

# Psychological Services

## **Patterns of MMPI-2-Restructured Form (MMPI-2-RF) Validity Scale Scores Observed Across Veteran Affairs Settings**

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Online First Publication, February 28, 2019. <http://dx.doi.org/10.1037/ser0000339>

### CITATION

Ingram, P. B., Tarescavage, A. M., Ben-Porath, Y. S., & Oehlert, M. E. (2019, February 28). Patterns of MMPI-2-Restructured Form (MMPI-2-RF) Validity Scale Scores Observed Across Veteran Affairs Settings. *Psychological Services*. Advance online publication. <http://dx.doi.org/10.1037/ser0000339>

# Patterns of MMPI-2-Restructured Form (MMPI-2-RF) Validity Scale Scores Observed Across Veteran Affairs Settings

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The purpose of this investigation is to provide descriptive information on veteran response styles for a variety of VA referral types using the Minnesota Multiphasic Personality Inventory (MMPI)-2-Restructured Form (MMPI-2-RF), which has well-supported protocol validity scales. The sample included 17,640 veterans who were administered the MMPI-2-RF between when it was introduced to the VA system in 2013 until May 31, 2015 at any VA in the United States. This study examines frequencies of protocol invalidity based on the MMPI-2-RF's validity scales and provides comprehensive descriptive findings on validity scale scores within the VA. Three distinct trends can be seen. First, a majority of the sample did not elevate any of the validity scales beyond their recommended interpretive cut-scores, indicating that scores on the substantive scales would be deemed valid and interpretable in those cases. Second, elevation rates are higher for the overreporting scales in comparison to the underreporting and non-content-based invalid responding scales. Lastly, a majority of those with an elevation on one overreporting validity indicator also had an elevation on at least one other overreporting scale. Implications for practice and the utility of the MMPI-2-RF within the VA are discussed.

**Keywords:** MMPI-2-RF, validity scales, Veteran Affairs, psychological assessment

Mental health problems are increasingly prevalent following deployment and military service (Seal et al., 2009). Approximately 40% of returning Operation Enduring Freedom (OEF) and Iraqi Freedom (OIF) veterans utilize services from the Department of Veteran Affairs (VA) for their mental health care needs (Kang, 2008), and veterans deployed as part of other recent operations in

a similar theater (e.g., Operation New Dawn) have similar mental health needs and are often considered as homogenous with OEF/OIF (Ramsey et al., 2017). This rate of utilization represents a steep rise from earlier eras (Doran, Pietrzak, Hoff, & Harpaz-Rotem, 2017) and reflects an opportunity to stem the prevalence of more severe mental illness in military service members (e.g., Hoge & Warner, 2014; Kang, Natelson, Mahan, Lee, & Murphy, 2003; Zivin et al., 2007). Among the challenges of providing effective treatments for veterans is the initial step of identifying appropriate services, which can be challenging as engagement and clinical need are likely to differ based on a variety of factors, including presenting symptoms (Doran et al., 2017).

Treatment referral is complicated by higher rates of disorder prevalence and comorbidity for both physical and mental health concerns (Hoge et al., 2004; Kang et al., 2003; Kilpatrick et al., 2013). Various common psychiatric disorders also predict lower rates of service utilization (Doran et al., 2017). For instance, substance use disorders have prevalence estimates as high as 32% in veterans (Vazan, Golub, & Bennett, 2013) and predict both greater service noninitiation and nonengagement (Dixon, Holoshitz, & Nossel, 2016). Moreover, the heterogeneous nature of some diagnoses common to veterans (e.g., posttraumatic stress disorder; Galatzer-Levy & Bryant, 2013) makes targeting a specific and dominant set of clinical symptoms difficult. In short, if clinical symptoms are not properly identified, they can produce a barrier to mental health care provision and engagement.

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The views expressed in this article do not reflect those of the Department of Veteran Affairs or of the United States Government. The authors declare that they have no conflict of interest. Yossef S. Ben-Porath is a paid consultant to the MMPI Publisher, the University of Minnesota, and Distributor, Pearson. He receives research funds from the University of Minnesota and as co-author of the MMPI-2-RF he receives royalties on sales of the test. Anthony M. Tarescavage receives research funding from the University of Minnesota Press.

