

Just World Beliefs among Medical Students and the General Public in Hawai'i

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Abstract

Just World Beliefs (JWBs) are a psychological tendency to conclude the world is an inherently fair place in which people experience the outcomes they deserve. Strong JWBs positively correlate with a personal commitment to long-term ambitions and blaming people for their negative health outcomes. This study aimed to measure JWBs in medical students and the general population of Hawai'i. It was hypothesized that (1) medical students would have stronger JWBs than the general public, and (2) JWBs would be strongest for medical students in the latter part of their training. Current residents of Hawai'i and medical students at the University of Hawai'i at Mānoa were recruited to complete a web-based survey measuring JWBs using the Global Belief in a Just World Scale. A t-test was used to compare JWB strength between the groups. A regression analysis identified factors predicting strength of JWBs. Contrary to both hypotheses, medical students in Hawai'i possessed weaker JWBs than Hawai'i residents ($P < .01$), and JWBs did not differ based on training duration ($P = .97$). Age ($P < .01$) was the only demographic variable to significantly predict JWBs. The difference in JWBs among medical and non-medical cohorts was no longer significant after controlling for age. Among medical students, younger age was associated with weaker JWBs. Future studies should explore the prevalence and effects of JWBs among diverse populations and the medical professionals that care for them.

Keywords

Medical education, Health psychology, Social psychology

Abbreviations

GBJWS = Global Belief in a Just World Scale
GED = General Education Development
JABSOM = John A Burns School of Medicine
JWB = Just World Belief
mTurk = Mechanical Turk
NIMHD = National Institute on Minority Health and Health Disparities
NIH = National Institutes of Health
UH-Mānoa = University of Hawai'i at Mānoa

Introduction

Aspiring medical professionals enter their clinical training with varied experiences, biases, and belief systems that shape how they learn and practice medicine. Just World Beliefs (JWBs) are defined as a tendency to view the world as an inherently fair place in which people experience the outcomes they deserve.¹⁻² JWBs suggest people have control over their fate and negative outcomes are the direct result of a person's decisions.

Strong JWBs are linked to an increased commitment to long-term ambitions and an aversion to using unjust methods to

achieve goals.³⁻⁴ Because a commitment to the study of medicine and avoiding unethical behavior are considered valuable competencies for medical school applicants,⁵⁻⁶ it is possible that medical schools may be more likely to accept applicants with strong JWBs. Additionally, JWBs serve as a protective coping mechanism that decreases stress, increases life satisfaction, and empowers the believer to feel control over personal outcomes.⁷⁻⁹ However, the degree to which an individual holds JWBs also positively correlates with victim derogation, including disease stigma,¹⁰⁻¹¹ blaming victims of sexual assault,^{2,12} and decreased support for expanding medical treatment access to vulnerable populations.¹³

This study examined the hypothesis that medical training may strengthen existing JWBs among medical students by encouraging trainees to link poor health outcomes to risk factors and life choices in patients, allowing students to feel they have some control over their own personal health while learning about severe disease pathology. However, the strength of JWBs among medical trainees and personnel has not been well studied.

The primary aim of this study was to quantify the strength of JWBs among medical students in Hawai'i and compare this measure to the strength of JWBs among the general population in Hawai'i. It was hypothesized that medical students would have stronger JWBs than the general public even after controlling for demographic characteristics. The secondary aim was to assess whether existing JWBs are strengthened during medical training. To test the hypothesis that medical education reinforces JWBs, this study compared the strength of JWBs among medical students in the first-half of medical training to the strength of JWBs among medical students in the second-half of medical training.

Methods

The University of Hawai'i at Mānoa (UH-Mānoa) Committee on Human Studies (CHS#2020-00115) approved this study as exempt from full review. Ola HAWAII grant number U54MD007601-34 from the National Institute on Minority Health and Health Disparities (NIMHD), a component of the National Institutes of Health (NIH), funded this study. The funding agency had no influence on the final data interpretation and resulting manuscript. The contents are solely the responsibility of the authors and do not represent the official view of NIMHD or NIH.

