.d.).

While the goal remains the same: designing light to create spaces where people are healthier, happier, and more productive, the formation of these organizations indicates that lighting design teams are becoming increasingly diverse. Its effects need to be adequately understood and accommodated for. To make sure we are meeting this goal we have to look at the environment the design is happening in. Design environments should be a collaborative, respectful, and creative space where all team members can bring their ideas, experiences, and perspectives to the table with the ultimate goal of producing the best lighting design result.

With this, this research aims to bring to light some of the demographic differences and similarities of members of a design team that are not often discussed in a work environment but impacts the outcome of the lighting design or lighting design process. Particular focus is put on gender dynamics related to the real and perceived experience of behavior and contributions within an architectural lighting design team. Ultimately, this effort hopes to identify key trends and spread awareness so that all members of a lighting design team can better understand each other and improve collaboration, thus supporting the creation of better lighting design.

This aim will be accomplished by looking at the correlation in the perception of one’s own gender identity group and tendencies there within and as it relates to other gender identity groups, specifically whether individuals are making generalizations that they do or do not fit into and might not hold up for other members of the same group. Furthermore, a discrepancy between perceived and lived experience will shed light on essential aspects to consider when seeking to improve collaboration and morale in the workplace.

1 INTRODUCTION

1.1 UN Sustainability Goals

While the goal is to impact the two goals mentioned above directly, this research hopes to impact all of them indirectly. If, through the support of this research, an environment is cultivated where design can be conducted and the hurdles of how we work and perceive each other are reduced, more energy can be allocated to address the issues outlined by the UN sustainability goals. Especially those impacted directly by architectural lighting design, such as Good Health and Wellbeing, Sustainable Cities and Communities, and Climate Action.
2 PREVIOUS RESEARCH

Collaboration has proven to be an integral part of design (Cross and Cross 1995, Branki, Jones and Edmonds 1993), and from the author’s perspective and experience, lighting design is no different. Previous studies have demonstrated a link between a team’s diversity of experiences, points of view, and educational background with improved team problem solving and the generation of new ideas (Van der Vegt and Janssen 2002; Østergaard, Timmermans and Kristinsson 2011). In order to investigate this further, a clear definition of diversity is required. According to the literature, two categories exist when defining diversity. One approach looks at “visible” diversity as it relates to characteristics that are readily detectable or outwardly represented (i.e. age, gender). The other looks at “underlying” diversity, referring to characteristics that we gain and can be changed (i.e. education, technical abilities) (Milliken and Martins 1996; Pelled 1996; Garcia-Prieto, Bellard and Schneider 2003).

This research places focus specifically on gender, a subcategory of “visible” diversity. Previous studies conclude that teams with “more balanced gender compositions are more likely to innovate when compared to firms with a high concentration in one gender” (Østergaard, Timmermans and Kristinsson 2011). In contrast, other research reveals that diversity can lead to better performance but similarly increase the potential for conflict; coined the “diversity paradox” (Garcia-Prieto, Bellard and Schneider 2003). One way of combating this potential conflict is inter-team empathy. It has been shown that “training individuals to understand the perspective of others” can assist with team formation, implying that mere consideration of each other’s perspectives may be enough to overcome surface-level differences (Williams, Parker and Turner 2007; Yeager and Nafukho 2011). As the lighting design industry is becoming increasingly diverse, this study looks at the similarities and differences as it relates to lighting designers’ experience. In gaining an improved understanding of the nuances in lighting designers’ experience, the hope is to positively impact inter-team empathy, leading to better communication within a team, ultimately resulting in a more open space where ideas can be shared freely, and individuals are empowered to become better designers.

3 METHODOLOGY

This research seeks to answer the following question:

Do architectural lighting designers have conscious and/or subconscious perceptions of themselves and others in the context of diverse and collaborative lighting design work environments?

Four sub-questions are used to answer this question and better understand the perceptions of gender by others and oneself.

1. Are generalizations made of ones’ own identity group that they themselves do not fit into? Do correlations exist between beliefs of oneself and ones’ own identity group?

2. Are generalizations made of ones’ own identity group and how are they aligned or different from the perception of others?

3. Are generalizations made that align with common gendered stereotypes?

4. Does a correlation exist between self-identifying gender and impact/contributions to how lighting design is conducted?

