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Original Research

Influence of Social Identity and Industry Role on Implicit Biases in Fitness Professionals

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Abstract

International Journal of Exercise Science 18(4): 1228-1251, 2025. https://doi.org/10.70252/SQUH3795 Implicit biases are unconscious, internally held beliefs shaped by cultural norms, societal structures, and personal experiences and are often related to societal constructs such as race, gender, age, body shape, and ability. The aim of this study was to explore the relationship between social identity, industry role, and implicit biases in fitness professionals. Participants (n=296) were randomly assigned two implicit association tests (IATs): disability, weight, gender, skin-tone, or age. IATs measured implicit bias through word and pictorial associations and timed response to word/picture stimuli. Interviews (n=25) were conducted to further examine participants' psychosocial beliefs and experiences related to biases. Quantitative data revealed *moderate* preferen3ces for younger, lighter skinned, thin, male individuals concurrent with a *strong* preference for able bodies. Certified personal trainers and strength and conditioning coaches held significantly stronger preferences towards younger people compared to participants with other certifications. Older participants were significantly more likely to prefer White, able-bodied, thin individuals compared to their younger counterparts. Black, Indigenous, and People of Color (BIPOC) participants and participants certified as personal trainers reported a significantly greater gender bias compared to White participants and those with other certifications. Interviews revealed themes including unacknowledged biases, body aesthetics conflict, negative/positive weight associations, and negative/positive reactions to bias-related discourse. In this study's sample of fitness professionals, both quantitative and qualitative data revealed preferences for the dominant body type (e.g., young, White, thin, able-bodied, and male). Addressing these biases is an imperative step in upholding the quality of care that clients receive.

Keywords: Unconscious beliefs, fitness industry, bias measurement, quality of care, mixed methods

Introduction

Biases can be defined as deeply rooted beliefs and attitudes that influence perception, judgment and behavior and can be categorized into two distinct, interrelated forms: explicit and implicit biases.[1] Explicit bias operates overtly, where biases are expressed directly and consciously.[1] Conversely, implicit biases are often unconscious, internally held beliefs shaped by psychosocial factors that are more difficult to identify because they are unconscious.[1,2] These unconscious, hidden biases are often formed through cultural norms, societal structures, and personal experiences and are often related to societal constructs such as race, gender, age, body shape, and ability.[1]

The prevalence of implicit bias among allied health professionals is harmful as it negatively impacts the quality of care that patients receive and increases damaging health outcomes. Previous studies examining the prevalence of such implicit biases have been examined in allied fields. For example, a systematic review examining implicit racial bias in healthcare providers reported slight to strong racial biases indicating a preference towards lighter skinned individuals.[3] Similarly, both doctors and occupational therapy students report implicit gender biases having a slight to moderate preference towards men with careers and women with families.[4,5] Recent literature also suggests allied health professionals possess implicit disability bias and age biases.[6,7] Recognizing and addressing implicit biases can be a preventative measure in circumventing discrimination and combating social inequalities.[4,7,8]

Both implicit and explicit weight bias have been extensively studied in fitness professionals. Research on weight biases in the fitness industry suggests that fitness professionals have strong, negative biases related to individuals in larger body shapes and sizes.[8-11] Both explicit and implicit biases towards weight have been shown to affect how fitness professionals engage with clients[12] as well as how clients perceive themselves within this framework.[13] Known predictors of weight bias within the fitness industry include belief in the personal controllability of weight, internalization of the athletic body type ideal, lack of personal history, or family/friend with obesity, etc.[14] Examining the implicit biases held by fitness professionals and identifying predictors related to their social identity is needed, as research has shown a relation between implicit bias and discriminations- e.g., ageism: stereotypes, prejudice, and discrimination towards others or oneself based on age.[2,15]

Fitness professionals are in the unique position of influencing health related attitudes and behaviors of their clients.[12,13] As implicit biases are unintentional, they may influence the quality of care that clients receive. Literature has shown that a lack in quality health care can manifest in physiological and psychological patterns of illness, such as physical pain, increased stress and anxiety, depression, and misdiagnosis.[16] Moreover, explicit *and* implicit biases can lead to a lack of motivation for clients, which may affect client engagement with healthy positive behaviors, thereby sustaining physiological and psychological ailments.[12,13]

As of publication, there is limited research pertaining to biases among fitness professionals. While research suggests fitness professionals have explicit and implicit weight biases,[8,9,12] only one article has examined how their social identity (e.g., age, skin-tone, weight, disability) is correlated with biases and that data was limited to weight biases.[11] Early research suggests that one's own social identity favors those who are similar to them, leading to in-group favoritism and out-group prejudice,[1] yet this has never been examined in the fitness industry. Therefore, the purpose of this study is to explore the influence of social identity (e.g., age, weight, skintone, weight, and disability) and industry role on implicit biases in fitness professionals. It is hypothesized that fitness professionals possess strong negative biases based on age, gender, disability, weight, and race.

Methods

Participants

Participants included a convenience sample of 296 individuals who identified as professionals currently working in the fitness industry and were at least 18 years of age (Table 1). A power analysis determined that to achieve a significance level of 0.05 and a power of 0.80, the study requires 134 total participants (30 participants for the disability and gender IATs, 40 for the weight IAT, and 34 for the skin-tone IAT).[17] Participants were recruited via an email sent to the IDEA Fitness listserv, which includes fitness professionals from around the world who are members of the IDEA Fitness Association (the world's largest fitness and wellness organization). The email went to 24.5k recipients, had a 13.1% opening rate (4,489 opens) and 284 clicks (7.4% click-through rate). Participants were also recruited via tailored emails to friends and colleagues in the fitness industry who were also asked to share the study link with their peers and colleagues. An incentive of 120 randomly drawn $15 gift cards was used to increase participation. This study was approved by the California State University, Long Beach Institutional Review Board (IRB#: 1 547060-1) and all subjects consented to participate in the research study prior to participation. This research was conducted fully in accordance with the ethical standards of the *International Journal of Exercise Science*.[18]

Table 1. Sample demographics

Demographic variable	Survey demographics		Interview demographics	
	n	%	*n*	%
Gender				
Female	188	63.51	20	80.00
Male	101	34.12	5	20.00
Race				
American Indian	5	1.69	0	0
African American	15	5.07	1	4.00
Asian Pacific Islander	12	4.05	2	8.00
Hispanic/Latino	25	8.45	4	16.00
White	210	70.95	18	72.00
Other	5	1.69	1	4.00
Multi-Race	3	1.01	0	0
Age				
18-24	56	18.92	0	0
25-34	81	27.36	4	16.00
35-44	53	17.91	4	16.00
45-54	46	15.54	6`	24.00
55-64	41	13.85	8	32.00
65-74	15	5.07	3	12.00
75-84	1	0.34	0	0

Demographic variable	Survey demographics		Interview demographics	
	n	%	*n*	%
Education				
Some high school, no diploma	3	1.01	0	0
High school degree or equivalent	18	6.08	0	0
Some college, no degree	46	15.54	0	0
Trade/Technical/Vocational	8	2.70	0	0
Associate degree	29	9.80	4	16.00
Bachelor's degree	95	32.09	11	44.00
Master's degree	78	26.35	6	24.00
Professional degree	3	1.01	0	0
Doctorate degree	8`	2.70	3	12.00
Other	4	1.35	1	4.00
Certification				
Personal trainer	138	46.62	22	88.00
Group fitness instructor	114	38.51	18	72.00
Strength & conditioning coach	33	11.15	3	12.00
Health & wellness coach	31	10.47	10	40.00
Income				
Less than $25,000	87	29.39	13	52.00
$25,000 to $34,999	26	8.78	1	4.00
$35,000 to $49,999	47	15.88	1	4.00
$50,000 to $74,999	53	17.91	6	24.00
$75,000 to $99,999	28	9.46	1	4.00
$100,000 to $149,999	4	1.35	3	12.00
$150,000 or more	10	3.38	1	4.00

Note. The survey questions for race and certification were not mutually exclusive.

