

# 10 The Restructured Clinical (RC) Scales

## Introduction

One of the more sweeping revisions to the standard MMPI-2 form came in 2003 with the introduction of the Restructured Clinical (RC) scales (Tellegen et al., 2003). These scales constitute the core set of scales of the latest form of the instrument, MMPI-2-RF, which will be discussed in the next chapter. Because the RC scales now comprise part of the standard MMPI-2 protocol, they will be discussed separately from form RF.

Among the reasons for creating the MMPI-2 RC scales was a desire to correct the longstanding problem of extensive co-variation among the clinical scales of the basic MMPI (Hathaway & McKinley, 1940) and MMPI-2 (Butcher, Dahlstrom, Graham, Tellegen, Dahlstrom, & Kaemmer, 2001)) which can make interpretation of the instrument somewhat difficult.

One source of the co-variation among the clinical scales is that the criterion-keying method of item selection employed by Hathaway and McKinley (1943) to select items for scale membership did not preclude them from appearing on scales that purportedly assess different diagnostic constructs. The item overlap among the clinical scales is not trivial, but substantial. If one considers only clinical Scales 1 through 4 and 6 through 9 (i.e. those scales with RC scale analogues), of the 259 items scored on one or more of these eight scales, 101 (39 percent) overlap at least one other scale. Of these, 66 items overlap only one other scale, 29 items are scored on three scales, 4 items are scored on four, and 2 items are scored on five. If one counts the actual number of overlaps between any two of the clinical scales, rather than the number of overlapping items, the total is 197 (see Table 10.1).

Table 10.1 Item overlap among MMPI-2 clinical scales

Scale	1	2	3	4	6	7	8	9
1	32							
2	9	57						
3	20	13	60					
4	1	7	10	50				
6	1	2	4	8	40			
7	2	13	7	6	4	48		
8	4	9	8	10	13	17	78	
9	0	1	4	6	4	3	11	46

Note: Values on diagonal are the number of items on each scale.

Among the number of reasons for item overlap across the clinical scales, two<sup>1</sup> are likely most responsible: (1) symptom overlap among psychiatric syndromes (Friedman, Gleser, Smeltzer, Wakefield, & Schwartz, 1983), and (2) shared first-factor variance. Each of these will be addressed below.

As there is a great deal of symptom overlap among psychiatric syndromes, it makes sense that overlapping items on scales that reflect syndromes with overlapping symptom presentations would lead to increased sensitivity of the scales; this increase in sensitivity, though, comes at the price of lowered specificity for the individual scales. Nichols (2006), in fact, has pointed out that within some samples, a pair of scales such as clinical Scale 7, viewed as a “neurotic” scale, and clinical Scale 8, viewed as a “psychotic” scale, might share close to 75 percent of their variance, although he further notes that this is not entirely surprising when one considers that the percentage of Scale 8 items that describe psychotic phenomena and the percentage that overlap Scale 7 are roughly equivalent. Both Goldberg (1965) and Dahlstrom (1969), however, have demonstrated that the configural pattern of scales with overlapping items can lead to enhanced predictability and classification. Thus, the historical shift from single-scale to codetype interpretation may be seen as an early attempt to compensate for the limited discriminant validity inherent in the clinical scales.

The second issue that affects item overlap among the clinical scales is that of shared first-factor variance. This factor reflects the major source of co-variation among MMPI/MMPI-2 scales and items and represents the broad, nonspecific general maladjustment or subjective distress dimension that has been given various labels, including Anxiety (Welsh, 1956) and Demoralization (Tellegen et al., 2003). This factor is pervasive throughout the MMPI/MMPI-2 item pools and serves to inflate the correlations among many, if not most, of the scales and, in turn, compromises their discriminant validity. The first factor is marked by a variety of item content including anxiety, tension, depression, and worry; reduced self-confidence/self-esteem; submissiveness or yielding in the face of obstacles; oversensitivity and irritability; and problems in concentration, memory, and initiative.

Given the substantial lack of specificity in the clinical scales, the RC scales project set out to create a set of scales that would better reflect the “...conceptually meaningful and clinically important constructs” (Tellegen et al., 2003, p. 11) represented by the original clinical scales.

### ***Creation of the RC Scales***

The construction of the RC scales proceeded in four steps. Although each of these steps will be briefly outlined below, the reader is encouraged to refer to Chapter 3 of the RC scales manual (Tellegen et al., 2003) for a more thorough description of the process.

The first step in the creation of the RC scales was to identify a subset of items to reliably measure the first factor and to create a new scale, termed *Demoralization*, to embody those items. The process undertaken by Tellegen et al. (2003) was informed by Watson and Tellegen's (1985) model of affect and based on Tellegen's (1985) assertion that the first-factor variance of the MMPI corresponded to the pleasantness–unpleasantness (PU) dimension of that model.

To create the Demoralization scale, Tellegen et al. (2003) first combined the items from clinical Scales 2 (Depression) and 7 (Psychasthenia), the scales they judged to be

most saturated with the PU dimension. They then performed two dimension-reduction analyses of these items using principal components analysis with varimax rotation (PCA/V): once to identify items with high (at least  $|.50|$ ) loadings on the first factor in each of four data sets, and again to identify items achieving high loadings on two other factors identified in the same data sets—Positive Emotionality (PEM) and Negative Emotionality (NEM). Ten items survived in both analyses. Items not appearing on Scales 2 and 7 were drawn from the remainder of the MMPI-2 item pool and added to these 10 items on the basis of their correlations with the PEM and NEM measures, yielding a Demoralization (*Dem*) scale of 23 items.

In Step 2, Tellegen et al. (2003) attempted to remove the covariance marked by *Dem* from each of the clinical scales. First, the *Dem* items were appended to each of the clinical scales, and the combined item set for each scale was subjected to PCA/V analysis to yield from two to five factors. Using this method, items from each scale that reflected PU variance would gravitate toward the *Dem* items and load on the first factor; items from each scale loading on this factor were then eliminated from the scale. Tellegen et al. then selected from their exploratory solutions a dimension judged to reflect a “substantive core” for each scale that remained “distinctive from demoralization and from the identified core components of the other Clinical Scales” (2003, p.15).

In Step 3, Tellegen et al. (2003) selected 158 of the original clinical scale items as candidates for membership in various “seed scales” that consisted of those items reflecting the distinctive core component of each clinical scale, as determined in Step 2. These seed scales were then refined to reduce overlap and increase internal consistency. From the remaining items, a second set of seed scales was derived to which items were either added to or eliminated from in order to increase the distinctiveness of the core component of each scale. The 73 items surviving these procedures were then sorted into a final set of seed scales for *RC1* through *RC9*. A seed scale for a revision of *Dem*, to be designated *RCd*, was also devised using 17 items of the original *Dem* scale.

In Step 4, the seed scales were augmented by items drawn from the entire MMPI-2 item pool. In short, an item was added to a seed scale if it demonstrated good convergence with the seed scale, as well as good discrimination from other seed scales. Items were deleted from seed scales if their inclusion led to reduced internal consistency or if they did not demonstrate adequate correlations with external validity criteria. These procedures culminated in the final RC scales, which are presented in Table 10.2, along with their corresponding clinical scales. Table 10.3 enables a comparison between the clinical, RC, and seed scales in terms of length and the extent to which items from the clinical scales persist in their RC versions and overlap with MMPI-2 content-based scales.

RC scales were not created for clinical Scales 5 and 0, as the core components of these scales were not judged to reflect psychopathology. Seed scales, however, were created for each of the core components (two core components in the case of clinical Scale 5); it was determined to focus on development of restructured versions of clinical Scales 5 and 0 at a later date.