This study follows the following methodology to answer these questions: study design, sample selection, and questionnaire development.
Based on the United Nations International Research and Training Institute for the Advancement of Women (United Nations n.d.), data should be collected from primary and secondary sources. Therefore, in this research, survey and literature reviews are the primary and secondary research. The survey is conducted online and has two different types of questions. The first is quantitative, focusing on demographics and highlighting gender representation within architectural lighting design. The second is qualitative, focusing on subjective experiences to better understand the individual’s perceptions and preferences as architectural lighting designers. The author selected this method of data collection because of its ability to “gathering information about a current status of a target variable within a particular collectivity” (Murray 2003), which in the case of this research is gender in the field of architectural lighting design.

3.1 Study Design

The sample used for this study is architectural lighting design professionals of all genders located in the United States. Architectural lighting design is different from other areas of the industry in that lighting designers collaborate in a team and interact more closely with architects, other engineering disciplines, consultants, and contractors to find solutions for design problems. For this reason, the study limited the sample to only architectural lighting designers and may not be representative of areas outside of this building design subset. By narrowing the scope to only include designers specifically in the US, it can be assumed that similar design stages are followed. In addition, the United States has an established lighting industry, with the lighting design workforce reaching 3,759 in 2020 (Zippia, Inc. 2021).
3.2 Questionnaire Development

This section outlines the three main phases in the survey’s development: construction, pilot testing, and administration & data collection.

3.2.1 Research Support

Some research suggests that in situations where diversity can lead to conflict, over-generalized perceptions regarding invalid stereotypes are often a part of the cause (Pettygrew and Tropp, A Meta-Analytic Test of Intergroup Contact Theory 2006; Pettigrew and Tropp, How does intergroup contact reduce prejudice? Meta-analytic tests of three mediators 2008). Stereotypes are qualities perceived to be associated with particular groups or categories of people (Schneider 2005). These associations are often applied instantly and subconsciously impact our interactions and behaviors (Catalyst 2005).

When looking at internalized gendered perceptions, that is, perception of ourselves, our own, and other identity groups, it is crucial to include and take stereotypes into account. The gendered stereotypes for the general US public per Schneider’s book, The Psychology of Stereotyping, can be found in Table 1. This list of qualities are used as the answer choices for questions 24, 38, and 39, wherein participants are asked to select traits that they believe most accurately describe themselves and their colleagues.

3.2.2 Construction

The questionnaire consisted of 41 questions, both quantitative and qualitative in nature. The questions were divided into four sections, as seen in Figure 3. After each section following the first, an optional free-response section was included where the participant could include any additional comments.

The question format included multiple-choice, close-ended questions using Likert scales, yes/no questions, and ordering questions asking participants to identify items from most to least significant.

3.2.3 Pilot Testing

To validate the clarity of wording and overall distribution method, pilot testing of the questionnaire was done by administering it to two peers and two staff members of the KTH ALD masters program. In addition, Alana Shepherd, the founder of the North American Coalition of Lighting Industry Queers, reviewed the questions and assisted with wording and answer choices to be more inclusive to those identifying outside the gender binary.

The questionnaire was updated with the feedback received; an approximate survey completion time of 10 minutes was established, and it was then ready for distribution.
3.2.4 Administration & Data Collection

The questionnaire was distributed using an online tool, Google Forms. The survey was circulated via digital platforms, including LinkedIn and email, to contact the author’s lighting design network and the broader community. In the case of LinkedIn, a post calling for participation was created and shared on the author’s personal page, which was then shared and circulated further by colleagues in the industry. Via email, organizations such as Women in Lighting Design (WILD) and the International Association of Lighting Designers (IALD) were contacted. WILD included the survey in their national chapter email newsletter and posted it on their Instagram, while IALD shared the survey via their LinkedIn profile.

The survey went live on April 28th, 2021, and remained available until May 10th, 2021, for a total of 10 days. Forty-four people participated in the survey. 3 of the 44 participants responded as not living within the US, so their responses were removed from the final data.

The sample included individuals from 16 states illustrated on the map located in Figure 4. Concentrations of sample participants were primarily from the northeast, with 13 of the 41 located in the state of New York.

Of the 41 respondents included in the final study sample, 80% identified as women, 15% as men, and 5% as non-binary. As a result, it is essential to note that an uneven representation of gender identities in the data exists. In addition, the sample size of persons identifying as non-binary is insufficient and therefore not representative of the population. For that reason, this data will not be included in the analysis.

3.3 Limitations

Although the survey aims to gain qualitative and quantitative data, limitations of this method exist.

- The inability of the participant to get clarification on a question if not understood. (Murray 2003)
- Answer choice limitations
- Wording of questions and answer choices can create bias in results - inability to discuss answer choices, lack of in-person communication

However, there are also benefits of doing a digital survey.