Protocol

The study employed a cross-sectional, convergent mixed methods design to simultaneously gather and analyze quantitative and qualitative data, allowing for comprehensive insights and triangulation of findings. Implicit bias was examined using five of the implicit association tests (IATs): disability, weight, gender, skin-tone, and age.[19] IATs measure implicit bias through word and pictorial associations and timed response to word/picture stimuli.[19] Specifically, the IAT reveals "attitude objects," such as differing body types (e.g., fat or thin) and pairs these images with associative, evaluative words (e.g., positive or negative words such as "good" and "bad"), evaluating implicit biases by measuring how quickly participants respond to these pictures and words.[19] The relationship between the pictures and words is then reversed, so that the order of pictures and their associative words is substituted with opposite attitude objects and associative words opposite to the original organized patterns, which can then measure a participant's automatic association (i.e. bias) by assessing the correlation data.[19] The time it takes a participant to categorize an image with a particular word when reversed then reveals the significance of the bias being studied.[19,20]

Participants completed an electronic survey that included a 6-item demographic and social identity questionnaire (self-selecting gender, race, age, education, certification, and income) and two of the five previously listed, randomly assigned IATs. Per the recommendation of the IAT representatives, only two of the five IATs were randomly assigned as participants display fatigue after completing two IATs; each test can take up to 30 minutes to complete. The IATs examine how strong an automatic association is between a given concept (e.g., thin and large bodies) and an attribute (e.g., good or bad). The only IATs that did not use "good" or "bad" attributes as part of the automatic association was the gender-career IAT which used "career and family" to correlate with the concept of gender captured using typical names of women and men. IATs have sound psychometric properties and have been used in a variety of disciplines.[21] Once participants completed the survey, they were provided the option of adding their email address if they were interested in being contacted for a follow up interview. Out of the 106 contacted, 25 participants chose to volunteer for the follow-up interview (see Table 2 for interview participant demographics). The authors stopped recruitment once data saturation was reached, when no new information or themes were observed in the data.[22] Interviewees were given pseudonyms to protect their identity. The semi-structured interview included seven pre-determined questions including:

1. Describe your ideal client?
2. Why do you think your clients choose you?
3. What are characteristics of clients that you don't look forward to working with?
4. What pressures do you feel as a fitness professional in the industry?
5. What do you think about the conversations about biases in the fitness industry?
6. Describe how you would interact with an <u>ideal</u> client.
7. Describe how you would interact with an <u>unideal</u> client.

Table 2. Interview participant demographics

Participant pseudonym	Gender	Race	Age	Certification
Abigail	Woman	Asian Pacific Islander/African American	34	Personal trainer/Health & wellness coach
Ariana	Woman	Hispanic/Latino	45	Personal trainer/Group fitness instructor
Beatrice	Woman	White	57	Health & wellness coach
Brooke	Woman	White	56	Personal trainer/Health & wellness coach
Clark	Man	Hispanic/Latino	47	n/a
Derek	Man	Asian Pacific Islander	36	n/a
Destiny	Woman	Middle Eastern	65	Personal trainer/Group fitness instructor
Elizabeth	Woman	White	49	Personal trainer/Group fitness instructor
Eva	Woman	White	43	Personal trainer/Group fitness instructor
Freddy	Man	White	56	n/a
Georgia	Woman	Hispanic/Latino	50	Health & wellness coach

Participant pseudonym	Gender	Race	Age	Certification
Gia	Woman	White	51	Personal trainer/Group fitness instructor/Health & wellness coach
Iris	Woman	White	60	Personal trainer/Group fitness instructor/Strength & conditioning coach
Jasmine	Woman	White	64	Personal trainer/Health & wellness coach
Julyssa	Woman	White	59	Group fitness instructor
Kathy	Woman	White	25	Group fitness instructor
Katie	Woman	White	50	Personal trainer/Group fitness instructor
Monica	Woman	White	65	Personal trainer/Group fitness instructor
Penelope	Woman	White	61	Personal trainer/Group fitness instructor/Health & wellness coach
Samantha	Woman	White	41	Personal trainer/Group fitness instructor/Health & wellness coach
Sydney	Woman`	White	41	Personal trainer/Group fitness instructor
Taylor	Woman	White	65	Personal trainer/Group fitness instructor
Tess	Woman	Hispanic/Latino	26	Personal trainer/Group fitness instructor/Strength & conditioning coach
Trent	Man	White	55	n/a

Statistical Analysis

A power analysis determined that to achieve a significance level of 0.05 and a power of 0.80, the study requires 30 participants for the disability and gender IATs, 40 for the weight IAT, and 34 for the skin-tone IAT.[17] The effect size for each IAT (D score) was determined using scoring algorithm methods outlined in Greenwald, Nosek and Najaji (2003) using SPSS V29 and was used to assess the strength of each implicit bias. Positive scores indicated a preference of the dominant identity (e.g., able-bodied, thin, male, White, and young) and negative scores indicated a preference of the non-dominant identity (e.g., disabled, larger-bodied, female, a person of color, and old). Scores that had latencies faster than 300 ms in ^{3} 10% of the trials were removed from analysis.[20] Independent sample t-tests were conducted to examine if there were significant differences between IAT results based on participants' gender (men vs. women), race (White vs. Black, Indigenous, and other people of color: BIPOC), and industry role (certified as a personal trainer, group fitness instructor, strength and conditioning coach, or health coach). Pearson correlations were run to analyze the strength and direction of the relationship between age and IAT score. Significance was set at 0.5 and all quantitative data was analyzed using IBM SPPS statistics version 28. Mean values for all IAT d scores were calculated to indicate the strength of association and social psychology interpretation guidelines for Cohen's d scores were used (small ≈ 0.15; medium ≈ 0.36; and large ≈ 0.66).[24]

To analyze the interviews, a framework analysis was utilized.[25] This analysis consists of five stages including 1) familiarization of the data, 2) identification of a thematic framework, 3) data indexing, 4) thematic organization of the data, and 5) content interpretation. To become familiarized with the interview content, two authors listened to the audio files and read the corresponding transcripts several times. Stage two required the use of the NVivo 14 software. Interview transcripts were uploaded to NVivo 14 and the same two authors independently created codes that represented recurring concepts that interviewees mentioned. Any transcript quotes that were deemed significant by the two authors were then categorized into a given code as supporting evidence. As part of stage three, a third author reviewed an Excel document with each of the quotes organized by code and decided if the quotes were designated to the appropriate code. During this stage, changes were discussed among the three authors, some quotes were moved and categorized under different codes, and a final thematic code book was created. Stage four included the formation of a new Excel spreadsheet which served as a visual representation of the thematic content. The final stage consisted of a discussion among the three authors to examine the context of the codes and develop a consensus on the interpretation of the codes. To assist in the content interpretation and reduce potential research biases, a matrix coding query was run using the NVivo 14 software. This query provided internal consistencies found between the code themes.

