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Positive contact and empathy as predictors of primary care providers' willingness to prescribe medications for opioid use disorder

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Abstract

Introduction: Patients with opioid use disorder (OUD) have a heightened need for quality health care, including access to evidence-based medications to reduce cravings and prevent overdose. However, primary care providers (PCPs) are reluctant to work with patients with OUD and implement medication prescribing into primary care practice. Previous studies have sought to identify potential ways to overcome these barriers, but often utilize interventions that facilitate both positive contact with as well as empathy for patients with OUD. In this study, we jointly assess positive contact and empathy to determine their unique impact on treatment attitudes and behaviors among PCPs, after controlling for other known predictors.

Methods: We surveyed 409 PCPs currently practicing in Ohio in 2022. Our primary dependent variables were willingness to work with patients with OUD, receipt of an X-waiver to prescribe buprenorphine, and interest in receiving an X-waiver. Our primary independent variables were positive contact and empathy toward patients with OUD. We computed bivariate correlations and multivariable linear regression (for continuous dependent variables) and logistic regression (for binary dependent variables) to understand the relationship between positive contact, empathy,

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and our outcome variables while accounting for other known predictors and relevant participant demographics.

Results: Positive contact was positively correlated with willingness to work with patients with OUD, receipt of the X-waiver, an interest in receiving the X-waiver, more frequent checking with patients about the need for naloxone, and higher odds of naloxone prescribing. These relationships held after accounting for PCP demographics, explicit bias toward patients with OUD, and overall levels of contact with patients with OUD. Empathy, conversely, was not a significant predictor of any treatment outcomes in the fully adjusted models.

Conclusion: Interventions and medical education programs aimed at improving treatment outcomes for patients with OUD should facilitate positive contact between PCPs and patients with OUD.

Keywords

Opioid-related disorders; Primary care; Misinformation; Buprenorphine; Addiction medicine

1. Introduction

Medications for opioid use disorder (MOUD) are critical tools to reduce mortality and the transmission of infectious disease among people with opioid use disorder (OUD) (Larochelle et al., 2018; Mcnamara et al., 2021). But MOUD are notably underused, especially in rural areas of the United States (US) that have been heavily affected by OUD (Mack et al., 2017; Qudah et al., 2022). In these areas, few primary care providers (PCPs), including physicians, physician associates, and nurse practitioners, are trained and willing to provide evidence-based treatments and preventive measures such as MOUD and naloxone (Andrilla et al., 2017; Harder et al., 2021). Buprenorphine, one of the MOUD, holds particular promise for primary care practice given its high efficacy and availability for use in this setting (Wakeman and Barnett, 2018). Nonetheless, fewer than 8% of PCPs in the US have ever prescribed buprenorphine (McGinty et al., 2020).

Exacerbating treatment access, PCPs are reluctant to engage with patients with OUD, despite this patient population's elevated need for quality, coordinated health care related to their OUD or its potential downstream consequences. Indeed, many PCPs report negative attitudes toward patients with OUD, experience negative emotional states when working with these patients, and report feeling less comfortable with and prepared to treat OUD in comparison to other conditions (Barry et al., 2014; Kennedy-Hendricks et al., 2016). Negative clinician-patient interactions not only impact the quality of treatment patients with OUD receive, but these interactions also shape adherence to treatment programs (Brener et al., 2010). Existing evidence also suggests that discomfort treating patients with OUD spills over into lower willingness to prescribe MOUD or engage in harm reduction through prescribing naloxone.

In order to improve treatment outcomes for OUD, interventions are needed to increase willingness to work with this patient population and prescribe MOUD.