- The ability to reach people from a distant place. (Murray 2003)
- Collect a large quantity of data in a short amount of time. (Murray 2003)

Allows a participant to fill in the questionnaire at their convenience. The study being restricted to architectural lighting designers within the US means the results may not represent the global lighting design community, and other areas outside lighting may yield different results.
4 RESULTS

The purpose of this chapter is to present the data collected as described in Chapter 3 – Methodology. The data was obtained through the use of a survey that was constructed in a way to address the 4 research sub-questions.

1. Are generalizations made of ones’ own identity group that they themselves do not fit into? Do correlations exist between beliefs of oneself and ones’ own identity group?

2. Are generalizations made of ones’ own identity group and how are they aligned or different from the perception of others?

3. Are generalizations made that align with common gendered stereotypes?

4. Does a correlation exist between self-identifying gender and impact/contributions to how lighting design is conducted?

The chapter will be organized by first giving an overview of the respondents followed by the results as they support the research sub-questions. Through the administration of the survey, a significant amount of data was gathered. Therefore only the results considered most pertinent to the research questions are presented below. As the data is discussed in the following chapter, survey questions will be referenced in the text or at the end of the sentence, in which case the question number will be found in brackets. The results of all the questions can be found in the Appendix.

4.1 Demographics

As outlined in Chapter 3.1.1, all practicing architectural lighting designers of any gender working in the US were invited to participate in the survey. Of the 39 respondents in the US and identified within the gender binary, 33 identify as female and 6 as male (Figure 4). This result is not representative of the US lighting design industry, where 33.6% are women, and the remaining percent are men (Zippia, Inc. 2021). In addition to gender, further participant demographic data was collected as part of section one of the questionnaire in order to get a clearer picture of those from whom the responses were collected. This included information on age, years of experience in lighting design, background education, and current position.

The ages of survey participants range between 25 and 75 years old, with over half, about 62%, being from age 25-44, Figure 5.
Of the participants, over 90% hold a degree from an institution of higher education, Figure 6. Compared to statistics of the industry in the US, the survey participants are more highly educated than can currently be expected in practice. Those with a high school education are accurately represented.

Figure 6: Level of education distribution comparison between survey participants and US Lighting design statistics (Zippia, Inc. 2021).

Figure 7: Level of education distribution of survey participants with gender breakdown.

Survey Participants
Level of Education by Gender

Figure 8 further breaks down the educational background by representing the subjects of study. In this graph, the total responses are greater than the total number of participants in that some respondents hold more than one degree. Although architectural engineering is the most represented, most participants hold a degree in lighting design or lighting design adjacent studies (i.e., architecture, interior design, theater design). However, a few have an educational background not directly correlated with lighting design, such as political science, English history, psychology, and business.

Figure 8: Subject of study distribution of survey participants with gender breakdown.
4.2 Sub-Question 1

To better understand perceptions of gender in a team environment, this research first seeks to answer how individuals identify themselves and the gender group they align with. As part of this, a closer look is taken at the survey questions that address these perceptions [24, 38, 39].

In preparation, questions 24, asking participants to describe themselves in working environments, are divided by gender. The results of those identifying as women are compared to how that same group responds to question 38 – asking to describe their female colleagues. This comparison can be seen in Figure 9. From this data, we see the greatest variation of any of the categories is 4%. For the most part, the variation is slight, the majority variance being within 2%, implying consistency. The few areas in which it is greater than 2% are friendly, active, and tough. Friendly and tough are seen as qualities attributed to other women that they themselves did not fit.

On the contrary, more women perceive themselves as active but less so other women. According to this data, the three qualities that women most identified with are appreciative, achievement-oriented, and self-confident. In contrast, the qualities least identified with, getting 0 responses, are aggressive and emotional. Coarse, unemotional, and whiny also received less than 1% of the response.

Similarly, the results of the male-identifying participants are compared to how the same group responds to question 39, which asks to describe their male colleagues. This comparison can be seen in Figure 10. This graph depicts more inconsistency, with half the categories having a greater than 2% variation and the greatest variation being 13%. Of those, 4 had a variation greater than 12% being sensitive, active, self-confident, and rational. Of these, sensitive and rational are both identified in themselves but not at all in other men. Active and self-confident, in contrast, are primarily seen as qualities other men hold but not themselves. The data shows that friendly, sensitive, ambitious, and rational were the most identified, representing 13% of the responses. Affectionate, emotional, warm, coarse, aggressive, and tough; on the other hand, each received 0 responses.

