Adm Policy Ment Health (2017) 44:642–650
DOI 10.1007/s10488-016-0761-2

ORIGINAL PAPER

Effect of Patient-Therapist Gender Match on Psychotherapy Retention Among United States Veterans with Posttraumatic Stress Disorder

Brian Shiner[1,2,3,4,5] · Christine Leonard Westgate[1] · Juliette M. Harik[1,4] · Bradley V. Watts[3,4,5] · Paula P. Schnurr[2,4]

Published online: 16 August 2016
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Abstract Extant literature suggests that patient-therapist gender matching may be associated with psychotherapy retention. We examined this relationship in a national cohort of Veterans ($n = 506{,}471$) initiating psychotherapy for posttraumatic stress disorder (PTSD) using multivariate logistic regression models. Overall, women were retained in psychotherapy at higher rates than men. When patient and therapist factors as well as practice patterns are considered, gender match between female patients with PTSD and female therapists was not a positive predictor of psychotherapy retention. Contrary to our expectations, gender match between male patients with PTSD and male therapist was a negative predictor of psychotherapy retention.

✉ Brian Shiner
brian.shiner@va.gov

Christine Leonard Westgate
christine.westgate@va.gov

Juliette M. Harik
juliette.harik@va.gov

Bradley V. Watts
bradley.watts@va.gov

Paula P. Schnurr
paula.schnurr@va.gov

[1] White River Junction VA Medical Center, 215 North Main Street, White River Junction, VT 05009, USA

[2] VA National Center for PTSD, 215 North Main Street, White River Junction, VT 05009, USA

[3] VA National Center for Patient Safety, Ann Arbor, MI, USA

[4] Geisel School of Medicine at Dartmouth, Hanover, NH, USA

[5] VA National Center for Patient Safety, 215 North Main Street, White River Junction, VT 05009, USA

Keywords Psychotherapy · Gender · Posttraumatic stress disorder · Veterans

Posttraumatic stress disorder (PTSD) is a mental health condition characterized by intrusive memories of the event, avoidance of reminders of the event, negative alterations in cognitions and mood, and alterations in arousal and reactivity following exposure to a traumatic event (APA 2013). PTSD affects approximately 6 % of the United States population during their lifetime (Pietrzak et al. 2011). Clinical practice guidelines consistently identify psychotherapy as a first-line treatment for PTSD (ACPMH 2007; IOM 2008; ISTSS 2009; NICE 2005; VA/DoD 2010). However, many patients who initiate psychotherapy for PTSD do not complete treatment (Schottenbauer et al. 2008). For example, one study examining psychotherapy use in a national cohort of patients newly diagnosed with PTSD found that among those who started psychotherapy, half received three or fewer sessions (Cully et al. 2008).

Although there are differing perspectives on what constitutes psychotherapy retention, prior studies have often defined eight psychotherapy sessions as the amount typically required to achieve a benefit. Outcomes research in psychotherapy for anxiety and depressive disorders has indicated that half of patients achieve a clinically meaningful improvement after eight sessions (Howard et al. 1986). Similarly, most patients who respond to evidence-based psychotherapies for PTSD have achieved the bulk of their gains by session eight (e.g., Galovski et al. 2012; Tuerk et al. 2011). Studies using this definition consistently indicate that <10 % of PTSD patients complete eight sessions of psychotherapy (Cully et al. 2008; Mott et al. 2014; Spoont et al. 2010). A growing body of research has

examined factors that impact psychotherapy retention among PTSD patients, focusing primarily on patient characteristics (Erbes et al. 2009; Garcia et al. 2011; Gros et al. 2011; Spoont et al. 2015). Comparatively less research has examined how therapist characteristics, or how the match of patient and therapist characteristics, may impact psychotherapy retention.

A theoretical basis for patient-therapist matching originates from the social psychology literature, which suggests that people identify with others who are similar to themselves (Festinger 1954). When lacking objective methods to evaluate their beliefs, people tend to compare themselves to others, and tend to choose people similar to them to make these comparisons. Therefore, patients who identify with their therapists may in turn be more likely to remain in psychotherapy. While gender is only one aspect of identity, it has been frequently investigated as a predictor of treatment alliance and treatment retention (Bhati 2014). Empirical investigations of the impact of patient-therapist gender match on psychotherapy retention in female psychiatric patients (Fujino et al. 1994) and adolescents with substance use disorders (Wintersteen et al. 2005) suggest an advantage for gender-matched patients. Others have found that patient-therapist gender match was unrelated to psychotherapy retention (Elkin 1994; Sterling et al. 1998). The effect of gender matching may be moderated by patient factors such as age, ethnicity, presenting problem, or by therapist factors such as training or years of professional experience. In prior studies, however, thorough examination of potential moderators has been limited by moderate sample sizes and underrepresentation of male patients.