Table 10.2 MMPI-2 RC scales and corresponding clinical scales

<i>RC Scale</i>	<i>Clinical Scale</i>
<i>RCd</i> Demoralization	
<i>RC1</i> Somatic Complaints	Scale 1 Hypochondriasis
<i>RC2</i> Low Positive Emotions	Scale 2 Depression
<i>RC3</i> Cynicism	Scale 3 Hysteria
<i>RC4</i> Antisocial Behavior	Scale 4 Psychopathic Deviate
<i>RC6</i> Ideas of Persecution	Scale 6 Paranoia
<i>RC7</i> Dysfunctional Negative Emotions	Scale 7 Psychasthenia
<i>RC8</i> Aberrant Experiences	Scale 8 Schizophrenia
<i>RC9</i> Hypomanic Activation	Scale 9 Hypomania

Table 10.3 Item composition and overlap for the clinical, seed, RC, and selected first factor and content-based scales

<i>Length</i>		<i>Item Overlap (%)</i>			
<i>Scale</i>	<i>Clinical/RC</i>	<i>Seed Items</i>	<i>Clinical Scale Items</i>	<i>Off-Scale Items</i>	<i>Items from Content-Based Scales</i>
<i>RC1</i>	32/27	15 (56%)	20 (74%)	7 (26%)	<i>HEA</i> : 20 (74%)
<i>RC2</i>	57/17	4 (24%)	8 (47%)	9 (53%)	<i>INTR</i> : 9 (53%); <i>DEP</i> : 2 (12%)
<i>RC3</i>	60/15	5 (33%)	5 (33%)	10 (67%)	<i>CYN</i> : 12 (80%); <i>HEA</i> : 0 (0%)
<i>RC4</i>	50/22	5 (23%)	9 (41%)	13 (59%)	<i>DISC</i> : 8 (36%); <i>ASP</i> : 6 (31%); <i>AAS</i> : 7 (32%)
<i>RC6</i>	40/17	6 (37%)	13 (76%)	4 (24%)	<i>BIZ</i> : 10 (59%); <i>PSYC</i> : 10 (59%)
<i>RC7</i>	48/24	7 (29%)	8 (33%)	16 (67%)	<i>A</i> : 10 (42%); <i>ANG</i> : 4 (17%); <i>OBS</i> : 3 (13%); <i>ANX</i> : 2 (8%)
<i>RC8</i>	78/18	6 (33%)	10 (56%)	8 (44%)	<i>BIZ</i> : 12 (67%); <i>PSYC</i> : 8 (44%)
<i>RC9</i>	46/28	8 (29%)	8 (29%)	20 (71%)	<i>AGGR</i> : 7 (25%); <i>ANG</i> : 4 (14%); <i>TPA</i> : 4 (14%)
<i>RCd</i>	–/24	17 (71%)	13 (54%)	11 (46%)	<i>DEP</i> : 11 (46%); <i>NEGE</i> : 1 (4%)

Notes: Decimals omitted. *RC1* = Somatic Complaints; *HEA* = Health Concerns; *RC2* = Low Positive Emotions; *INTR* = Introversion/Low Positive Emotionality; *DEP* = Depression; *RC3* = Cynicism; *CYN* = Cynicism; *RC4* = Antisocial Behavior; *DISC* = Disconstraint; *ASP* = Antisocial Practices; *AAS* = Addiction Admission Scale; *RC6* = Ideas of Persecution; *BIZ* = Bizarre Mentation; *PSYC* = Psychoticism; *RC7* = Dysfunctional Negative Emotions; *ANG* = Anger; *OBS* = Obsessiveness; *ANX* = Anxiety; *RC8* = Aberrant Experiences; *RC9* = Hypomanic Activation; *AGGR* = Aggressiveness; *TPA* = Type A; *RCd* = Demoralization; *NEGE* = Negative Emotionality/Neuroticism.

Source: Table adapted from Nichols (2006).

### ***Psychometric Properties of the RC Scales***

The RC scales have demonstrated good internal consistency (coefficient alpha) across multiple samples. Tellegen et al. (2003) reported internal consistency estimates ranging from .70 to .95 for males and .71 to .95 for females across various settings. As one might expect, given the core components' focus on psychopathology, internal consistency estimates were nominally higher among inpatient samples than within the normative sample.

Handel and Archer (2008) reported alpha estimates ranging from .83 to .94 for men and .82 to .94 for women among psychiatric inpatients. Simms et al. (2005) reported mean coefficient alpha estimates of .83 (range = .76 to .94) and .79 (range = .73 to .93) for clients at an outpatient psychology clinic and for military veterans, respectively. Rouse, Greene, Butcher, Nichols, and Williams (2008) reported mean alpha coefficients ranging from .70 to .90 across a variety of samples. Wygant, Boutacoff et al. (2007) reported coefficient alpha estimates ranging from .57 (*RC6*) to .89 (*RCd*) among candidates being evaluated for bariatric surgery. Similarly, van der Heijden, Egger, and Derksen (2008) reported alpha estimates ranging from .55 (*RC6*) to .87 (*RCd*) in the Dutch normative sample; alpha estimates in a Dutch clinical sample, however, ranged slightly higher, from .71 (*RC6*) to .91 (*RCd*). Finally, in a non-clinical sample of college students, Forbey and Ben-Porath (2008) reported alpha estimates ranging from .62 (*RC6*) to .87 (*RCd*) for males and .59 (*RC6*) to .89 (*RCd*) for females.

With regard to test-retest reliability, there has been little published research at the time of this writing. Tellegen et al. (2003), however, reported one-week test-retest correlations ranging from .76 to .91 for men and .54 to .90 for women in the MMPI-2 normative sample.

### ***Scoring the RC Scales***

The MMPI-2 re-standardization sample (Butcher et al., 2001) was used to develop gender-specific scoring norms and uniform *T*-score conversions. In addition to the traditional gender-specific scoring norms, non-gendered *T*-score conversions are available from the test publisher and are routinely scored by the Q Local scoring program offered by Pearson Assessments.

Scoring for the RC scales is accomplished in the same manner as with the clinical scales. As the RC scales now comprise part of the standard MMPI-2 protocol, they are routinely scored as part of a computer-based scoring or administration. Hand scoring templates, as well as gender-specific and non-gendered profile sheets, which are appropriate for personnel selection applications, are available from Pearson Assessments.

### ***Using the RC Scales***

In this section, each of the RC scales will be introduced. A description of the "core component" of each scale will be given. Additionally, the research surrounding each scale's correlates will be summarized. Finally, interpretative suggestions for high and low scores, when appropriate, will be offered.

First, a word about similarities and differences in relation to elevations on clinical and RC scales is warranted. In a valid profile when the elevation patterns match (i.e. no

elevation on a clinical scale or its corresponding RC scale—or, conversely, elevations on each) one can be more confident in interpreting these scores. The approach may be less apparent, though, when discrepancies exist. Graham (2012) suggests that when the clinical scale is elevated, but the corresponding RC scale is not, one should use caution in making inferences about the test taker that reflect the core construct associated with the clinical scale, as their clinical scale elevation may reflect first-factor concerns. Graham notes that in many of these cases, *RCd* is likely to be elevated. He further suggests that with profiles in which the RC scale is elevated, but the corresponding clinical scale is not, one can reliably make inferences based on the core construct assessed by the RC scale and that, in these cases, there are likely to be less first-factor concerns.

### **Demoralization (*RCd*)**

The *RCd* scale serves as a measure of general distress and emotional discomfort/turmoil that an individual is experiencing. The scale contains 24 items, with 22 keyed True. Thus, elevations on this scale can be affected by an All-True or All-False response set. Males in the normative sample scored significantly lower than females, although the effect size for the difference is small (see Table 10.4).

### **Correlates**

Among psychiatric inpatients, Handel and Archer (2008) found that elevated *RCd* scores were positively related to suicide attempts, as well as to depression, anxiety, guilt, and blunted affect, as measured by the Brief Psychiatric Rating Scale (BPRS; Overall & Gorham, 1988). Arbisi, Sellbom, and Ben-Porath (2008) also found positive correlations with suicidal ideation and attempts, decreased energy, depression, anxiety, decreased sleep, and hopelessness among male VA inpatients and male and female community medical center inpatients. Tellegen and Ben-Porath reported the following correlates for inpatient men and women: cocaine abuse; depression and tearfulness; suicidality; decreased sleep, appetite, and energy; feelings of guilt, hopelessness, and worthlessness; poor concentration; loss of interest; and antidepressant medication.