Participants

Medical Student Cohort

Medical students enrolled in UH-Mānoa's John A. Burns School of Medicine (JABSOM) were recruited for this study. JABSOM is the only medical school in the state, and approximately 90% of incoming JABSOM students are Hawai'i residents.¹⁴ In April 2021, an invitation to participate in this study was emailed to 305 current medical students through an existing e-mail distribution list. Respondents completing the survey received a \$20 electronic Starbucks gift card by email. The web-based survey remained open until May 2021.

Hawai'i State Resident Cohort

To serve as a comparison group, a sample of Hawai'i residents was recruited using Amazon Mechanical Turk (mTurk) (Amazon Web Services, Seattle, WA) from December 2020 until April 2021. This online crowdsourcing marketplace of 500 000 registered users provides an avenue for recruiting individuals meeting specific demographic criteria for research participation without compromising data quality.¹⁵⁻¹⁸ Registered mTurk users were eligible for participation if they identified as residents of Hawai'i over 18 years of age on their mTurk profile. Respondents received \$5 paid through the mTurk web site for their participation, an amount consistent with the compensation provided to mTurk users for tasks of similar duration.¹⁹

Questionnaire

All participants completed an online consent form and an anonymous web-based survey with 54 questions via REDCap version 12.4.11 (Vanderbilt University, Nashville, TN) hosted by UH-Mānoa.²⁰⁻²¹ Data utilized in this study consisted of demographic questions (11 items) followed by an assessment of JWBs (7 items). Two scales related to reproductive health stigma (33 items) were included in this survey for a study outside the scope of the current manuscript. The surveys for both cohorts (medical students and Hawai'i residents) were identical with the exception of demographic questions concerning level of education. For example, Hawai'i residents were asked about the highest level of education attained with options starting at General Education Development (GED) or less than a high school diploma. The Hawai'i resident survey also asked whether a respondent's doctorate degree is in a clinical field or a non-clinical field. The medical student participants were asked for current level of training with options including pre-clinical medical student (first 2 years of medical school) and clinical medical student (last 2 years of medical school). Because 1 in 4 people in Hawai'i identify with 2 or more races,²² each participant was able to select multiple race and ethnic identities.

JWBs were measured using the 7-item Global Belief in a Just World Scale (GBJWS).²³ This validated assessment asks par-

ticipants to report their level of agreement with a series of short statements (such as "I feel that people get what they deserve" and "I feel that people who meet with misfortune have brought it on themselves.") using a 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). The GBJWS responses are summed to produce a total mean score ranging from 7 to 42 and a per-item mean score ranging from 1 to 6. Higher scores on this scale signify stronger JWBs. This scale was chosen for its brevity, high internal consistency, and widespread use in previous studies.^{10,23-24} To improve the quality of the data in the final analysis, 3 attention filter checks were utilized in both the demographic and scale portions of the survey, a practice that has been successfully used in other web-based research surveys in an effort to exclude bots and participants who are completing the survey without reading the question prompts.^{17,25} For example: "Everyone has a favorite food. You may enjoy burgers, tacos, or salads for dinner, but select pizza from the items below." Participants who did not choose "pizza" as the answer to this question were excluded from the analysis.

Data Analysis

Using IBM SPSS version 28 (IBM Corp, Armonk, NY), the demographic characteristics of each group were analyzed using descriptive statistics. JWBs between the 2 cohorts were compared using a *t*-test. Linear regression modeling with JWB strength as the dependent variable was utilized to identify factors associated with stronger JWBs. As a final step, a series of linear regression models were developed with JWB strength as the dependent variable. Independent variables included age, gender, race and ethnicity, and cohort (medical student vs Hawai'i residents). Preliminary models were investigated with separate dummy variables for each Asian ethnicity and with all 6 subgroups combined into a single Asian and Pacific Islander variable. Independent variables for race and ethnic identities with less than 10 participants were not included in the regression analysis.