There are no current data regarding the effect of patient-therapist gender matching for patients with PTSD. Some limited data, however, that examine the effect of patient or therapist gender. Those studies show inconsistent effects of gender on PTSD treatment retention (Lange et al. 2001; Paivio et al. 2004; Sijbrandij et al. 2007). Primary care research indicates that women disclose more psychosocial information to female physicians (Hall and Roter 2002; Roter and Hall 2004) and female trauma survivors are more likely to disclose information about traumas such as interpersonal violence to female physicians (Brown et al. 1993; Lo Fo Wong et al. 2006). This is consistent with psychotherapy literature showing that women report a therapist gender preference more commonly than men and those with a preference tend to request female therapists (Cooper 2006; Landes et al. 2013; Pikus and Heavey 1996; Speight and Vera 2005). However, it is unknown whether this preference translates into better psychotherapy retention rates for patients with PTSD.

Given the substantial burden of untreated PTSD symptoms on both the individual patient (Frayne et al. 2011; Kessler 2000) and the healthcare system (Ivanova et al. 2011), identification of factors that promote psychotherapy retention is a priority. If patient-therapist gender match does enhance retention rates, this can inform the optimal assignment of patients to therapists and the particular circumstances when arranging a gender match are most critical. Our objective in the current study was to examine the effect of patient-therapist gender match on psychotherapy retention for patients with PTSD. Seeking to extend existing research conducted on more modest samples, we used a large cohort of United States veterans, which allowed for the examination of patient and therapist factors that may modify the effect of gender match. We expected higher retention rates when patient-therapist dyads were gender matched, even after controlling for patient and therapist factors as well as practice patterns.

Method

Data Source

We used the Veterans Affairs (VA) corporate data warehouse (CDW) to identify patients with new PTSD treatment episodes from fiscal year 2004 through fiscal year 2013. We obtained patient demographic and encounter information as well as psychotherapist demographic data from the CDW. The XXXX XXXX Committee for the Protection of Human Subjects approved this study.

Participants

We included VA users who received a primary diagnosis of PTSD (309.81) at two or more outpatient encounters, at least one of which occurred in a mental health setting, over the course of 90 days between October 1 2003 and September 30 2013. Patients were excluded if they had received a PTSD diagnosis in the prior two years. When patients met the cohort inclusion criteria multiple times over the 10-year period, only their first episode was included. We examined treatment receipt in the year following the first diagnosis. Patients were included in this analysis if they initiated individual psychotherapy in the 6 months following their first PTSD diagnosis. Because of changes in current procedural technology (CPT) codes initiated in 2012, our crosswalk indicated that we needed to include both psychotherapy and psychotherapy with medication management CPT codes in order to maintain consistency across fiscal years. These CPT codes included: 90804–90819, 90821–90824, 90826–90829, 90832–90834, 90836–90841, 90843, 90845, 90863, and 96152.

Therapists

We identified unique provider codes for all therapists initiating individual psychotherapy with patients in our cohort. Provider codes were linked to a table of provider information containing information about their gender, age, number of years of VA service, and whether they had prescription privileges.

Therapy Retention

We linked each patient to the therapist with whom he or she completed his or her initial session of individual psychotherapy. We defined therapy retention as completing eight or more sessions with that same therapist over the 6 months following the initial session. Three standards for treatment retention have been used in prior work examining psychotherapy receipt using VA administrative data. Cully et al. (2008) and Mott et al. (2014) used the most liberal period of eight sessions over 1 year. Spoont et al. (2010, 2015) used eight sessions over a period of 6 months, and Seal et al. (2010) used nine sessions over a period of 15 weeks. To be consistent with existing literature, we chose the mid-range standard of eight sessions over 6 months.