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In addition to greater comorbidity and higher rates of prevalence, compensation and pension evaluations can also complicate service delivery in the VA. This environment creates a context in which clinically directed treatment can be intermingled with a forensic evaluation process (Russo, 2013), making it difficult to know how and to what degree a test-taker's report in a psychological evaluation is affected by the compensation process. Indeed, the compensation evaluation process may frequently lead to response styles that embellish actual experienced symptoms (see Ray, 2017, for a discussion on this topic). This can negatively impact service referral, as information from the compensation evaluation may enter the veteran's record and misinform other providers. Approximately 21% of veterans are service connected for mental or physical health conditions (United States Census Bureau, 2017), and those who are service connected frequently receive compensation for multiple conditions (Veterans Benefit Administration, 2017). For instance, estimates are that between 33% and 53% of veterans with posttraumatic stress disorder (PTSD), one of the most common service connected conditions (Veterans Benefit Administration, 2017), undergo a compensation evaluation (e.g., DeViva & Bloem, 2003; Freeman, Powell, & Kimbrell, 2008). Accordingly, the compensation examination process may have widespread impact on the care of veterans, particularly considering the possibility that plans to apply for compensation and pension may influence veterans' response styles in early stages of treatment (i.e., in clinical evaluations).

One method to improve diagnostic accuracy and treatment recommendation involves strong and well-vetted assessment practices with indicators of response style. The MMPI-2-Restructured Form (MMPI-2-RF; Tellegen & Ben-Porath, 2008/2011) is one example of this sort of measure. It has been used within the VA system to examine longitudinal treatment engagement patterns (Arbisi, Rusch, Polusny, Thuras, & Erbes, 2013) and strengthen understanding of clinical presentations (Arbisi, Polusny, Erbes, Thuras, & Reddy, 2011; Ray, 2017; Sellbom, Lee, Ben-Porath, Arbisi, & Gervais, 2012; Wolf et al., 2008; Wolf & Miller, 2014).

Research with the MMPI-2-RF validity scales on military and veteran samples has primarily focused on the detection of overreporting, likely given the evaluative context of the VA (e.g., Ray, 2017). For instance, Nelson and colleagues (2011) evaluated overreporting scale patterns across three groups of veterans (veteran simulation, disability neuropsychological evaluation, and nondisability neuropsychological evaluation) for cognitive complaints, such as concussion or mild traumatic brain injury, and those participants undergoing an evaluation tied to the compensation process (e.g., those with a motive for secondary gains) had greater evidence of exaggeration on the MMPI-2-RF overreporting scales ( $d = .34$ – $.79$ ). Likewise, when service members are grouped based on their overreporting scores, scores on an extratest measures of symptom overreporting are likewise elevated (Armistead-Jehle et al., 2018). Consistent with the research trend toward the MMPI-2-RF validity scales functioning effectively within veteran and active-duty populations, veterans asked to simulate PTSD had substantially higher scores compared to genuine patients with PTSD, with effect sizes for the overreporting scales ranging from 0.74 to 1.62 (Goodwin, Sellbom, & Arbisi, 2013).

Beyond the VA, research on the MMPI-2-RF has consistently shown that all of its validity scales differentiate between credible and noncredible responding with large effect sizes (Ingram &

Ternes, 2016; Sharf, Rogers, Williams, & Henry, 2017). Ingram and Ternes highlighted a need for continued study of veteran response styles as measured by the MMPI-2-RF considering the limited number of studies on which they could base their analyses and the way that veterans and veteran related issues represent important considerations in understanding trends in the MMPI-2-RF validity scales.

Psychological assessments are conducted in the VA for reasons other than compensation and pension evaluations; for example, testing may be conducted for initial or confirmatory diagnostic purposes and treatment planning. However, even in these noncompensation evaluations, where an incentive to engage in noncredible responding may not be apparent, veterans are likely to be aware that the results will be integrated into their medical record and may be considered during a subsequent compensation and pension evaluation (for a comprehensive review of the compensation and pension process, see Worthen & Moering, 2011). Indeed, disability status of veterans referred for clinical evaluation has been found to relate to service-connection status (e.g., active vs. nonactive claim), suggesting that rates of symptom overreporting were greater even when the evaluation was not directly part of the compensation and pension process (Nelson et al., 2011). Thus, overreporting may occur at a higher than expected rate even in nominally clinical evaluations. Considering the evaluative complexity facing psychologists within the VA and the potential utility of psychological assessments for assessing response style, the purpose of this investigation is to provide a needed examination of veteran test-taking approaches for those undergoing psychological assessment within the VA (see Ray, 2017) as measured by the MMPI-2-RF validity scales.

