



RESEARCH ARTICLE

Pay Equity in Applied Behavior Analysis

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Abstract

Pay equity is the practice of minimizing employee wage inequalities based on gender, race, and other criteria. The goal of this practice is to ensure equitable compensation for comparable work and experience. Pay discrepancies have existed in a wide range of professional fields for many years; however, the degree to which equal and fair pay occurs among practicing applied behavior analysts is currently unknown, and represents an important step for ensuring parity in the field of applied behavior analysis (ABA). We conducted an online survey to gather pay information from certified behavior analysts and analyzed pay equity across race and gender for each level of certification. Findings suggest that some level of pay inequity exist across all levels of certification. However, female minority groups tend to be affected by pay inequity the most, both in terms of average salary earned and increase in pay across levels of certification. Findings also indicate that a large proportion of ABA employers are female nonminorities. We discuss the implications of these findings and provide suggestions for improving pay equity in ABA.

Keywords discrimination · diversity · equity · gender · pay · race

Pay equity is the practice of mitigating or eliminating employee wage inequalities based on race, gender, or implicit biases. The goal of this practice is to resolve wage disparities across a range of ethnic, social, or political identity markers. In general, this approach encourages employers to assume the axiom that equal pay should be provided for work of equal value, regardless of who provides that work (Rubery, 2003). In 1964, the U.S. government ratified the Civil Rights Act (1964), which prohibits wage discrimination based on race, gender, nationality, or religious affiliation (Blumrosen, 1978). Likewise, the Employment Equity Act (1995) in Canada was enacted to ensure equality in the workplace, which prevents wage discrimination against women, Indigenous peoples, persons with disabilities, and members of visible minorities.

Although the concept of pay equity is theoretically sound, and legal precedent has been set to prevent wage discrimination, its application has been poorly executed, as evidenced by pay gaps attributed to race and gender observed across almost all professional

fields (Cohn, 2019). The Organisation for Economic Co-operation and Development (OECD; 2020) revealed that pay inequities exist in 43 countries. Of those, the United States and Canada are ranked as having the ninth and eighth largest gender pay gaps worldwide. Statistics Canada (2016) indicated that the average employment income for men was 35.6% higher than the average income for women. Furthermore, gender pay gaps are present in public, private, and nonprofit sectors (Bishu & Alkadry, 2017; Gibelman, 2000; Mandel & Semyonov, 2014). There is a breadth of evidence to indicate that gender inequity continues to persist, and issues surrounding equal opportunity for women are just as relevant today as they were decades ago (Tharenou, 2013).

Pay inequities continue to exist in human-service and health-care occupations. The Center for Workforce Studies (2014) concluded that male psychologists earn more than female psychologists across workplace settings including education, private research, and health services settings, with the largest gap occurring in the medical offices, medical outpatient programs, and nursing facilities. Likewise, a study by the National Association of Social Workers (NASW, 2009) found a persistent pattern of male social workers earning more annually than female social workers, across settings

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including private practice, health clinics, outpatient facilities, hospitals, school settings, and social services agencies.

Preliminary evidence suggests that gender pay gaps exist within the field of applied behavior analysis (ABA). Li et al. (2019) examined the salaries of 54 women and 49 men employed in academic faculty positions at 1 of 16 universities accredited by the Association for Behavior Analysis International. They reported that women were paid less than men at each academic rank, and women earned the lowest salary at each rank (the highest salary reported at each rank was earned by a man). However, the study conducted by Li et al. (2019) was not without limitations and it is unclear if the results obtained are representative of practicing behavior analysts or the field of ABA. For example, the authors analyzed the salaries of behavior analysis faculty members, but certified behavior analysts who practice in university settings represent only 2% of the entire field of practicing behavior analysts (Behavior Analyst Certification Board [BACB], n.d.). Therefore, it is unclear if the pay gaps identified by Li et al. (2019) are representative of the 98% of behavior analysts who practice in nonuniversity settings (e.g., autism spectrum disorder, education, developmental disabilities). Second, the study is limited by how the authors obtained gender information about faculty members. Gender was assigned to individuals according to their first names or based on an internet search of that individual's webpage. This method is particularly troublesome because gender identity cannot be assumed based on name or appearance. Instead, gender is an internal concept that each individual can choose to express in a way that feels appropriate to them, and this may differ from their assigned sex at birth (Human Rights Campaign, n.d.). Although a name or appearance may suggest a certain gender assignment, only that individual can confirm or deny those assumptions.

Therefore, researchers interested in identifying the gender of their participants should seek to determine the participant's *gender identity* and *expression*. As indicated, gender identity refers to each person's subjective experience about which gender they are supposed to be, and gender expression is how they show their gender identity in society (Stuckey, 2015). In addition, gender identity is not binary: individuals can identify as transgender, no gender, or a third gender (Stuckey, 2015). Transgender refers to individuals whose gender identity is different from their sex at birth and third gender refers to individuals who may share traits of both male and female genders, or identify as a gender that is neither male nor female in nature (e.g., nonbinary). Moreover, gender identity and expression can change over time, which suggests the only way to obtain accurate gender information is by explicitly querying individuals.

