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11 Social identities, intersectionality, and the experiences of women and women of color in marine,
12 aquatic, and fisheries science professions
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28 **Abstract**

29   In many STEM fields, women are considered an underrepresented social group and have

30 been the subject of research and initiatives focused on increasing their representation. However,

31 research suggests that focusing solely on numerical representations of a single measure of

32 diversity often ignores how the combination of identities influence experiences. This study

33 investigates how women and women of color perceive that their social identities (gender, race,

34 and or ethnicity) influence their experiences in marine, aquatic, and fisheries science-related

35 careers. Findings revealed positive experiences connected to social identities, including examples

36 of feelings of belonging and positive evaluations of members of their ingroups. However,

37 findings also highlighted negative experiences resulting from social identities and instances of

38 outgroup discrimination and bias. While all participants in this study identified as women,

39 finding revealed differences in experiences across racial and ethnic groups, highlighting the

40 importance of exploring diversity and experiences through an intersectionality framework.

41 **Introduction**

42   Diversity and inclusion initiatives within organizations, institutions, and professions have

43 presented a way to acknowledge that, historically, not everyone has had the same access or

44 experiences in educational or professional settings. However, a pitfall of diversity initiatives is

45 that they often focus on getting people in the room, without fully acknowledging the experiences

46 that may deter individuals from staying there, such as experiences with discrimination and biases

47 (Puritty et al. 2017). Efforts to promote an inclusive culture and professional environment

48 require an examination of areas of potential bias and discrimination, followed by a willingness to

49 make the appropriate changes to reduce these biases (Ferdman and Deane 2013; Puritty et al.

50 2017). While biases exist explicitly and implicitly, awareness of potential biases and the

51 willingness to address them can reduce the chances of those biases manifesting and influencing

52 the experiences of others (Dasgupta 2004).

53   In many STEM fields, women are considered an underrepresented social group (Beede et

54 al. 2011; National Science Board 2020) and have been the subject of research and initiatives

55 focused on increasing their representation (Jackson et al. 2014; Stewart et al. 2016). While

56 gender is often used as a signifier of diversity (Banks 2009; Hon et al. 1999; Lee Baker et al.

57 2016), focusing on a single measure of diversity, and solely on numerical representations, often

58 ignores the heterogeneity within these socially-constructed groups (Dennissen et al. 2020; Tatli

59 and Özbilgin 2012). Studies have found that the experiences of women of color in STEM can go

60 unnoticed when grouped into the larger social categories of gender, race or ethnicity (Malcom et

61 al. 1976; Ong et al. 2011; Wilkins-Yel et al. 2019). Therefore, multiple researchers have

62 proposed the use of an intersectionality approach to explore diversity in organizations and STEM

63 fields (Núñez et al. 2020; Rodriguez et al. 2016; Wilkins-Yel et al. 2019). This study draws on

64   theoretical frameworks of social identity and intersectionality to explore the experiences of

65   women and women of color in marine, aquatic, and fisheries sciences professions.

66   Social identity theory suggests that individuals categorize themselves as belonging to

67   social groups and that knowing that they belong to these groups holds significance and value

68   (Tajfel and Turner 1978; Tajfel et al. 1979). According to social identity theory, the

69   categorization of individuals into socially constructed groups, paired with the recognition of

70   group membership, has the potential to influence group member's behaviors and beliefs (Tajfel

71   and Turner 1978; Tajfel et al. 1979). As a result, individuals mentally create in-groups (groups

72   an individual feels they belong to) and out-groups (groups an individual does not feel they

73   belong to) and are constantly categorizing and evaluating themselves as they relate to their in-

74   groups and out-groups (Tajfel et al. 1979).

75   A consequence of social comparison is the potential for ingroup favoritism and outgroup

76   discrimination (Abrams and Hogg 1988; Tajfel et al. 1979). Literature suggests that a person's

77   desire to see their ingroup in a positive light may result in favoritism towards their ingroup and

78   bias and discrimination towards their outgroups (Abrams and Hogg 1988; Dasgupta 2004; Tajfel

79   et al. 1979). Research on implicit ingroup favoritism found that when group membership is

80   salient, members of advantaged (or represented) groups typically exhibit more implicit ingroup

81   favoritism and more bias against outgroups compared to members of disadvantaged groups

82   (underrepresented) (Dasgupta 2004). As a result, biases held by members of advantaged groups

83   are more likely to negatively impact the lives of disadvantaged outgroups, whereas biases held

84   by disadvantaged group members were less likely to have the same impact on the advantaged

85   group (Dasgupta 2004).