To accomplish this goal, in this study we report the frequency of elevated MMPI-2-RF validity scale scores across each of the nine validity scales, using standard interpretive thresholds (i.e., Ben-Porath & Tellegen, 2008). Specifically, we report the percentage of veterans who produced elevated scores on scales assessing noncontent-based invalid responding (VRIN-r/TRIN-r), general overreported pathology (F-r and Fp-r), somatic and cognitive overreporting (FBS-r, RBS, and Fs), and underreporting (L-r and K-r). We also report frequencies to document the number of overreporting invalidity scales that exceeded interpretive recommendations in each test protocol (after excluding those who exceed interpretive recommendations for noncontent based invalid responding validity scales). Frequencies for the number of underreporting scales exceeding interpretive recommendations were also calculated in the same manner.

## Method

### Participants

This study utilized a sample of 17,640 veterans who completed the MMPI-2-RF between 2013 (when the MMPI-2-RF was introduced into the VA's electronic testing system) and May 31, 2015 at any VA in the United States. The Mental Health Assistant Suite system is a widely used test administration and scoring platform used across the VA. All MMPI-2-RF testing that was administered electronically (or entered for scoring) in the VA Mental Health Assistant Suite during this time was included in this study. Table 1 provides demographic information across test administrations for

Table 1  
Demographic Characteristics of Participants

Demographic characteristic	Full Sample <i>n</i> = 17,640	Valid <i>n</i> = 12,570
Marital Status		
Single	3855 (21.9%)	2713 (21.6%)
Separated	916 (5.2%)	518 (4.1%)
Married	8384 (47.5%)	6070 (48.3%)
Divorced	3952 (22.4%)	2779 (22.1%)
Widowed	271 (1.5%)	198 (1.6%)
Missing	262 (1.4%)	292 (2.3%)
Period of Service		
World War II	14 (<1%)	13 (<1%)
Korea	53 (<1%)	45 (<1%)
Vietnam-Era	4247 (24.1%)	3155 (25.1%)
Post-Vietnam	2095 (11.9%)	1458 (11.6%)
Gulf War	10842 (61.5%)	7607 (60.5%)
Other/Missing	389 (<1%)	292 (2.3%)
Service Connection		
NSC	2646 (15%)	2058 (16.5%)
0–30%	2044 (11.6%)	1511 (12.0%)
31–50%	2931 (16.6%)	1576 (12.5%)
51–70%	3480 (19.7%)	2432 (19.3%)
71–99%	3891 (22.1%)	2641 (21.0%)
100%	2599 (14.7%)	1643 (13.1%)
Missing	49 (<1%)	709 (5.6%)
%Male	15059 (85.4%)	10627 (84.5%)
Combat Veteran	1736 (9.8%)	1173 (9.3%)

*Note.* NSC = Non-Service Connected. This indicates that an individual was either not evaluated for service connection or that their evaluation indicated the presenting problem was not related to their military service. Information of education level is not coded within the electronic medical record and, thus, was not available for demographic information. Age is electrically recorded; however, it was not collected into this MMPI-2-RF database. Valid scale criteria includes standard cut-scores: CNS < 18, VRIN-*r* < 80, TRIN < 80, F-*r* < 120, and Fp-*r* < 100.

this study for the full sample and the subset of individuals who produced valid MMPI-2-RF protocols according to the guidelines outlined by Ben-Porath and Tellegen (2008; CNS < 18, VRIN-*r* < 80, TRIN-*r* < 80, F-*r* < 120, and Fp-*r* < 100). In general terms, individuals in the full sample tended to be male (85.4%), married (47.5%), and service connected (approximately 94%). Approximately 10% of the sample comprised combat veterans. The valid sample closely approximated the demographics of the full sample.