Results

Quantitative Results

Summary of Significant Results.

With the amount of data presented in this paper, the authors thought it best to summarize the significant findings here as well as what is reported in each subsection. There was a significant positive correlation between participant's age and positive scores on the overall race ($r = .203$; $p < 0.05$), disability ($r = .203$; $p < 0.05$), and weight ($r = .278$, $p < .05$) IAT scores, suggesting that as participant age increased, so did their race, disability, and weight bias. Additionally, participants who were not certified as personal trainers ($M = 0.44$; $SD = 0.46$) and those who were certified as strength and conditioning coaches ($M = 0.43$; $SD = 0.49$) held significantly stronger negative beliefs about older people. White participants ($M = 0.35$; $SD = 0.38$) and men ($M = 0.20$; $SD = 0.38$) reported significantly less gender bias compared to BIPOC participants ($M = 0.38$; $SD = 0.21$) and women ($M = 0.42$; $SD = 0.32$). Lastly, participants who were certified as personal trainers ($M = 0.38$; $SD = 0.28$) reported significantly stronger gender bias compared to those who were not certified as personal trainers ($M = 0.33$; $SD = 0.40$; ($p < 0.05$). Prevalence of biases by industry role are depicted in figures 1-5.

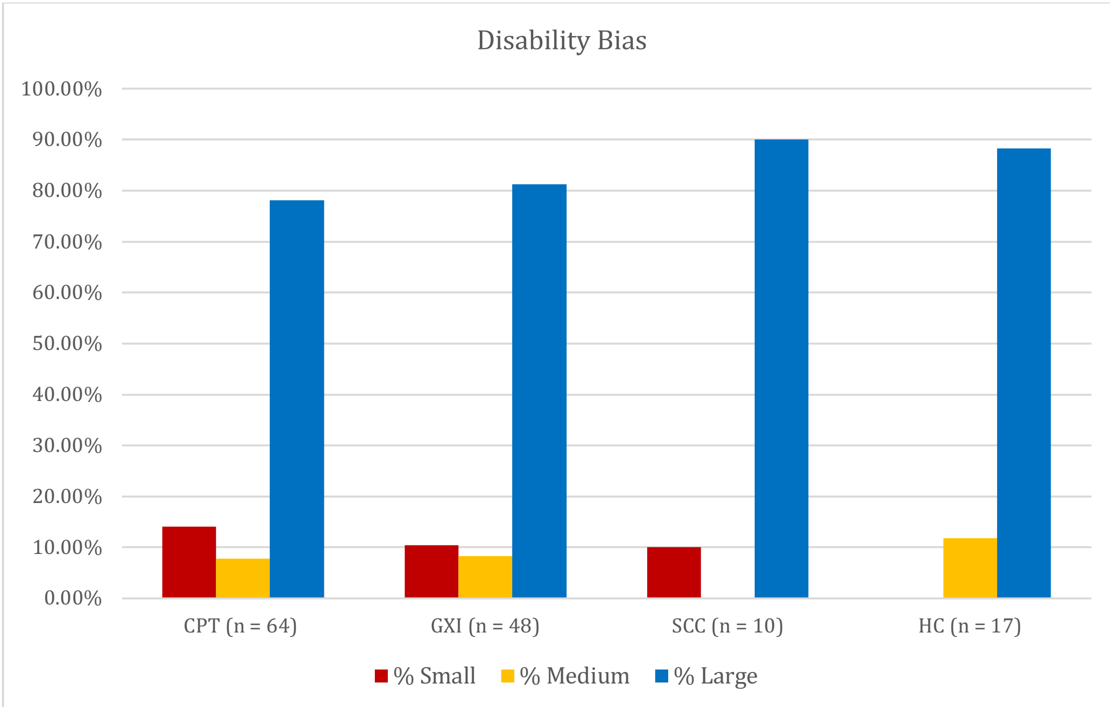

Figure 1. Percentages of IAT d scores for disability bias represented as small ≈ 0.15, medium ≈ 0.36, or large ≈ 0.66 effect. CPT = Certified Personal Trainer. GXI = Group Fitness Instructor. SCC = Strength and Conditioning Coach. HC = Health Coach.

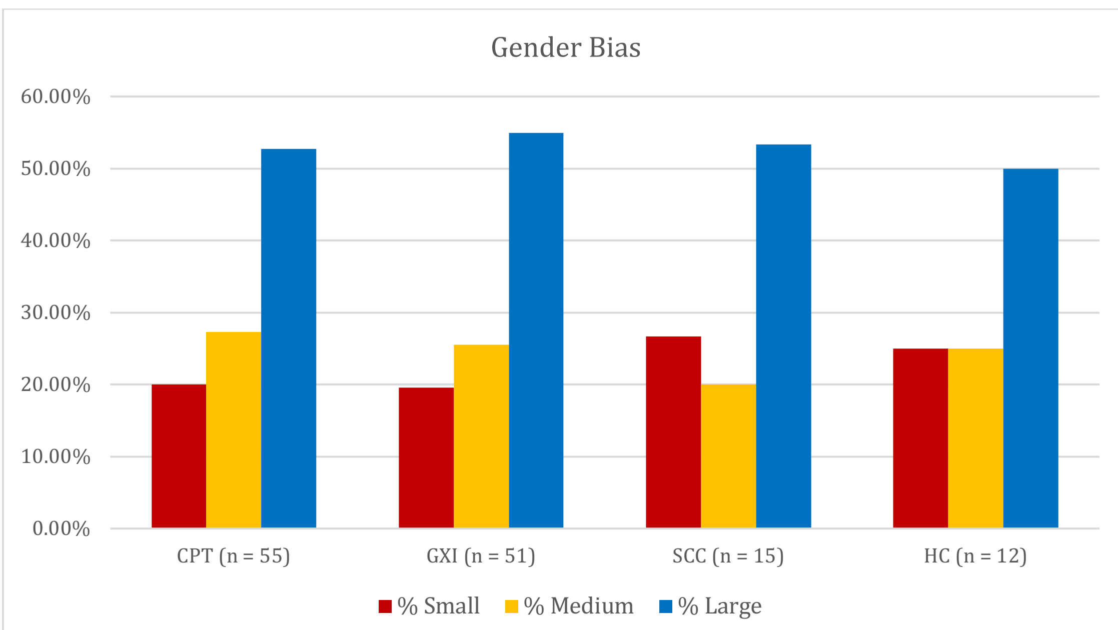

Figure 2. Percentages of IAT d scores for gender bias represented as small ≈ 0.15, medium ≈ 0.36, or large ≈ 0.66 effect. CPT = Certified Personal Trainer. GXI = Group Fitness Instructor. SCC = Strength and Conditioning Coach. HC = Health Coach.