Neither men nor women identified themselves or their identity groups as being aggressive. The data suggests women aligning more closely with how they see other women while men generally have more significant inconsistency.
4.3 Sub-Question 2

Figure 11 compares the data of how men and women identify their female colleagues [38]. Overall, over half the qualities show a difference in how women and men respond, which is less than 1%, showing a tendency for consistency.

The areas in which the data shows an alignment of perceptions are for the qualities emotional, aggressive, and unemotional, as they were not selected to represent female colleagues by either gender. The commonality is also evident for the quality of self-confidence, receiving a larger portion of the overall responses (10%) and having a less than 1% variation between men and women.

While appreciative received a substantial portion of the responses (12%), women identify their female colleagues more as appreciative than men, with a variation of 10% between them.

The second part looked at how men and women perceived their male colleagues, seen in Figure 12 [39]. Unlike above, over half the qualities show a variation in responses between men and women greater than 1%, indicating more inconsistency. Qualities that neither gender attributed to their male colleagues are affectionate, emotional, sentimental, and aggressive. The other quality that is most aligned is self-confidence, receiving 15% of the overall responses with a 2% variation between men and women.

Friendly and achievement-oriented are two qualities with high response rates and a significant variance between men and women. In both cases, women are more inclined to ascribe this quality to their male colleagues than men, with an almost 8% difference for both.
4.4 Sub-Question 3

As outlined in section 3.2.1, the traits participants select from in answering questions 24, 38, and 39 are commonly held gender stereotypes within the US (Schneider 2005). Figures 13 and 14 depict all responses for perceived attributes for female and male colleagues, respectively. Although the male results tend to be more masculine when compared to the general population, overall, the data shows a great deal of variation, indicating inconsistency with what would be expected from the American general public.

Figure 13 depicts only 46% of responses falling under stereotypical female responses, less than half. While Figure 14 indicates a stronger tendency to what is expected, with about 70% of responses falling within the gender stereotype, the third most identified quality for men is a stereotypically female characteristic.

### Table 1: Common Stereotypes of Men and Women Based on Psychological Research

<table>
<thead>
<tr>
<th>Women's Traits</th>
<th>Men's Traits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affectionate</td>
<td>Dominant</td>
</tr>
<tr>
<td>Appreciative</td>
<td>Achievement-oriented</td>
</tr>
<tr>
<td>Emotional</td>
<td>Active</td>
</tr>
<tr>
<td>Friendly</td>
<td>Ambitious</td>
</tr>
<tr>
<td>Sympathetic</td>
<td>Coarse</td>
</tr>
<tr>
<td>Mild</td>
<td>Forcful</td>
</tr>
<tr>
<td>Pleasant</td>
<td>Aggressive</td>
</tr>
<tr>
<td>Sensitive</td>
<td>Self-confident</td>
</tr>
<tr>
<td>Sentimental</td>
<td>Rational</td>
</tr>
<tr>
<td>Warm</td>
<td>Tough</td>
</tr>
<tr>
<td>Whiney</td>
<td>Unemotional</td>
</tr>
</tbody>
</table>

Figure 13: Comparison of how all participants perceived their female colleagues and the gendered stereotypes

Figure 14: Comparison of how all participants perceived their male colleagues and how the gendered stereotypes
In answering this question, two facets of being a lighting designer were looked at more closely, values and the related skills necessary for design problem solving [18, 23]. In better understanding the results for the two questions pertaining, the data is divided by gender and then further divided between age and level of experience. This data can be seen in Figures 15-20 and for closer inspection of the percentages, see the Appendix.

Among my participants, both men and women agree on the importance of incorporating sustainable cities and communities into a design, with about half selecting it as one of their most important UN sustainability goals. Good Health and Wellbeing and Climate Action were the next two to be deemed most important. However, in both cases, the data shows men placing a higher emphasis on each value, with 18% and 14% variance, respectively (Figure 15).

Another area where both genders agree is placing no importance on incorporating Gender Equality or Life Below Water when designing light. This result could be since these two areas are often not directly impacted by lighting design.

As we look at how the data compares when age and years of experience are included, we see interesting trends. Goal 13, Climate Action, shows the most support by those with 0-5 years of experience and between the ages of 25-34 (Figure 16, 17). As both age and experience increase, we see a general trend of declining importance. This outcome is most likely due to the fact that the negative impacts of climate change will more likely affect the younger population (Ojala and Lakew 2017).