The sample for this investigation is demographically unique from comparison groups within the MMPI-2-RF interpretive manual. The combined comparison group presented within this study was derived from scores observed in a VA adult acute inpatient and a substance abuse treatment unit, using archival data collected during service eras in which the service connection was less common and at lower levels (United States Department of Veterans Affairs, National Center for Veterans Analysis and Statistics, 2014). Accordingly, veterans within the comparison group were likely to have lower mean scores on the MMPI-2-RF validity scales than those in the current sample. Magnitudes of difference were the highest for the overreporting scales ( $d = .28$  on F-*r*,  $d = .56$  on Fp-*r*,  $d = .53$  on Fs,  $d = .79$  on FBS-*r*, and  $d = .85$  on RBS) and were the lowest on the underreporting scales ( $d = .00$  on K-*r* and  $d = .31$  on L-*r*). These two comparison groups had a weighted mean age of 46.1 ( $SD = 11.1$ ) and were composed only of males.

Individuals drawn from the inpatient psychiatric unit sample were less frequently involved in conflicts (e.g., Persian Gulf; 6.5% vs. approximately 60% in this sample) and were less likely to be service connected (45.3%). Gulf War is the service era label provided within the electronic medical record system of the VA for a combined period of service from August 1990 to August 2001, as well as from September 2001 onward. Information about service era and service connection were not available for the substance abuse treatment comparison group.

## Measures

**MMPI-2-RF.** The MMPI-2-RF (Ben-Porath & Tellegen, 2008) is a 338 true-false item personality measure comprising 51 scales. The 42 substantive scales measure various clinical constructs, and the 9 validity scales are used to determine if a respondent is engaging in noncredible responding. The validity indicators can be classified as serving one of three purposes—assessing overreporting, underreporting, or content nonresponsiveness—and are evaluated prior to the substantive scales.

Non-content-based responsiveness is measured by the 53 item-pair Variable Response Inconsistency (VRIN-*r*) scale and the 26 item-pair True Response Inconsistency (TRIN-*r*) scale. These scales assess the degree to which a respondent is answering questions either randomly or in a fixed-true/fixed-false manner, respectively. Overreporting is assessed using the Infrequent Responses (F-*r*), Infrequent Psychopathology Responses (Fp-*r*), Infrequent Somatic Responses (Fs), Symptom Validity (FBS-*r*), and Response Bias Scale (RBS) scales. The F-*r* scale is a 32-item scale that includes items endorsed by 10% or less of the normative sample. Fp-*r* is a revised version of the MMPI-2 Fp scale (Arbisi & Ben-Porath, 1995), which includes items that were endorsed by 20% or less of psychiatric patients. Fs comprises 16 items and was developed by Wygant, Ben-Porath, and Arbisi (2004) to assess somatic overreporting through use of uncommonly endorsed items within medical and chronic pain samples. The FBS-*r* scale contains items that were rationally identified through frequency counts and by observation of malingering response patterns in civil forensic settings (Lees-Haley, English, & Glenn, 1991). Finally, the RBS (Gervais, Ben-Porath, Wygant, & Green, 2007) contains 28 items correlated with scoring below published cutoffs on performance validity tests. The overreporting scales are composed largely of nonoverlapping items: F-*r* shares 4 items with RBS; Fp-*r* contains 2 shared items with RBS; Fs has 3 items included on FBS-*r* and 2 on RBS; FBS-*r* has 1 item that is scored on Fp-*r*, 3 on Fs, and 4 on RBS; RBS contains 4 items scored on F-*r*, 2 on Fs and Fp-*r*, and 4 on FBS-*r*. Accordingly, elevations on multiple overreporting scales because of shared items is unlikely. Underreporting is measured by the Uncommon Virtues (L-*r*) and Adjustment Validity (K-*r*) scales. The 14-item L-*r* scale measures assertion of uncommon virtuous behaviors, which is associated with efforts to present oneself in a positive light. The K-*r* scale is a subtler indicator of underreporting. It includes 14 items that reflect claims of positive psychological adjustment, which are unlikely to be accurate in clinical settings.

Interpretative cut-scores for each validity scale are outlined by Ben-Porath and Tellegen (2008). The most conservative cutoffs, which are most indicative of noncredible responding, are as follows: VRIN-*r*  $\geq 80$ , TRIN-*r*  $\geq 80$ , F-*r*  $\geq 120$ , Fp-*r*  $\geq 100$ , Fs  $\geq$

100,  $RBS \geq 100$ ,  $FBS-r \geq 100$ ,  $L-r \geq 80$ , and  $K-r \geq 70$ . Additionally, if 18 or more items are not scorable (represented as the Cannot Say [CNS] score), profiles may be invalid.