It is important to recognize that gender is not the only variable that may affect pay equity. Differences in race and ethnicity also influence pay disparities. A longitudinal study

in the United States indicated that Black individuals experience a pay gap relative to white individuals when socioeconomic status across the two groups are the same (for lower-middle and working classes individuals; Pais, 2011). Likewise, Yap (2010) found that wage gaps existed between white individuals and minority groups at a large nationwide organization where white men earned more than minority men, and white women earned more than minority women. Finally, like the gender pay gap, there is evidence to suggest the race pay gaps exists across sectors (Grotsky & Pager, 2001).

Pay inequities based on race or appearance also exist in human-service and health-care occupations. Lewis (2018) reviewed microdata samples of social workers' employment information between 1980 and 2014. After controlling for education, location, and hours worked per week, the pay disparity findings indicated that white male social workers earned more than Black and Latinx social workers. Likewise, Li and Koedel (2017) examined the 2015 and 2016 salary data from faculty members across 40 U.S. universities. The faculty members occupied roles within the biology, chemistry, economics, English, sociology, educational leadership, and policy disciplines. The results indicated that Black faculty earned on average \$10,000–\$15,000 less than white faculty annually.

Although there is a limited but growing body of literature on racial pay gaps outside the field of ABA, research on racism, diversity, and discrimination within ABA is sparse. In 2020, the BACB released certificant demographic data, which provided some insight into the race of practitioners in the field of ABA. These data suggested over half of certified behavioral practitioners are white (56.16%), which may imply that specific training in cultural competency and diversity training may be warranted (see also Connors et al., 2019). There is a growing body of literature on how behavior-analytic concepts and principles can be used to potentially alter or reverse racist biases (e.g., Matsuda et al., 2020; Mizael et al., 2016), but there are relatively few studies that have studied race as a variable affecting pay inequity within the field of ABA. That is, the potential for discriminatory practices within ABA based on race (e.g., how racial minorities in ABA are paid compared to nonminority groups) have not been previously analyzed.

Pay inequities increase when gender and race intersect (Chapman & Benis, 2017). For example, Smith (2012) sought to identify discrepancies in wage and employer benefits based on gender, race, and authority level. Smith (2012) reported that although men made more money than women at each authority position (e.g., worker, supervisor, manager), this discrepancy in wage compounded when comparing white men to women of varying ethnic backgrounds at each authority position (i.e., white men consistently made more money on average at each level than minority women).

Smith (2012) reported that the wage advantage that white men had over Black women in the same position was larger than the wage discrepancy between supervisor and nonsupervisory workers.

The available behavior-analytic literature suggests that there is more work to be done with regards to diversity, inclusion, and equity. As Li et al. (2018) astutely point out, there is a need for continued support for participation of women, diverse racial, and ethnic groups, as well as members of the LGBTQ+ community within ABA. Pay equity is an imperative starting point in the pursuit of increased parity among practicing behavior analysts. When pay inequities exist, bias or prejudice also exist at some level, either covertly or overtly. By targeting pay equity as an initial goal, the field can ensure that behavior analysts are in a fair position to address additional issues surrounding prejudice and bias. Furthermore, although differences in gender has shown to influence academic status, research recognition, and the pay of university professors (Li et al., 2018, 2019), there is currently no literature on how both gender and race affect the pay of certified behavior analysts.

The purpose of this study was to evaluate pay equity in the field of ABA by analyzing the wage and salaries of certified behavior analyst practitioners. In particular, we evaluated the impact of race and gender on the wage and salaries of certified behavior analysts residing in the United States and Canada. The aims of this study were to (1) identify the racial and gender make-up of employees and employers in the field of ABA; (2) identify the extent to which gender and race affect the pay of practitioners in ABA and to bring awareness to systematic pay gap issues within the field; and (3) to provide strategies to eliminate pay discrepancies based on gender or race, which may lead to formal recommendations surrounding appropriate pay-scale systems in ABA.

Method

Participants

Participants were contacted through the BACB mass email service and represented the total population of certified behavior analysts in the United States and Canada. We sent an electronic survey to 117,894 individuals, which was comprised of practicing board certified behavior analysts (BCBA, BCBA-D), board certified assistant behavior analysts (BCaBA, and registered behavior technicians (RBT). Prior to completing the survey, recipients were informed that participation in the survey could expand the literature on pay equity within the field of ABA and identify potential inequities that may exist based on gender and race. Following completion of the survey, participants were offered the opportunity to submit their email addresses for a chance to

win one of four Amazon gift cards valued at approximately \$20.00 (USD) each (email addresses were stored in a spreadsheet separate from survey response data to ensure participant anonymity). We received 693 surveys over a 1-month period.

Instrument

A 56-item survey was developed using Qualtrics survey software that took approximately 15 min to complete. The format of the survey was designed such that responses to some of the questions resulted in participants not completing all 56 items (i.e., skip-logic branching). For example, if the participant identified they could not, or did not want to provide demographic information about their employer(s), they were redirected to the concluding questions and not required to complete employer-related questions. The response options were presented in single-option multiple-choice format, multiple-option multiple-choice format, drop-down menu format, or text-entry format.