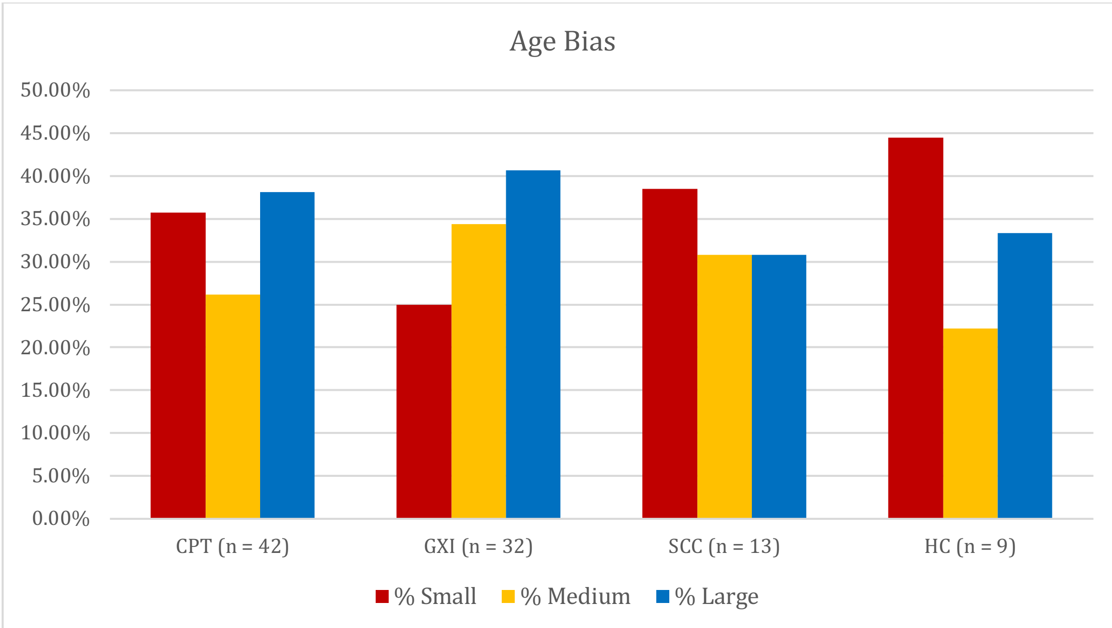

Figure 3. Percentages of IAT d scores for age bias represented as small ≈ 0.15, medium ≈ 0.36, or large ≈ 0.66 effect. CPT = Certified Personal Trainer. GXI = Group Fitness Instructor. SCC = Strength and Conditioning Coach. HC = Health Coach.

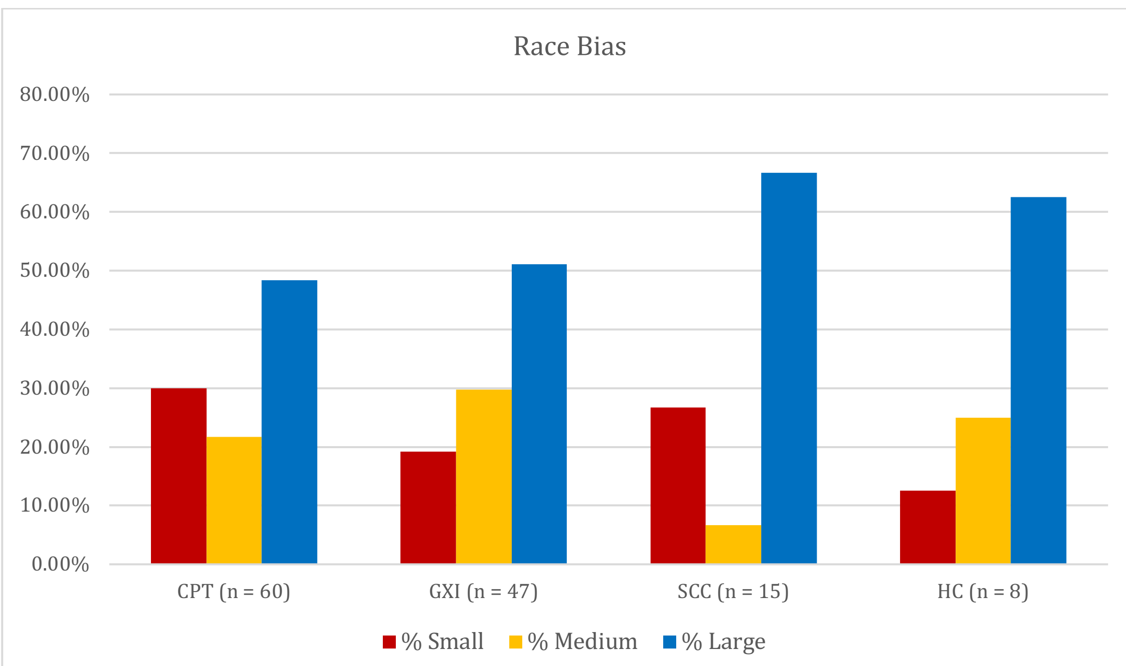

Figure 4. Percentages of IAT d scores for race bias represented as small ≈ 0.15, medium ≈ 0.36, or large ≈ 0.66 effect. CPT = Certified Personal Trainer. GXI = Group Fitness Instructor. SCC = Strength and Conditioning Coach. HC = Health Coach.

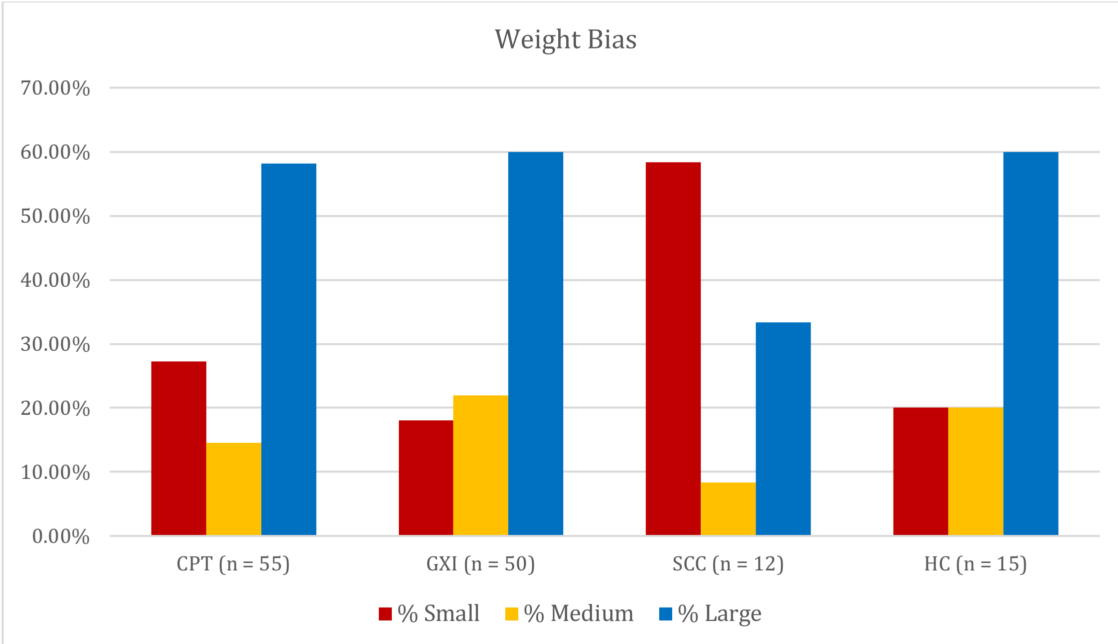

Figure 5. Percentages of IAT d scores for weight bias represented as small ≈ 0.15, medium ≈ 0.36, or large ≈ 0.66 effect. CPT = Certified Personal Trainer. GXI = Group Fitness Instructor. SCC = Strength and Conditioning Coach. HC = Health Coach.

Age Bias.