A similar trend is seen when looking at Peace, Justice, and Strong Institutions. This is also supported by what is expected in the general public, with studies showing younger people being more engaged with social movements concerning environmental and humanitarian issues (Norris 2004).
Figure 16: Comparison of age distribution in survey participant responses to Question 18.

Figure 17: Comparison of experience distribution in survey participant responses to Question 18.
Seeing up to 2% variation between men and women, the data shows consistency between genders and identifies with skills in visual presentation, coordination, and organization. Similarly, 0 participants identified their most substantial contribution in program coding. On the contrary, CAD/computer modeling skills show a greater tendency to be a skill among men, with a difference of 31% (Figure 18).

The data indicates that as well as being a skill more identified with by men, level of experience and age also play a role (see Figures 18-20). 80% of those with 0-5 years of experience identified this as one of the top three skills they bring to a team. Besides one, all other levels of experience have 0 participants believing this to be a top area of contribution. The other one is 31+ years of experience with 5% identifying.

Design problem solving was another area with significant variation between men and women. Here women identified this more strongly as a skill they contribute with a 26% difference. When showing the distribution by age range, we also see a significant result, with 100% of those ages 55-74 believing this to be a skill they can offer (Figure 19).

In Figure 20, technical problem-solving skills are associated with years of experience. Of those with 0-5 years’ experience, 0% selected this skill. Between 0 and 25 years of experience, the data shows a relationship between increased participants identifying with this skill and more years of experience.

Figure 18: Comparison of gender distribution in survey participant responses to Question 23.
Figure 19: Comparison of age distribution in survey participant responses to Question 23.

Figure 20: Comparison of experience distribution in survey participant responses to Question 23.
While some attributes, such as self-confidence, are consistent in how men and women attribute them to genders, some work is to be done to further bridge the perceived and actual qualities ascribed to each gender. As the data shows, some discrepancy exists between how people self-identify and how others identify the group they belong to.

However, from the results, it is also evident that many factors can play a role, and although tendencies exist, people are individuals and, therefore, will be unique. A comment left by a survey respondent further supports this by explaining their difficulty answering these questions in that “each male/female member of our team has quite different personalities.” Therefore it is important to reiterate that bridging the gap between perceived and actual qualities should be done on a smaller inter-team scale. Teams can do this by creating opportunities to foster a better relationship, improve inter-team empathy, and close the gap between those working in a lighting design team. Further research can be done here to investigate possible methods and techniques in support of this effort.

The gendered stereotypes, as listed from previous research, are representing the American general public. Compared to data from existing research on American men and women, there is an apparent deviation seen in these results. This indicates that architectural lighting designers do not necessarily line up with cultural norms. As it has become evident through the data collected by the survey, an element of the sector’s uniqueness is that it is accessible by people from varying or non-traditional educational backgrounds. This is one possible reason a deviation between the two exists.

When looking at other data published regarding the general public and applying it to architectural lighting designers, this difference should be considered. Published data on men and women do not necessarily represent those within this sector of building design. This is relevant specifically when considering published literature or training regarding generic teams or team communication. It may not be appropriate or translate accurately to an architectural lighting design team.

As seen in my results, different genders can make different contributions to the team. Therefore, it is imperative our teams be made up of diverse members so that everyone can bring their strengths to the table. However, looking at the data, it can be seen that gender is not the only important factor of diversity at play. As we see in the data, differences in skills and issues of importance are in some cases correlated more heavily with other demographic factors such as years of experience and age. Looking at the results in Figure 16, a clear divide between older and younger lighting designers is seen in that younger designers seem to place more emphasis on the climate crisis. In contrast, 0% of lighting designers 40+ identified it as a UN goal they align with. This suggests a generational divide in priorities. It would be fascinating to conduct further work to determine whether this is a trivial finding or points to deeper, more underlying causes. Further research looking at why this divide shows up would be an interesting extension to this inquiry.

As the data has made apparent, different people bring different things to the table, confirming for the lighting design sector what has been confirmed in other sectors and therefore supporting the previous research. This underlines the fact that the need for diversity is a broader issue and impacts various work environments.

In addition, more studies should be done to better understand the experiences and perceptions of those identifying outside the gender binary, further contributing to the diversity in the lighting design industry.