86   An intersectionality framework acknowledges that looking at an issue from a single

87   identity lens has the potential to hide the experiences of individuals who are discriminated

88   against as a result of a combination of intersecting identities, such as race, gender, and class

89   (Crenshaw 1989). Depending on the situation, individuals can simultaneously hold both

90   marginalized and privileged identities (Crenshaw 1989; Núñez et al. 2020). Scientific

91   institutions are not immune to these social processes and social relations. Within institutions of

92   science exist underlying systems built on cultural and behavioral norms that have been

93   characterized by white, masculine values that include implicit and explicit biases against other

94   group values (Byars-Winston and Rogers 2019; Carlone and Johnson 2007; Davies et al. 2021).

95   These cultural norms within science fields create systems of power that allow for the

96   perpetuation of discrimination while requiring individuals from underrepresented groups to

97   navigate their sense of belonging within the system (Byars-Winston and Rogers 2019; Davies et

98   al. 2021).

99   From a social identity and intersectionality lens, when pursuing a career in a traditionally

100   white and male-dominated field, the social experiences of women may result from both internal

101   and external in-group and out-group comparison. For example, a white woman's experiences

102   may result from in-group comparison when racial identity is salient and or out-group comparison

103   when gender identity is salient. Whereas a woman of color's experience may result from out-

104   group comparison when racial identity and or gender identity is salient, making their experience

105   different even from those which they share a social identity category. This reflects the "double

106   bind" that is often experienced by women of color in science (Malcom et al. 1976; Ong et al.

107   2011)

108   *The Current Study*

109   This study contributes to the literature on diversity by exploring the subjective

110   experiences of women, across career levels and racial identity groups. An examination of the

111   experiences of women and women of color in marine, aquatic, and fisheries science professions

112   places a focus on groups with marginalized identities, the intersection of these identities, and

113   how these identities affect how one navigates professional experiences. Anthias (2013) proposed

114   four societal arenas of investigation for understanding intersectionality and social relations:

115   *organizational* (e.g., how groups are organized with an institution framework), *representational*

116   (*e.g., depictions of a profession or role models in the profession), *intersubjective* (e.g.,

117   interpersonal interactions with others*), and *experiential (*e.g., narratives of how individuals make

118   sense of their abilities). Each societal arena provides a different scale of analysis, while also

119   representing interrelated aspects of social relations (Anthias 2013), therefore providing a context

120   through which a social identity and intersectionality lens can be used to explore experiences

121   within fields of marine, aquatic, and fisheries science. Utilizing these societal arenas of social

122   relations, this study investigated the following research question: How do women and women of

123   color perceive that their social identities (gender, race, and or ethnicity) influence their

124   experiences in marine, aquatic, and fisheries science-related careers?

125   **Methods**

126   ***Recruitment and Participants***

127   Recruitment and interviewing took place from February 2019 through July 2020, at

128   annual scientific conferences including meetings hosted by the American Fisheries Society,

129   Society for Freshwater Science, Association for the Science of Limnology and Oceanography,

130   Society for Advancement of Chicanos/Hispanics and Native Americans in Science, and Coastal

131   & Estuarine Research Federation. Separate from conference settings, interviews were also

132 conducted with students and professionals from NOAA Sea Grant and Educational Partnership

133 with Minority-Serving Institutions sponsored programs.

134   A non-probability snowball sampling approach, in which research participants and key

135 contacts are asked to assist in identifying other potential participants, was used to ensure

136 recruitment included individuals across racial and ethnic social identities (Bernard 2013). Before

137 each meeting, individuals connected with diversity and inclusion initiatives were identified and

138 asked participant in the study and to assist with identifying potential participants by sharing the

139 recruitment notice with others in their networks. An Institutional Review Board (IRB) approved

140 recruitment notice provided participants with the option to opt-in to the study via a short online

141 survey that collected demographic information, including race/ethnicity, gender, and career level.

142 Finally, opt-in participants were contacted before or during the conference to schedule in-person

143 interviews. Additional recruitment occurred via snowball sampling outside of conferences. Two

144 interviews were conducted online during the COVID-19 pandemic via Zoom and Google Meet,

145 bringing the total to 34 interviews.

146   All participants self-identified as individuals pursuing careers related to marine and or

147 fisheries science fields. Participants also self-identified their career level (undergraduate student,

148 graduate student, professional), gender, and race/ethnicity. Multiple participants identified as

149 more than one racial/ethnic group, resulting in participants from the following racial/ethnic

150 categories: Black/African American, Latino/Latina, Multi-racial, Asian/Asian American, and

151 White.

152 ***Procedure and Measures***

153   This study involved in-depth semi-structured interviews, with the average interview

154 lasting around 40 minutes. During each interview, participants provided responses to a series of

155 open-ended questions about their career decisions and experiences pursuing careers related to

156 marine, aquatic, and or fisheries sciences. Participants were asked to describe both positive and

157 negative experiences and about connections between experiences and their social identities. All

158 interviews were recorded and transcribed to text files. During the review of each interview file,

159 all direct identifying information was removed to comply with IRB requirements.