A total of 77 participants were randomly assigned to take the Age Bias IAT assessment (M = 0.43; SD = 0.36). The correlation analysis between participant age and the age IAT scores revealed a non-significant Pearson correlation coefficient of -0.027 (p = 0.819), indicating no meaningful relationship between participant age and age IAT scores. An independent samples t-test results revealed no significant difference between gender and IAT age scores, $t(75) = 0.84$, $p = 0.41$, ES = 0.21, however, both men (M = 0.48; SD = 0.39) and women (M = 0.41; SD = 0.35) displayed a moderate preference for younger rather than older adults. An independent samples t-test results revealed no significant difference between race and age IAT scores, $t(71) = 0.11$, $p = 0.91$, ES = 0.03, however, both White (M = 0.42; SD = 0.35) and BIPOC (M = 0.43; SD = 0.38) participants displayed a moderate preference for younger rather than older adults.

There was a significant difference between those who were certified as personal trainers (M = 0.38; SD = 0.31) and those who were not certified as personal trainers (M = 0.44; SD = 0.46), with participants who were not certified as personal trainers having significantly stronger negative beliefs about older people ($t(54) = .569$, $p < 0.05$). There was also a significant difference between those who were certified as strength and conditioning coaches (M = 0.43; SD = 0.49) and those who were not certified as strength and conditioning coaches (M = 0.39; SD = 0.33), with participants who were certified as strength and conditioning coaches having significantly stronger negative beliefs about older people ($t(54) = .353$, $p < 0.05$). There was no significant difference in age IAT scores between those who were certified as group fitness instructors (M = 0.37; SD = 0.33; p = 0.23) and those who did not have a group fitness certification (M = 0.43; SD

= 0.41), $t(54) = 0.57$, $p = 0.57$, ES = 0.15. There was also no significant difference between IAT scores between those who were certified as a health coaches (M = 0.25; SD = 0.30; p = 0.35) and those who did not have a health coach certification (M = 0.43; SD = 0.37), $t(54) = 1.35$, $p = 1.82$, ES = 0.49. Regardless of certification, participants demonstrated a slight to moderate preference for younger rather than older adults (M = 0.43; SD = 0.36).

Race Bias.

Out of the 296 participants who took the survey, 115 of them were randomly assigned to take the SkinTone IAT assessment (M = 0.38; SD = 0.39). There was a significant positive correlation between participant age and positive scores on the Overall IAT scores (r = .203, p <0.05), suggesting that as participant age increased, there was a tendency for positive associations with words related to "Good and Light-skinned people" and negative associations with words related to "Good and Dark-skinned people." An independent samples t-test results revealed no significant difference between gender and SkinTone IAT scores $t(108) = 1.15$, $p = 0.253$, ES = 0.23, however, both men (M = 0.32; SD = 0.43) and women (M = 0.41; SD = 0.36) displayed a moderate preference towards lighter skinned people. An independent samples t-test results revealed no significant difference between race and SkinTone IAT scores $t(102) = 2.0$, $p = 0.54$, ES = 0.42, however, both White (M = 0.43; SD = 0.35) and BIPOC participants (M = 0.26; SD = 0.45) participants displayed a moderate preference towards lighter skinned people.

An independent samples t-test results revealed no significant differences in SkinTone IAT scores between those who were certified as personal trainers (M = 0.42; SD = 0.35; $t(81) = 0.03$, $p = 0.98$, ES = 0.01) and those who were not certified as personal trainers (M = 0.42; SD = 0.36). There was also no significant difference in SkinTone IAT scores between those who were certified as strength and conditioning coaches (M = 0.47; SD = 0.38; $t(81) = 0.60$, $p = 0.55$, ES = 0.18) and those who were not certified as strength and conditioning coaches (M = 0.41, SD = 0.35). There was no significant difference in SkinTone IAT scores between those who were certified as group fitness instructors (M = 0.38; SD = 0.37; $t(81) = 0.99$, $p = 0.33$, ES = 0.22) and those who were not (M = 0.46; SD = 33). Lastly, there were no significant differences in SkinTone IAT scores for participants who were certified as health coaches (M = 0.48; SD = 0.30; $t(81) = 0.59$, $p = 0.56$, ES = 0.21) compared to those who were not (M = 0.41; SD = 0.36). Regardless of certification, participants demonstrated a slight to moderate preference for light skinned adults (M = 0.38; SD = 0.38).

Gender Bias.

A total of 110 participants were randomly assigned to take the Gender-Career IAT assessment (M = 0.34; SD = 0.37). The correlation analysis between participant age and the gender-career IAT scores revealed a non-significant Pearson correlation coefficient of 0.143 (p = 0.141), indicating no meaningful relationship between participant age and gender-career IAT scores. An independent samples t-test results revealed a significant difference between gender and gender IAT scores ($t(105) = 3.22$, $p = 0.02$, ES = 0.66) with men having significantly less gender bias than women. Men also reported a slight preference for men with career and women with family (M = 0.20; SD = 0.38) compared to a moderate preference displayed by women (M = 0.42; SD = 0.32). An independent samples t-test results revealed a significant difference between race and gender IAT scores, $t(100) = 0.34$, $p = 0.73$, ES = 0.08. White participants (M = 0.35; SD = 0.38) reported significantly less gender bias compared to BIPOC participants (M = 0.38; SD = 0.21), however they both displayed a moderate association for men with career and women with family.

There was a significant difference between those who were certified as personal trainers (M = 0.38; SD = 0.28) and those who were not certified as personal trainers (M = 0.33; SD = 0.40), with participants who were certified as personal trainers having significantly stronger gender-career bias compared to those who were not certified as personal trainers $t(78) = 0.57$, $p = 0.57$, ES = 0.13. An independent samples t-test revealed no significant differences in Gender-Career IAT scores between those who were strength and conditioning coaches (M = 0.34; SD = 0.38; $t(83) = 0.33$, $p = 0.74$, ES = 0.09) and those who were not (M=0.67; SD = 0.32). Similarly, there were no significant differences in Gender-Career IAT scores between participants certified in group fitness (M = 0.41; SD = 0.31; $t(78) = 0.1.58$, $p = 0.12$, ES = 0.36) compared to those who were not (M = 0.29; SD = 0.36). Lastly, there were no significant differences in Gender-Career IAT scores between participants certified as a health coaches (M = 0.38; SD = 0.29; $t(83) = 0.16$, $p = 0.87$, ES = 0.05) compared to those who were not (M = 0.36; SD = 0.34). Regardless of certification, participants demonstrated a slight to moderate preference for men with career and women with family (M = 0.34; SD = 0.37).

Disability Bias.

Among the 296 participants who took the survey, 120 of them were randomly assigned to take the Disability Bias IAT assessment (M = 0.73; SD = 0.42). There was a significant positive correlation between participant age and disability bias IAT score ($r = .353$, $p < .001$), indicating that as participant age increased, so did the tendency for positive associations with words related to "Good and Abled" and negative associations with words related to "Bad and Disabled". An independent samples t-test results revealed no significant difference between gender and disability IAT scores ($t(115) = 0.05$, $p = 0.96$, ES = 0.01), however, both men (M = 0.74; SD = 0.44) and women (M = 0.74; SD = 0.40) displayed a strong preference for able bodied individuals. An independent samples t-test results revealed no significant difference between race and disability bias IAT scores ($t(110) = 1.05$, $p = 0.30$, ES = 0.22), however, both White (M = 0.78; SD = 0.41) and BIPOC (M = 0.69; SD = 0.41) participants displayed a strong preference for able bodied individuals.