Most interventions to date focus on bias reduction among health care professionals rather than treatment outcomes such as willingness to work with patients with OUD or to prescribe evidence-based medications (Livingston et al., 2012; Madras et al., 2020; McGinty et al., 2015; Yoast et al., 2008). The foundation of these interventions has been facilitating contact with patients with OUD or another substance use disorder (SUD), given the decades of evidence suggesting that increasing interpersonal contact is associated with reduced prejudice (Earnshaw, 2020; Pettigrew and Tropp, 2008). However, these studies report mixed support for the role of contact in reducing stigma toward patients with SUDs (Hooker et al., 2023). One study found that, when paired with bias, stress, and burnout, contact was actually associated with lower willingness to work with this patient population (Dhanani et al., 2021). In other words, contact perceived to be negative may reinforce stereotypes and reduce willingness to treat patients with OUD. These findings demonstrate the need to not just consider the amount of contact PCPs have with patients with OUD, but also the nature of the contact (i.e., whether the contact is negative or positive). For this reason, some recent bias-reduction interventions have focused on facilitating positive contact, with one intervention demonstrating success for lowering bias (Livingston et al., 2012).

One limitation in existing studies, though, is that contact is often paired with empathy. That is, these interventions often present testimonials from patients with OUD to provide trainees with meaningful and positive contact with the patient population. Such approaches may also promote empathy for patients by encouraging trainees to take their perspective and understand their feelings and experiences. Given the longstanding focus on fostering empathy in health professions education (Kahriman et al., 2016; Moudatsou et al., 2020; Samarasekera et al., 2023), it is important to disentangle what drives positive treatment outcomes – positive contact or empathy.

The aim of the current study is to assess whether previous positive experiences treating patients with OUD and empathy toward patients with OUD are associated with greater willingness to treat this patient population, an increased likelihood of being waived to prescribe MOUD, and greater naloxone prescribing among PCPs. Our study advances the literature by directly measuring treatment attitudes and behaviors associated with positive contact and empathy, independent of general levels of contact. This study is also the first to assess the separate roles that positive contact and empathy may play in shaping clinician behavior, while controlling for explicit bias, which is one of the most commonly studied predictors of treatment outcomes in the literature. These findings have important implications for future PCP training interventions to increase MOUD and naloxone prescribing, as well as willingness to treat patients with OUD.

2. Materials and methods

2.1. Sample

Data were collected from 409 PCPs who were licensed to practice in the state of Ohio. Participants were recruited to complete a survey about the ways that OUD is managed in the primary care setting. Participants were eligible to complete the survey if they were a physician, nurse practitioner, or physician associate; were eligible to prescribe MOUD; and practiced in a setting in which they have a high likelihood of regular contact with

patients with OUD (i.e., family medicine, internal medicine, addiction medicine, obstetrics/gynecology, infectious disease, emergency medicine, and psychiatry). Potential participants were identified in three ways: 1) we emailed PCPs in relevant practice settings who were registered on the State Board of Medical Licensing roster; 2) we advertised the study through several professional associations in Ohio; and 3) we asked health professions training programs to advertise to their alumni. For those who were sent direct emails, reminder emails were sent approximately 3 and 7 days after the original email invitation. The survey was available from October to December of 2022. Participants received a \$20 Amazon gift card in exchange for participating. The study was approved by the Ohio University internal review board and informed consent was obtained prior to participation.

2.2. Measures

2.2.1. Primary outcomes—Our primary dependent variables were willingness to work with patients with OUD, receipt of an X-waiver to prescribe buprenorphine, and interest in receiving an X-waiver among those without an active waiver. Willingness to work with patients with OUD was measured using a 5-item scale that was developed specifically for this population (Franz et al., 2021). An example item is, “In the future, I would accept more patients with opioid use disorder.” Responses were provided on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*). The measure had good internal consistency ($\alpha = 0.90$) and results from an exploratory factor analysis (EFA) indicated a single factor solution (eigenvalue = 3.65) that explained 73.08% of the variance. All factor loadings were above acceptable cutoffs (i.e., they exceeded 0.40; Hinkin, 1998). A scale score was created by taking the mean of the five items. Participants were asked if they had received an X-waiver (responses were yes/no). For those who said no, we additionally asked about their interest in receiving the X-waiver in the future (responses were yes/no).