Among those seeking outpatient psychiatric or psychological care, Sellbom, Graham, and Schenk (2006) found moderate to strong positive relationships between *RCd* scores and depression, somatization, paranoia, anxiety, and mania. Sellbom, Ben-Porath, and Graham (2006) found small, but significant, relationships between *RCd* and current Global Assessment of Function scores (this was a negative relationship), depression, interpersonal sensitivity, and insecurity. Binford and Liljequist (2008) found positive relationships between *RCd* scores and depressed mood, suicidal ideation, and sleep problems. Simms et al. (2005) found positive correlations for *RCd* scores and negative temperament, mistrust, and self-harm, as measured by the Schedule for Nonadaptive and Adaptive Personality (SNAP) (Clark, 1993), in samples of military veterans and college psychology clinic clients. Tellegen and Ben-Porath (2011) reported that *RCd* scores are positively correlated with descriptions of insecure, anxious, pessimistic, and depressed for males. Correlates for outpatient females included depressed. Among non-patients, Forbey and Ben-Porath (2008) reported

Table 10.4 Univariate statistics for RC raw scale scores by gender within the MMPI-2 normative sample

Scale	Sex	M	SD	F	d
RCd	Male	4.23	4.41	29.69	0.22
	Female	5.27	5.13		
RC1	Male	3.06	2.96	41.19	0.25
	Female	3.90	3.56		
RC2	Male	4.09	2.73	1.61	0.05
	Female	3.96	2.48		
RC3	Male	6.13	3.60	14.81	0.15
	Female	5.59	3.51		
RC4	Male	5.41	3.62	138.39	0.47
	Female	3.87	3.05		
RC6	Male	0.92	1.44	10.99	0.13
	Female	0.74	1.32		
RC7	Male	5.56	4.12	61.15	0.31
	Female	6.91	4.55		
RC8	Male	2.03	2.24	0.00	0.00
	Female	2.03	2.26		
RC9	Male	12.32	5.04	61.16	0.31
	Female	10.86	4.46		

Notes: For males,  $N = 1,138$ ; for females,  $N = 1,462$ .  $d$  = Cohen's  $d$ , calculated by the formula  $d = \frac{M_1 - M_2}{S_{Pooled}}$

$$\text{where } S_{Pooled} = \sqrt{\frac{df_1}{df_{Total}}(s_1^2) + \frac{df_2}{df_{Total}}(s_2^2)}$$

moderate to strong relationships between *RCd* scores and measures of depression and anxiety. Among the earlier MMPI-2 scales, *RCd* is highly correlated with *DEP* at .94 and non-*K*-corrected *Pt* at .93 (Greene, 2011).

### Interpretation

In general, non-elevated scores on *RCd* indicate someone who is not experiencing a significant amount of psychological distress. As scores begin to elevate above a *T*-score of 65, individuals tend to report more dissatisfaction with their current situation and are likely to feel sad and anxious. Individuals with scores in this range see little chance of their situation improving in the future.

As scores increase, above a *T*-score of 75 we are likely to encounter individuals who feel unable to cope or are overwhelmed with their current situation, and are experiencing significant clinical distress and turmoil. Even more so than those with scores below 75,



they feel that their future is bleak. Depression is more likely when scores are this high. Individuals with scores in this range should be thoroughly evaluated for suicide risk.

### **Somatic Complaints (*RC1*)**

Tellegen et al. (2003, p. 54) noted that the *RC1* scale “bears the strongest resemblance to its Clinical Scale counterpart” (*HS*). *RC1* contains 27 items, 20 of which are shared with clinical Scale 1, with which it correlates at .96, and with *HEA* at .95 (Greene, 2011). The seven new items’ content refers to head pain, muscle or movement dysfunction, speech problems, and having a lump in one’s throat. Eleven items are keyed True and the remaining 16 keyed False. Thus, this scale is not particularly susceptible to an All-True or All-False response set. Females in the normative sample scored significantly higher than males, although the effect size for the difference was small (see Table 10.4).

### **Correlates**

Among the correlates for psychiatric inpatients are chronic pain, along with decreased sleep, energy, and appetite (Arbisi et al., 2008). Handel and Archer (2008) reported physical illness, physical problems, somatic concerns, and suicide attempts among the correlates of higher scores on *RC1*. Tellegen and Ben-Porath (2011) reported that *RC1* scores were positively correlated with problems of suicidality and depression, along with antidepressant medication among inpatient women at the time of admission, but not in outpatient men. Correlates for inpatient men included decreased sleep, appetite, and energy among those treated at a community hospital, and chronic pain in those treated at a VA medical center. Additional correlates for females treated at a community hospital include depressed mood; decreased sleep, appetite, and energy; suicidal ideation; and chronic pain.

Somatization, depression, and anxiety were reported by Sellbom and colleagues (Sellbom, Ben-Porath, & Graham, 2006; Sellbom, Graham, & Schenk, 2006) among outpatient clients. Simms et al. (2005) reported moderate positive correlations between *RC1* scores and negative temperament and self-harm on the SNAP among their two samples. Tellegen and Ben-Porath (2011) included correlates of anxious, pessimistic, depressed, and somatic symptoms for both male and female outpatients. Forbey and Ben-Porath (2008) reported a moderate correlation between *RC1* scores and scores on a somatization screening instrument among non-patient college students.

### **Interpretation**

In general, this scale reflects a preoccupation with physical functioning, although some studies have shown depressive and suicidal correlates. Elevations on *RC1* can occur when an individual has genuine physical or somatic complaints; thus, an elevation on this scale should not automatically lead one to assume hypochondriasis or a somatization disorder.

Non-elevated scores on this scale usually reflect an absence of significant physical complaints, whereas elevated scores reflect their presence. These are often of a gastrointestinal or neurological nature. Complaints of head pain are not uncommon, nor are complaints of fatigue and a loss of energy. Subjective reports of depression are



also associated with high scores. As scores elevate above a *T*-score of 75, we begin to see individuals who are more likely to respond to psychological distress with physical symptoms; further, they are likely to reject psychological explanations for their symptoms, especially if *RC1* is elevated in isolation. The degree to which individuals with elevations in this range are preoccupied with their physical functioning is unusual among individuals with bona fide physical problems.

### **Low Positive Emotions (RC2)**

As *RCd* corresponds to the negative emotionality aspect of Watson and Tellegen's (1985) model of affect, *RC2* corresponds to positive emotionality aspect, specifically, the relative lack of positive emotions. According to this model, negative affect is associated with both depression and anxiety, but a lack of positive affect is a distinguishing feature of depression (Watson, Clark, & Carey, 1988). When extracting items for the seed scale, two clear dimensions emerged from clinical Scale 2: a demoralization dimension, and a positive dimension that was negatively keyed. Of the 57 items on clinical Scale 2, only 8 are shared with *RC2*, or just under 50 percent of *RC2*'s items.

*RC2* contains 17 items, all keyed False; thus, this scale is particularly susceptible to an All-False response set. There was no significant difference on raw scores between females and males in the normative sample (see Table 10.4). Among other scales of the MMPI-2, *RC2* is correlated with *INTR* at .88 (Greene, 2011).

### **Correlates**

Handel and Archer (2008) noted positive relationships with suicide attempts, depression, psychomotor retardation, blunted affect, and emotional withdrawal among psychiatric inpatients. Arbisi et al. (2008) reported depression and a wide range of accessory symptoms among inpatients at a community medical center; among male VA psychiatric inpatients, however, only depression was associated with *RC2* scores. Tellegen and Ben-Porath report positive correlations between *RC2* scores and depression, suicidality, and antidepressant medication in male and female inpatients. Additional correlates for males and females at a community hospital include decreased sleep, loss of interest, anhedonia, decreased energy, poor concentration, suicidal ideation, and feeling helpless, hopeless, and/or worthless. High *RC2* scores were associated with a history of a suicide attempts in men; in women, high scores were associated with a history of a suicide plan, although not with a history of attempts.