Potential Moderators

We examined four groups of potential moderators including patient—therapist gender match, patient factors, therapist factors, and practice patterns. First, we stratified patients and therapists into four potential match groups: (1) Female Patient—Female Therapist, (2) Female Patient—Male Therapist, (3) Male Patient—Female Therapist, and (4) Male Patient—Male Therapist. Second, we examined patient factors including age, ethnicity, race, VA service connected disability rating, military service era, and military exposure including sexual trauma and combat. VA service connection disability rating indicates the percentage of each Veteran's medical impairment that is due to military service. Third, we examined therapist factors including age, number of years of VA service, and whether they had prescription privileges. Fourth, to account for individual practice patterns, we developed a therapist retention rate. To calculate therapist retention rate, we divided the number of patients in the cohort with whom each therapist completed eight sessions or more by the number of patients with whom each therapist initiated treatment. We created an interaction term for therapist retention rate and fiscal year. Prior research has indicated that both due to an influx of new patients in the early years of the cohort (Rosenheck and Fontana 2007) and the cumulative effects of mental health hiring initiative by the later years of the cohort (Hermes et al. 2012; Wagner et al. 2011) the amount of psychotherapy an individual therapist would have capacity to deliver varied from year to year.

Analysis

We compared therapist characteristics by gender using *t* tests and Chi Square analyses where appropriate, using a Bonferroni correction for multiple testing. We compared patient characteristics by patient-therapist match group using Chi Square analysis, using Bonferroni correction for the omnibus tests and then conducting relevant pairwise testing. We constructed a series of logistic regression models to predict the effect of patient-therapist gender match on psychotherapy retention. We began with a univariate model including patient-therapist gender match as the independent variable and psychotherapy retention as the dependent variable. We then sequentially added independent variables representing patient characteristics and therapist characteristics. Finally, we added the interaction term for therapist retention rate and fiscal year. We used this interaction term to account for individual practice patterns, as we were unable to perform a nested model due to the very high number of therapists caring for patients in the cohort. All analyses were performed in SAS version 9.4 (SAS Institute, Cary NC).

Results

There were 506,471 patients in the cohort, which included 46,330 women (9.2 %) and 460,141 men (90.9 %). Patients initiated psychotherapy with 20,657 therapists, including 8297 male therapists (40.2 %) and 12,360 female therapists (59.8 %). Each therapist initiated psychotherapy with a mean of 24.5 patients ($SD = 45.9$) from the cohort. Female therapists were younger, had fewer years of VA service, were less likely to have prescription privileges, and had higher psychotherapy retention rates (Table 1).

Female patients were younger, more likely to be from minority populations, and tended to have been in the military during more recent service eras (Table 2). Female patients were far more likely than male patients to report sexual trauma and less likely to have been exposed to combat. Female patients who reported sexual trauma were more likely to see a female therapist and female patients who reported combat exposure were more likely to see a male therapist, and the same held true for male patients. Younger male patients tended to see female therapists whereas older male patients tended to see to male therapists. The largest differences were among male patients who served during the Vietnam Era, who tended to see male therapists and among male patients who served during the Persian Gulf and Iraq and Afghanistan Eras, who tended to see female therapists.

Table 1 Therapist characteristics by gender

	Female (n = 12,360)	Male (n = 8297)
Age[a]	44.5 (SD = 11.9)	48.6 (SD = 12.4)
Years of VA service[a]	6.0 (SD = 8.0)	8.8 (SD = 9.9)
Prescription privileges (n)[a]	4124 (33.4 %)	3766 (45.4 %)
Patient retention rate (sd)[a]	12.7 % (SD = 20.0)	8.7 % (SD = 16.7)

VA veterans affairs

[a] $P < 0.0001$ in t test or χ^2 analysis

Among the 506,471 patients who initiated psychotherapy, 40,188 (7.9 %) completed eight or more sessions with their initial therapist. Female patients who saw female therapists had the highest retention rate, whereas male patients who saw male therapists had the lowest retention rate. Furthermore, both female patients and male patients were more likely to complete eight or more sessions when assigned to a female therapist. Although not used in this categorical analysis, the average number of sessions completed followed the same pattern: female patients who saw female therapists completed the highest number of sessions (mean 4.4, median 3), followed by female patients who saw male therapists (mean 3.3, median 2), male patients who saw female therapists (mean 3.2, median 2), and male patients who saw male therapists (mean 2.9, median 2).