2.2.2. Secondary outcomes—Participants were asked if they prescribed naloxone (responses were yes/no) and how often they checked with patients with OUD about the need for naloxone (responses ranged from 1 [*never*] to 5 [*every visit*]).

2.2.3. Focal independent variable—Our primary independent variables of interest were positive contact, or the degree to which PCPs had contact with patients with OUD that they appraised in positive ways, and empathy toward patients with OUD. Positive contact was measured using three items developed by Plant and Devine (2003). These items asked respondents to indicate how pleasant, rewarding, and positive their past experiences working with patients with OUD have been. Responses were given on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*) and higher scores indicate more positive contact. The three items demonstrated strong internal consistency reliability ($\alpha = 0.90$). The data were subjected to an EFA with principal axis factoring and results indicated a single factor solution (eigenvalue = 2.49) that explained 82.88% of the variance. The factor loadings were all above standard cutoffs (Hinkin, 1998). We measured empathy using a 6-item scale developed by Batson et al. (1988). This scale contains a series of feelings that represent empathy (e.g., sympathetic, compassionate, warm) and asks participants to indicate the degree to which they feel each of these feelings toward patients with OUD. Responses are provided on a scale from 1 (*not at all*) to 7 (*extremely*). This measure demonstrated

strong reliability ($\alpha = 0.93$) and results from the EFA suggested a single factor solution (eigenvalue = 4.46) that explained 74.37% of the variance. All factor loadings were above the recommended cutoff of 0.40. Scale scores were created by taking the mean of the positive contact and empathy items, respectively.

2.2.4. Additional independent variables—Our secondary independent variables were general contact and explicit bias toward patients with OUD. These variables were included given that they have previously been identified as important predictors of our outcomes of interest. We thus wanted to account for these variables to better understand the unique impact of positive contact. General contact was measured using a single item taken from Brener, von Hippel, and Kippax (Brener et al., 2007). This item asked participants to indicate the percentage of their time, from 0 to 100, that is spent working with patients with OUD. Further, explicit bias was measured using a scale developed by Franz et al. (2021). The scale was originally created to assess bias toward injecting drug users and has since been adapted to assess bias toward patients with OUD (Dhanani et al., 2021; Franz et al., 2021). The scale contains eight items that reflect explicit negative attitudes toward patients with OUD (e.g., “People with opioid use disorder are immoral.”). Responses were provided on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*). The scale demonstrated good internal consistency ($\alpha = 0.85$) and results from an EFA indicated a single factor solution (eigenvalue = 3.93) that explained 49.14% of the variance. All factor loadings exceeded the recommended cutoff of 0.40. A scale score was created by taking the mean of the eight items.

2.3. Analysis

We first computed descriptive statistics and bivariate correlations to assess the relationships among our study variables. To better understand the unique relationship between positive contact and our outcome variables while accounting for other known predictors, we conducted multivariable linear regression (for continuous dependent variables) and logistic regression (for binary dependent variables). To aid in the interpretation of the estimated odds ratios from the logistic regression, we computed marginal effects. We controlled for relevant participant demographics (i.e., age, work hours per week, gender, employment setting, location, employment length, and race) by entering those variables in Step 1 of each model. Explicit bias and positive contact were then entered in Step 2 and empathy and positive contact were entered in Step 3 of each model. We used listwise deletion for participants who did not complete all survey questions, resulting in a final analytic sample of 400 participants for multivariable analyses.

3. Results

3.1. Descriptive results

Of the 409 eligible participants who completed the survey, 43% ($n = 177$) were physicians, 27% ($n = 112$) were physician associates, and 29% ($n = 120$) were nurse practitioners. The average age was 42.43 ($SD = 11.97$) and 60% of the sample identified their sex as female. Approximately half of the sample identified as White (81%), 6% identified as Asian, 3% identified as Black or African American, and 3% identified as having more than one race.