160 ***Data Analysis***

161   Interview data were analyzed using NVivo, a qualitative data analysis software program.

162 The first step of analysis involved creating codes, which are "tags or labels for assigning units of

163 meaning to the descriptive or inferential information compiled during a study" (Miles and

164 Huberman 1994) to assign to the data. Structural coding methods, in which codes are developed

165 based on the research question or topic (DeCuir-Gunby et al. 2011) were used (Figure 1). An

166 overarching code "Experiences" was created for the research question: How do women and

167 women of color perceive that their social identities (race/ethnicity and gender) influence their

168 experiences in marine and fisheries science-related professions. Within the experiences code,

169 were three sub-codes: gender, intersectional identities, and race/ethnicity. Each of these codes

170 were further divided into positive and negative experiences sub-codes.

171   To operationalize the codes, I created a codebook containing the names, descriptions,

172 and examples of text for each code (DeCuir-Gunby et al. 2011) (Figure 1). The codebook was

173 then shared with an additional reviewer who provided feedback on the codes and coding

174 examples. Next, I coded each interview by applying codes to appropriate text. After the initial

175 rounds for coding, coded text was further analyzed using axial coding, which is a process of

176 organizing codes and drawing connections, then themes were identified (Corbin and Strauss

177   2014; DeCuir-Gunby et al. 2011) (Figure 1). An additional reviewer also provided feedback on

178   the connections and themes.

179   *Positionality Statement*

180   This study utilizes my experience as a social scientist with training in qualitative research

181   methods and data analysis. That being said, how researchers perceive the social world often

182   reflects their position within it, which can impact the way that they approach and interpret their

183   research (Jacobson and Mustafa 2019). I identify as a Black/African American woman early

184   career fisheries social scientist, who, similar to the participants in this study, has had both

185   positive and negative experiences in marine, aquatic, and fisheries science settings. I

186   acknowledge that while my personal experiences are not directly included in the data presented

187   in this study, they did have an impact on this study, in that they influenced the research topic,

188   questions, and interactions with the participants. In line with social identity theory, as a woman,

189   a person of color, and a scientist, it is possible that some of the participants viewed me as a part

190   of their ingroup, resulting in a willingness to share experiences that they may have not been

191   willing to share with researchers presenting other social identities.

192   **Results**

193   The study's 34 participants identified as the following racial/ethnic social identity groups:

194   Black (32%), Latina (18%), Multi-racial (24%), White (24%), Asian (2%). All participants self-

195   identified as women during data collection. All participants identified as one of following three

196   career levels: professional (24%), graduate student (47%) or undergraduate student (29%)

197   *Experiences in marine, aquatic, and fisheries sciences*

198   The following results are organized using the four societal arenas of social relations

199   (organizational, representational, intersubjective, experiential). Each societal arena is briefly

200   introduced followed by themes that fall within that arena.

201   *Organizational*

202   The organization of groups within marine, aquatic, and fisheries science organizations,

203   institutions or professions positively and negatively impacted the experiences of women and

204   women of color. Within the broader organizational arena, diversity and inclusion initiatives were

205   identified as a key theme related to the experiences of participants in this study.

206   ***Diversity and Inclusion Initiatives -*** Many participants mentioned that their social identities

207   provided them access to diversity and inclusion initiatives. Participants saw diversity and

208   inclusion initiatives as examples of positive experiences resulting from their social identities that

209   contributed to building ingroup relationships with other scientists with shared social identities

210   (Figure 2, quote 1). However, some participants highlighted the effects of diversity inclusion

211   initiatives that negatively impacted participant's experiences by reminding them that they are a

212   part of the outgroup (Figure 2, quote 2).

213   Participants expressed concerns about tokenism, for example being expected to represent

214   their entire gender or race, and feeling a heightened sense of imposter syndrome, which resulted

215   in them questioning their ability and belongingness. One participant provided examples of their

216   experiences at a primarily white institution in which their department provided scholarships to

217   students from underrepresented backgrounds and how that impacted their experiences (Figure 2,

218   quote 3).