## Procedures and Planned Analysis

Data for this study were extracted from the VA Informatics and Computing Infrastructure platform, which allows IRB approved access to the Corporate Data Warehouse (CDW), where veteran medical records are electronically stored. Information extracted from the CDW for this study included demographic information as well as item-level responses for all MMPI-2-RF administrations. Item responses were used to calculate rounded/truncated scaled scores. Administrations of the MMPI-2-RF were assumed to have followed standard procedures. This includes considering if the respondent is an appropriate candidate for testing using the instrument (e.g., that the respondent can see, read, and comprehend the testing materials appropriately).

We utilized stop codes to identify VA outpatient clinics with varying assessment contexts. Stop codes are numeric values that define the type of clinic in which a service is being conducted. It was only possible to identify the VA clinic in which MMPI-2-RF testing was conducted (e.g., PolyTrauma, Internal Medicine, Mental Health Clinic, etc.) and not specific referral questions. Given that there is some variation in how assessments are handled across different VAs, there are likely some instances in which psychological testing is conducted and coded for a stop code that is not that clinic's primary service mission. However, stop codes provide a way to compare common response styles typical of the setting where the assessment is conducted. A summary of MMPI-2-RF validity scale scores observed across VA clinics can inform clinicians about more generalizable patterns of potential noncredible responding across major VA assessment contexts. For the purposes of this article, only clinics/stop codes that had over 100 test administrations were utilized. Nine service locations, identified by stop codes, met this inclusion criterion and comprised 92.6% ( $n = 16,331$ ) of all MMPI-2-RF administrations. Remaining administrations were distributed such that only a handful of profiles were available for the remaining service locations (e.g., frequently only

1 or 2 and almost exclusively less than 20, with none approaching the a priori sample size of 100 selected for independent examination in this study). As a result, calculation of generalizable comparative information from this database was only possible for stop codes presented in this paper.

## Results

Descriptive statistics for the validity scales, as well as cumulative elevation frequencies associated with various  $T$  score cutoffs, are provided in Table 2 across all VA service locations. In cases where an individual's TRIN- $r$  or VRIN- $r$  scores indicated protocol invalidity (4.9% of cases;  $n = 865$ ), they were removed from frequency calculation on the over- and underreporting scales. The overreporting scales show the highest levels indicating protocol invalidity, ranging from 5.2% (FBS- $r$ ) to 27.3% (RBS) using the most conservative cut-scores provided within the interpretive manual (e.g.,  $F-r \geq 120$ ,  $Fp-r \geq 100$ ,  $Fs \geq 100$ ,  $RBS \geq 100$ ,  $FBS-r \geq 100$ ), whereas scales assessing underreporting and inattentive or random responding were infrequently elevated beyond recommended cut-score values. Skew and kurtosis for the validity scales were within normal ranges, except for TRIN- $r$ , whose kurtosis suggests a leptokurtic distribution with a greater frequency of responses occurring on the tails. This is to be expected because for  $T$  scores on TRIN there are no scores below the mean of 50. Observed mean scores of this sample are also substantially higher on most scales than those in previous veteran samples, with one such sample provided in the table for comparison. Conversely, standard deviations are generally like those previously observed.

The cumulative frequency of validity scale elevations (i.e., the number of validity scales on which a veteran produced an interpretable elevation; i.e., not exceeding any of the following cut-scores: VRIN- $r \geq 80$ , TRIN- $r \geq 80$ ,  $F-r \geq 120$ ,  $Fp-r \geq 100$ ,  $Fs \geq 100$ ,  $RBS \geq 100$ ,  $FBS-r \geq 100$ ,  $L-r \geq 80$ , and  $K-r \geq 70$ ) is reported in Table 3. During the calculation of cumulative frequencies, those participants exceeding interpretive recommendations on VRIN- $r$  or TRIN- $r$  were excluded from over- and underreporting scale calculation. Three distinct trends can be seen. First, a majority of the sample did not elevate any of the validity scales