We obtained data on participant characteristics by asking a minimum of two questions about gender identity (e.g., “What is your gender?”; “Do you identify as transgender?”) and a minimum of two questions about race and ethnicity (e.g., “Which race do you identify with?”; “Do you consider yourself a visible minority?”). Certain gender and race responses resulted in additional questions (e.g., if a participant selected “nonbinary” gender, they were asked additional questions about their nonbinary identity). To enhance the inclusivity and accuracy of our reporting, we consulted the Human Rights Campaign (the largest civil rights organization working to achieve lesbian, gay, bisexual, transgender, and queer equality) to inform our response options on survey items related to gender. Likewise, to provide accurate response options for participant race, we consulted the Statistics Canada census, which indicates that visible minorities consist primarily of individuals who represent the following groups: Arab, Black, Chinese, Filipino, Japanese, Korean, Latin American, South Asian, Southeast Asian, West Asian, and biracial. Further, nonminorities included Indigenous peoples, and individuals who identified as “white” (i.e., generally used for individuals of European origin or descent). If participants did not identify with the gender or race options provided, they could select “other” and manually provide a text-entry response.

We asked five questions to obtain data on employment characteristics including the type of certification participants held, duration since acquiring certification, location of workplace (e.g., “Is your workplace based in a rural or urban setting?”; a definition of population size corresponding to each response option was provided), and current sector of employment (e.g., “What is your current level of certification?”; “Please select the sector of work that you are

currently employed in, and will base the subsequent answers on.”). To determine the sector options, we selected the five most prevalent areas of practice according to the BACB (i.e., autism, education, developmental disabilities, behavioral medicine, and university teaching).

In addition, we obtained all the aforementioned types of data (e.g., race, gender, certification) on each participant’s employer(s) if the participant indicated they could accurately provide this information. However, participants were not required to provide information about their employers to participate.

We asked six questions related to participant income to obtain information on recipients’ wage and salary (e.g., “Select the wage range that best represents your current salary”). We also required participants to manually enter their gross hourly, weekly, or yearly wage and salary information (e.g., “Please record your yearly salary amount in the text box below.”). To account for participants who were employed at more than one setting, participants were instructed to respond to wage and salary questions from the perspective of the position where they worked the most hours per week.

Data Analysis

Given that the majority of practicing and certified behavior analysts reside in the United States, we normalized monetary data across different currencies. All salary and wage data submitted in Canadian dollars (CAD) were converted to U.S. dollars (USD) based on foreign exchange rates as of July 2020. For example, a salary of \$43,000 CAD was converted to \$32,052.80 USD. All rates and salaries provided by participants, as well as those that resulted from currency conversion, were rounded to the nearest dollar (e.g., \$30,052.80 was rounded to \$30,053).

All wage per hour data were converted to annual salaries so that participants who earned an hourly wage could be compared to those who earned an annual income. To calculate annual salary, we multiplied the hourly wage by 40 hr (i.e., a standard workweek in North America), and then multiplied the product by 52 weeks (i.e., the number of calendar weeks in a year). For example, if a participant indicated they earned a wage of \$15 per hour, this was converted to a \$31,200 annual income.

We analyzed data by reporting descriptive and summary statistics (e.g., count, percentages, means) to identify trends and differences in pay equity based on gender and race. We used the most relevant aspects of the extracted data to calculate and summarize results. In all cases of data analysis, we used the largest denominator applicable to protect against artificially inflating overall percentages and means. Differences in the denominator of each analysis was due to participants opting out of answering specific questions related to

pay or employer information. Data were analyzed across demographic variables, salary and income characteristics (693 participants), and employer(s) information (557 participants). In addition to descriptive statistics, we conducted statistical analyses to test whether there were significant differences in mean salary across gender and across minority and nonminority status at each level of certification.

Results

Participant Characteristics

Survey responses were obtained from 600 participants from the United States (87%) and 93 from Canada (13%). The majority of participants indicated they worked in the autism sector (71%), developmental disabilities sector (12%), or education sector (11%). Table 1 displays the composition of participants. We obtained representative data from individuals who identified as males (12%), females (87%), and nonbinary (1%). Individuals were permitted to identify as transgender in addition to their current gender, therefore, results for individuals who identified as transgender are included in the other gender categories. A large proportion of individuals identified as female BCBAs (44%) or female RBTs (39%), however, this finding is not unusual given that the majority of certified individuals in ABA are females (Nosik et al., 2019). We also obtained representative data across a range of racial and ethnic groups. Based on the racial make-up of participants, 74% represented a nonminority, 25% represented a single minority group, and 1% represented a biracial minority group (e.g., a combination of minority and minority, nonminority and nonminority, or both).

We examined the number of years each participant held their most recent certification as a marker for years of experience working in the field of ABA. The majority of participants had 1–5 years of experience (53.7%), compared to less than 1 year of experience (21.2%), 6–10 years of experience (17.6%), and 11 or more years of experience (7.5%). We also examined the geographic location of participants to account for differences in cost-of-living across regions. The majority of participants reported their workplace as being located in an urban location (80.8%), where there was a population

Table 1 Composition of participants based on demographic information

	Male	Female	Nonbinary	TOTAL
Nonminority	8.4%	64.4%	1.0%	73.8%
Minority	3.2%	22.9%	0.1%	26.2%
TOTAL	11.6%	87.3%	1.1%	100%

Table 2 Mean salary across male, female, and nonbinary practitioners

Male	Female	Nonbinary
\$67,697	\$61,513	\$52,491

Table 3 Mean salary across gender at each level of certification

Certification	Male	Female	Nonbinary
BCBA-D [®]	\$101,616	\$105,869	—
BCBA [®]	\$82,549	\$78,609	\$73,417*
BCaBA [®]	\$58,200*	\$54,054	—
RBT [®]	\$44,296	\$40,240	\$39,936

* Sample size less than five

of at least 1,000 and a density of 400 or more residents per square kilometer.