219   Finally, one participant expressed concerns about how diversity is perceived in marine,

220   aquatic, and fisheries sciences, compared to STEM fields, and how it can lead to feelings of

221   exclusion. An Asian American participant highlighted how she is often told that Asian

222   Americans are overrepresented in STEM. Yet, she rarely sees people that look like her in her

223   field. This resulted in an in-group-out-group comparison and feelings of not belonging, which is

224   sometimes supported by diversity and inclusion narratives. She provided an example of a

225   colleague not considering another Asian American woman as representing diversity when

226   reviewing applications for a diversity program (Figure 2, quote 4).

227   *Representational*

228   The ability to see oneself within an organization, institution, or profession either

229   facilitated or deterred feelings of belongingness and decisions to pursue a career in marine,

230   aquatic, and fisheries science professions. The representational arena focuses on the depictions of

231   a profession in general, which presents itself in various ways, including role models in the

232   profession. Three themes were identified within the representational arena including *mentorship*

233   *and support; marginalized, but privileged*; and *possible selves*

234   ***Mentorship and Support -*** Participants discussed situations in which it appeared that the

235   salience of their identities resulted in positive experiences in the form of establishing

236   mentorships and support systems with individuals with shared identities. While positive

237   experiences with male mentors were mentioned, there were many instances where participants

238   called out the importance of gender and their experiences with other women. This was

239   commonly seen when discussing how other women in the field, as formal and informal mentors,

240   have helped them along their career journey (also see Figure 3, quote 1).

241   However, simply sharing a gender identity did not always result in positive ingroup

242   experiences, especially in situations that caused other social identities to become more salient.

243   For example, one participant discussed how they felt their experiences with English as a second

244   language influenced their experiences with their graduate advisor, someone they previously

245   assumed was a part of their support system. They discussed a negative experience involving their

246   advisor while reviewing an important grant application (Figure 3, quote 2).

247   *Marginalized, but Privileged -*The theme of privilege presented itself in two ways. First,

248   some participants, who identified as multi-racial or Latina, discuss how being able to "pass" as

249   another race or ethnicity afforded them a privilege that others did not have based on their ability

250   to be perceived as a part of an ingroup, even if they do not identify as such (Figure 4, Quote 1 &

251   2).

252   Similarly, privilege was also acknowledged by some white participants when asked

253   whether they thought their experiences were different from people from other racial or ethnic

254   groups. In some instances, participants expressed that they believed individuals from other racial

255   and ethnic backgrounds likely experienced more barriers and challenges as a result of their racial

256   or ethnic social identities. However, they did not believe their own race was a barrier in their

257   career experiences because they were able to see themselves in others in the field (Figure 4,

258   Quote 3).

259   *Possible Selves -* As seen in the previous example of privilege, how participants viewed

260   the importance of representation also provided insight into how they viewed factors that

261   influenced their career goals and aspirations. The concept of possible selves reveals connections

262   between cognition and motivation and represents individuals' ideas for the future, including what

263   they might become, and what they desire to become (Markus and Nurius 1986). Participants

264   highlighted examples of seeing other women and people of color as science professionals and

265   how that had a positive influence on their decisions to pursue a career in science. For example,

266   one participant discussed how all their high school science teachers were women and how

267   hearing about their stories as in science related careers (a dolphin trainer and a retired

268   neurosurgeon) made an impact and allow them to see pursuing a career in science as a

269   possibility. However, this same participant who reflected on positive experiences associated with

270   gender representation in science also discussed the negative impact that lack of representation

271   can have when their race or ethnic identity is salient. They revealed that they identified as Latina

272   and Native American and discussed the impact of not seeing Native Americans represented in

273   science (Figure 5, quote 1).

274   For some participants, lack of representation resulted in their decision to pursue careers in

275   marine, aquatic, or fisheries science coming later in life because they did not see being a scientist

276   as a possible career choice (Figure 5, quote 2). As a result, many participants expressed their

277   desire to persist in careers in marine, aquatic, and fisheries science so that they could be sources

278   of representation for future generations of scientists that look like them.

279   *Intersubjective*

280   Many of the themes previously highlighted in representational arena can also represent

281   intersubjective arena, as many of the positive and negative experiences related to representation

282   presented themselves as a result of interpersonal interactions. Below, two additional themes were

283   identified within the intersubjective arena including *microaggressions* and *safety concerns*.

284   ***Microaggressions -*** Participants discussed experiencing microaggressions associated

285   with their gender, racial, or ethnic social identities. Sue et al. (2007) defines microaggressions as

286   "everyday verbal, nonverbal, and environmental slights or insults, whether intentional or

287   unintentional, which communicate negative messages to target persons based solely upon their

288   marginalized group membership." Participants discussed instances in which they were the target

289   of microaggressions from members of gender, racial or ethnic outgroups. In these instances,

290   participants were often subjected to comments rooted in stereotypes associated with their social

291   identity groups (Figure 6, quotes 1 & 2).