The remainder (7%) selected 'prefer not to say.' Participants worked an average of 41.32 (SD = 13.14) hours per week and had been in practice for an average of 17.77 (SD = 11.58) years. Approximately 62% of the sample practiced in urban areas followed by 15% who practiced in partially rural counties and 23% who practiced in rural counties.

3.1.1. Bivariate results—Means, standard deviations, and correlations for all study variables are shown in Table 1. Both positive contact and empathy were significantly and positively related to all outcomes: willingness to work with patients with OUD, checking with patients about the need for naloxone, naloxone prescribing, receipt of the X-waiver, and interest in the X-waiver. Bias was similarly related to all outcome variables but relationships were negative. General contact was positively and significantly related to all outcomes except interest in receiving the X-waiver.

3.1.2. Multivariable regression results—Results for the linear regression analyses are shown in Table 2, which reports the standardized regression coefficients for each model. Results for the model predicting willingness to work with patients with OUD indicated that, after controlling for relevant participant demographics, explicit bias ($\beta = -0.39$, 95% CI [-0.49, -0.30], $p < .001$), general contact ($\beta = 0.29$, 95% CI [0.19, 0.39], $p < .001$), and positive contact ($\beta = 0.55$, 95% CI [0.47, 0.63], $p < .001$) were significantly related to willingness (Table 2). The relationship with empathy was nonsignificant ($\beta = 0.08$, 95% CI [-0.01, 0.16], $p = .074$). The change in R^2 was 0.268 for the step in which explicit bias and general contact were entered and .245 for the step in which positive contact and empathy were entered. Results for the model predicting frequency of checking with patients about the need for naloxone indicated there was only a significant relationship with positive contact ($\beta = .25$, 95% CI [0.13, 0.36], $p < .001$). The change in R^2 was 0.022 for the step in which explicit bias and general contact were entered and .104 for the step in which positive contact and empathy were entered.

Results for the binary logistic regression model predicting X-waiver receipt indicate a significant positive relationship for general contact (OR = 1.03, 95% CI [1.02, 1.04], $p < .001$) and positive contact (OR = 1.96, 95% CI [1.49, 2.57], $p < .001$) (Table 3). The relationship for empathy (OR = 1.03, 95% CI [0.74, 1.42], $p = .871$) was not significant and explicit bias (OR = 0.64, 95% CI [0.40, 1.00], $p = .050$) approached significance. For naloxone prescribing, we found significant relationships for general contact (OR = 1.03, 95% CI [1.01, 1.04], $p < .001$) and positive contact (OR = 1.37, 95% CI [1.04, 1.82], $p < .001$), but not for empathy (OR = 1.04, 95% CI [0.74, 1.47], $p = .871$). The relationship for explicit bias approached significance (OR = 0.63, 95% CI [0.39, 1.01], $p = .057$). The final model predicted interest in receiving an X-waiver among those who did not currently have one. Only a significant relationship for positive contact was present (OR = 2.09, 95% CI [1.38, 3.17], $p < .001$). The estimate of the marginal effect for positive contact suggests that each point on the positive contact scale is associated with a 12 percentage point increase in the probability of having an X-waiver.