Results

Response Rate

A total of 162 medical students participated in the survey. Results from 33 medical student participants were excluded due to incorrectly answering the attention filter questions (28 respondents) or completing less than 5% of the survey questions (5 respondents). The final analysis included 129 medical student participants, yielding a 42% response rate.

One hundred sixty-seven surveys were submitted from the Hawai'i resident mTurk cohort of which 117 survey responses were from unique participants. Some mTurk users submitted the survey multiple times. When duplicate submissions from the same person were identified, only the first survey was included in the analysis. Twenty-six participants were excluded

for incorrectly answering attention filter questions (23 respondents) or for completing less than 5% of the survey questions (3 respondents). The final analysis included 91 residents of the state of Hawai‘i.

Participant Demographics

Mean ages for the medical student cohort and the Hawai‘i resident cohort were 25.9 years and 35.8 years, respectively (see **Table 1**). Forty percent of all participants (88 out of 220) identified with multiple racial and ethnic groups with 25.5% reporting 2 races/ethnicities and 14.5% reporting 3 or more races/ethnicities. The majority of participants in both the Hawai‘i resident and medical student cohorts identified as Asian (56.0% and 82.9% respectively). The Hawai‘i resident cohort included fewer Chinese respondents (9.9% vs 36.4%), fewer Vietnamese respondents (0% vs 7.8%), and more Black or African American participants (6.6% vs 0%) than the medical student cohort. Almost half of the Hawai‘i resident cohort (47.2%) and 29.6% of the medical student cohort reported 2 or more races or ethnic identities. Half of the Hawai‘i resident cohort (49.5%) and 31.0% of the medical student cohort identified as male.

Table 1. Demographic Characteristics of Medical Student and Hawai‘i Resident Cohorts		
	Medical Student Cohort (n=129)	Hawai‘i Resident Cohort (n=91)
	No. (%)	No. (%)
Mean Age (years)	25.9	35.8
Race and Ethnic Identities^a		
White/Caucasian	48 (37.2%)	45 (49.5%)
Black/African American	0 (0%)	6 (6.6%)
Asian	107 (82.9%)	51 (56.0%)
Japanese	54 (41.9%)	28 (30.8%)
Filipino	25 (19.4%)	16 (17.6%)
Chinese	47 (36.4%)	9 (9.9%)
Korean	12 (9.3%)	8 (8.8%)
Vietnamese	10 (7.8%)	0 (0%)
Native Hawaiian	13 (10.1%)	9 (9.9%)
Hispanic	5 (3.8%)	1 (.8%)
Other	8 (6.2%)	8 (8.8%)
≥ 2 race or ethnic identities	61 (47.2%)	27 (29.6%)
Gender		
Female	89 (69.0%)	46 (50.5%)
Male	40 (31.0%)	45 (49.5%)
Education		
No college education	0 (0%)	12 (13.2%)
Some college or advanced degree	127 (100%)	79 (86.8%)

^a Participants had the option of selecting multiple races and ethnicities.