292   ***Safety Concerns*** - Participants also discussed experiences that presented threats to their

293   physical well-being. This included examples of how gender and or racial identity resulted in

294   concerns and experiences of sexual harassment and racial harassment in field settings. When

295   discussing their gender, one participant discussed the need to create safe spaces for people and

296   shared safety concerns after revealing that they had been sexually harassed in the field by

297   someone they had to continue working with to complete their fieldwork (Figure 6, quote 3).

298   Another participant described their experiences as the only black student at a

299   program in which they felt they was discriminated against and put in dangerous situations

300   due to her racial identities. They recounted several experiences with a divemaster, in

301   which they were treated differently from the other students, chastised, and ignored

302   (Figure 6, quote 4).

303   *Experiential*

304   How individuals make sense of their abilities and experiences reflect the experiential

305   arenas of social relations. The theme of *stereotype threats* was identified as representing an

306   example of the experiential arena.

307   ***Stereotype Threats -*** Participants also discussed examples of dealing with stereotype

308   threats. Stereotype threats occur when people feel that they are at risk of conforming to

309   stereotypes associated with one or more of their identities (Spencer et al. 1999). One participant

310   discussed how they constantly have to evaluate what they are saying in a professional setting to

311   ensure they are not conforming to the stereotype of being an aggressive black woman (Figure 6,

312   quote 5).

Discussion

313

314   The objective of this study was to explore the experiences of women and women of color

315 while highlighting the importance of understanding how social identities and intersectionality

316 manifest during the pursuit of careers in marine, aquatic, and fisheries sciences. My findings

317 suggest that women and women of color experience both positive and negative interactions that

318 can be attributed to the salience of their social identities in the field. Despite efforts, women and

319 women of color remain underrepresented in STEM fields, including marine, aquatic, and

320 fisheries science professionals. On paper, based on the numerical representation of diversity,

321 organizations and institutions may appear to be making progress toward their diversity goals.

322 However, examinations of the experience of people who are socially and professionally labeled

323 underrepresented revealed that some professional environments are not as welcoming (inclusive)

324 as they seem.

325   My findings highlighted positive experiences resulting from gender, racial, and or ethnic

326 social identity being represented and salient and revealed instances of ingroup favoritism. When

327 identities were salient and experiences presented the opportunity for participants to identify

328 others as a part of their ingroup, my results suggested that participants experienced feelings of

329 belongingness and expressed positive evaluation of members of their ingroups. These

330 experiences created spaces for participants to feel like they were welcome as marine, aquatic,

331 and fisheries science professionals. This study also revealed instances where the salience of

332 social identities potentially informed participants' possible selves including experiences

333 associated with diversity initiatives, mentorship, and representation. Other scholars have focused

334 on examining the connections between the concept of possible selves and career decisions,

335 including the decision to become a scientist (Wonch Hill et al. 2017). Research suggests that

336   while possible selves developed on an individual level, they are often the result of social

337   comparisons (Markus and Nurius, 1986).

338   As highlighted in intersectionality frameworks, individuals possess both marginalized

339   and privileged identities, which were reflected in findings that revealed differences in

340   experiences across race and ethnicity. While overall, women are viewed as underrepresented in

341   marine, aquatic, and fisheries science, for some individuals, their privilege identity (e.g., race or

342   perceived race) afforded them the ability to see themselves in others in the field. One participant

343   pointed out feeling like a tolerable minority which reflects a view of partial acceptance and

344   reflects the fluidity of the intersection of marginalization and privilege, even within a single

345   social category such as race/ethnicity. Research on toleration suggests that it exists somewhere

346   between acceptance and discrimination, where toleration presents the possibility that a person

347   can be included in a shared community or ingroup, and discrimination sends a clear sign of

348   difference and outgroup status (Cvetkovska et al. 2020).

349   While positive experiences exist throughout social relations, often associated with

350   ingroup identification, findings also highlighted negative experiences resulting from gender,

351   racial, and or ethnic social identities being salience and revealed instances of outgroup

352   discrimination and biases. Negative experiences presented themselves in many forms including

353   tokenism, microaggressions, stereotype threats, and safety concerns. In these instances,

354   participants provided examples of how their gender, racial, and ethnic social identities reminded

355   them that even though they were establishing themselves as marine, aquatic, and fisheries

356   science, they were still a part of a marginalized outgroup. These experiences often result from

357   systems of power based on cultural norms in science which have traditionally minimized the

358   experiences of individuals that do not clearly fit within the system. (Byars-Winston and Rogers

359   2019; Carlone and Johnson 2007; Davies et al. 2021). Previous research has explored the

360   experience of individuals who are considered non-prototypical representations of categories and

361   how that results in marginalization (Carlone and Johnson 2007; Purdie-Vaughns and Eibach

362   2008). Research suggests that non-prototypical representations can result in both invisibility (e.g.