4. Discussion

The goal of this study was to distinguish the separate roles that positive contact and empathy play in shaping clinician behavior, while controlling for explicit bias, which is one of the most commonly studied predictors of treatment outcomes in the literature. Our findings indicated that positive contact was the strongest predictor across all outcomes studied, including willingness to work with patients with OUD, more frequent checking with patients about the need for naloxone, higher odds of naloxone prescribing, and nearly twice the odds of receiving an X-waiver and expressing an interest in the X waiver. Empathy, by contrast, was not a significant predictor of any outcome in fully adjusted models. Importantly, the relationship between positive contact and treatment attitudes and behaviors held after controlling for relevant participant demographics and other known predictors of treatment outcomes, including explicit bias and general contact with patients with OUD. Regarding the size of these effects, results of the standardized regression models predicting willingness to work with patients with OUD and the frequency of checking for naloxone demonstrated that the coefficient for positive contact was roughly twice as large as the coefficient for general contact and exceeded the coefficient for explicit bias, which is a well established predictor of treatment outcomes. Further, PCPs who had positive contact with patients also had twice the odds of having received an X-waiver or having interest in receiving one. We also note that the magnitude of the observed relationships between positive contact and the outcome variables in this study exceeds those found for other, more established predictors (e.g., Hooker et al., 2023 found the bivariate correlation between stigma and willingness to work with patients with OUD to be $-.40$; Franz et al., 2021a,b found the relationship between burnout, controllability, and blame and willingness to work with patients with OUD to be $-.12$, -0.15 , and 0.14 , respectively). Finally, in a prior study conducted among PCPs who were exposed to a multimodal educational intervention designed to increase MOUD prescribing, the percentage of the sample that had an X-waiver increased from 0.8% before the intervention to 7.1% after the intervention (Clark et al., 2019). In comparison, we identified that positive contact was associated with a 12 percentage point increase in receipt of an X-waiver, demonstrating that positive contact had a greater impact on X-waiver receipt than prior interventions. This provides important support for developing interventions to bolster positive contact for health care professionals working with patients with OUD.

Our findings therefore expand upon previous research linking positive contact to prejudice toward other stigmatized groups (Barlow et al., 2012; Christ et al., 2014) in two key ways. First, the current study expands on extant work on the role of contact in shaping treatment outcomes by specifically examining positive contact in the context of patients with OUD. Previous studies have focused on general contact with patients with OUD as a predictor of bias and treatment outcomes (Mort et al., 2021), but findings have been mixed, with some indicating that contact may be accompanied by heightened negative attitudes and treatment outcomes (Brenner et al., 2007; Crapanzano et al., 2019; Dhanani et al., 2021). These inconsistent findings align with early conceptual work on the contact hypothesis which argued that contact itself is not enough to elicit positive intergroup outcomes. Instead, the contact must be high quality and appraised positively to be beneficial (Allport, 1954). This proposition is also supported by empirical evidence on other stigmatized identities which

documents that positive contact can overcome bias whereas negative contact might heighten it (Allport, 1954; Paluck et al., 2019; Plant and Devine, 2003). Given that clinicians may have interactions with patients with OUD that are appraised both positively and negatively, it is therefore important to measure contact in a way that allows us to identify whether the prior contact clinicians have had was positive. Correspondingly, this study builds on existing literature by focusing specifically on positive contact and identifying that positive contact is indeed positively related to several integral treatment outcomes.

Second, research on clinician-patient relationships in the context of OUD has primarily focused on predicting bias, other attitudes, or knowledge related to patients with OUD (Mort et al., 2021). The current study extends that research by examining the predictors of seldom studied but important treatment outcomes, including receipt of an X-waiver to prescribe buprenorphine and naloxone prescribing. Importantly, we found clinically significant results, with positive contact being associated with twice the odds of having received an X-waiver or having interest in doing so. Eligibility to prescribe buprenorphine is particularly important to understand given that, despite its efficacy in treating OUD, clinicians were reluctant to pursue the training to prescribe buprenorphine prior to regulation changes in 2022 (Huhn and Dunn, 2017; Lanham et al., 2022). Our findings therefore not only clarify the types of contact that are needed to improve treatment willingness among PCPs, but also document that the benefits of positive contact extend beyond knowledge and attitudinal changes and are associated with different training and prescribing behaviors.

Although empathy had significant bivariate relationships with our outcome variables, empathy was no longer a significant predictor of outcomes after accounting for positive contact, general contact, and explicit bias. This finding is important because substantial emphasis has been placed on building empathy for patient populations during medical training and in other settings (Moudatsou et al., 2020; Winter et al., 2022; Yu et al., 2022). However, our findings suggest that facilitating positive contact may result in greater benefits, perhaps because positive contact allows clinicians to build the competencies necessary to navigate interactions with patients with OUD. Although empathy may help clinicians take the perspective of and have positive emotions toward patients with OUD, positive contact may equip clinicians with the skills needed to engage this patient population.