We constructed our predictive model for psychotherapy retention in four stages (Table 3). In the first model, we entered the four dyads and obtained a c statistic of 0.58, meaning that the univariate model predicted psychotherapy retention in 58 % of cases. Odds for the highest-completing dyad (female patient and female therapist) were 3.22 (95 % CI 3.12, 3,33; $p < 0.0001$) compared to the lowest-completing dyad (male patient and male therapist, which served as the reference dyad). In the second model, we added patient characteristics including age group, ethnicity, race, service-connected disability, service era, sexual trauma, and combat exposure. The c statistic increased to 0.62 while the odds ratio for highest- versus lowest-completing dyad was reduced to 2.07 (95 % CI 1.98, 2.16; $p < 0.0001$). In the third model, where we added therapist variables of therapist age, time in VA service, and prescription privileges, the c statistic increased to 0.73 while the odds ratio for highest- versus lowest-completing dyad was reduced to 1.79 (95 % CI 1.71, 1.87; $p < 0.0001$).

In our final model, we added the therapist retention rate and fiscal year interaction term to the patient and therapist factors listed in the previous paragraph, which increased the c statistic to 0.86, and decreased the odds ratio for highest- versus lowest-completing dyad to 1.32 (95 % CI 1.26,1.38; $p < 0.0001$). Odds ratios for all dyad pairings remained positively correlated and statistically significant compared with the male patient and male therapist reference group. Notably, however, therapist gender became less important within patient gender groups when other factors were considered. In fact, the confidence intervals for female patients matched with female therapists and female patients matched with male therapists overlapped (OR 1.32; 95 % CI 1.26, 1.38; $p < 0.0001$ vs. OR 1.27; 95 % CI 1.18, 1.37; $p < 0.0001$), and the magnitude of the difference between male patients matched with female therapists and male patients matched with male therapists was greatly reduced (OR 1.06; 95 % CI 1.04, 1.09; $p < 0.0001$).

Although our primary aim was to examine therapist and patient gender matching, we found that multiple covariates were significant predictors of psychotherapy retention in our final model. Patients in all age groups younger than age 65 were more likely to complete eight sessions of psychotherapy, with those between ages 35 and 54 having the greatest odds of retention. Patients identifying as Hispanic and Latino, Native American, or African Americans had lower odds of psychotherapy retention compared to those who identified as white. Patients with no service-connected disability had the lowest odds of psychotherapy retention and groups with increasing ratings beginning at the 10 % level were associated with increasingly higher retention rates. Veterans of World War II, the Korean War, and the Iraq and Afghanistan Wars had lower odds of psychotherapy retention than post-Vietnam Era Veterans. Sexual trauma increased the odds of completing eight sessions of psychotherapy whereas combat trauma decreased the odds. Patients who saw therapists who were older than 65 had the lowest odds of completing psychotherapy, whereas those assigned to the small group of psychotherapists who had worked in the VA for greater than 30 years had the highest odds of retention. Finally, having a therapist with prescription privileges was associated lower odds of completing eight or more sessions of psychotherapy.

Discussion

Contrary to our expectation, gender match between patients with PTSD and therapists is not a positive predictor of psychotherapy retention when other patient and therapist