363   feeling excluded, ignored, or that you don't belong), and hypervisibility (e.g. tokenism, extra

364   scrutiny, microaggression) both resulting in negative impacts on experiences as seen in the result

365   (Purdie-Vaughns and Eibach 2008). This is especially true for women of color who are required

366   to navigate gendered and racialized experiences (Purdie-Vaughns and Eibach 2008; Wilkins-Yel

367   et al. 2019).

368   Throughout all of the themes presented in the results, there were instances where

369   participants expressed the mental toll that being underrepresented in marine, aquatic, and

370   fisheries sciences had on their psychological well-being. Research on social identities and

371   psychological well-being suggest that characteristics of social identities, including group

372   identification and belongingness, can have a positive impact on well-being (Cameron 1999).

373   Conversely, outgroup biases and discrimination can negatively affect psychological well-being

374   (Forrest-Bank and Cuellar 2018). However, research focusing on ethnic identities suggests that a

375   strong ingroup identification plays an important role in psychological well-being and may help

376   mediate some of the negative effects of outgroup biases such as microaggressions (Forrest-Bank

377   and Cuellar 2018).

378   Experiences often resulted in feelings of anxiety, stress, imposter syndrome, and caused

379   participants to question their decisions to continue pursuing careers in marine, aquatic, and

380   fisheries. This is supported by previous literature describing the impact that discrimination,

381   microaggressions, and stereotype threats have on the well-being of individuals from

382   marginalized communities (Forrest-Bank and Cuellar 2018; Sue et al. 2007; Wilkins-Yel et al.

383   2019). Focusing specifically on STEM fields, Beasley and Fischer (2012) found that stereotype

384   threats had a significant positive effect on the likelihood of women and minorities leaving STEM

385   majors. While sometimes minor in a given situation, the combined effects of outgroup

386   discrimination and biases that occur throughout the career journey of women and women of

387   color have a lasting effect, which is exemplified by the following quote:

388   It's unfortunate that I have to navigate my entire career…having to teach people
389   how to talk to me and teach people what they can and cannot say in professional
390   settings or even in casual settings. That there's lots of things that people think is
391   okay and it's not. And that's exhausting.
392   **– Black graduate student**

393   **Conclusion**

394   This study set out to explore the experiences of women and women of color within

395   marine, aquatic, and fisheries sciences professions across career levels and contributes to the

396   literature by exploring diversity beyond numerical surface levels. My findings revealed that in

397   addition to navigating what it means to be scientists, women, and women of color, also navigated

398   experiences associated with their social identities within marine, aquatic, and fisheries sciences.

399   While all of the participants navigated gendered experiences, women of color had to navigate

400   gendered and racialized experiences. This emphasizes the importance of taking an intersectional

401   approach to explore diversity and inclusion while highlighting a potential danger that exists

402   when only focusing on the broad social categories (e.g., race or gender) and assuming

403   homogeneity of experiences within these categories. Not only should the focus be placed on the

404   experiences of underrepresented social identity groups as a whole, but also on understanding

405   how multiple identities interact with social relations and cultural norms of science to encourage

406   or dissuade women and women of color from marine, aquatic, and fisheries sciences professions.

407   The findings of this study highlight the experiences of a small subset of women pursuing

408   careers in marine, aquatic, and fisheries sciences. This study utilized qualitative research

409   methods that reveal examples of experiences of individuals that may have been missed in a

410   generalizable quantitative study. The dichotomy of "quantitative vs. qualitative" research

411   presents a parallel track to how we often view diversity and inclusion in science. Marine, aquatic,

412   and fisheries sciences often focus on quantitative data and generalizability, and we often rely on

413   numerical representations as a measure of diversity. However, to be inclusive and provide a

414   sense of belonging to our colleagues, we must move away from solely seeking to generalize or

415   quantify individuals from underrepresented backgrounds. Becoming a more inclusive profession

416   requires that we also take a qualitative approach that allows for a deep dive into an understanding

417   of not only what makes us different but also what makes us similar, for example, a shared

418   passion for marine, aquatic, and fisheries science.