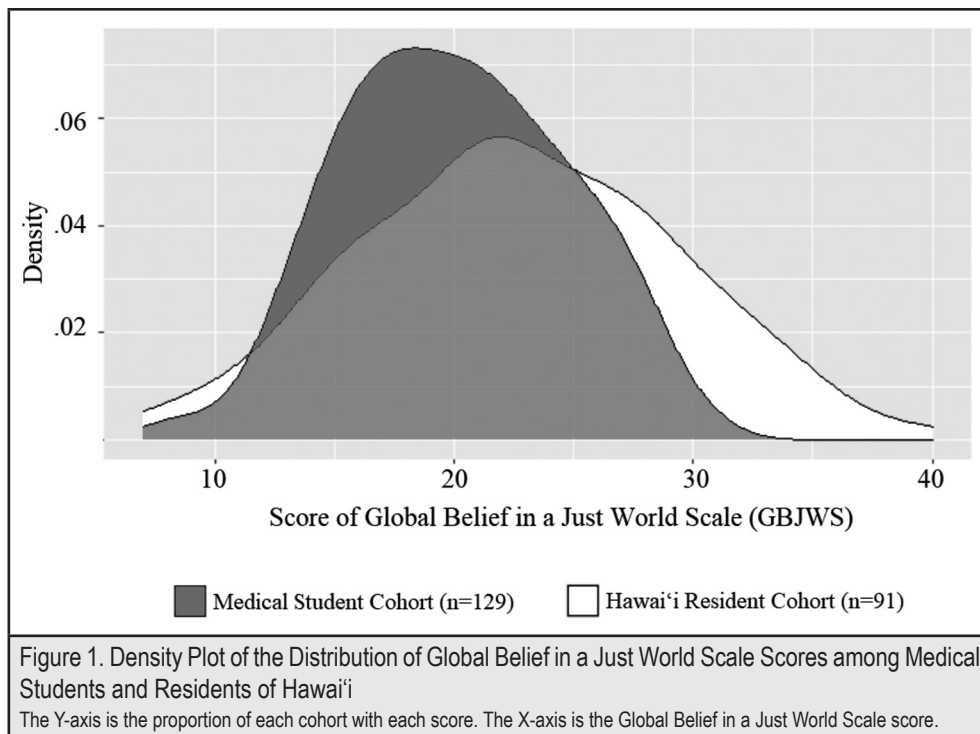
The Hawai‘i resident cohort included participants with a wide-range of education levels with the majority having completed at least some college and 1 participant earning a non-medical doctorate degree. Among the medical student cohort, 54.3% were in the pre-clinical portion of their training (first 2 years of medical school) and 45.7% were in the clinical portion of their training (years 3 or 4 of medical school).

JWBs Among Medical Students and Hawai‘i Residents

Total scores on the GBJWS ranged from 7 to 40 with an overall mean of 21.1 and a standard deviation of 5.7 (see **Figure 1**). The per-item GBJWS mean was 3.0 with a standard deviation of .81. Overall JWBs proved to be weaker in the medical student cohort (mean: 20.0; SD: 4.7) compared to the Hawai‘i resident cohort (mean: 22.6; SD: 6.4; $P < .01$). Within the medical school cohort, there was no significant difference in JWB strength between first- and second-year students near the start of their training (mean: 20.0; SD: 4.9) versus third- and fourth-year medical training near the end of their training (mean: 20.1; SD: 4.4).

Regression Analysis

Overall, the final regression model accounted for 11.3% of the variance in GBJWS score ($F[5,170]=4.3$; $P < .01$). Black race and Hispanic ethnicity were excluded from the regression analysis due to having less than 10 participants with these identities. Race, ethnicity, and gender did not predict JWB strength in the final regression model. Participant age was significantly related to JWB with a standardized β of .24 (see **Table 2**). Therefore, this model predicts that with every 1 standard deviation increase in age (8.9 years), GBJWS score will increase by .24 of a standard deviation (equivalent to a 1.3 scale points). Cohort membership (medical student vs Hawai‘i resident) was not a significant factor after accounting for the influence of age and race/ethnicity.



	β (95% CI)	Standardized β	t	P-value
Significant Factors				
Age	.16 (.04 to .27)	0.24	2.7	<.01
Non-Significant Factors				
White race	-.64 (-2.58 to 1.30)	-.05	-0.65	.52
Asian & Pacific Islander	1.27 (-1.03 to 3.56)	0.09	1.09	.28
Male Gender	-1.04 (-2.85 to .77)	-.09	-1.14	.26
Medical Student Cohort	-1.40 (-3.52 to .73)	-.12	-1.3	.2

Discussion

Contrary to the hypothesis, the medical student cohort held weaker JWBs than Hawai'i resident cohort not attending medical school. The mean level of JWBs was the same between medical students in the first-half of medical school training and their peers in the second-half of medical school training, a finding contrary to this study's second hypothesis that medical students' JWBs would be strongest for students with a longer duration of exposure to medical education. This finding suggests JWBs may be unaffected by exposure to medical school training. Further, the regression analysis revealed that the decreased strength of JWBs among medical students was primarily explained by the young age of this cohort. All medical students in this study were 32 years or younger, and younger age was associated with weaker JWBs. Other studies have identified a similar relationship between age and JWBs, but the reasons JWBs are higher among older people remain unclear.²⁶⁻²⁷