Table 2 Patient characteristics by gender match

Patient gender	Female $n = 46{,}330$		Male $n = 460{,}141$		Pairwise differences
Patienttherapist gender match	F–F $n = 34{,}240$	F–M $n = 12{,}090$	M–F $n = 241{,}074$	M–M $n = 219{,}067$	
Outcome variable					
≥Eight sessions in 6 months	16.8 % (5757)	9.5 % (1144)	8.4 % (20,346)	5.9 % (12,941)	w-m, wxt, mxt
Covariates					
Age					
<35 years	34.4 % (11,787)	36.8 % (4451)	22.8 % (54,968)	19.5 % (42,794)	w-m, wxt, mxt
35–44 years	22.1 % (7567)	21.4 % (2583)	10.9 % (26,198)	9.8 % (21,415)	w-m, —, mxt
45–54 years	30.9 % (10,583)	29.3 % (3540)	15.3 % (36,804)	14.9 % (32,620)	w-m, wxt, mxt
55–64 years	11.0 % (3781)	10.9 % (1319)	39.2 % (94,522)	43.5 % (95,327)	w-m, —, mxt
65+ years	1.5 % (522)	1.6 % (197)	11.9 % (28,582)	12.3 % (26,911)	w-m, —, mxt
Ethnicity					
Hispanic or latino	7.3 % (2497)	7.4 % (890)	8.2 % (19,752)	8.0 % (17,441)	w-m, —, mxt
Unknown	2.5 % (843)	2.8 % (338)	3.3 % (7972)	3.5 % (7727)	w-m, wxt, mxt
Not hispanic or latino	90.2 % (30,900)	89.8 % (10,862)	88.5 % (213,350)	88.5 % (193,899)	w-m, —, —
Race					
Native American	2.0 % (676)	1.6 % (198)	1.5 % (3736)	1.4 % (3154)	w-m, wxt, mxt
Asian	1.1 % (377)	1.1 % (139)	0.9 % (2132)	0.8 % (1760)	w-m, —, mxt
African American	30.6 % (10,462)	28.3 % (3419)	19.1 % (45,985)	18.0 % (39,482)	w-m, wxt, mxt
Hawaiian/Pacific Islander	1.7 % (572)	1.4 % (173)	1.5 % (3667)	1.5 % (3392)	Omnibus > 0.0014
Multiracial	0.9 % (301)	1.0 % (118)	0.4 % (1034)	0.5 % (1001)	w-m, —, —
Unknown	5.1 % (1760)	5.2 % (634)	6.8 % (16,387)	7.1 % (15,656)	w-m, —, mxt
White	58.7 % (20,092)	61.3 % (7409)	69.7 % (168,133)	70.6 % (154,622)	w-m, wxt, mxt
Service connection					
100 %	17.2 % (5878)	18.5 % (2233)	21.3 % (51,394)	23.2 % (50,875)	w-m, wxt, mxt
70–90 %	35.4 % (12,109)	35.7 % (4315)	37.1 % (89,538)	37.9 % (83,009)	w-m, —, mxt
10–60 %	28.9 % (9883)	27.9 % (3370)	28.2 % (68,026)	26.7 % (58,514)	w-m, wxt, mxt
0 %	1.9 % (640)	1.7 % (202)	1.3 % (3123)	1.2 % (2718)	w-m, —, —
None	16.7 % (5730)	16.3 % (1970)	12.0 % (28,993)	10.9 % (23,951)	w-m, —, mxt
Service era					
World War II	0.1 % (35)	0.1 % (18)	1.8 % (4373)	2.1 % (4674)	w-m, —, mxt
Korea	0.2 % (82)	0.2 % (23)	1.8 % (4407)	2.1 % (4508)	w-m, —, mxt
Vietnam	10.1 % (3476)	10.3 % (1245)	49.1 % (118,392)	54.3 % (119,017)	w-m, —, mxt
Post-Vietnam	21.0 % (7191)	19.3 % (2328)	6.7 % (16,100)	6.1 % (13,265)	w-m, wxt, mxt
Persian Gulf	67.4 % (23,075)	69.0 % (8342)	40.5 % (97,622)	35.6 % (77,883)	w-m, wxt, mxt
Iraq and Afghanistan[a]	30.5 % (10,435)	35.6 % (4298)	30.0 % (72,288)	25.6 % (56,083)	w-m, wxt, mxt
None listed/unknown	1.0 % (334)	0.9 % (110)	0.6 % (1504)	0.6 % (1269)	w-m, —, —
Military exposure					
Sexual trauma	65.7 % (22,494)	56.8 % (6867)	4.8 % (11,452)	4.0 % (8686)	w-m, wxt, mxt
Combat	16.0 % (5467)	18.9 % (2285)	32.9 % (79,293)	35.1 % (76,961)	w-m, wxt, mxt
Fiscal year treated					
2004 and 2005	12.7 % (4359)	14.1 % (1706)	14.0 % (33,705)	18.5 % (40,573)	w-m,wxt, mxt
2006 and 2007	14.8 % (5058)	16.6 % (2009)	16.8 % (40,489)	20.0 % (43,842)	w-m, wxt, mxt
2008 and 2009	20.9 % (7157)	21.5 % (2601)	22.1 % (53,303)	21.8 % (47,687)	w-m, —, mxt
2010 and 2011	24.0 % (8207)	22.0 % (2655)	24.6 % (59,414)	21.1 % (46,272)	w-m, wxt, mxt
2012 and 2013	27.6 % (9459)	25.8 % (3119)	22.5 % (54,163)	18.6 % (40,693)	w-m, wxt, mxt

w-m women differ from men, *wxt* women differ by therapist gender match, *mxt* men differ by therapist gender match