Salary and Wage Analysis

Participant salaries were analyzed across gender and race individually, in combination (i.e., the intersection of gender and race), and in combination with other variables (e.g., years of experience). When gender, race, certification, and other variables were analyzed together, the number of participants representing each group became smaller, inhibiting the ability to conduct statistical analyses. Therefore, although all results are displayed in each table, we elected to directly compare only those groups with sample sizes larger than five.

Gender

Table 2 displays the mean difference in salaries across males, females, and nonbinary practitioners. The results indicated that male practitioners earned 9.6% more than female practitioners, and 25.3% more than nonbinary practitioners. This difference in salary according to gender alone was not statistically significant.

Gender and Certification

Table 3 displays the mean difference in salaries across male, female, and nonbinary participants at each certification level. The results indicate that males earned 9.6% and 10.4% more than female and nonbinary practitioners, respectively, at the RBT level, and 4.9% more than female practitioners at the BCBA level. At the BCBA-D level we observed an inverse relation where females earned 4.1% more than males. These differences in salary according to gender and certification were not statistically significant.

Table 4 Mean salary across nonminority and minority practitioners

Nonminority	Minority
\$63,006	\$59,641

Table 5 Mean salary across nonminority and minority groups at each level of certification

Certification	Nonminority	Minority
BCBA-D [®]	\$114,566	\$88,087
BCBA [®]	\$78,305	\$81,575
BCaBA [®]	\$54,858	\$54,640
RBT [®]	\$39,826	\$42,416

Table 6 Mean salary of practitioners across gender and race

	Male	Female	Nonbinary
Nonminority	\$66,259	\$62,729	\$56,137
Minority	\$71,261	\$58,131	\$43,680*

* Sample size less than five

Race

Table 4 displays differences in mean salaries across nonminority practitioners and minority practitioners. The results indicated that, on average, nonminority practitioners earned 5.5% more than minority practitioners. This difference in salary across race alone was not statistically significant.

Race and Certification

Table 5 displays the mean difference in salaries across nonminority and minority participants at each certification level. Results indicate that nonminority practitioners earned 26.1% more than minority practitioners at the BCBA-D level. On the other hand, minority practitioners earned 4.1% and 6.3% more than nonminority practitioners at the BCBA and RBT levels, respectively. The difference at the BCaBA level was negligible. These differences in salary across race and certification were not statistically significant.

Gender and Race

Table 6 displays the mean salary of participants when gender and race are combined. The results indicate that male practitioners of a nonminority race earned more than female and nonbinary practitioners of a nonminority race (5.5% and 16.5%, respectively), and females of a minority race (12.8%; $t(225) = 2.2786, p = 0.0236$). Male practitioners of

a minority race earned the most overall, earning 7.3% more than males of a nonminority race, 12.7% more than females of a nonminority race, and 20.3% more than females of a minority race ($t(179) = 1.9893, p = 0.0482$).

Gender, Race, and Certification

We examined the mean salary among gender, race, and certification to determine if wage disparities were amplified when these variables intersected (Table 7). The results indicate that nonminority males earned more than minority females at every certification level, and that this difference becomes larger at higher certification levels. For example, nonminority males earned 4% more than minority females at the RBT level, but earned 28% more than minority females at the BCBA-D level (note that these differences were not statistically significant). Furthermore, male minority and nonminority practitioners appear to earn more than female nonminority practitioners at the RBT and BCBA level, but not the BCBA-D level (these differences were not statistically significant). Furthermore,

the findings indicate that female nonminority BCBA-Ds earned 48.9% more than female minority BCBA-Ds ($t(12) = 2.6866, p = 0.0198$).

Gender, Race, Certification, and Years since Acquiring Certification

To determine if years of experience can account for some differences in pay across gender and race, we examined years since acquiring most recent certification, and continued to compare average salaries across gender, race, and certification (Table 8). However, in doing so the sample size across many groups decreased. Therefore, similar to prior analyses, we analyzed only those groups that contained a sample of at least five participants and could be compared to an equivalent gender or race. For example, female nonminority BCBA-Ds with at least 11 years of experience contained a sample of over five participants, and could be compared to female minority BCBA-D practitioners with at least 11 years of experience, who also had a sample size of over five participants. However, these female groups could not be compared

Table 7 Mean salary across gender and race at each level of certification

	Male		Female		Nonbinary	
	Nonminority	Minority	Nonminority	Minority	Nonminority	Minority
BCBA-D [®]	\$99,076	\$104,791 *	\$123,172	\$74,724	---	--
BCBA [®]	\$82,844	\$81,589	\$77,884	\$81,574	\$73,417 *	--
BCaBA [®]	\$49,000 *	\$67,400 *	\$55,639	\$46,134 *	--	--
RBT [®]	\$43,828	\$45,760	\$39,279	\$42,108	\$39,000 *	\$43,680 *

* Sample size less than five

Table 8 Mean salary across gender, race, certification, and years since certification variables