An independent samples t-test results revealed no significant differences in Disability IAT scores between those who were certified as personal trainers (M = 0.75; SD = 0.41; $t(89) = 0.01$, $p = 0.99$, ES = 0.003), and those who were not certified as personal trainers (M = 0.76; SD = 0.45). There was also no significant difference in Disability IAT scores between those who were certified as strength and conditioning coaches (M = 0.77; SD = 0.37; $t(89) = 0.15$, $p = 0.88$, ES = 0.05) and those who were not certified as strength and conditioning coaches (M = 0.75, SD = 0.43). There was no significant difference in Disability IAT scores between those who were certified as group fitness instructors (M = 0.76; SD = 0.44; $t(89) = 0.18$, $p = 0.85$, ES = 0.04) and those who were not (M = 0.75; SD = 0.40). Lastly, there were no significant differences in Disability IAT scores for participants who were certified as health coaches (M = 0.83; SD = 0.41; $t(89) = 0.86$, $p = 0.40$, ES = 0.23) compared to those who were not (M = 0.74; SD = 0.42). Regardless of certification, participants demonstrated a strong preference for able bodied adults (M = 0.73; SD = 0.42).

Weight Bias.

Out of the 296 participants who took the survey, 102 of them were randomly assigned to take the Weight Bias IAT assessment (M = 0.44; SD = 0.41). There was a significant positive correlation between participant age and weight IAT score (r = .278, $p < .05$), indicating that as participant age increased, so did the tendency for positive associations with words related to "Good and Thin" and negative associations with words related to "Bad and Fat." An independent samples t-test results revealed no significant difference between gender and weight IAT scores ($t(97) = 1.12$, $p = 0.25$, ES = 0.25), however, both men (M = 0.38; SD = 0.42) and women (M = 0.48; SD = 0.41) displayed a moderate preference for thinner individuals. An independent samples t-test results revealed no significant difference between race and weight IAT scores ($t(91) = 1.45$, $p = 0.15$, ES = 0.38), however, both White (M = 0.47; SD = 0.39) and BIPOC (M = 0.32; SD = 0.32) participants displayed a moderate preference for thinner individuals.

An independent T-Test revealed no significant differences in Weight IAT scores between those who were certified as personal trainers (M = 0.49; SD = 0.36; $t(78) = 0.82$, $p = 0.41$, ES = 0.19) and those who were not (M = 0.42; SD = 0.38). There were also no significant differences in Weight IAT scores between participants certified as strength and conditioning coaches (M = 0.17; SD = 0.49; $t(78) = 1.56$, $p = 0.12$, ES = 0.53) and those who were not (M = 0.41; SD = 0.40). No significant differences in Weight IAT scores existed between certified group fitness instructors (M = 0.49; SD = 0.38; $t(78) = 0.88$, $p = 0.36$, ES = 0.21) and those who were not (M = 0.41; SD = 0.35). Lastly, there were no significant differences in Weight IAT scores between participants certified as health coaches (M = 0.44; SD = 0.51; $t(78) = 1.04$, $p = 0.30$, ES = 0.32) compared to those that were not (M = 0.40; SD = 0.40). Regardless of certification, participants demonstrated a slight to moderate preference for thinner adults (M = 0.44; SD = 0.41).

Qualitative Results

Theme 1: Less Acknowledged Biases (Disability, Race, Age, & Gender).

When comparing the five biases analyzed in the quantitative data, disability, race, age, and gender were mentioned the least often (n = 20) and weight biases were discussed the most often (n = 42). Out of the 25 participants who completed the follow-up interview, disability was only mentioned once and the comment lacked depth: "Abilities, medical condition" (Beatrice). Race was mentioned a total of five times during the interviews, with one participant saying, 'there's biases on, you know, for lack of a better phrase that fitness is only available or presented for those who are called Caucasian" and "there's a lot of biases towards ethnicity" (Beatrice). Age was mentioned a total of six times with participants stating there are "a lot [of biases] against older people, that they're frail and out of shape, and can't do a lot of things that they actually can do as far as physically achieving things. I think sometimes we don't challenge them enough" (Gia). Gender was a total of eight times with participants stating "and then we have the one [bias] still with women versus men, you know, and what a girl should do, and what a woman should do versus a man. So, I think there's limit." (Destiny) and "when I began instructing, the male teachers were always more favored than the female teachers, and it was really frustrating, and it may have been because so much of the clientele was female, and somehow they just liked that energy. I don't know, and I'm not saying that there still weren't superstars that were both male and female. But there just seems to be a certain bias to male instructors." (Julyssa).

Theme 2: Weight Bias in Fitness Professionals.

Out of the 25 participants who completed the follow-up interview, weight was mentioned 42 times. Categorical distinction resulted in two sub-themes: 1) fitness professionals' aesthetics, 2) weight comments. The sub-theme of fitness professionals' aesthetics represented discussions around the pressures and expectations participants felt in regard to what their bodies look like, particularly in context to the fitness industry. One participant said "I understand that people expect as a fitness professional, we should practice what we preach. I do. But I also am not looking to achieve a body builder or bikini competitor aesthetic." (Ariana). The sub-theme of negative weight comments represented statements from participants suggesting negative comments or experiences related to weight in the fitness industry. One participant said "I think one, the one that kind of comes up the most...is again this idea that size is attributed to health. And the way you look is attributed to how healthy you are, or how or how worthy you are to like, exercise, and move and be. and be fit." (Abigail). The sub-theme of positive weight comments represented discussions about weight that were positive in nature. For example, one participant said "I hope, because I create a welcoming environment. I really try to deviate from a lot of the things that are commonly publicized by the industry. I try not to reference anything about what you should look like. Anything about, you know, like levels of activity. Like I try to just keep it as a very open class. You could take whatever option you want. I do not care. I just care that you're enjoying yourself for the next 30 to 60 min." (Kathy).

Subtheme 1: Fitness Professionals' Aesthetics.

Fitness professionals mentioned aesthetics fourteen times, describing the conflicts surrounding what their bodies should look like. Nine times professionals mentioned aesthetics as external pressure, stating "[I am] a PhD trained exercise physiologist and yet I still feel like I have to look a certain way to be credible in the industry" (Abigail). One professional mentioned aesthetics as internal pressure, stating "Well, I've fought it for my entire career but there's, uh, there's an internal pressure to look a certain way, you know, fit." (Brooke). Four times professionals mentioned aesthetics as not fitting into client expectations, with participants stating "I just look like a normal person. I may look a little heavier, maybe to some. Then so, I know that there's a lot quite a bit, there's the bias of you know, body type," (Elizabeth) and "Perhaps that I'm not a traditional like social media fitness influencer that's a certain size or ethnicity." (Abigail).

Subtheme 2: Weight Comments.

Eleven fitness professionals had negative responses which were not about their own bodies but specifically mentioned weight in response to the bias question. A negative response is classified as participant hesitancy to answer bias questions and/or participant lack of awareness particularly in response to weight biases. Statements include: "And in the past I have also... I have one physical therapist that works for me. She is obese. And one of the clients that reported back to me said that I don't want to have this PT working with me because she is morbidly obese." (Jasmine) and "I think that there is a stigma in the fitness industry that you have to be good at it. Or that you have to have a certain body shape or body size to do certain things. So you know, like you have to be fit, or you have to be...look this way to kind of go in the fitness center and use it. Versus people who are maybe new into their fitness journey or restarting their fitness journey, and maybe have, you know, gained weight, or whatever that looks like, and and so forth." (Derek). Seventeen fitness professionals had positive responses which specifically mentioned weight, where positive responses were classified as participants awareness of weight biases within the fitness industry. Statements include: "I don't ever focus on or try not to focus on weight or uh looks." (Eva) and " So when I'm working with clients, whether in a group, fitness or one on one environment, we aren't focusing on weight, or on punishment, or on making movement equate to something they hate. We're focusing more on having fun and yes, working hard, but more so on the feeling behind it? Does it feel good? Does it feel powerful? Does it feel strong? Does it feel tough, focus more on the feelings? I think that creates a really cool sense of psychological safety where they don't feel like they're in an environment where they're being judged, and they feel motivated to pursue feelings instead of numbers." (Jake).