5.5 Takeaways

- A gap exists in the gendered perceptions among colleagues.
- Although tendencies exist, people are unique and therefore, so are teams.
- Architectural lighting designers ≠ cultural norms.
- The nature of the industry might play a role.
- Different people make different contributions to a team.
- Diversity across many areas is advantageous.
6 CONCLUSION

Assuming that diversity is advantageous to group working environments, this thesis has initiated a discussion on the perceptions of genders in an architectural lighting design environment and their implications. Despite some limitations, including time constraints and scale, the study identified gaps in perceptions of genders within the lighting design industry. Furthermore, this research indicates tendencies for architectural lighting designers to veer from stereotypical gender norms, suggesting that traditional literature on gender and collaboration may not be applicable. Considering this study focused on “visible” diversity in terms of gender, the results imply that gender is not the only important factor contributing to diverse work teams and that diversity across many areas is advantageous to the development of architectural lighting design.

In concluding this research, abundant opportunities for further development present themselves. These include identifying methods and techniques to support inter-team empathy in collaborative design environments, unpacking the generational divide and its implications, and investigating further the experiences and perceptions of non-binary identifying lighting designers in the industry.

7 ACKNOWLEDGMENTS

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I want to thank all the architectural lighting design professionals who helped distribute and participated in the survey.

I want to thank my parents and sister, Emily, who have been and continue to be my biggest fans.

And finally, I want to thank the many classmates, friends, and colleagues who have been there for me during all the moments between.
8 REFERENCES

8.1 Bibliography


8.2 Figures

Figure 1 United Nations, 2021, UN Sustainability Goals 5 & 10, "Illustration", accessed on May 2021, https://sdgs.un.org/goals

Unless the ownership is specified, the graphs were created by the author for the purpose of this thesis.

9 APPENDIX

9.1 Question References

| Question 2 | Through collaboration with Alana Shepherd, the answer selection was expanded to be more inclusive to those who identify outside of the binary. |
| Question 9 | The selection of company size ranges was made with the LinkedIn criteria as reference. |
| Question 18 | The UN's 17 sustainable development goals were used as the criteria for responses in looking at what people consider more important. |
| Question 19 | The different stages of lighting design was gathered from a master thesis lecture given by Foteini Kytialidou (Kytialidou 2021). |
| Question 21, 22, 25 | Statements were gathered as part of the conclusions of John Gray's book (Gray 1992). |
| Question 23 | The set of skills listed as options in this question were extracted from looking at actual lighting design job ads and the current range of skills that is common to be expected in the US. |
| Question 24 | The qualities listed were gathered from Schneider’s book, The Psychology of Stereotyping. (Schneider 2005). |
| Question 34, 37 | Statements were gathered as part of the conclusions of John Gray's book (Gray 1992). |
| Question 38, 39 | The qualities listed were gathered from Schneider’s book, The Psychology of Stereotyping. (Schneider 2005). |

Table X: References used in creation of questions
9.2 Survey Questions & Results

Section 1

Question 1

What is your age?

44 responses

- 18-34 years old: 20.0%
- 35-54 years old: 27.3%
- 55-64 years old: 11.4%
- 65-74 years old: 5.0%
- 75 years or older: 8.6%

Question 2

What is your own gender identity?

44 responses

- Male: 75.0%
- Female: 10.0%
- Other: 10.0%
- Non-binary: 5.0%

Question 3

What is your nationality?

44 responses

- American: 50 (11.4%)
- Asian-American: 31 (7.0%)
- Brazilian: 27 (6.1%)
- Caucasian: 29 (6.5%)
- Irish: 28 (6.4%)
- US: 27 (6.1%)
- United States: 26 (5.9%)
- Venezuelan Italian: 25 (5.7%)

Question 4

In which city do you currently work?

44 responses

- Atlanta: 2 (4.5%)
- Columbus, Ohio: 2 (4.5%)
- Detroit: 2 (4.5%)
- Houston: 6 (13.6%)
- Jackson: 2 (4.5%)
- New York: 2 (4.5%)
- New York, NY: 2 (4.5%)
- Pittsburgh: 2 (4.5%)
- Seattle: 2 (4.5%)

Question 5

What is the highest degree or level of education you have completed?

44 responses

- Some High School: 2 (4.5%)
- High School: 2 (4.5%)
- Bachelor's Degree: 2 (4.5%)
- Master's Degree: 2 (4.5%)
- PhD or higher: 2 (4.5%)
- Trade School: 2 (4.5%)
- Prefer not to say: 38 (86.4%)
Section 2

Question 12

Have you gotten the opportunity to take on a management role within architectural lighting design?

- Yes: 70%
- No: 30%

Question 13

Have you had a manager of the same gender?

- Yes: 34.1%
- No: 65.9%

Question 14

What is the gender of your direct boss?