		Male		Female		Nonbinary	
		Nonminority	Minority	Nonminority	Minority	Nonminority	Minority
BCBA-D [®]	> 11	\$154,587 *	\$155,000 *	\$131,400	\$100,000 *	---	—
	6 to 10	—	\$107,000 *	\$125,175 *	\$90,000 *	—	—
	1 to 5	\$62,068 *	\$85,162 *	—	\$69,060 *	—	—
	< 1	—	\$72,000	\$50,540 *	\$45,500 *	—	—
BCBA [®]	> 11	\$90,920 *	—	\$99,539	\$81,639	—	—
	6 to 10	\$80,686	\$37,270 *	\$80,132	\$85,267	\$69,000 *	—
	1 to 5	\$85,215	\$93,407	\$75,695	\$81,493	—	—
	< 1	\$56,278 *	\$55,000 *	\$65,526	\$71,813	\$75,625 *	—
BCaBA [®]	> 11	—	—	—	\$62,241 *	—	—
	6 to 10	—	—	\$53,613 *	—	—	—
	1 to 5	\$49,000 *	\$72,800 *	\$53,792	\$38,080 *	—	—
	< 1	—	\$62,000 *	\$57,800	—	—	—
RBT [®]	> 11	\$95,122 *	—	\$43,394	\$41,347 *	—	—
	6 to 10	—	\$37,440 *	\$45,019	\$51,960 *	—	—
	1 to 5	\$47,222	\$49,400 *	\$39,202	\$42,378	\$40,213 *	\$43,680 *
	< 1	\$36,159	\$43,680 *	\$37,481	\$39,778	\$35,360 *	—

* Sample size less than five

to males at the same certification level, with the same number of years since certification, because those groups contained sample sizes of fewer than five participants.

At the BCBA level, female nonminority participants with at least 11 years since certification earned 19.8% more than female minority participants with similar experience. Female minority participants who had 6–10 years of experience since certification earned 6.2% and 5.5% more than female nonminority practitioners and male nonminority practitioners with similar experiences, respectively. Years of experience provides more context to the results observed at this level compared to when we analyzed gender, race, and certification only. Previous results indicated that female minority BCBA earned 4.6% more on average than female nonminority BCBA, however, the addition of experience demonstrates a theme whereby female minority practitioners may earn greater salaries earlier in their career (i.e., soon after certification) but begin to experience a growing pay discrepancy as years since certification pass (i.e., 11 years or more).

Male minority BCBA who had 1–5 years of experience since certification earned the most on average compared to other groups with equal experience. They earned 20.3% and 13.6% more, respectively, than female nonminorities and female minorities who had similar experience. Across this group, female nonminority BCBA earned the least overall. Although direct comparisons could not be made for every stage of experience, the addition of experience as a contributing factor towards pay strengthens the general conclusions of previous analyses, which indicate that males tend to earn more on average, regardless of years since certification.

For certified RBTs, male nonminority practitioners who had 1–5 years of experience since certification earned 18.6% and 10.9% more, respectively, than female nonminority ($t(113) = 2.7513, p = 0.0069$) and female minority practitioners who had similar experiences. In addition, female minority practitioners who had less than 1 year of experience since acquiring their RBT certification earned the most on average relative to male nonminority practitioners (9.5%) and female nonminority practitioners (5.9%) who also had similar experiences. Without considering years since certification as a variable, we saw that male practitioners earned the most overall. When reanalyzing the data with experience as a factor, we continue to see males earning more than females. However, this finding does not maintain for practitioners who have less than 1 year of experience where females (both minority and nonminority) earn more than nonminority males.

We examined the difference in average salary increases for female RBTs and BCBA. We analyzed these levels in particular because the largest proportion of participants in this study were females certified at these levels. Moreover, these were the largest groups that allowed such an analysis. The data suggests that female minority practitioners experience the smallest increase in average salary as the number of years since certification accrue (i.e., average increase of 3.5% from 1 year since certification to 11 years since certification). However, female nonminority RBTs experience a 14.6% increase in salary over the same timeframe. At the BCBA level, a similar pattern emerges wherein female minority practitioners appear to progress the least, with an overall average increase of 14.6% from less than 1–11 years. This is relative to a 20% increase in female nonminority BCBA. However, it should be noted that female

Table 9 Mean salary across gender, race, certification, and location variables

		Male		Female		Nonbinary	
		Nonminority	Minority	Nonminority	Minority	Nonminority	Minority
BCBA-D	Rural	—	—	\$95,700 *	—	—	—
	Urban	\$99,076	\$104,791 *	\$133,192	\$74,724	—	—
	Unknown	—	—	\$118,000 *	—	—	—
BCBA	Rural	\$85,700	\$70,000 *	\$82,778	\$92,571	—	—
	Urban	\$78,225	\$80,166	\$77,403	\$81,245	\$73,417 *	—
	Unknown	\$103,307 *	\$90,940 *	\$74,960	\$66,340 *	—	—
BCaBA	Rural	—	—	\$53,613 *	\$56,160 *	—	—
	Urban	\$49,000 *	\$67,400 *	\$59,212	\$41,121 *	—	—
	Unknown	—	—	\$38,010 *	—	—	—
RBT	Rural	\$43,680	—	\$41,345	\$41,604	—	—
	Urban	\$44,386	\$47,840	\$38,967	\$42,235	\$39,000 *	\$43,680 *
	Unknown	\$35,360 *	\$31,200 *	\$38,092	\$41,505	—	—

* Sample size less than five

nonminority BCBAAs tended to have a higher mean salary at fewer years of experience (i.e., less than 1)

Gender, Race, Certification, and Location

We examined if participants lived in urban or rural areas in our analyses to determine if geographic location contributed to, or helped explain, pay discrepancies observed in prior analyses (Table 9). At the BCBA-D level, female nonminorities living in an urban area earned 29.3% more than male nonminorities living in an urban area.