[a] Iraq and Afghanistan Service Era is a subset of Persian Gulf Service Era; *F* female, *M* male

Table 3 Odds ratios for psychotherapy retention (95 % confidence interval)

Predictor	At least eight sessions c = 0.58 *n* = 506,471	Add patient variables c = 0.62 *n* = 506,471	Add therapist variables c = 0.73 *n* = 506,471	Add TRR × FY interaction term c = 0.86 *n* = 506,471
Female patient—female therapist	3.22 (3.12, 3.33)[d]	2.07 (1.98, 2.16)[d]	1.79 (1.71, 1.87)[d]	1.32 (1.26, 1.38)[d]
Female patient—male therapist	1.67 (1.56, 1.77)[d]	1.11 (1.03, 1.18)[b]	1.23 (1.14, 1.31)[d]	1.27 (1.18, 1.37)[d]
Male patient—female therapist	1.47 (1.44, 1.50)[d]	1.44 (1.41, 1.47)[d]	1.28 (1.25, 1.31)[d]	1.06 (1.04, 1.09)[d]
Male patient—male therapist	Reference	Reference	Reference	Reference
Age <35 years		1.00 (0.94, 1.07)	1.01 (0.94, 1.08)	1.16 (1.08, 1.25)[d]
Age 35–44 years		1.13 (1.06, 1.21)[c]	1.14 (1.06, 1.21)[c]	1.45 (1.34, 1.56)[d]
Age 45–54 years		1.21 (1.15, 1.28)[d]	1.23 (1.16, 1.30)[d]	1.53 (1.43, 1.63)[d]
Age 55–64 years		1.03 (0.99, 1.08)	1.04 (0.99, 1.09)	1.15 (1.10, 1.21)[d]
Age 65+ years		Reference	Reference	Reference
Ethnicity hispanic or latino		0.82 (0.79, 0.86)[d]	0.83 (0.79, 0.86)[d]	0.88 (0.84, 0.92)[d]
Ethnicity missing		0.86 (0.80, 0.93)[d]	0.89 (0.83, 0.96)[b]	0.93 (0.86, 1.01)
Ethnicity not hispanic or latino		Reference	Reference	Reference
Race Native American		0.83 (0.76, 0.91)[d]	0.81 (0.74, 0.88)[d]	0.89 (0.81, 0.98)[a]
Race Asian		1.04 (0.94, 1.16)	1.09 (0.98, 1.21)	1.03 (0.91, 1.15)
Race African American		0.74 (0.72, 0.76)[d]	0.72 (0.70, 0.75)[d]	0.77 (0.74, 0.79)[d]
Race Hawaiian/Pacific Islander		0.93 (0.85, 1.01)	0.98 (0.90, 1.06)	0.98 (0.89, 1.08)
Race multiracial		0.90 (0.78, 1.04)	0.95 (0.82, 1.10)	0.94 (0.80, 1.10)
Race unknown		0.79 (0.75, 0.83)[d]	0.78 (0.74, 0.82)[d]	0.83 (0.79, 0.88)[d]
Race white		Reference	Reference	Reference
Service connection 100 %		0.97 (0.94, 1.01)	1.03 (0.99, 1.07)	1.25 (1.20, 1.30)[d]
Service connection 70–90 %		0.96 (0.93, 1.00)[a]	0.99 (0.96, 1.03)	1.17 (1.13, 1.22)[d]
Service connection 10–60 %		0.99 (0.96, 1.02)	0.98 (0.94, 1.01)	1.05 (1.01, 1.09)[a]
Service connection 0 %		1.00 (0.91, 1.09)	0.99 (0.91, 1.09)	1.02 (0.92, 1.12)
Service connection none		Reference	Reference	Reference
World War II Veteran		0.34 (0.29, 0.40)[d]	0.39 (0.33, 0.46)[d]	0.57 (0.47, 0.68)[d]
Korean War Veteran		0.53 (0.46, 0.61)[d]	0.59 (0.51, 0.68)[d]	0.84 (0.72, 0.99)[a]
Vietnam Veteran		0.81 (0.74, 0.88)[d]	0.83 (0.76, 0.91)[d]	1.06 (0.96, 1.17)
Post-Vietnam		1.16 (1.06, 1.26)[c]	1.17 (1.07, 1.27)[c]	1.17 (1.06, 1.29)[b]
Gulf Era Veteran		1.03 (0.95, 1.12)	1.00 (0.92, 1.09)	1.03 (0.94, 1.13)
Iraq and Afghanistan Veteran		0.97 (0.94, 1.01)	0.89 (0.86, 0.92)[d]	0.86 (0.82, 0.89)[d]
No service era listed		0.89 (0.76, 1.03)	0.95 (0.81, 1.11)	1.27 (1.07, 1.51)[b]
Sexual trauma		1.48 (1.43, 1.54)[d]	1.46 (1.41, 1.51)[d]	1.32 (1.26, 1.37)[d]
Combat		0.81 (0.79, 0.83)[d]	0.85 (0.83, 0.87)[d]	0.87 (0.85, 0.90)[d]
Therapist age <35			1.76 (1.66,1.87)[d]	1.22 (1.14,1.30)[d]
Therapist age 35–44			1.60 (1.51,1.69)[d]	1.17 (1.10,1.24)[d]
Therapist age 45–54			1.31 (1.24,1.38)[d]	1.16 (1.09,1.23)[d]
Therapist age 55–64			1.22 (1.15,1.29)[d]	1.09 (1.03,1.16)[b]
Therapist age unknown			1.47 (1.39,1.55)[d]	1.10 (1.04,1.17)[b]
Therapist age 65+			Reference	Reference
Therapist VA service <5 years			1.13 (1.05,1.21)[b]	0.94 (0.87,1.02)[a]
Therapist VA service 5–10 years			0.94 (0.87,1.01)	0.91 (0.84,0.99)[a]
Therapist VA service 11–20 years			0.91 (0.84,0.98)[a]	0.92 (0.85,0.99)
Therapist VA service 21–30 years			0.94 (0.87,1.02)	0.99 (0.91,1.07)
Therapist VA service unknown			0.96 (0.89,1.05)	0.95 (0.86,1.04)
Therapist VA service 31+ years			Reference	Reference
Therapist prescription privileges			0.21 (0.21, 0.22)[d]	0.49 (0.48, 0.51)[d]