Health care organizations, medical schools, and other institutions can draw on these findings to better guide their efforts to improve treatment outcomes for patients with OUD. Specifically, institutions can create opportunities for positive contact with patients with OUD. It may be important that these positive interactions occur in naturalistic settings, as opposed to or in addition to only occurring inside of training or intervention contexts. That is, for the positive contact to be most effective, clinicians may need exposure to rewarding, meaningful interactions with real patients, an opportunity to observe the positive impact of MOUD and naloxone prescribing, and an effective clinician-patient relationship. Facilitating positive contact may be possible through increased opportunities to observe MOUD prescribing in either the primary care or addiction medicine setting for PCPs in training or through mentoring networks for PCPs already in practice. Given our findings related to explicit bias, we also encourage such efforts to incorporate bias-reduction techniques as well to bolster efficacy.

4.1. Limitations

Because we did not use a probability-based sampling approach to recruit respondents to our study, our sample may not be representative of the PCP population in the state of Ohio. We attempted to increase the diversity and size of our sample by utilizing multiple recruitment methods, but additional research should confirm these findings. In particular, our participants predominantly worked in urban areas. Given that barriers are more pronounced in rural areas, future work is needed that focuses on PCPs working in rural contexts. Additionally, 48% of our sample had an X-waiver, which is significantly higher than the general clinician population in the US (6%; Duncan et al., 2021). We intentionally oversampled PCPs with X-waivers to better understand how training impacted attitudes and treatment practices but a possible result is that our sample may have been more receptive to working with patients with OUD. Relatedly, our findings are also limited by social desirability bias which may have led participants to endorse more positive attitudes and report more positive behaviors, thus artificially inflating observed relationships among our study variables. We attempted to limit social desirability bias by collecting survey data anonymously, but it is possible that it still impacted our findings. We also cannot determine causality among our study variables because data were collected at a single time point. It is therefore possible that engaging in more positive treatment behaviors leads to more positive contact with patients with OUD. Subsequent research should adopt longitudinal study designs to better disentangle this possibility. We also note that the X-waiver program ended shortly after this study was conducted. Finally, future research would also benefit from qualitative data examining the specific nature of positive interactions that clinicians have with patients with OUD. This would help determine what types of interactions could be simulated or prioritized in health professions training to improve treatment outcomes.

5. Conclusion

In a sample of PCPs currently practicing in Ohio, we found that positive contact was consistently related to positive treatment outcomes, including willingness to work with patients with OUD, prescribing and checking for the need for naloxone, receipt of the X-waiver, and, among those without it, an interest in receiving the X-waiver. These relationships also held after controlling for explicit bias and general contact with patients with OUD. Empathy, conversely, had significant bivariate relationships with treatment outcomes but these relationships were no longer significant in the regression analyses. Future interventions focused on improving treatment attitudes and behaviors should prioritize facilitating positive contact with patients with OUD.

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Declaration of competing interest

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Table 1

Intercorrelations among study variables.

	M	SD	1	2	3	4	5	6	7
1. Empathy	3.10	.95	(.93)						
2. Positive contact	3.21	1.10	.45*	(.90)					
3. Explicit bias	2.04	.70	-.55*	-.43*	(.85)				
4. General contact	23.82	25.53	.29*	.32*	-.27*	-			
5. Willingness	3.39	1.06	.46*	.69*	-.48*	.37*	(.90)		
6. Narcan check	3.16	1.39	.15*	.28*	-.12*	.18*	.27*	-	
7. Narcan prescribing	.70	.46	.17*	.23*	-.19*	.27*	.21*	.31*	-
8. X waiver	.48	.50	.26*	.41*	-.29*	.34*	.42*	.21*	.34*
9. X waiver interest	.36	.48	.24*	.34*	-.14*	.11	.46*	.16*	.21*

Note: N=400-409; reliabilities appear on the diagonal; the correlation between X waiver and X waiver interest cannot be computed because X waiver interest was only measured among people who did not have an X waiver;

* $p < .05$.