- Male: 30.5%
- Female: 32.7%
- Transition non-binary/gender expansive: 27.3%
- Transgender male: 5.6%
- Transgender female: 2.0%
- Male: 0.3%
- Other: 0.2%

Question 15

Did you have a mentor within the architectural lighting design industry?

- Yes: 30.8%
- No: 69.2%

Question 16

If you selected yes, what was their gender?

- Male: 40.8%
- Female: 20.0%
- Transition non-binary/gender expansive: 20.0%
- Non-binary: 18.2%

Question 17

If you would like to elaborate on any of your above responses, please do so here.

(Optional)

“I changed firms so that I could do this.”
“I’m an owner but we have some line management still. My direct line manager is a woman”
“I have had tutors in my master’s both male and female. As mentor and office manager experienced guidance from female colleagues.”
“I only had a manager of the same gender for a few weeks; I have had many mentors of both genders, but most often male.”
“Wishing I had a female mentor...”
“I also have female mentors but the person who mentors me most responsively is a..."
male two rungs up the ladder at my company’

“I had both a male and a female mentors, at different times- two male and another female”

“I am a non-binary person who more closely identifies as female and is female-presenting, so I would sort of consider having a female manage and a female role model as closest to my own gender identity as possible.”

“I had same gender (women) as managers as an Intern but not as an employee.”

“Holophane Trained me”

“Mentor was at another lighting design firm, not my current firm.”

“I am putting down arch lighting mentor as Trans/non-binary/ gender expansive because Queer/ Lesbian/ Gay is not on the list. Cis identifying Lesbians are not treated can be butch when we are a certain age. Older lesbians may not identify as Cis but it is known.”

“I find that there are more women in lighting design, however there seems to be more men in architecture, engineering, and construction.”

Section 3

Question 18

Of the UN’s 17 Sustainable Development Goals, which 3 would you select as most important to incorporate when approaching a design problem? 3 options must be selected.

44 responses

1) No Poverty
2) Zero Hunger
3) Good Health & Wellbeing
4) Quality Education
5) Gender Equality
6) Affordable & Clean Energy
7) Decent Work & Economic Growth
8) Industry Innovation & Infrastr.
9) Reduced Inequalities
10) Sustainable Cities & Co.
11) Life Below Water
12) Pease, Justice, & Strong
13) Climate Action
14) Life on Land
15) Peace, Justice, & Strong
16) Partnerships for the Goals

Question 18 - Percentage Tables

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<thead>
<tr>
<th>Gender</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
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<td>0.0%</td>
<td>9.1%</td>
</tr>
<tr>
<td>2) Zero Hunger</td>
<td>0.0%</td>
<td>15.2%</td>
</tr>
<tr>
<td>3) Good Health &amp; Wellbeing</td>
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<td>48.0%</td>
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<tr>
<td>4) Quality Education</td>
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<tr>
<td>5) Gender Equality</td>
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<td>0.0%</td>
</tr>
<tr>
<td>6) Clean Water Sanitation</td>
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</tr>
<tr>
<td>7) Affordable &amp; Clean Energy</td>
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<td>18.2%</td>
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<tr>
<td>8) Decent Work &amp; Economic Growth</td>
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<tr>
<td>9) Industry Innovation &amp; Infrastructure</td>
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<td>0.1%</td>
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<tr>
<td>10) Reduced Inequalities</td>
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<td>15.2%</td>
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<tr>
<td>11) Sustainable Cities &amp; Communities</td>
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<tr>
<td>12) Responsible Consumption &amp; Production</td>
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<td>13) Climate Action</td>
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<td>15) Life on Land</td>
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<td>16) Peace, Justice, &amp; Strong Institutions</td>
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<tr>
<td>17) Partnerships for the Goals</td>
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## Question 24 - Percentage tables

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<td>Program coding</td>
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<tr>
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### Experience

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<td>4.8%</td>
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</tbody>
</table>

## Question 25

Which statement more accurately describes how you cope with stress?

- I have coping strategies and am able to handle stressful situations effectively.
- I am able to adapt to stressful situations and feel competent in managing them.
- I feel overwhelmed by stress and struggle to cope effectively.
- I need help to manage stress and improve coping strategies.
- Other.

## Question 26

On a scale of 1 to 5, how would you describe the stress levels of your position?

- 1: Very low stress
- 2: Low stress
- 3: Moderate stress
- 4: High stress
- 5: Very high stress

## Question 27

In your opinion or experience, do the architectural/interior design industry offer alternate working arrangements to better accommodate family responsibilities?

- Yes
- No
- Other.