Table 2  
Descriptive Statistics and Frequency of Scale Elevation

Scale	Comparison Group		Study Sample		Kurtosis	Skew	Cumulative % of Administrations $\geq$ T-score							
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			60	70	80	90	100	110	120	
VRIN-r	53.5	10.0	58.7	17.7	1.07	.76	22.6%	6.6%	<b>1.5%</b>	.4%	.1%	.1%	.1%	
TRIN-r	52.5	10.5	50.4	12.3	6.58	1.86	27.5%	9.9%	<b>3.6%</b>	.7%	.4%	.2%	.1%	
F-r	80.4	27.5	87.9	25.0	-1.29	-.12	84.5%	73.5%	57.9%	47.8%	38.4%	30.4%	<b>23.2%</b>	
Fp-r	60.4	15.0	70.8	21.6	-.32	.7	54.5%	39.3%	26.9%	18.5%	<b>12.3%</b>	8.4%	3.8%	
Fs	67.9	20.5	79.5	23.4	-1.05	.25	71.8%	59.2%	47.0%	36.1%	<b>19.6%</b>	15.0%	.1%	
FBS-r	62.8	15.0	75.0	15.7	-.53	-.02	82.5%	64.5%	43.3%	17.3%	<b>5.2%</b>	.8%	>.01%	
RBS	67.8	19.0	84.5	20.1	-.86	-.05	84.8%	73.6%	60.7%	39.8%	<b>27.3%</b>	12.2%	5.6%	
L-r	53.0	10.0	56.2	10.4	.09	.43	35.5%	10.8%	<b>2.3%</b>	.1%	>.1%	n/a	n/a	
K-r	42.0	10.0	42.0	10.1	.18	.79	5.1%	<b>.4%</b>	.0%	n/a	n/a	n/a	n/a	

*Note.* The comparison  $M$  ( $SD$ ) column displays weighted means and standard deviations calculated from combining the all-male VA comparison groups (Psychiatric inpatient  $n = 1,059$  and Substance Abuse treatment  $n = 1,151$ ) reported in the Technical Manual (p. 303). The remaining descriptive information ( $M$ ,  $SD$ , Kurtosis, Skewness, and Cumulative % of tests below given  $T$ -scores) are based on administrations of the MMPI-2-RF ( $n = 17,640$ ), with those exceeding recommended cut-values on TRIN- $r$ /VRIN- $r$  excluded from the over- and under-reporting scale calculations. Bolded values indicate that scores at or above this  $T$ -score invalidate an MMPI-2-RF protocol (Ben-Porath & Tellegen, 2008). n/a indicates that a score at this level is not possible.



Table 3  
Cumulative Frequency of Validity Scale Elevations Indicating Invalidity

Cumulative frequency	0	1	2	3	4	5	6	7
Total Number of Scales	57.8%	15.6%	9.9%	8.1%	6.5%	2.0%	>.1%	>.001%
# of Over-report	62.9%	12.6%	9.0%	7.9%	6.2%	1.5%	—	—
# of Non-Credible Response	95.1%	4.6%	.3%	—	—	—	—	—
# of Under-report	97.5%	2.4%	.1%	—	—	—	—	—

*Note.* A — indicates no additional scales could be elevated; there are five over-reporting scales, two under-reporting scales, and two non-responsiveness scales. Standard cut-scores (Ben-Porath & Tellegen, 2008): CNS  $\geq 18$ , VRIN-r  $\geq 80$ , TRIN  $\geq 80$ , F-r  $\geq 120$ , and Fp-r  $\geq 100$ . Invalid non-content-based invalid responding (VRIN-r/TRIN-r) profiles were excluded from calculation of over- and under-reporting cumulative frequency.

beyond their recommended interpretive cut-scores, indicating that scores on the substantive scales would be deemed valid and interpretable in those cases. Second, elevation rates are higher for the overreporting scales in comparison to the underreporting and non-content-based invalid responding scales. Lastly, a majority of those with an elevation on one overreporting validity indicator also had an elevation on at least one other overreporting scale (e.g., 12.6% of the sample invalidated one overreporting scale while 24.6% invalidated two or more overreporting scales).

When applying standard cut-scores for the validity scales, 71.2% ( $n = 12,570$ ) of the sample produced protocols that would be deemed valid; however, this range was highly variable depending upon the setting in which the MMPI-2-RF was administered (see Table 4). For instance, stop code 197 (Polytrauma) and 301 (Internal Medicine) had invalidity rates of 15.7% and 27.9%, respectively, based on F-r, and 8.3% and 15.7% based on Fp-r. This finding reflects the importance of contextual influences in validity scale score interpretation.