[a] $P < 0.05$, [b] $P < 0.01$, [c] $P < 0.001$, [d] $P < 0.0001$; *TCR* therapist retention rate, *FY* fiscal year

factors are considered. Although the raw odds ratios were in agreement with prior research demonstrating a benefit to gender match among female patients, our large sample size allowed us to control for practice patterns, where patients who are more likely to complete eight or more sessions of psychotherapy are systematically seen by female therapists. Our unexpected finding of a small but significant increase in treatment retention when male patients were seen by female therapists is unique to our study and was facilitated by a large male patient population not included in other studies on gender matching (e.g., Fujino et al. 1994). Women were more likely than men to complete eight or more sessions of psychotherapy, but their odds of retention with a female or a male therapist were not significantly different. Men, on the other hand, were less likely to complete eight or more sessions of psychotherapy when matched with a male therapist. Therefore, it does appear that gender matters in patient-therapist matching, but it matters less than we thought and in a different way than we expected. Though our significant finding applies only to men, this is highly relevant finding in the VA, where over 90 % of patients in our cohort initiating psychotherapy for PTSD were men.

Though we observed that male patients were more likely to be retained in psychotherapy with female therapists than with male therapists, we do not recommend that clinics begin systematically matching male patients to female therapists on the basis of this single study. The findings from this single study warrant replication, and the mechanism by which female therapists may more successfully retain patients in psychotherapy is worthy of investigation. If future research can identify a particular aspect of the male patient-female therapist dynamic or a characteristic among female therapists that promotes treatment adherence, perhaps this would elucidate strategies that could be used by all therapists to promote engagement and retention.