At the BCBA level, we saw that regardless of gender and race, practitioners employed in rural settings earned more on average than those employed in urban settings. At the BCBA level we saw female nonminority participants earning the least on average, in both urban and rural locations. Furthermore, male nonminorities earned more than female nonminorities regardless of geography, and female minorities earned more than both groups regardless of geography. This finding suggests that location may account for some of the discrepancy observed in prior analyses.

For participants with RBT certification, we did not continue to see rural workplaces providing higher average salaries. Male RBTs, regardless of location or minority status earned more than female practitioners in both urban and rural settings. This is consistent with prior analyses and suggests that location did not play a factor in pay discrepancies for individuals holding RBT certification.

Employer Characteristics

We collected and summarized data regarding employer demographics. Table 10 displays the gender and race of participant employers who indicated their workplace had one employer (76% of participants). We found that 52% of individual employers were females of a nonminority race (i.e., white women), and 20% were males of a nonminority race (i.e., white men). We found that only a small proportion of individual employers were minorities, of either gender (10%).

Table 11 displays the data for participants who indicated they had more than one employer (24%). We found that of the participants who had multiple employers, the largest proportion of employers were comprised of both males and females (69%), and nonminority individuals (42%). However, 41% of employers were comprised of both minority and nonminority employers. Overall, a large proportion of employer tend to be female nonminority individuals.

Discussion

We conducted an online survey to examine pay equity within the field of ABA. Pay equity was determined by collecting and analyzing annual income data at each level of certification and then analyzing the degree to which differences in pay could be attributed to gender, race, years since certification, and location. The general findings of this study suggest that pay discrepancies occur at all levels of gender and race to some extent. However, some of these discrepancies can be explained by certification level, years of experience, and geographic location. Further, in many cases minority groups (i.e., females or minority races) earned more than their majority counterpart groups at different levels of certification (e.g., minority BCBAAs and RBTs).

Although some differences in pay can be accounted for, there appear to be pay discrepancies that both cannot be easily resolved or explained by moderator variables and cannot be explained by variability in pay across individuals. As such, the results of this study suggest five general findings

Table 10 Demographic make-up (percentage) of employers for participants who indicated one employer

	Male	Female	Unknown	TOTAL
Minority	2%	8%	0%	10%
Nonminority	20%	52%	0%	72%
Unknown	1%	3%	14%	18%
TOTAL	23%	63%	14%	100%

Table 11 Demographic make-up (percentage) of employers for participants who indicated multiple employers

	Male and Female	Male Only	Female Only	Unknown	TOTAL
Minority Only	5%	0%	4%	0%	9%
Nonminority Only	27%	2%	13%	0%	42%
Both Minority and Nonminority	29%	1%*	8%	3%*	41%
Unknown	8%	0%	0%	0%	8%
TOTAL	69%	3%	25%	3%	100%

* Sample size less than five

regarding pay equity in ABA. First, with the exception of the BCBA-D level, male practitioners earned on average a greater annual salary than female practitioners. Second, males (regardless of nonminority or minority status) earned more on average than female minorities, across all levels of certification. Third, female nonminorities earned on average more than female minorities at the BCBA-D level. Fourth, female minorities had the smallest increases in pay across certification level and years of experience (i.e., time since obtaining certification). Fifth, the large proportion of ABA employers are female nonminorities. Overall, the findings of this study indicate that gender race pay gaps exist in ABA to varying degrees, and that they are particularly prominent at certain certification levels (e.g., RBT), and for certain minority groups (e.g., female minorities).

Although the present study controlled for differences in geographic location and years since certification, it is possible that another variable not accounted for contributed to observed differences pay equity between different genders and races. For instance, differences in practitioner roles and responsibilities may have led to differences in observed pay equity despite any real difference across gender and race. However, because all participants were certified behavior analysts, they all previously demonstrated core competencies in ABA, and those competencies are often tied to specific tasks or activities that a behavior analyst would engage in. Furthermore, over 80% of our respondents worked in the autism or developmental disabilities sectors, likely having shared roles and responsibilities. Finally, greater than 80% of participants also reported working in urban locations, which likely accounted for nuanced differences in responsibilities across locations. Therefore, it is unlikely that differences in roles and responsibilities, as opposed to differences in gender and race, accounted for the findings. Although this possibility cannot be entirely ignored, there is some literature suggesting that even when these variables are controlled for, wage gaps are still evident (e.g., Bishu & Alkadry, 2017; Travis et al., 2009).

The Association of Professional Behavior Analysts (APBA; 2015) published a survey on the modal annual income across different levels of certification. They reported that the modal annual income for full-time BCBA-Ds was between \$65,000 and \$75,000, with nearly a quarter earning between \$45,000 and \$65,000. APBA indicated that years of experience corresponded with annual income (i.e., in general, more experience corresponded with a greater annual income), and public sources of funding often accounted for at least some aspect of respondents' income composition. The present study differs from APBA by including RBT salary data in the pay analysis, evaluating pay across different countries (potentially across a greater diversity of individuals), and analyzing results in terms of gender and race while controlling for potential confounds such as years of

experience. Nonetheless, nonuniform comparisons between the two studies indicate some similarities regarding sample composition and reported salaries. However, given that APBA did not report salaries across race and gender, to our knowledge, the present study is the first to provide these data publicly.