Among outpatients, depression has been positively correlated with scores on *RC2* (Binford & Liljequist, 2008; Sellbom, Ben-Porath, Graham, 2006; Sellbom, Graham, Schenk, 2006). Other correlates include suicidal ideation, sleep problems (Binford & Liljequist, 2008), negative temperament (Simms et al., 2005), worries about the future (Forbey & Ben-Porath, 2007); loss of motivation (Forbey & Ben-Porath, 2007; Sellbom, Graham, & Schenk, 2006), and introversion (Sellbom, Graham, & Schenk, 2006). Tellegen and Ben-Porath (2011) include the following among the correlates for *RC2* scores in outpatient men: anxious, depressed, sad, self-doubting, self-degrading, self-punishing, preoccupied with health concerns, multiple somatic complaints, fatigue, acute psychological turmoil, difficulty concentrating, self-doubting, feels that life is a

strain, fear of losing control, sleep disturbance, lonely, worrier, feels pessimistic and hopeless, feels like a failure, and feeling one is getting a raw deal from life. For women, the correlates include: sad, tearful, feels pessimistic and hopeless, self-doubting, self-degrading, self-punishing, feels like a failure, feels that life is a strain, socially awkward and insecure, lonely, sleep disturbance, and fatigue.

Ranson, Nichols, Rouse, and Harrington (2009) reported that in two large samples of Midwestern undergraduates (Total  $N = 1,202$ ) *RC2* and *Si* predicted scores on the Wisconsin Physical and Social Anhedonia Scales (Kwapil, Chapman, & Chapman, 1999) about equally well, and less well than *INTR*, respectively, across all comparisons.

### **Interpretation**

The scale essentially measures a lack of engagement in the positive emotional aspects of life, as well as in the types of activities associated with positive emotionality. Individuals scoring low ( $T < 39$ ) are often described as confident, energetic, socially engaged, and optimistic. Individuals with elevated scores ( $T > 65$ ) are at increased risk for depression. They find little pleasure in the activities of their lives or in social interactions. They may appear to be disengaged from those whom they have been close to in the past. They worry about a future that they view as bleak, and see little possibility for improving the future; thus, they have little motivation to effect change. They report a lack of energy, yet have difficulties with sleep; they may evidence psychomotor retardation. As scores increase beyond a  $T$  of 75, the possibility of major depression increases, as does the likelihood of suicidal ideation. Individuals scoring high on this scale should be carefully screened for suicidal thoughts.

### **Cynicism (RC3)**

Tellegen et al. (2003, p. 55) described *RC3* as “represent[ing] a circumscribed component of clinical Scale 3 that we singled out as distinctive.” All 15 items are keyed True; thus it is quite sensitive to an All-True response set. *RC3* shares 5 items with *Hy* (all from *Hy2*, Need for Affection), and 12 items with the Cynicism (*CYN*) content scale (11 of which appear on *CYN1*, Misanthropic Beliefs), with which it correlates at .93 to .95 among the Tellegen and Ben-Porath samples), and 10 items with the Hostility (*Ho*) scale, with which it correlates .85 (Greene, 2011). In addition, it shares four items with *Pa3*, Naïveté. Note that the items on *RC3* are reverse-scored as compared to clinical Scale 3, as Tellegen et al. stated a wish for higher scores to reflect higher levels of cynicism; thus, scores on *RC3* may be inversely related to scores on *Hy*. Males in the normative sample scored significantly higher than females, although the effect size for the difference was small (see Table 10.4).

### **Correlates**

No correlates of moderate or greater strength have been reported among inpatient samples for *RC3* (Arbisi et al., 2008; Handel & Archer, 2008; Tellegen & Ben-Porath, 2011). Among outpatients, modest positive relationships have been reported for mistrust (Sellbom, Ben-Porath, & Bagby, 2008; Sellbom, Graham, & Schenk, 2006;

Simms et al., 2005), sleep disturbance in men (Tellegen & Ben-Porath, 2011), and anger (Sellbom et al., 2008) as well as high scores on the SNAP paranoid, schizotypal, borderline, and narcissistic personality disorder scales (Simms et al., 2005). Scores on *RC3* were found to be negatively related to measures of agreeableness (Sellbom et al., 2008) and needs to achieve. Among non-patients, negativism has been shown to be moderately correlated (Forbey & Ben-Porath, 2008; Sellbom & Ben-Porath, 2005) with scores on *RC3*, as has Machiavellianism (Ingram, Kelso, & McCord, 2011) and alienation (Ingram et al., 2011; Sellbom & Ben-Porath, 2005). In addition, Sellbom and Ben-Porath have noted that positive well-being is negatively correlated with *RC3* scores.

Greene (2011) has suggested that although few correlates exist for *RC3*, the theme of the items is one of occasional anger. Unlike the items on *RC6*, which will be discussed later, the items on *RC3* are not self-referential.

### ***Interpretation***

Individuals who score low ( $T < 39$ ) on *RC3* have been described as seeing others as trustworthy. Low scores on this scale may also reflect naïveté or gullibility. High scorers, on the other hand, are described as being hostile and seeing others as essentially untrustworthy. They may feel alienated from others and, because of their inability to trust others, may have difficulty forming therapeutic alliances with caregivers. Because they often see others as essentially “being in it only for themselves,” they may also be willing to take advantage of others.

### **Antisocial Behavior (*RC4*)**

Tellegen et al. (2003) suggested that clinical Scale 4 contained an abundance of items pertaining to feelings of alienation and demoralization, and that *RC4* provides “an unconfounded assessment of an individual’s antisocial tendencies” (p. 56). *RC4* contains 22 items, with 16 keyed True. Nine items remain from clinical Scale 4, eight items are shared with the Disconstraint PSY-5 scale (*DISC*; four of these also overlap clinical Scale 4), and seven items are shared with the Addiction Acknowledgement supplemental scale (*AAS*; two of these also overlap with clinical Scale 4), with which it correlates at .79 (Greene, 2011). Males in the normative sample scored significantly higher than females; the effect size for the difference was moderate (see Table 10.4).

Greene (2011) has suggested that *RC4* correlates with scales in four categories: (1) antisocial attitudes and behaviors, (2) disconstraint, (3) substance abuse, and (4) family problems. Bolinsky and Nichols (2011) have expressed concern that the addition of items clearly related to substance abuse, in particular, may have caused an unintended “drift” away from the construct measured by the seed items (i.e. antisocial behavior) and made it possible for elevations on the scale to occur solely as a result of substance-related problems. Tellegen and Ben-Porath (2011), in fact, reported higher correlations for substance abuse problems and diagnoses than for any history of legal issues or diagnosis of antisocial personality disorder for both males and females, and in both outpatient and inpatient samples. Bolinsky, Trumbetta, Hanson, and Gottesman (2010), however, reported modest positive correlations between *RC4* scores in adolescence and criminal behavior as an adult.

**Correlates**

Among inpatients, positive correlations have been found between *RC4* score and substance issues (Arbisi et al., 2008; Ben-Porath & Tellegen, 2008; Handel & Archer, 2008). Legal issues have also been associated with higher scores on *RC4* (Arbisi et al., 2008; Ben-Porath & Tellegen, 2008; Handel & Archer, 2008). Handel and Archer (2008) also noted a positive correlation with hostility. Ben-Porath and Tellegen (2011) reported that higher scores are associated with abusive behavior in men, but not in women. Tellegen and Ben-Porath (2011) note a positive correlation between *RC4* scores and suicidal ideation.