## Discussion

This study offers a needed descriptive analysis of the MMPI-2-RF validity scale scores with the VA population for those referred for psychological evaluation. Two notable patterns in research on the MMPI-2-RF have suggested the need to examine validity scales more closely in the VA. First, veteran status, and issues critical to veteran care (e.g., PTSD), may influence validity scale scores (Ingram & Ternes, 2016; Sharf et al., 2017). Second, there is a shortage of studies examining the MMPI-2-RF validity

scales in veteran and military samples despite research demonstrating its wide use (Russo, 2018). Because of the comprehensive nature of this study sample, the validity scale elevation rates reported are the most accurate representation of what is typical within the VA during psychological evaluations, which contributes to understanding the rate with which MMPI-2-RF validity scale elevations occur in this setting.

Implications for use of, and research with, the MMPI-2-RF in the veteran population discussed below are based upon the following results of this study: (a) The frequency with which elevations on the validity scales, particularly the overreporting scales, lead to uninterpretable assessment protocols is greater in certain VA settings compared with others; (b) the rates of invalid responding in the current study are also similar to those observed in other studies within the VA using earlier versions of the MMPI (e.g., 43.1% among PTSD Clinical Teams in the current sample vs. 46.0% of MMPI-2 administrations on PTSD Clinical Teams; Glenn et al., 2002); and (c) the rates of elevated scores vary depending on the scale examined.

Higher elevation rates on MMPI-2-RF overreporting scales may reflect the potential for secondary gain because the service-related disability compensation assessment process is intermingled with assessments conducted for treatment provision at the VA (e.g., Ray, 2017). Although it is not possible to determine precisely the cause of the observed high elevation rates, this finding highlights the need for additional research on use of the MMPI-2-RF validity scales with this population to guide accurate interpretation of test results. Given the varying elevation rates across service locations,

Table 4  
Frequency of Validity Scale Scores Indicating Protocol Invalidity by Location Stop Code

Service Location (Stop Code)	<i>n</i>	VRIN-r	TRIN-r	F-r	Fp-r	Fs	FBS-r	RBS	L-r	K-r	% Elevated
197 (PolyTrauma)	343	2.0%	1.5%	14.9%	7.9%	13.7%	3.5%	25.9%	<.01%	0%	37.6%
301 (Internal Medicine)	2744	1.4%	1.4%	26.9%	15.1%	25.3%	7.1%	34.4%	1.4%	.1%	50.2%
502 (MH Clinic)	2684	1.3%	2.6%	24.2%	13.7%	21.5%	6.1%	29.7%	2.1%	<.01%	45.9%
510 (Individual Psychology)	1726	1.6%	3.4%	18.7%	10.9%	17.7%	4.6%	22.0%	2.1%	<.1%	38.9%
512 (MH Consultation)	954	1.5%	4.6%	24.6%	15.6%	21.2%	6.3%	28.2%	2.3%	<.01%	47.9%
533 (MH Biomedical)	377	3.2%	2.9%	13.3%	4.0%	14.9%	4.2%	19.6%	3.7%	<.01%	36.2%
534 (MH Integrated Care)	163	2.5%	7.4%	6.7%	4.3%	5.5%	3.1%	7.4%	2.5%	1.8%	23.3%
538 (Psychological Testing)	6744	1.5%	3.6%	17.7%	9.5%	15.7%	3.9%	22.8%	2.3%	.4%	37.8%
540 (PTSD Clinical Team)	285	<1%	1.4%	33.3%	19.6%	26.7%	7.0%	36.5%	0%	0%	56.8%

*Note.* Elevation rates based on the highest, most conservative cutoffs presented in the MMPI-2-RF Manual (Ben-Porath & Tellegen, 2008). MH = Mental Health. The percentage of individuals with an elevation reflects the portion of those participants who exceed recommended cut-scores on one or more nine validity scales.

it would be useful to understand more about the evaluation context for these locations so that contextual factors may be factored in properly in test score interpretation. These challenges have led administrators to urge clinicians to avoid labels such as malingering (Russo, 2014), which should, of course, never be inferred based on test scores alone. However, it should be noted that noncredible responding disrupts treatment efforts and the allocation of resources to veterans with genuine psychological problems. At a minimum, multimodal assessment practices should supplement sole use of the validity scales to ensure accurate identification of feigned symptoms (Ali, Jabeen, & Alam, 2015).