We included pay data across two countries with an attempt to determine the generality of pay equity in ABA. Although there were some differences in pay across certification level according to the country of the practitioner, these differences either (1) were not statistically significant or (2) consisted of samples too small to allow for statistical analysis (e.g., only three BCBA-Ds from Canada participated). Future researchers could consider expanding on the present findings by including nations outside of North America into the pay analysis.

There has been increased interest in diversity and inclusion in ABA, including the extent to which minority genders and races are represented and treated fairly (Li, 2021; Wright, 2019; Zarcone et al., 2019). Although the results of this study indicate that pay inequities exist to some extent in ABA, it may be important to recognize that this finding is not unique to this field: pay discrepancies based on gender and race exist across a range of professions (Pillinger, 2005; Sady & Hanvey, 2018). Despite the generality of this finding, behavior analysts should not succumb to complacency when interpreting these results. For some, the outcome of this study might establish the promotion and advocacy for pay equity as reinforcing, whereas for others, response effort, delayed access to reinforcement, and competing contingencies may serve as barriers to upholding race and gender equality. Nonetheless, members of the ABA community are responsible for ensuring parity, equity, and equality among its members, and pay discrimination based on gender or race should be eliminated. It is fortunate that a number of potential solutions could be enacted to promote pay equity.

Alkadry and Tower (2006) have reported that pay inequity is a result of interconnections among organizational, sociocultural, and human capital barriers. Therefore, multiple strategies may be required to begin to rectify pay discrepancies (Gibelman, 2003). The strategies identified in the literature to reduce pay inequities can be categorized into antecedent-based and consequence-based actions. These actions can occur both at the organizational and individual levels.

Organizational Antecedent Actions

Behavior analysis practitioners are encouraged to advocate for the development of a pay equity committee in their workplace. Establishing a pay equity committee may help behavior analysts to first identify if a pay equity issue exists, and it may also decrease the potential aversive nature

of approaching an employer about remunerating deficits. In addition, approaching an organization about establishing a pay equity committee may be better received when a cooperative group of employees make such a request. The Pay Equity Act of Canada (2018) suggests that the committee should be comprised of at least three members who regularly review the manner in which salaries and promotions are determined. The majority of the group must be representative of the employees who the pay equity plan affects, and 50% of the group must be women. The committee should determine the wages of employees within the workplace, which can be used to evaluate if employee compensation favors specific groups of individuals based on gender or race.

Organizations are also encouraged to adopt pay transparency policies, which are the ability for employees to be informed about the wage and salaries of their co-workers (Ramachandran, 2011). The National Labor Relations Board in the United States has a historic position of permitting employees to discuss and share their salary information freely. However, many employers continue to prohibit their employees from sharing such information (Connell & Mantoan, 2017). The Women's Bureau (n.d.), an agency within the U.S. Department of Labor, reports that the vast majority of states do not currently have legal protections surrounding pay transparency. In Canada, some provinces have pay transparency acts that mandate employers to report income differences based on gender. Although pay transparency is not common, especially in the private sector, there is evidence to suggest that workplaces with publicly available salary data tend to have smaller wage gaps (Ramachandran, 2011). Therefore, pay transparency could be a method in which organizations providing behavior-analytic health services could identify and eliminate pay discrepancies based on race or gender.

It is important for organizations to determine if there are pay equity laws that they must comply with, and if so, conduct pay equity audits to ensure compliance with these standards. Most workplaces are subject to governing regulations that are designed to ensure pay equity. Currie and Hill (2013) report that access to equitable salaries, and wage disparity settlements, are more prevalent in countries that have the appropriate legislation and implementation. One way to enforce these laws, is to conduct regular audits. A pay equity audit is an evaluation of wage and salary data within an organization that seeks to determine if a pay gap exists, and to determine what barriers exist in reaching equitable outcomes. Pay equity audits provide a tangible way that behavior analysts can begin to bridge the gap between the gender and race salary discrepancies that exist in the field of ABA. Any employee who is a behavior analyst practitioner can suggest a pay equity audit within their organization, and any

employer who is a behavior analyst practitioner can implement such an audit. Within each organization, the results of such analyses will provide information that can highlight the processes and systems in place currently governing wage practices.

Organizational Consequence Actions

Organizations should develop systems to resolve pay discrepancy issues in the workplace (i.e., consequences that are initiated and enforced when pay discrimination issues have been identified). For example, despite the outcome of a pay equity audit, an organization should develop a pay equity plan which includes identifying if there are job classes that are predominately male or female within the organization. A pay equity plan should also involve determining the value of each job class, and calculating the compensation associated with each job class based on that value. This ensures that each individual in the job class is paid with respect to the value of the work and not due to other variables such as gender or race.

If a pay equity plan or audit identifies a difference in compensation between a predominately male job class, and a predominantly female job class (or minority and nonminority job classes), an employer should increase the compensation that is payable to its employees who are affected (according to the Pay Equity Act, 2018). Note: the employer should provide compensation that equates to the highest rate that an employee with the same job class has received or is currently receiving.