In outpatient samples, the primary *RC4* correlates have been found to be substance issues (Binford & Liljequist, 2008; Sellbom, Ben-Porath, & Graham, 2006), depression (Binford & Liljequist, 2008), mistrust, and manipulateness (Simms et al., 2005). Tellegen and Ben-Porath (2011) found that both males and females with high scores on *RC4* were more likely to have been the victims of physical abuse than individuals with low scores; males were more likely to be physically abusive. Women with high scores were more likely to have been victims of sexual abuse. Tellegen and Ben-Porath also reported that both men and women felt that their family lacked love.

**Interpretation**

Individuals scoring low ( $T < 39$ ) on *RC4* report a below average history of antisocial behavior and substance abuse. Individuals with elevated ( $T > 65$ ) scores, however, are more likely to have a history of antisocial behavior and/or substance abuse. They are likely to have a history of failing to conform to social rules and norms, and to be described as argumentative, critical, or antagonistic in their relations with others. Thus, they often have a poor history of interpersonal relationships. Their family relationships tend to be strained or distant. They frequently have a history of poor achievement.

**Ideas of Persecution (RC6)**

*RC6* contains 17 items, with 16 keyed True; as such, it is susceptible to an All-True response set. *RC6* shares 13 items with clinical Scale 6 (12 on *Pa1*, Persecutory Ideas, with which it correlates at .83 to .92 among the Tellegen and Ben-Porath [2011] samples), 10 with Bizarre Mentation (*BIZ*; 8 of these also appear on clinical Scale 6), and 10 with the PSY-5 Psychoticism scale (*PSYC*; 9 of these also appear on clinical Scale 6). Males in the normative sample endorsed significantly more items than did females, although the magnitude of the difference was small (see Table 10.4).

All but one of the *RC6* items are self-referential, in contrast to the items on *RC3* which are not. Tellegen et al. (2003) note that, as compared to clinical Scale 6, *RC6* is less saturated with demoralization and that an elevation of clinical Scale 6 in the absence of an elevation of *RC6* would suggest that the respondent is not experiencing clear persecutory ideation. Greene (2011) has suggested that the scale broadly correlates with measures of psychoticism and infrequent responses.

### **Correlates**

Behavioral correlates that have been reported among inpatient samples include paranoid suspicions, delusions, and hallucinations (Arbisi, Sellbom, & Ben-Porath, 2008). Handel and Archer (2008) reported conceptual disorganization, suspiciousness, and hallucinatory behavior in their inpatient sample. Tellegen and Ben-Porath (2011) reported positive correlations for suspiciousness, ideas of reference, delusions, and hallucinations among inpatient men and women.

Among individuals seeking outpatient treatment, Sellbom, Graham, and Schenk (2006) reported a positive relationship between mistrust and *RC6* scores. Simms et al. (2005) reported positive correlations between *RC6* scores and measures of mistrust and eccentric perceptions. Sellbom, Ben-Porath, and Graham (2006) reported modest correlations with depression, global psychopathology, interpersonal sensitivity, anxiousness, and insecurity; interestingly, they did not report a significant relationship with suspiciousness. Tellegen and Ben-Porath (2011) reported the following correlates for males: feels that life is a strain, does not get along with coworkers, depressed, and self-degrading; they reported a negative relationship with high achievement needs. For women, they reported negative relationships with high aspirations, achievement needs, communication effectiveness, likability, having many interests, and creating a good impression.

Among non-patients, Forbey and Ben-Porath (2008) reported modest positive relationships between *RC6* scores and measures of somatization, depression, and magical thinking. Sellbom et al. (2008) reported a negative relationship between *RC6* scores and a measure of trust.

### **Interpretation**

Low scores on *RC6* are not interpreted. High scores may reflect significant persecutory ideation, such as the belief that others are out to harm one's self. As scores increase, the probability of paranoid delusions or other psychotic symptoms increases.

Individuals who score high on *RC6* are often described as being suspicious of others and their motives. They see malicious intent in the actions of others and often blame others for their difficulties. Their mistrust of others can cause difficulties in interpersonal relationships; thus, these individuals are often alienated from others. As the *T*-score increases above 80, the individual should be carefully assessed for paranoid delusions and hallucinations.

### **Dysfunctional Negative Emotions (RC7)**

*RC7* was conceptualized as a scale to measure reports of negative emotional experiences, such as anxiety, anger, or fear. Of the 24 items in *RC7*, 8 are shared with clinical Scale 7, and 10 with Welsh's *A* (4 of these items also overlap clinical Scale 7). Greene (2011) reports a correlation between *RC7* and *A* of .90 and notes that the various scales with which *RC7* evidences very high (i.e. > .80) correlations represent only the broad category of general distress. Indeed, Bolinskey and Nichols (2011) have suggested that *RC7* may be even more saturated with first-factor variance than clinical Scale 7, which they attribute

as much to difficulties in the creation of the original scale as to problems unique to *RC7*. The saturation of *RC7* with the first-factor variance is not unexpected, given that all seven of its seed items overlap by at least one and as many as six items ( $M = 2.1$ ) with three independent first-factor markers described by Nichols (2006).

*RC7* contains 24 items, all keyed True. As with other scales, one should carefully evaluate the effects of response sets when interpreting elevations on this scale. Females in the normative sample evidenced a small, but significant, effect for endorsing more items than did their male counterparts (see Table 10.4).

### **Correlates**

Handel and Archer (2008) reported positive relationships between *RC7* scores and anxiety, somatic concerns, and a history of sexual abuse among inpatients. Arbisi, Sellbom, and Ben-Porath (2008) reported decreased sleep, flashbacks, suicidal ideation, and antidepressant medication among the correlates of *RC7* scores among inpatients. Tellegen and Ben-Porath (2011) list antidepressant medication among the correlates for men, and antidepressant medication, depression, and suicidal ideation among the correlates for women in an inpatient setting.

Among those seeking outpatient treatment, Sellbom, Graham, and Schenk (2006) found *RC7* scores to be positively related to mistrust, depression, anxiety, and somatization. Simms et al. (2005) reported correlates of negative temperament, mistrust, manipulateness, aggression, self-harm, eccentric perceptions, and detachment, as measured by the SNAP, within an outpatient sample. Scores on *RC7* were also positively related to scores on the paranoid, schizotypal, borderline, narcissistic, avoidant, and dependent personality scales of the SNAP. Within their sample of outpatients, Ben-Porath and Graham (2006) reported moderate correlates of global psychopathology, depression, interpersonal sensitivity, anxiety and insecurity. Among the correlates for outpatient men offered by Tellegen and Ben-Porath (2011) were acute psychological turmoil; anxiety; insecurity; sadness; tearfulness; moodiness; pessimism; preoccupation with health problems; difficulty concentrating; feeling overwhelmed, lonely, inferior, like a failure, and that one gets a raw deal from life; feeling as though one's family is lacking in love and resenting family members; keeping others at a distance; and being self-punishing and self-degrading. Poor stress tolerance was also positively correlated with *RC7* scores. For outpatient females, Tellegen and Ben-Porath reported positive relationships with the tendency to give up easily, as well as with suicidal ideation. Negative relationships were reported with stress tolerance, self-reliance, high aspirations, and having many interests.

Among non-patients, *RC7* scores have been correlated with measures of trait anxiety, trait anger, obsessive-compulsiveness, and social phobia (Forbey & Ben-Porath, 2008). Sellbom et al. (2008) reported positive relationships with anxiety, angry-hostility, self-consciousness, and vulnerability. They reported negative relationships with trust, conscientiousness, and competence.

### **Interpretation**

Greene (2011) suggests that due to the high correlation between *RC7* and other measures of first-factor distress, only one such scale should be interpreted. We agree with this



observation and note, again, that one should never use a score as confirming evidence for a high score on a scale with which it is redundant.