Theme 3: Positive and Negative Responses to Bias Discussions in Fitness Industry.

Subtheme 1: Negative Response to Bias Question.

Negative responses to the bias question were classified into two distinct categories; the first being participant hesitancy to answer bias question, and the second being lack of awareness of biases within the fitness industry. Participant hesitancy to answer bias question included six statements; for example: "I think that there are definitely... there are some truths when it comes to just different biases that are out there, and um, and at the same time, maybe, my perspective, I feel like some. There might be some things that might be a little over inflated, too. But you know everybody has a different viewpoint and perspective. So you know. So I think I think there's some truth to that." (Clark) and "I don't encounter those conversations. The only way I encounter conversations is like, ACE is making us do an equity, diversity, and inclusion training now to renew our cert. I mean, I don't come across that really in my industry. Um, not personally. I mean, there are people of all all types in the Gyms. I know they're there for a reason. I'm. I'm glad to see them for whatever like I said, their motivation is. I think that's wonderful. Most of them know what they can't do, and they they know what they can do. So they stick to that. you know. Usually there's some people I feel could be doing more. But you know that's up to them. But I don't really think I encounter that really, truly much." (Monica).

Four participants displayed a lack of awareness when asked about biases within the fitness industry, stating: "And even nowadays I understand that as an outsider, like looking out looking in at it, it looks like if marketing doesn't have the people of different, you know demographics or people of different sizes, then I can see how there's a perception of bias. But being someone in the fitness industry moving other bodies, I love moving bodies, and I know that movement is for everybody, so I get torn with the discussions, because once people focus on movement, then I think we're on the same page." (Sydney).

Subtheme 2: Positive Response to Bias Question.

Positive responses to the bias question were classified into two distinct categories; the first being participant awareness of biases within the fitness industry, and the second being participants who acknowledged bias question as an important conversation. Participant awareness of bias question included sixteen statements, such as: "There's absolutely biases. Whether it's size, gender, ethnicity. Even as far as socioeconomic structure, in what's available for people. I think we get a lot of different opinions on who has access to fitness, and who has access to particular services within the fitness and wellness industry. And I think there's a lot of gatekeeping that happens from those natural biases." (Samantha). Eleven participants acknowledged bias question as an important conversation, stating: "I think the fitness industry is delayed in having these conversations, we're an industry that I think, for the most part all of us, and on the professional side, craves spaces where people feel safe right? Like I think we're all fighting to create these movement experiences where it's not about body shaming. It's not about comparison. and I think we've made steps in that direction towards bias in some areas. But I think other areas have been desperately left behind." (Jake).

Discussion

This study reveals the implicit biases shared among fitness professionals of varying demographics. Social identity and industry role has a profound influence on the development of biased attitudes and beliefs, details of which are described below organized by bias type.

Age Bias

Quantitative data in this study showed that participants across all demographics had a moderate preference for younger, rather than older, adults. Qualitative findings from the interviews revealed that age bias was mentioned in 24% of the conversation, as supported by the NVivo analysis, particularly noting that older adults are often underestimated in their fitness capabilities and misjudged as frail or out of shape. Research on the analysis of age IAT's within the fitness industry is lacking. However, previous studies within allied fields have shown similarities to the present findings. In a mixed-methods study of 31 breast cancer healthcare providers, results demonstrated that there was a moderate preference for younger patients, with a slightly higher average Age IAT score compared to that of fitness professionals in this study (0.52 and 0.43, respectively)[26] Similarly, Friedman and VanPuymbrouck reported that 70.37% of graduate occupational therapy students (n=54) moderately preferred younger patients (M=0.67).[26,27] In addition, healthcare providers have described not receiving sufficient knowledge on aging and/or exposure to diverse older adults during their training, increasing hesitancy to treat this population.[26] Therapists and fitness professionals alike may hold higher expectations of outcomes that do not align with older persons' goals, therefore when patients/clients "underachieve" this may reinforce ageist attitudes. Age stereotyping by fitness professionals [15]negative beliefs likely impedes exercise participation resulting in clients' diminished quality of life.[7,15,28]

Race Bias

Quantitative data showed that participants of any demographic group had a moderate preference for lighter skinned individuals, and race was mentioned in 20% of the follow-up interviews, as supported by the NVivo analysis. There is no research on the examination of Race IAT's within the fitness industry; however, previous studies within allied fields have shown similarities to the present findings. In a recent study by Jones Race IAT scores for nurses and physicians averaged 0.33, which was slightly lower than the average Race IAT scores shown by the fitness professionals in this study (0.38).[29] This is consistent with 31 other studies that depict slight to strong racial bias (preference to lighter skinned individuals) among healthcare providers.[3] Older fitness professionals in this study had a significantly greater preference for people with lighter skin tones compared to younger fitness professionals which may be due to hindered inhibitory processes associated with age, thereby limiting their ability to suppress dominant attitudes.[30]

The preference for lighter skinned individuals shown by fitness professionals of all demographics is not unexpected. People of color are commonly and systemically portrayed as bodies that do not meet the global health narrative that Whiteness is analogous with being physically fit.[31] Additionally, media perpetuates this global health narrative by influencing the public to form "pro-White" beliefs and attitudes about individuals in the health and fitness industry (both clients and professionals), which negatively impacts people that do not meet such standards.[31] Given that the dominant and idealized body is White, it is likely that fitness professionals internalize the message that Whiteness is analogous with being "good" and "healthy", thereby leading to their moderate preference for lighter skinned individuals. Research has shown that possessing pro-White biases diminishes quality of care for people of color in the healthcare setting.[32] Thus, one might ascertain that if fitness professionals also possess pro-White biases, their clients will experience reduced quality of care as well.

Gender Bias

Only male participants had a slight gender bias. All participants, regardless of race or certification, demonstrated a moderate preference for men with career and women with family. During interviews gender bias was mentioned frequently, in 40% of the conversations as supported by the NVivo analysis, with a consensus that fitness professionals who are men are often preferred and more respected than fitness professionals who are women. These experiences were only reported by fitness professionals who were women. Research on gender bias using IATs and its influence on behaviors is absent within the fitness industry, however previous studies involving allied health fields reveal similarities to the present findings. A mixed methods study found that the average Gender-Career IAT score for doctors was 0.36, while a separate study revealed that occupational therapy students had an average score identical to that of the fitness professional in the present study (0.34) [4,5]. Interestingly, Kramer and colleagues also discovered that female doctors had a greater gender bias (0.39) than male doctors (0.31), which corresponds to the present findings that revealed female fitness professionals had a greater preference for males with career and women with family, than male fitness professionals (0.42 and 0.20, respectively).[4]