An organization that identifies pay inequity should evaluate their pay level and pay structure. Pay level refers to an organization's average employee wage in relation to the market's average employee wage. Pay structure refers to the processes and policies in place within an organization that reflects how wage is determined, the composition of salaries, and how they change over time. Brown et al. (2003) report that pay structures enhance resource efficiency, patient outcomes, and organizational financial performance.

Organizations should consider implementing a contingency-based procedure to encourage its members to engage in the appropriate pay equity actions described above. This could involve pay-equity bonuses, as well as grants or merchandise that promote pay equity. There are currently no known reinforcement-based procedures in place to address pay equity efforts in either Canada or the United States (however, Rubery (1995) offers a discussion of how a pay-for-performance reward system could promote pay equity). A development of this sort could be experimentally evaluated, and potentially set a precedent for other fields who are experiencing pay inequities.

Individual Antecedent Actions

An individual practitioner should engage in dialogue with a potential employer about pay level, pay structure, and pay transparency within the organization prior to accepting a new position. This includes attending to the acceptance and willingness of a potential employer to discuss employee compensation compared to others at the same level. In some cases, the employers verbal behavior about pay equity may differ from the overt actions of the organization. Therefore, practitioners should seek to identify tangible indicators of pay equity within an organization. For example, identify if a pay equity committee exists at the organization, review the pay structure, compare the pay structures across organizations, and consult with current and past employees of the organization.

Behavior analysts in practice are recommended to consult the literature on pay equity, in particular within the realm of behavior analysis. Although this is the first study of its kind, it is likely that as the available data on pay in ABA grows, behavior analysts will be able to confidently advocate for pay equity within and across organizations. Further, the literature base on fair pay standards will assist behavior analysts in preparing to adequately defend the importance of pay equity, and also inform potential employers about the benefits of an equitable field and organization.

Individual Consequence Actions

If an individual practitioner becomes aware that their employer is engaging in wage discrimination on the basis of gender, race, or both, there are several actions that the individual can take. An initial response may include reviewing the organizations pay transparency policies (if they exist), and determining if these policies are legal in the jurisdiction that the organization resides. If the employee is legally permitted to discuss their wage and salary, the employee may consider verifying an inequity exists by discussing the concern with a supervisor or mentor within the organization. Depending on the context, it may be appropriate to bring the concern forward to a human resource department, or the employer(s) themselves.

In addition, the practitioner should review the relevant legislation in their province, or state. As mentioned, most areas in the United States and Canada have legislation that aims to prevent discrimination. Provided there is legislation in the individuals jurisdiction, behavior analysts may consider resolving this issue by filing a complaint with the appropriate agency. In Canada, the Canadian Human Rights Commission provides information about who to contact regarding race and gender discrimination. In the United States, the Department of Labor provides similar information on how to file a gender or race discrimination complaint and with whom.

Cornish (2013) suggests that pay equity should be treated as a human rights issue. A behavior analyst should not be expected to continue working at an organization that does not treat pay equitably or compensate their employees based on the value of their work.

Conclusion

Pay equity ensures that employees are paid fairly, based on the value of their work, instead of variables such as race or gender. Unfortunately, the results of this study indicate that in most cases, men earn more than women, and substantially more than women who are minority races at some certification levels. We also found that some inequities exist across race for doctoral-level behavior analysts in practice. As a field that consistently emphasizes the importance of targeting issues of social significance, we are ominously lacking in the fair and equitable treatment of a variety of our members. Organizations, and the field at large, may benefit in many ways from decreasing the pay disparity that currently exists, including greater productivity from employees, improved job performance, and greater job satisfaction (Berkowitz et al., 1987; Cowherd & Levine, 1992; Swan & Futrell, 1978).

Although it is impossible to account for all possible variables other than gender and race that influence pay (e.g., differences in pay are not only a product of equity, but a product of other variables such as practitioner roles and responsibilities), the inability to control for all possible confounds may not be essential to identify a systemic relationship between pay and equity. For instance, future researchers might examine the extent to which global variables such as gender and race reveal pay gaps that are predictive or indictive of more specific and narrow variables (e.g., funding source, job description). In doing so, our field may be better equipped at understanding why members of specific majority groups are more likely to assume positions (i.e., have a role or responsibility) that correlate with higher pay.

Although this study is the first to identify pay gaps among behavior analyst practitioners based on gender and race, it is limited by the small sample size for some of the groups analyzed (e.g., BCaBAs who were male minorities). As a result, it is possible that the salary data collected for certain groups may not be representative of the majority of individuals in that demographic. However, it is equally likely that only a small sample of individuals from certain groups responded because these groups contain fewer individuals in general relative to other groups (i.e., there are characteristically fewer individuals who represent these groups in ABA). Future researchers might consider alternatives to survey recruitment to obtain

pay information from underrepresented groups. Future researchers might also consider conducting further analyses of employer demographics within the field of ABA, and determine if a glass-ceiling exists for behavior analysts who are minorities (both employers and employees). Overall, the outcome of this study can serve as a jumping-off point for future researchers to address potential diversity and discrimination issues within ABA.

Data Availability The data that support the findings of this study are available from the corresponding author upon reasonable request.

Declarations

Conflict of Interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

Ethical Standards All procedures performed involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments. This study was reviewed and received clearance from the Brock University Research Ethics Board. Informed consent was provided electronically by participants.

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