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Acknowledgments

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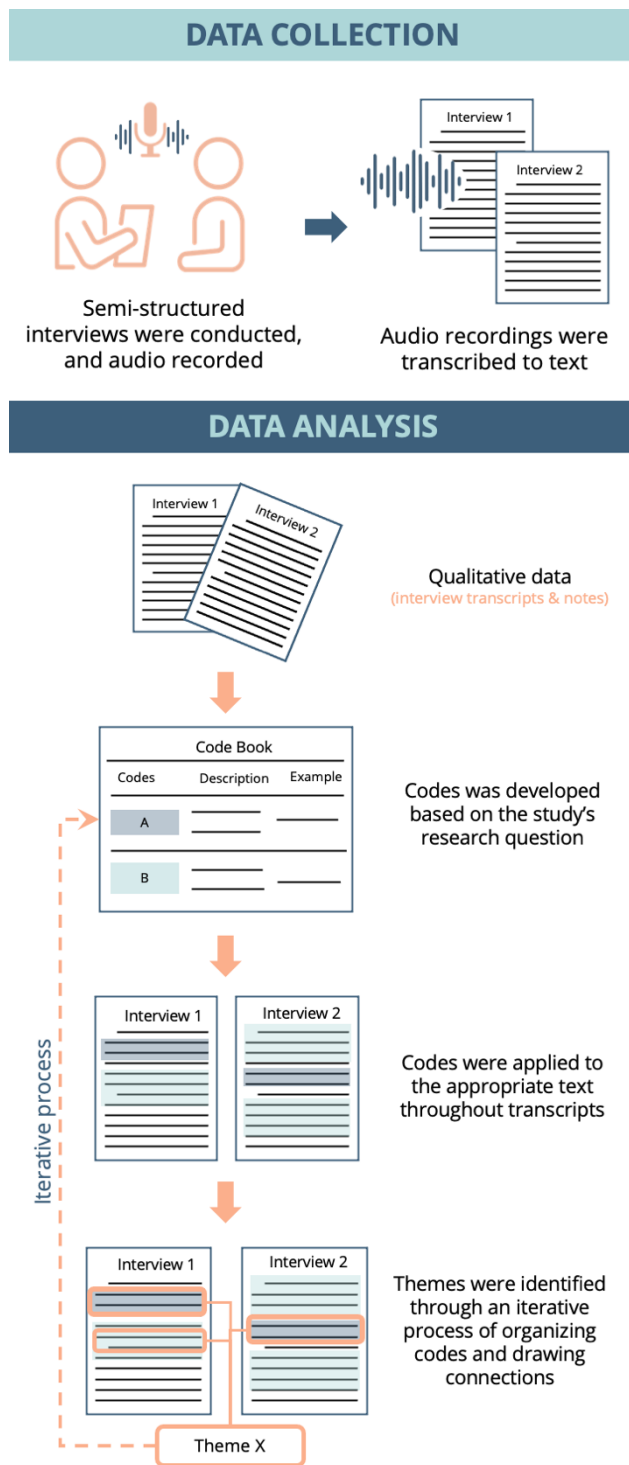536   *American Psychologist, 62*(4), 271–286. https://doi.org/10.1037/0003-066X.62.4.271

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554   Figures

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DATA COLLECTION

Semi-structured
interviews were conducted,
and audio recorded

Audio recordings were
transcribed to text

DATA ANALYSIS

Qualitative data
(interview transcripts & notes)

Code Book

Codes   Description   Example

A

B

Codes was developed
based on the study's
research question

Iterative process

Interview 1   Interview 2

Codes were applied to
the appropriate text
throughout transcripts

Interview 1   Interview 2

Themes were identified
through an iterative
process of organizing
codes and drawing
connections

Theme X

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558   *Figure 1. Illustration of the data collection and data analysis process.*

DIVERSITY AND INCLUSION INITIATIVES

1 I've done a lot of internships that are diversity inclusive. So, I didn't feel like I was alone and trying to do this. Most of the time you only see white people or men doing all these jobs. But I was able to find other people that looked like me that were interested in doing the same things and you're all really successful...So that was definitely a positive.
– Black undergraduate student

2 Okay, it was hard when I went through it, because I had really high anxiety, I was always on diversity fellowships, which always like sets you, like you almost feel like "Is there a star next to my name?" And even my post-doc was the same thing. And I always felt like you're always getting a little bit more extra attention, and you don't know what to do with it.
– Multi-racial (Latina & White) professional

3 The imposter syndrome is so much bigger because it's like, "Dang. If I wasn't black would I have gotten into this program? So I think I definitely have to push that out of my mind for my own self but it's definitely always there....folks are like, Oh she's there because of this."
– Black graduate student

4 I scroll up to look at the notes, and it was something about how Asian American females are overrepresented in STEM, so they don't really count in terms of diversity. Since I have been struggling with this for a while, that felt extremely delegitimizing...maybe I don't actually bring anything to the table, and maybe this is how other people see me. Maybe I don't belong.
– Asian American graduate student

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560 *Figure 2. Participant quotes representing the diversity and inclusion initiative's theme.*

MENTORSHIP AND SUPPORT

1 I will say in terms of deciding for marine science, I have had a lot of mentors that just in general in terms of gender, strong women, independent women that have always been encouraging and never were "You can't do this." It was always "I did this. So, can you.