Low scores ( $T < 39$ ) on *RC7* are obtained from individuals who report little or no general distress. High scores, on the other hand, reflect significant negative emotional experiences, such as anxiety, fear, or irritability. Individuals who score high on *RC7* can often be described as feeling sad and unhappy. They are prone to guilt and have a tendency to be self-critical. They worry excessively and are very insecure; as such, they are prone to perceive criticism where it may not exist. They are pessimistic; they expect to fail and believe that they have failed. They frequently worry and have sleep difficulties, including nightmares. They may feel overwhelmed and incapable of coping with their current situation. Particularly high scores ( $T > 80$ ) reflect significant emotional discomfort and helplessness; a referral for medication evaluation may be warranted.

### **Aberrant Experiences (*RC8*)**

Tellegen et al. (2003) noted that the *RC8* items describe a wide variety of symptoms, including sensory, perceptual, cognitive, and motor disturbances. *RC8* is much less saturated with first-factor variance than is its clinical Scale 8 counterpart. Further, unlike scales such as *BIZ* or *PSYC*, the items of *RC8* do not include paranoid content, as that construct was confined to *RC6*. *RC8* contains 18 items, with 17 keyed True; thus, elevations are particularly sensitive to an acquiescent or All-True response set. Of these 18 items, 10 appear on clinical Scale 8, 8 on *PSYC*, and 12 on *BIZ* (4 on *BIZ-1* and 6 on *BIZ-2*). No difference in mean item endorsement was observed between males and females in the normative sample (see Table 10.4).

Nichols (2006) observed that *RC8* reflects a good balance in content reflecting anomalous experience (e.g. de-realization and hallucinations) and Schneider's (1959) First Rank symptoms, such as thought broadcasting. He noted that there is no other MMPI-2 scale in which this content is better represented and concentrated. Greene (2011) reported a correlation between *RC8* and *BIZ* of .91, and noted that the defining characteristics of those scales with which *RC8* highly correlates are psychotic behaviors and symptoms, infrequent responses, and general distress.

### **Correlates**

Handel and Archer (2008) reported that *RC8* scores were positively related to ratings of conceptual disorganization, hallucinatory behavior, and unusual thought content among psychiatric inpatients. Others (Arbisi, Sellbom, & Ben-Porath, 2008) have also reported that hallucinations are associated with *RC8* elevations in inpatient men and women.

Sellbom, Graham, and Schenk (2006) reported *RC8* correlates among outpatients that included bizarre experiences, paranoia, panic, anxiety, and mania. Simms et al. (2005) reported that *RC8* scores were moderately correlated with ratings of negative temperament, mistrust, and eccentric perceptions. Among the correlates for male outpatients reported by Tellegen and Ben-Porath (2011) are anxiety, depression, somatic complaints, low achievement-oriented, sleep disturbance, feelings of failure, and difficulty making decisions. Correlates reported for female outpatients included a



history of suicide attempts and sexual abuse, hallucinations, feeling disoriented, and a poor ability to cope with stress.

Among non-patients, Forbey and Ben-Porath (2008) noted that *RC8* scores were positively correlated with scores on the Magical Ideation (Eckblad & Chapman, 1983) and Perceptual Aberration (Chapman, Chapman, & Raulin, 1978) scales. Sellbom et al. (2008) reported that higher scores on *RC8* were associated with lower scores on trust.

### ***Interpretation***

Low scores on *RC8* should not be interpreted. Individuals who produce moderately elevated *T*-scores in the range of 65 to 74 may be exhibiting schizotypal characteristics. They are reporting unusual perceptions and thought processes, which may include hallucinations and/or delusional beliefs. They may exhibit impaired reality testing. They are often described as anxious or depressed. They have difficulty trusting others and are also likely to have difficulties in interpersonal and occupational functioning. As *T*-scores elevate above 75, the possibility of schizophrenia or another psychotic disorder increases, along with the degree of thought and perceptual disturbance. Referral for a medication evaluation, hospitalization, or intensive therapy should be considered.

### **Hypomanic Activation (*RC9*)**

The items in *RC9* have been described as measuring behaviors such as racing thoughts, increased energy, expanded mood, heightened self-regard, sensation-seeking, and irritability—all behaviors associated with hypomanic activation (Tellegen et al., 2003). *RC9* contains 28 items, with all but one keyed True; it is therefore particularly sensitive to All-True or All-False response sets. It shares eight items with clinical Scale 9 and seven with the Aggressiveness (*AGGR*) *PSY-5* scale (one of these items also overlaps clinical Scale 9). Males evidence a small, but significant effect for endorsing more items than their female counterparts in the normative sample (see Table 10.4).

Greene (2011) has observed that scores on *RC9* correlate most highly with scales that measure antisocial attitudes and behaviors, hypomania, and aggression. Bolinsky and Nichols (2011) suggested that the hypomanic activation core present in the seed items for *RC9* may have been significantly diluted by the angry, vindictive, and aggressive content recruited into the scale in Step 4 of the *RC* scales' development. As a consequence, in some profiles an elevation on *RC9* may be generated more on the basis of this scale's hostile content than by its hypomanic content.

### ***Correlates***

Tellegen and Ben-Porath (2011) report a history of cocaine abuse and a history of violent behavior among the correlates of *RC9* scores for inpatient men. For inpatient women, they reported correlates of histories of substance abuse, and cocaine abuse, as well as a diagnosis of substance abuse or dependence. Handel and Archer (2008) reported substance abuse, conceptual disorganization, and excitement among the correlates of *RC9* in a sample of psychiatric inpatients. Arbisi, Sellbom, and Ben-Porath (2008) reported that cocaine use was positively correlated with *RC9* scores.

In a sample of individuals seeking outpatient treatment, Simms et al. (2005) reported manipulateness, aggression, and disinhibition among the correlates of *RC9* scores. Scores on *RC9* were also strongly correlated with scales associated with antisocial, borderline, histrionic, and narcissistic personality disorders. Sellbom, Ben-Porath, and Graham (2006) reported that elevated *RC9* scores were correlated with descriptions of clients as antisocial and aggressive. Sellbom, Graham, and Schenk (2006) reported mistrust and mania were associated with higher scores on *RC9*.

Among non-patients, Forbey and Ben-Porath (2008) reported that higher *RC9* scores were associated with higher scores on measures of general impulsivity, motor impulsivity, and activation. Sellbom et al. (2008) reported that *RC9* scores were positively correlated with measures of angry-hostility, impulsiveness, and excitement-seeking. *RC9* scores were negatively associated with scores on measures of agreeableness, trust, straightforwardness, compliance, modesty, and deliberation.

### **Interpretation**

Individuals who score low ( $T < 39$ ) on *RC9* are reporting low levels of hostility, energy, and engagement with the environment. Individuals with elevated scores may be described as irritable or hostile. They report increased levels of energy and may experience racing thoughts. Individuals with high scores are likely to be high in sensation-seeking; they may have poor impulse control and be more inclined to engage in antagonistic and/or risky behaviors. They may exhibit antisocial behaviors and have problems with substance abuse. As *T*-scores increase above 75, the likelihood of a manic episode increases. A referral for a medication evaluation should be considered.

### **A Final Word on Interpretation**

It can be expected that clinicians familiar with the MMPI-2 and the codetype approach to its interpretation may well wish to know how the codetype strategy might be applied to the profile of RC scale scores. At present, the RC/RF authors have not recommended such an application, and data bearing on the correspondence of clinical scale and RC scale profiles is in short supply. One obvious point of discrepancy is with respect to the *Hy* and *RC3* scales, with the former emphasizing the denial of cynical traits and attitudes (see *Hy2*, from which all of the *RC3* seed items were drawn), and the latter affirming such traits/attitudes. However, even if *Hy* and *RC3* are dropped from consideration, the correlations in the Tellegen et al. (2003) samples between *Hs* and *RC1*, *D* and *RC2*, *Pd* and *RC4*, *Pa* and *RC6*, *Pt* and *RC7*, *Sc* and *RC8*, and *Ma* and *RC9*, average only .76 (range: .62 for *RC6* to .94 for *RC1*), indicating that the RC scales account for less than 60 percent of the variance of the clinical scales. As a consequence, the pattern of elevations on the profile of RC scale scores may be expected to differ both widely and frequently from the codetype patterns formed by the clinical scales.