The cutoffs utilized to classify overreported protocols in the current study are based on the highest, most conservative (specific) interpretive cutoffs recommended in the MMPI-2-RF manual. Given high specificity rates at these interpretive thresholds, over-reporting is likely when elevations occur at these levels. Considering the high rates of invalid protocols observed in some VA settings, it is important to adhere to the recommended cut-scores suggested for the MMPI-2-RF validity scales. For example, there may be a tendency for clinicians to disregard these cut-scores because they have habituated to these elevations and are attempting to gain clinical information from the assessment process. However, adherence to standard MMPI-2-RF interpretive guidelines ensures that clinicians do not over- or misinterpret available information from the substantive scale scores. This is particularly important considering the evaluative context (Russo, 2013, 2014; Worthen, & Moering, 2011) and the influence that various factors may have on validity scale elevation (e.g., sex, diagnosis, evaluation purpose; Ingram & Ternes, 2016).

Likewise, the need for further evaluation of specific cut-scores for the MMPI-2-RF Validity Scales is indicated because of the complex evaluation context and process of the VA. There is a consensus that the MMPI-2-RF validity scales are effective (Ingram & Ternes, 2016; Sharf et al., 2017); however, there has also been variability in reports of specific scale cutoffs recommended that would maximize sensitivity and specificity for use with veterans. For instance, Goodwin et al. (2013) suggested that Fp-r may be optimally used with a cut-score of 90, whereas F-r functions was identified as operating most effectively at a *T* score of 105. On the other hand, Mason and colleagues (2013) suggested different variations from traditional cut-scores and recommended using  $F-r \geq 100$ ,  $Fp-r \geq 80$ , and  $Fs \geq 90$ . Absent further research, modification to standard, manual-based recommended cut-scores should be made cautiously (if at all), based on very specific context-based considerations and only with similar patient populations after repeated validation. At present, the cut-scores identified in the MMPI-2-RF's interpretive manual are the most widely tested and validated. Nevertheless, it is important to reiterate that conclusions regarding response style, particularly malingering, require the integration of extratest information, even when high scores on the MMPI-2-RF validity scales occur.

This study should be considered within the scope of its limitations. First, there were no external criteria (e.g., malingering diagnoses, symptom validity tests, or performance validity tests) that were available to evaluate the performance on the MMPI-2-RF validity scales, and without such information it is not possible to make definitive statements about the reason for these elevations. Thus, while it is possible that the high invalidity rates are due to potential secondary gain, it is likely that complex manifestation of

significant psychopathology may also, to some extent, be responsible for increases on scales, producing results that mimic noncredible responding. In short, while profile invalidity does not equate to feigning, high rates of profile invalidity underscores a need for continued study on assessment practices and validity scale effectiveness with veterans, common clinical presentations for veterans, and the VA as an evaluation setting. Accordingly, future research will benefit from further evaluating the role of diagnosis in influencing response style for veterans as well as examining factors leading to fluctuations across service location (e.g., determine why PTSD Clinical Team [56.8%] and internal medicine [50.2%] have higher rates of invalidity compared to Integrated Care [23.3%]). Such factors likely include some combination of intentional embellishment of actual experienced symptoms as part of a desire to receive needed care or forensic enmeshment in disability compensation evaluations, as well as clinical psychopathology.

Additionally, the use of primary stop codes to assess service clinics offers a general assessment of presentation style within a clinical context setting but does not describe reason for that presentation. This is, in part, because the primary stop codes associated with compensation and pension evaluations had an insufficient number of cases to meaningfully evaluate them. In turn, results in this paper must be interpreted as providing representative summations of specific service clinics (i.e., stop codes), with those clinics used more for compensation and pension evaluations having response patterns represented that are more typical of those evaluations. Thus, while this study describes what is occurring generally, referral reason was not utilized (and was not available within this dataset) to evaluate this more specifically. Future studies will benefit from examining referral reason in its relation to MMPI-2-RF elevation. This study was also limited in the available demographic information, and a few important demographic characteristics were not available (i.e., age and education level). Nonetheless, given the comprehensive, national sampling of this study, the patterns documented represent best available current information about validity scale scores of veterans undergoing psychological assessments across VA health care setting throughout the U.S.

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Received September 7, 2018

Revision received January 27, 2019

Accepted January 30, 2019 ■