– Multi-racial (White & Black) professional

2 She didn't give me the paper with all the red scratches or the word document with all the corrections. She just told me that she was not wasting her time on it and that I should go and take basic English writing classes. And that has been something that has... it had a mark. My career and my, I don't know, my person, and I still choke a little about it because it's somebody that I thought I had in my corner and it was completely unprofessional how she handled that, and it was completely rude, how she said it, how she approached it and her attitude. It was completely wrong...She's what at the time I thought was my support system and saying something like that it really crushed me.

- Latina professional

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562 *Figure 3. Participant quotes representing the mentorship and support theme.*

MARGINALIZED, BUT PRIVILEGED

1 I think I've also been very lucky, because when people look at me, they don't know what I am. And I can kind of be a chameleon... I hate to use the term, but I can pass as whatever, as a couple of different things...I don't know if I'm, I guess getting the same benefits as a white person would get...but I do think I've had it much easier than other people.
–Latina graduate student

2 I'm very aware that I'm like half white and I'm white passing, and I'm very cautious that that's kind of helped me. I don't have to face the same struggles as others because I have that privilege. But it's very hard for me because, even though I know that I am white passing, I just don't identify...
–Multi-racial (Asian & White) undergraduate

3 I think being a white person in the sciences, and being a woman has it's challenges, but being white, I never had to deal with issues of representation. You learn about the great white people that have done great white things in science. I feel like that was a barrier that I didn't have to overcome, so maybe getting into the sciences was a lot easier for me because of that... I didn't have to struggle with that extra component of who am I in this field? Where are my people in this field? They were there.
– White professional

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564   *Figure 4. Participant quotes representing the marginalized, but privileged initiative's theme.*

POSSIBLE SELF

1. Any time there's a number like the statistics, so like, "Okay, this is how many Caucasian, and this is how many ..." Native American is always just like at the bottom or there's like one. It's always just like, 1% like, "Wow, that's a lot." A full percent...how do you even feel you can go along if there's nobody there representing you?
   – Multi-racial (Latina & Native American) undergraduate

2. I did think I could be anything, it was just that my notion of anything was very small because no one had ever told me scientists don't have to be the smartest people, scientists don't have to be these rich white men who you see as scientists. And so, I just didn't even have the language to express that that's something I might've wanted.
   – White graduate student

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566   *Figure 5. Participant quotes representing the possible-self theme.*

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MICROAGGRESSIONS

1 There're times... I'm a SCUBA diver and every time I tell people that, they goes, "Oh, you can swim?" And so it's always like this automatic reaction. And then there was one time that we were out in the field and we were diving. I'm there, a scientific diver, researcher, supposed to be there, and someone asked me, "Oh you're here to carry the oxygen tanks?" What? What do you mean?

– Black graduate student

2 I was a TA and in front of my students, the professor I was working under asked me, he said why don't you... I think it was like, why are you wearing dark colors? And I was like, that's just what I like. And he says, in front of my students, you should wear pink, you're a girl, girls wear pink.

– Latina graduate student

SAFETY CONCERNS

3 (*describes being sexually harassed during fieldwork*)
It's an experience that is kind of like... It was hard for me to see what those interactions were... I did not react. I just kind of went into shock and I just didn't know what to do...I did not say anything. And that's something that did affect how I see this field...I should have spoken out earlier in my career, but I was afraid.

– Latina graduate student

4 **I** would explain that I was having leaks in my oxygen tank, and he would pick it up, throw it, throw on the regulator and be like "Oh, you're fine, whatever ... " like, "Quit complaining." Then, the other students would say "Oh, my oxygen tank is leaking," he would sit, listen, get them a new replacement ... things like that.

– Black undergraduate student

STEREOTYPE THREAT

5 As an African American woman, there's always this risk of coming across as aggressive...I feel like I always have to check myself about being aggressive with things because of perception around being an aggressive black woman...Would a white man who says the same thing get the same "she's being angry and aggressive perception"? Or would people say that he's being a great advocate and speaking so well about the situation? And so, I still do that check all the time and it's ridiculous that I do, that I have to, that I have to run that mental check on myself for a lot of things I say.

– Black professional

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Figure 6. Participant quotes representing the microaggressions, safety concerns, and stereotype threat themes.

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