Although there are as yet no rules of thumb available for reconciling clinical scale and RC scale profiles when these are discrepant, it can be suggested that the clinician turn to the RC scale/content-based correlates identified by Rouse et al. (2008) and by Greene (2011). Thus, for example, *RC1* may be compared with *HEA*, *RC2* with *INTR*, *RC3* with *CYN1*, *RC4* with *AAS*, *RC6* with *Pa1*, *RC7* with *NEGE*, *RC8* with *BIZ*, and *RC9*

with *AGGR*. Across the same samples as above, Tellegen and Ben-Porath (2011) report correlational values for each of these scale pairs averaging .85 (range: .67 for *RC9/AGGR* to .94 for *RC3/CYN1*), or about 11 percent higher than for the correlations between the RC scales and their parent clinical scales (excluding *Hy/RC3*). This increase in the magnitude of association between content-based MMPI-2 scales and the RC scales is only to be expected, as the RC scales are themselves content driven.

In summary, at the present state of knowledge, seeking to expect equivalence between the pattern of scores and their respective codetypes for the clinical scales, on the one hand, and the RC scales, on the other, is ill-advised. Rather, it is recommended that the clinician treat the RC scales as new content-based measures that are likely to find better accord with other content-based scales than with their clinical scale parents. And it is with these measures that correspondences should be sought, not with the clinical scales. As to which of *any* pattern of scores, clinical scale, content scale, RC scale, *PSY-5* scale, or others, the clinician must judge the accuracy of “fit” for the patient in the usual manner, against interview and case history findings, the reports of informants, contemporary behavioral observations and ratings, and so on.

### **Criticisms of the RC Scales**

The introduction of the RC scales has not been without controversy. Indeed, at least two of the authors of this book (i.e. Bolinsky and Nichols) have published works that urge caution in interpreting elevations on some scales. Further, James N. Butcher, the primary architect of the revision of the MMPI that led to MMPI-2, has written that he does not recommend the RC scales for clinical use (Butcher, 2011). Others, of course—chief among them Auke Tellegen and Yosef S. Ben-Porath, who were also heavily involved in the creation of MMPI-2—have published an even greater number of works purporting to provide evidence of the scales’ clinical utility. Although a complete review of the extant literature concerning use of the RC scales is beyond the scope of this chapter, we will attempt to summarize the literature from both points of view. Finally, we will attempt to offer a bit of perspective.

#### ***Empirical Tradition***

Butcher (2011) has criticized the *method* of the RC scales’ creation, noting that Tellegen et al. (2003) essentially abandoned the empirical method of test construction on which the MMPI/MMPI-2 was based. Caldwell (2006) noted that the difference between factorially-derived scales and empirically-derived scales is that of “maximal” (i.e. to measure something very well) versus “meaningful” measurement, which can be thought of in terms of criterion discrimination. The MMPI and MMPI-2 scales, of course, were based on the latter method of test construction, whereas the RC scales were based on the former.

#### ***Theoretical Basis***

Some have questioned the appropriateness of Watson and Tellegen’s (1985) hierarchical model of mood as the starting point for the development of the RC scales, opening this

model to criticism of the basis of its performance in subsequent empirical investigations of mood. Indeed, following an analysis of this literature, Ranson, Nichols, Rouse, and Harrington (2009) concluded that the Watson–Tellegen model is neither convincingly corroborated, nor has it performed advantageously relative to competing models of mood such as the circumplex model of Russell (1980). Despite the appropriate and well-ordered series of steps employed in the construction of the RC scales following the initial creation of the *Dem* marker for Watson and Tellegen’s PU dimension, it is unclear how any deficiencies of the Watson–Tellegen model—and the representation of its PU dimension in *Dem/RCd* (including the omission of a replication of the RC authors’ Step 2 using *RCd* following its revision from *Dem*)—may have affected the final versions of the RC scales.

### **Redundancy**

Rouse et al. (2008) found that each of the RC scales correlate more highly with a supplementary, content, or PSY-5 scale than with its parent clinical scale. They further argued that over half of the RC scales (e.g. *RCd*, *RC1*, *RC3*, *RC7*, *RC8*, and *RC9*) were redundant with existing MMPI-2 scales due to the extraordinarily high correlations they evidence with those scales. Tellegen, Ben-Porath, and Sellbom (2009), however, countered the first argument by noting that the RC scales were not created to mimic the clinical scales; they noted that, rather than trying to capture the divergent and overlapping content of the clinical scales, the RC scales were created to measure a distinctive core component of each clinical scale. To the second argument, they note that the proposed “proxy” scales with which Rouse et al. (2008) argued that the RC are redundant are less distinguishable from one another than are the RC scales; they further argued that the RC scales better account for variance in the clinical scales than do the proposed proxies. Greene, Rouse, Butcher, Nichols, and Williams (2009) offered a rejoinder in which they, again, demonstrated the high correlations of the RC scales with extant MMPI-2 scales and noted that the MMPI-2-RF Technical Manual (Tellegen and Ben-Porath, 2011), also demonstrates the same high correlations as noted by Rouse et al.

### **Construct Drift**

Nichols (2006) used the term “construct drift” to refer to the possibility that adding items that correlated with seed items (i.e. in Step 4 of the RC scales’ creation) risked the drift of the selected core construct in the direction of substantive content areas at variance with this core. Among the RC scales for which the possibility of construct drift has attracted some empirical attention are *RC3*, *RC4*, *RC7*, and *RC9*.

With regard to *RC3*, Butcher (2011, p. 182) has noted that the “rich descriptors” associated with clinical Scale 3 and its associated codetypes are lost when using *RC3*. Thomas and Youngjohn (2009) have further noted that *RC3* is not particularly useful as a marker of somatization among traumatic brain injury patients. It has been suggested (Butcher, Hamilton, Rouse, & Cumella, 2006; Nichols, 2006) that *RC3* has essentially drifted to the point of being an entirely different scale from clinical Scale 3, and one that is redundant with *CYN/CYN1*.

With respect to this criticism, it is worth noting that this differentiation of *RC3* from clinical Scale 3 was not unintentional, a fact acknowledged by Nichols (2006). Tellegen

et al. (2003) clearly stated the intention to concentrate somatic concerns on RC1, which left a smaller proportion of items from which to extract a unique core component. They also noted a decision to reverse-score the items in order to reflect more clinical concerns. With regard to redundancy, Tellegen et al. (2006) noted that item overlap works in both directions. They pointed out that while 80 percent of RC3 items appear on CYN, only 52 percent of CYN items appear on RC3. The CYN items that do not appear on RC3 are self-referential items, which reflect a construct that was isolated to RC6. The item overlap of RC3 and CYN occurs primarily with CYN1, which overlaps RC3 by 11 items.

The primary area for concern regarding RC4 has been its high degree of correlation with substance abuse. Caldwell (2006, p. 194) noted that clinical Scale 4 was created to identify “the asocial and amoral type of psychopathic personality.” Although Nichols (2006) initially suggested that RC4 may be an improvement over previous scales, he also expressed concern that the high proportion of substance abuse items may “risk false positive inferences of broad antisocial dispositions and behavior based on substance abuse alone” (p. 135); this concern was later echoed by Bolinsky and Nichols (2011). Indeed, as pointed out earlier, RC4 scores consistently demonstrate higher positive correlations with substance use than with legal difficulties (see, e.g. Tellegen et al., 2003).