Due to the vast literature demonstrating gender biases,[33] it may be unexpected to see that this study's sample of female fitness professionals had stronger associations of men with career. Previous research suggests that implicit gender-career bias may manifest because of culturally ingrained gender role expectations, such that women should be home caregivers and men should be dominant in their profession.[34] As a result, women experience internalized sexism and unknowingly contribute to the cycle of imbalances seen between men and women.[35] Research in healthcare has shown that implicit gender-career bias held by senior physicians, who oversee postgraduate medical training, negatively influences the overall assessment of the women trainees as well as the career path that the women trainees will choose.[4] To parallel, men disproportionately comprise the leadership positions within the fitness industry leaving women professionals in the absence of women mentors that they can mirror.[36] As a result, women in the fitness industry are likely to remain in stereotypical women roles such as group fitness instructor and feel pressured to work harder than their men counterparts to be successful, which can lead to career stagnancy.[37]

Disability Bias

Quantitative data showed that in this sample, regardless of demographics, participants demonstrated a strong preference for able bodied as opposed to disabled adults. Qualitative data revealed that when interviewing fitness professionals, disability bias was only mentioned once, in an indirect manner. Research on disability bias and its influence on fitness professionals is lacking. However, previous studies involving allied health fields reveal similarities to the present findings. In a quantitative study of 25,006 healthcare providers, VanPuymbrouck and colleagues reported a strong correlation between age and implicit disability bias where 45-year-old healthcare providers were expected to have an average Disability IAT score of 0.68

compared to 25-year-old providers who were expected to have an average score of 0.58.[16] Interestingly, compared to previous research demonstrating moderate disability biases in health care professionals (0.54±0.43;0.51±0.44),[7,15] findings from this study with fitness professionals reveal much stronger preferences to able bodied individuals (0.73 ± 0.42).

Findings also revealed a significant positive correlation between participant age and disability bias IAT score, with older adults having more disability bias. Older age is often equated to physical and cognitive disabilities.[38] It may be that older fitness professionals internalize ageism and do not want to associate their aging with disability, hence revealing a preference for able bodied adults.[38] The overall attitude that fitness professionals hold towards able bodied adults is not unexpected. For one, there is a lack of representation of disabled adults who engage in regular exercise.[39] The fitness industry further perpetuates ableism by marketing strong, muscular men and petite women with toned bodies as the idealistic physique, thus likely discouraging the disabled population from feeling welcomed to participate in fitness settings.[40] Disabled gym-goers have reported unpleasant interactions with fitness instructors due to their unwillingness to provide modified exercises, leaving individuals feeling excluded and inferior.[41] Conversely, fitness professionals that have offered some accommodations have done so based on assumption instead of communicating with the disabled participant as to what their needs are.[42] Recent evidence suggests that individuals who are disabled are treated more poorly in a fitness setting compared to individuals who have no disability.[42] In fact, such attitudes and behaviors are not unforeseen within fitness and allied health fields given the standard training instilled to “fix” or “heal” bodies that do not align with the idealistic body type- able-bodied, thin, muscular, etc.[7]

Weight Bias

In addition to older participants having a stronger and significant preference for thinner bodied individuals, all participants, regardless of demographics or certification, had slight to moderate preferences towards thinner adults. It is possible that older adults had significantly stronger weight bias because they do not want to stray away from the dominant societal attitudes of weight, as they are already discriminated against for their age (a factor out of their control). Qualitative data revealed that weight bias was mentioned over 20 times during interviews, ranging from the context of fitness professionals feeling pressured to have a certain body type to actively avoiding weight loss discussions with their clients. Early studies on weight biases in the fitness industry found that fitness professionals have a strong implicit weight bias towards obese individuals.[8,43,44] More recently, Walters and Ede reported high *explicit* weight bias among fitness professionals, with several factors such as BMI, gender, and education level playing significant influence on total weight bias.[11]

Fitness professionals’ preference for thinner bodies found in this study corroborates society’s idealization of thin bodies and disdain for obesity.[43,45] A thinner body is viewed as the epitome of health and wellness and is marketed as the superior body type to strive for.[46] By contrast, previous evidence has shown that different populations, including personal trainers and health professionals, repeatedly relate negative attributes (e.g., lazy, clumsy, noncompliant) to individuals struggling with obesity.[43-45] Yet, individuals who experience anti-fat bias and negative stereotyping internalize these beliefs, resulting in unfavorable behavior such as avoiding exercise or participating in fitness-related activities.[11,43] Additionally, evidence has shown that the damaging effects of experiencing weight bias includes remaining overweight, additional weight gain, and increases in psychological anguish.[47]

A few limitations should be considered when reviewing the present findings. First, the sample of participants for the interview portion of this study was not diverse. The majority of interviewees consisted of older, White women which is not as representative of the fitness industry as a whole (see Table 1). Secondly, the demographic survey completed by the interview participants was lacking certain information that could have proven useful when evaluating the qualitative data. For example, participants were not asked if they identified as disabled and years of experience in the industry was not collected. Future studies may also benefit from asking participants about different types of biases directly during the interview. Rather than the neutral approach this study used to avoid using a "leading" question (i.e., "What do you think about the conversations about biases in the fitness industry?"), it would have been helpful to ask direct questions about each bias to prompt participants to speak specifically about each bias (e.g., "Tell us your perspectives on race bias in the fitness industry"). Additionally, effort should be made to further extrapolate the various combinations of industry role (e.g., group fitness instructors who are also personal trainers) and their relationship to the various biases as results in this study were based on industry role groups that were not mutually exclusive. Future research should focus on awareness of fitness professionals in managing age, gender, weight, ability, and race-related discrimination. It is also imperative to investigate the intersectionality of fitness professionals' identities and how this may influence their implicit bias. Approaching the fitness industry from an intersectional perspective may be the key to supporting cultural humility and equity among professionals, thus diminishing poor health outcomes across marginalized populations. Lastly, the number of analyses conducted in this study increased the family-wise error rate (FWER). Future research conducted in this area should limit the number of hypotheses tested in one study.

Overall, there is a *moderate* preference for younger, lighter skinned, thin, men concurrent with a *strong* preference for able bodies. It is imperative to address these negative assumptions and unbeknownst implicit biases as they can greatly diminish the quality of care that clients receive and affect health behaviors demonstrated by the clients themselves. Fitness professionals' implicit bias may affect their judgement and decision-making regarding exercise programming, which can impact clients' psychological and physiological health. Implicit bias may also negatively affect communication and interactions between professional and client, causing clients to internalize unfavourable perceptions of fitness. Subsequently, clientele may cease to participate in fitness or health endeavours, thus increasing health disparities.

While efforts have been made to address biases in the industry, those efforts have diminished with time. Fitness organizations may claim that they are pro diversity and inclusivity but lack policies that foster such accountability.[48] This performative allyship further discourages marginalized individuals from partaking in fitness settings.[49] Research on interventions that utilize singular strategies such as bias awareness, counter stereotyping, or perspective-taking to reduce implicit bias suggest that those strategies alone are not sufficient in reducing biases.[50] However, Devin and colleagues demonstrated that implementing multi-dimensional interventions which make providers aware of their biases, provides education on controlling automatic responses to stigmatized individuals, *and* includes exercises that allow active practice of their newly acquired knowledge significantly reduced implicit race bias.[51] There are few examples of bias trainings in the fitness industry, however most focus on weight bias (e.g., "A Space for Every Body: Addressing Weight Bias in the Fitness Industry" Course offered by ACE) and lack opportunities for implementing knowledge into practice. Thus, continued effort by the fitness industry to offer multi-dimensional approaches to addressing all biases is needed. Systems of oppression (e.g., ableism) influence all fields, including the fitness industry; without intervention, the negative impact of biases on clients' health will be a never-ending cycle.

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