---

*52*  

*53*
If you would like to elaborate on any of your above responses, please do so here. (Optional)

“My firm is an exception - they offer alternative working arrangements. This is uncommon in the industry.”
“I have definitely had a smoother ride because I am a university educated white male.”
“I have great admiration for those that started a few rungs of the ladder behind me.”
“My gender has held me back from receiving the appropriate salary I deserve and the design opportunities I have earned.”
“I think that the ranking from most important to least important of the phases may be a false/forced spectrum and question its usefulness. Each stage should be considered paramount in the moment, and also must be considered in regards to the needs of the project. I ranked bid phase as least important but sometimes it may be most important - especially with an inexperienced or very jumpy client where careful bidding can make or break the project more than any other phase. Just as an example. We are in the design industry, you deal with all types.”
“I have no trans/non-binary/gender expansive colleagues, so best relate to the female colleagues.”
“PreCovid the ALD industry (especially within engineering firms) were much worse with family friendly flexibility. Covid forced the flexibility on all of us.”
“Work well with female and Trans/non-binary/gender expansive colleagues I work well with men and women. I would never want to work at a woman-only firm, but I do like to work for women bosses, and prefer to support other women in my industry”
“I have definitely experienced men not wanting to work with me because I am a woman.”
Section 4

Question 33
Do you feel that people of historically marginalized genders have the same opportunities in architectural lighting design as men?
- Yes
- No

Question 34
In the field of lighting design, do you perceive the following statement as masculine, feminine, or neutral? It defines my sense of self through the ability to achieve results.
- Masculine
- Feminine
- Neutral
- Other

Question 35
In the field of lighting design, do you perceive the following statement as masculine, feminine, or neutral? It defines my sense of self through my feelings and by the quality of my relationships.
- Masculine
- Feminine
- Neutral
- Other

Question 36
In the field of lighting design, do you perceive the following statement as masculine, feminine, or neutral? I cope with stress by reaching out and talking about the cause of my stress.
- Masculine
- Feminine
- Neutral
- Other

Question 37
In the field of lighting design, do you perceive the following statement as masculine, feminine, or neutral? I cope with stress by withdrawing myself from the conversation or situation.
- Masculine
- Feminine
- Neutral
- Other

Question 38
Select up to 5 words from the list that best describe your female colleagues:
- Affectively
- Ambitious
- Emotional
- Influential
- Sympathetic
- Strong
- Independent
- Feminine
- Assertive
- Warm
- Dominant
- Aggressive
- Assertive
- Attractive
- Neurotic
- Dramatic
- Supportive
- Unconventional
- Flexible
- Quirky
- Unpopular
If you would like to elaborate on any of your above responses, please do so here. (Optional)

“This is difficult in that each male/female member of our team has quite different personalities.”

“My answer the perception of marginalized genders having same opportunities is specific to my city/region. I certainly imagine as a whole, it is often likely that they may not have the same opportunities as men.”

“The boss (man) is coarse, funny, aggressive, and sympathetic. The other male designers are mild, quiet, just want to get the work done without conflict. The woman who designs and manages the studio is very egotistical, a perfectionist, very friendly, very loud.”

“Men are jocular, talkative, and often appear stressed”

“Most of my male colleagues are pleasant to work around. There are a few that are not however and I would describe them as difficult and childish.”

If there is anything else you would like to add about your experience in lighting design, please leave a comment below. (Optional)

“Sexism is rampant - at previous firms, I’ve been hit on at conferences, and told that they wanted another senior designer to lead a project because he was male.”

“I am a business owner, who started my business because other flexible work opportunities weren’t available. Now I provide a flexible work environment for the people who work on my team.”

“Lighting Designers have large egos which often do not allow entry level and mid level advancement. This is a generic statement but has been observed in multiple firms. “I’d like to see a salary comparison of senior lighting designers across the country, male to female”

“Most of my issues with men arise not from my company but from working with men from other companies in the industry - sales, construction, architecture.”

“Mostly the lighting industry in New York has been very welcoming and supportive of me as a woman. There are so many women leaders in New York firms, it’s great. with a few exceptions: I had one male boss early in my career that acted inappropriately (to me and others). I’ve had many engineers and contractors ignore me or underestimate me only to compliment me later because I turned out to be competent. And finally, my graduate school department is run entirely by middle-aged white men. As a student and also as part-time faculty I would have liked to see a woman in one of the full time / leadership roles .”
GENDER AND THE ARCHITECTURAL LIGHTING DESIGN TEAM

A Study into the Real and Perceived