A number of patient factors remained predictive of therapy retention even after considering patient–therapist gender matching. Many of these factors (e.g., minority patients and older patients) are consistent with prior psychotherapy literature (Cully et al. 2008; Quinones et al. 2014; Spoont et al. 2015) and highlight the need to further explore other disparities in psychotherapy treatment. Other findings, such that combat veterans and Vietnam-era veterans are most often matched with male therapists, are unique to this data set and deserve replication. It is quite possible that these matching patterns are the result of appropriate deference to patient preference for therapist. However, we need further examination of the mechanisms by which patient preferences for therapists are assessed and honored.

Similarly, a number of therapist factors remained significant predictors of treatment retention even after considering the effect of gender matching. Younger therapists were more likely to have patients who completed eight sessions. In each younger therapist age group, the retention rate was greater. Other therapist factors may be an artifact of incorrect coding. For example, it seems likely that the lower retention rate among therapists who can prescribe medications is at least partially due to miscoding of medication management visits as psychotherapy visits.

This work points out the need to better understand the existing processes and culture that determine how each patient is matched to a therapist. We see evidence of some defined patterns. For example, women with military sexual trauma and younger patients tend to see female therapists. It also appears that there may be a trend that older patients and combat veterans see male therapists. In some cases these may be intentional referral and patterns that result in better care, but in other case they may result from unconscious bias and not serve patients interests. In any case, the referral processes for therapy is an area that would benefit from further investigation.

The limitations to our work are considerable. These limitations tend to group around two issues: the lack of outcome measures and incomplete demographic data for both therapists and patients. We assume, based on prior literature that stopping psychotherapy prior to eight sessions is associated with less improvement. That assertion must be taken with caution, as we have no outcome data on this sample. Indeed, it has been documented that some PTSD patients conclude treatment because they had improved prior to the eighth session (Galovski et al. 2012; Kelly et al. 2009; Stein et al. 2012). This issue is relevant, as we have no information about the content of the psychotherapy sessions. It is possible that male patient–male therapist dyads are more likely to use evidence based psychotherapy approaches and improve and terminate prior to session eight. Our multivariate analysis accounted for only basic patient and therapist characteristics. Because of this we were unable to examine the effect of patient-therapist matching on other characteristics such as race, ethnicity, preferred language, or cultural knowledge. It is likely that other unaccounted patient or therapist factors would further erode, or enhance, the effect of gender matching. Three examples of factors that deserve further exploration are military exposure, sexual orientation, and sexual identity. We had relatively blunt information about military exposures including two categorical classifiers regarding combat exposure and sexual trauma. Further information such as the extent of combat exposure and gender of sexual assailants could qualify the relationships that we observed. We did not have any information about sexual orientation or sexual identity. This may have resulted in false assumptions about how patients would identify with their therapists based on gender and could have resulted in misclassification bias.

Our preliminary analysis suggests that matching therapists and patients by gender has different effects on the likelihood of psychotherapy retention in women and men with PTSD; women were more likely to be retained in therapy in the case of gender matching and the opposite was true for men. When we considered basic demographic factors of patients and therapists, the effect of gender matching disappeared in women. However, there remained a small increase in treatment retention for male patients assigned to female therapists. Determining the mechanism of this relationship could support interventions to improve psychotherapy retention for male patients, who have lower rates of psychotherapy retention than female patients. Finally, future work should consider treatment matching on a wider array of factors (other than gender), and should explore the processes through which patients are assigned to a particular therapist.

Acknowledgments This manuscript is the work of the authors and does not necessarily represent the views of the Department of Veterans Affairs or the United States Government.

Funding This study was funded by a United States Department of Veterans Affairs Health Services Research and Development Career Development Award to Dr. Shiner (CDA11-263).

Compliance with Ethical Standards

Conflict of Interest Dr. Shiner declares that he has no conflict of interest. Ms. Westgate declares that she has no conflicts of interest. Dr. Harik declares that she has no conflicts of interest. Dr. Watts declares that he has no conflicts of interest. Dr. Schnurr declares that she has no conflicts of interest.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and national research committees and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Specifically, this study was reviewed and approved by the White River Junction VA Medical Center Research and Development Committee, the Dartmouth College Committee for the Protection of Human Subjects, and VA National Data Systems.

Informed consent This retrospective cohort study was granted a waiver of informed consent by the Dartmouth College Committee for the Protection of Human Subjects (CPHS#24544).

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