The solution to such an apparent impasse might be found if we simply consider the respective reported purposes of clinical Scale 4 and RC4. As Caldwell (2006) notes, clinical Scale 4 was designed to measure a type of personality; Nichols (2006, p. 123) referred to this aspect of the clinical scales as their “syndromal complexity.” The RC scales, however, were never designed to measure this type of syndromal complexity; Weed (2006), in fact, questions whether this complexity is worth preserving. The stated purpose of RC4 is the assessment of past and current antisocial behavior, rather than a type of personality. One could certainly argue that substance issues would fall under the former umbrella; Ben-Porath and Tellegen (2008, 2011), in fact, list substance abuse as a correlate of RC4 in the *MMPI-2-RF Interpretive Manual*. Even if one does not wish to include substance abuse as a manifestation of antisocial behavior—thus raising the question of false positives based on RC4 scores—clinical Scale 4 was by no means immune to false positives; in the latter case, however, false positives may have arisen as a consequence of demoralization/first factor variance.

With regard to RC7, the focus of criticism has been as much on its redundancy with other first-factor scales as on its drift away from the original construct of psychasthenia. Bolinsky and Nichols (2011) have recently suggested that this drift may have actually occurred as much during the creation of the original clinical Scale 7 as in the creation of RC7. Regardless of when such drift occurred, it appears that RC7, like its predecessor, remains saturated with first-factor variance. We suggest that the reader heed Greene’s (2011) caution regarding the interpretation of redundant scales.

The empirical correlates of RC9 lend support to Nichols’ (2006; Bolinsky & Nichols 2011) suggestion that the aggressive content in RC9 may overpower the manic content on some profiles. That is not to suggest that elevations on RC9 are necessarily not associated with hypomanic activation—as Tellegen et al. (2006) point out, agitation and irritability are among the diagnostic criteria for mania, but were not included among Hathaway and McKinley’s (1943) criterion group’s symptoms—but simply to serve as a reminder for caution when interpreting elevated scores on RC9.



### Sensitivity

Homogeneous scales with obvious item content, of which the RC and MMPI-2 content scales are examples, tend to be somewhat more vulnerable to both under- and over-reporting than are the more complex, multivariate MMPI-2 clinical scales. Studies using a variety of samples have found that the RC scales elevate less readily, that is to say are less sensitive, or more prone to false negatives, than are the MMPI-2 clinical scales (Binford & Liljequist, 2008; Cumella, Kally, & Butcher, 2009; Gordon, Stoffey, & Perkins, 2013; Gucker, Kreuch, & Butcher, 2009; Haas & Saborio, 2012; Megargee, 2006; Pizitz & McCullough, 2011; Rogers, Sewell, Harrison, & Jordan, 2006; Sellbom, Ben-Porath, McNulty, Arbisi, & Graham, 2006; Wallace & Liljequist, 2005; but see also Osberg, Haseley, & Kamas, 2008). The findings reported by Megargee and by Pizitz and McCullough are particularly concerning in this respect. In a large (> 2,000) sample of incarcerated felons, Megargee found that their mean scores on the RC scales were, on the average, lower than the mean RC scores of the MMPI-2 re-standardization sample, and all were below a *T*-score of 56, including *RC4* (Antisocial Behavior), a scale one would expect to be significantly elevated among prison inmates. Pizitz and McCullough, in a sample of convicted male stalkers, found that five of the RC scales (*RC2*, *RC3*, *RC7*, *RC8*, and *RC9*) showed a mean *T*-score below 50, and that the mean *T*-score for *RC4*, a scale that one would expect to be elevated in such a sample, was only 51.7, more than a standard deviation below that obtained by these men on Scale 4. Converting the MMPI-2 to the MMPI-2-RF, these investigators found that of the 42 substantive (i.e. non-validity) scales on this form, only 8 achieved mean scores greater than *T*-50, the highest of these being on Mechanical-Physical Interests (MEC; see Chapter 11), at a *T*-score of 57, for this all-male criminal sample.

The reasons for this apparent lack of sensitivity of the RC scales are not difficult to find. Like those of the MMPI-2 content scales, the vast majority of the RC items are content-obvious, and thus readily avoided. Additionally, like the content scales, for which the keyed response is True for 297 of their 366 total items (81 percent), *M* = 21 items per scale, the keyed response for the RC scales (*RC1–RC4* and *RC6–RC9*) is True for 126 of their 168 total items (75 percent), *M* = 21 items per scale. These patterns are in substantial contrast with the MMPI-2 clinical scales, those representing psychiatric syndromes (*Hs*, *D*, *Hy*, *Pd*, *Pa*, *Pt*, *Sc*, and *Ma*). Of the 411 items that are scored on one or more of these scales, the keyed response is True for 228 items (55 percent), *M* = 51 items per scale. Thus the examinee who wishes to minimize the possibility of psychopathology being detected on the RC scales, as on the content scales, may readily do so by generally avoiding True responses, whereas this strategy will be less successful as applied to the more evenly True/False balanced MMPI-2 clinical scales.

The assessment of potentially false negative RC scale scores and/or patterns may proceed with reference to the customary validity scales and indicators. In general, RC false negatives appear to occur most frequently in the context of at least one or more indications of under-reporting/defensiveness, such as elevations on one or more of *L*, *K*, *S*, *Mp*, and *Sd*, or on negative values for the *F – K* index, –10 to –20, or less. Additionally, a bias favoring False responding can often be detected by the True/False balance, with a relatively high False percent, greater than, say, 60 percent False, suggesting, and greater than 70 percent, strongly suggesting, such bias. Finally, of course, it behooves the

psychologist to seek to reconcile RC scales that appear to be under-elevated with any reliable extra-test data supporting the presence of bona fide psychological disturbance.

## Perspective

Archer and Newsom (2000) noted that there had been little change in psychologists' tests over the course of four decades. They further noted that although this lack of change reflected, to some degree, the robustness of the tests employed by psychologists, it spoke as well to the rather slow pace of change in the field of clinical assessment. We are all creatures of habit; we are comfortable with what we know and change is difficult. However, as Rogers and Sewell (2006, pp. 177–178) remind us, "One should not be a slave to the best test-construction practices of 1940."

Archer (2006) noted that it was precisely the desire to maintain continuity with the previous version of the instrument that led to the relatively modest revision that resulted in MMPI-2. This effort at moderation, however, did not assuage those who felt that the MMPI-2 represented too radical a departure from the original version (Adler, 1990). In the case of the RC scales, although there was some effort made to preserve some continuity with the original clinical scales with the decision to base each of the RC scales on a core component of a clinical scale, this effort was far less than that made in the MMPI-2 revision. However, it appears that the effort to maintain this level of continuity may have backfired to some extent. Whereas some (Rogers and Sewell, 2006) question the logic of basing the RC scales only upon distinctive core components of the eight clinical scales, others (e.g. Butcher, 2011; Nichols, 2006; Rouse et al., 2008) point out that the RC scales often do not correlate highly with their parent clinical scales.

We are reminded of Meehl's (1959) observation that the point of psychological testing should not be to predict what the psychiatrist down the hall would say. In that same vein, we would offer the reminder—as Tellegen et al. (2003) noted and have continued to point out—that the purpose of the RC scales was not to have them align perfectly with the clinical scales. Such an exercise would have been pointless. Rather, the RC scales were designed to measure different, but related constructs—maximal measurement, if you will, but not meaningless. We should acknowledge that the RC scales are different than the clinical scales and will not provide identical measures of the same constructs as the earlier scales. Likewise, we must accept that they are imperfect measures of the constructs they were designed to assess—and may, in fact, contain more "syndromal complexity" than was intended (e.g. see *RC4* and *RC9*). The goal of future research should be to help us understand what the RC scales *do* rather than *do not* measure. As with any psychometric instrument, the burden ultimately lies with the user to fully understand the research with regard to both the concurrent and predictive validity of an instrument before incorporating that measure into their clinical practice.

## Note

- 1 One might argue that a third reason for item overlap is error (i.e. an item falling on a scale due to a spurious correlation between the criterion and item endorsement frequency). Such an argument, however, is beyond the scope of the present discussion.