Table 2

Multivariable linear regression analyses.

	Willingness			Naloxone Checking		
	β	SE	95% CI	β	SE	95% CI
Age	.07	.06	-.048, .191	.03	.06	-.091, .150
Weekly work hours	.05	.05	-.056, .157	-.01	.06	-.119, .095
Sex	.02	.06	-.089, .128	-.03	.06	-.142, .076
FQHC	.11*	.05	.013, .215	.08	.05	-.026, .177
Locale	.10	.06	-.021, .226	.12	.06	-.006, .243
Appalachian	-.04	.06	-.159, .079	-.05	.06	-.167, .073
Tenure	-.21***	.06	-.329, -.091	-.09	.06	-.212, .028
Race	.05	.05	-.054, .151	-.05	.05	-.152, .054
R²	.064			.028		
Explicit bias	-.39**	.05	-.487, -.298	-.10	.06	-.212, .011
General contact	.29***	.05	.193, .386	.10	.06	-.019,
R² (R²)	.332 (.268)			.050 (.022)		.208
Positive contact	.55***	.04	.466, .627	.25***	.06	.130, .363
Empathy	.08	.04	-.008, .164	.06	.06	-.066, .180
R² (R²)	.578 (.245)			.104 (.054)		

Note: N = 400; sex is coded 1 = male, 2 = female; FQHC = federally qualified health center and is coded 0 = no, 1 = yes; locale is coded 1 = urban, 2 = suburban, 3 = rural; Appalachian is coded 0 = no, 1 = yes; race is coded 0 = white, 1 = minority; β = standardized regression coefficient;

* p < .05

** p < .01

*** p < .001.

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Table 3

Multivariable logistic regression analyses.

Variable	Naloxone Prescribing			X-Waiver Receipt			X-Waiver Interest		
	OR	SE	95% CI	OR	SE	95% CI	OR	SE	95% CI
Age	1.00	.01	.97, 1.02	1.01	.01	.99, 1.04	1.02	.02	.98, 1.05
Weekly work hours	1.02	.01	1.00, 1.04	1.01	.01	.99, 1.03	1.00	.02	.97, 1.03
Sex	.34 ^{***}	.31	.18, .62	.60	.27	.35, 1.02	.35 ^{**}	.39	.16, .76
FQHC	1.24	.31	.68, 2.27	1.55	.28	.90, 2.67	.65	.45	.27, 1.57
Locale	1.47	.21	.98, 2.21	.91	.18	.64, 1.30	1.28	.25	.78, 2.10
Appalachian	.73	.41	.33, 1.62	1.31	.38	.62, 2.75	.63	.59	.20, 1.99
Tenure	1.03	.02	.98, 1.07	1.03	.02	.99, 1.07	.98	.03	.92, 1.04
Race	1.82	.54	.63, 5.23	1.09	.43	.47, 2.52	.65	.69	.17, 2.53
Explicit bias	.63	.24	.39, 1.01	.64	.23	.40, 1.00	1.02	.31	.56, 1.86
General contact	1.05 ^{**}	.01	1.01, 1.04	1.03 ^{****}	.01	1.02, 1.04	1.02	.01	.99, 1.05
Positive contact	1.37 [*]	.14	1.04, 1.82	1.96 ^{****}	.14	1.49, 2.57	2.09 ^{****}	.21	1.38, 3.17
Empathy	1.04	.17	.74, 1.47	1.03	.16	.74, 1.42	1.52	.23	.96, 2.39
Pseudo R²	.259			.348			.249		

Note: N = 400; sex is coded 1 = male, 2 = female; FQHC = federally qualified health center and is coded 0 = no, 1 = yes; locale is coded 1 = urban, 2 = suburban, 3 = rural; Appalachian is coded 0 = no, 1 = yes; race is coded 0 = white, 1 = minority;

* p < .05

** p < .01

*** p < .001.