This study recruited people living or attending medical school in Hawai'i, a population that is demographically distinct from the population of the continental US.²² Compared to overall US population, Hawai'i's population includes a higher proportion of people who are Asian, Native Hawaiian, Pacific Islander, or multiple races. Although previous studies have identified cultural, regional, and racial differences in JWBs,²⁸⁻³¹ JWBs among Hawai'i residents in this study were similar to previously published measures of JWBs among North American adults.³²⁻³³ When this scale was initially developed using a sample of undergraduate students in North Carolina, the mean GBJWS total was 23.8,²³ and more recent studies utilizing national samples found similar mean GBJWS totals between 22.6 and 23.6.³²⁻³³ Cultural differences likely interact with JWBs in complex ways, and the presence of JWBs among the many cultures of Hawai'i could be explored in future research.

This study is a novel investigation of JWBs among a previously unexplored population, medical student trainees. A 2023 study explored the role of just world belief among nursing trainees in the southeast US, concluding that JWBs mediated the relationship between past personal trauma and attitudes towards trauma-informed care among nursing students. Nursing students with high JWBs were less likely to have experienced past adverse childhood experiences and less likely to embrace trauma-informed care.³⁴ However, that study did not include medical students and little is known concerning JWBs among practicing health care professionals. JWB strength among the sample of nursing students was similar to the strength of JWBs using the GBJWS among medical students in the current study (Means: 21.3 vs 21.1).

PubMed, Google Scholar, and the University of Hawai‘i at Mānoa (UH-Mānoa) electronic library were queried for keywords “Hawaii” [AND] “Just World”, and the brief literature review found this study is the third published assessment of JWBs in Hawai‘i. The two prior publications of JWBs in Hawai‘i studied UH-Mānoa undergraduate students.^{10,30} In Dalbert and Yamauchi’s 1994 study of Hawai‘i and German undergraduate students enrolled in introductory psychology courses, Hawai‘i students held stronger JWBs than German students and both cohorts demonstrated a positive correlation between strength of JWBs and judgements of the fairness of situations faced by immigrants.³⁰ More recently, Ebner and colleagues conducted a study of UH-Mānoa undergraduates enrolled in a psychology course, concluding JWBs were associated with stigmatizing views of eating disorders and obesity.¹⁰ The inclusion of non-undergraduate participants in Hawai‘i is a major strength of the current study.

Limitations

Limitations of this study include the sample size which could impact this study’s ability to detect small differences between cohorts. Additionally, this study depended on self-reported demographic characteristics, which could produce inaccuracies. Although none of the respondents in the Hawai‘i resident cohort identified themselves as having clinical education when asked about education level, the possibility that a respondent completed surveys for both cohorts cannot entirely be excluded. Additionally, the mTurk cohort of Hawai‘i residents may not be representative of the general public. The mTurk participants tend to be more educated and ethnically diverse compared to participants obtained by other sampling methods.¹⁶ These differences may limit the generalizability of this study’s findings.

Conclusions

This study demonstrated medical students in Hawai‘i have weaker JWBs than the general public of Hawai‘i. Based on the results of this study, this difference may be explained by the younger overall age of medical trainees. Further, JWBs were stable across levels of medical school training, contradicting the hypothesis that exposure to illness in medical education would strengthen JWBs. Because JWBs play a role in personal wellness,^{7,9} dehumanization,³⁵ and victim blaming,^{2,12} while also mediating the relationship between personal experiences and attitudes towards patient care,³⁴ understanding JWBs could help develop targeted interventions to minimize these harmful tendencies. For more insight into the influence of JWBs, future studies should explore the prevalence and effects of JWBs among diverse populations and the full range of medical professionals caring for them.

Conflict of Interest

None of the authors identify a conflict of interest.

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