

Performance of Recidivism Risk Assessment Instruments in U.S. Correctional Settings

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With the population of adults under correctional supervision in the United States at an all-time high, psychologists and other professionals working in U.S. correctional agencies face mounting pressures to identify offenders at greater risk of recidivism and to guide treatment and supervision recommendations. Risk assessment instruments are increasingly being used to assist with these tasks; however, relatively little is known regarding the performance of these tools in U.S. correctional settings. In this review, we synthesize the findings of studies examining the predictive validity of assessments completed using instruments designed to predict general recidivism risk, including committing a new crime and violating conditions of probation or parole, among adult offenders in the United States. We searched for studies conducted in the United States and published between January 1970 and December 2012 in peer-reviewed journals, government reports, master's theses, and doctoral dissertations using PsycINFO, the U.S. National Criminal Justice Reference Service Abstracts, and Google. We identified 53 studies (72 samples) conducted in U.S. correctional settings examining the predictive validity of 19 risk assessment instruments. The instruments varied widely in the number, type, and content of their items. For most instruments, predictive validity had been examined in 1 or 2 studies conducted in the United States that were published during the reference period. Only 2 studies reported on interrater reliability. No instrument emerged as producing the "most" reliable and valid risk assessments. Findings suggest the need for continued evaluation of the performance of instruments used to predict recidivism risk in U.S. correctional agencies.

Keywords: risk assessment, recidivism, adult offenders, systematic review, predictive validity

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The rates of correctional supervision and incarceration in the United States are staggering. To demonstrate, almost seven million people—or one in 35 adults—were under the supervision of correctional systems in the United States at the end of 2013 (Glaze & Kaeble, 2014). This includes approximately one in 51 adults on probation or parole and one in 110 adults incarcerated in prison or jail. These are rates higher than seen anywhere else in the world. As a point of comparison, the rate of incarceration in the United States is more than four times the rate of incarceration found in the

majority of the world's countries (Walmsley, 2013). In fact, even though the United States has less than 5% of the global population, it has close to one-quarter of the world's prisoners (Walmsley, 2013). Clearly, there is a pressing need for efforts to reduce mass incarceration in the United States, including treatment to reduce recidivism and diversion of lower risk offenders to alternative settings and punishments. Indeed, not all offenders are at equal risk of recidivating (Langan & Levin, 2002) and, accordingly, may not require the same levels of supervision and intervention (Monahan & Skeem, 2016). Additionally, in contrast with the traditional "one-size-fits-all" criminal justice approach, research shows that the most effective strategies for reducing recidivism are those delivered to offenders at greater risk of recidivism that target individual needs (Andrews & Bonta, 2010). Consequently, psychologists and other professionals working in U.S. correctional agencies face mounting pressures to differentiate between offenders at greater and lower risk of recidivism and to guide decisions regarding treatment and supervision (Jung, Brown, Ennis, & Ledi, 2015; Monahan & Skeem, 2016).

In recent years, risk assessment has come to be recognized as a key component of criminal justice reform and evidence-based corrections in the United States (Casey, Warren, & Elek, 2011). There is overwhelming evidence that risk assessments completed using structured approaches produce estimates that are more reliable and more accurate than unstructured risk assessments (Grove,

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Zald, Lebow, Snitz, & Nelson, 2000; Ægisdóttir et al., 2006). Risk assessments completed using structured approaches also have been shown to lead to better public safety outcomes (Mamalian, 2011). For these reasons, instruments designed to predict risk of general recidivism, including committing a new crime and violating conditions of probation or parole, are increasingly required and being implemented in correctional agencies in the United States (J. Miller & Maloney, 2013; Monahan & Skeem, 2014; Monahan & Skeem, 2016). Despite the many different risk assessment instruments available, relatively little is known regarding the performance, and interrater reliability and predictive validity specifically, of recidivism risk assessments completed on adult offenders in U.S. correctional settings. Though there have been several high quality reviews of risk assessment instruments to date, the ability of their findings to inform decisions regarding which recidivism risk assessment instrument to implement in U.S. correctional settings is limited in three crucial ways.

First, these reviews have focused primarily on instruments designed to predict specific forms of recidivism, notably violent or sexually violent offending, rather than predicting general recidivism more broadly (e.g., Fazel, Singh, Doll, & Grann, 2012; Gendreau, Goggin, & Little, 1996; Hanson & Morton-Bourgon, 2009; Singh, Grann, & Fazel, 2011; Tully, Chou, & Browne, 2013; Yang, Wong, & Coid, 2010). Violent and sexually violent offenders, however, comprise a relatively small proportion of the U.S. inmate population overall (Carson & Sabol, 2012). As such, the assessment of general recidivism risk is a more common task. Second, prior reviews have included a relatively short list of risk assessment instruments, typically fewer than 10, rather than including a comprehensive list of risk assessment instruments that are being used in practice. Third, and finally, prior reviews have examined the performance of risk assessments in studies conducted in multiple countries, with the predominance of studies conducted in Canada and the United Kingdom. Assessment instruments—risk assessment or otherwise—do not have reliability and validity that are transportable across populations and settings (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 2014). There may be meaningful differences between offenders, assessors, and services in U.S. correctional settings and those in other jurisdictions that affect the reliability and validity of risk assessments (Monahan & Skeem, 2016).

To advance knowledge, we conducted a systematic review of studies conducted in correctional settings in the United States that have examined the predictive validity of assessments completed on adult offenders using instruments designed to predict risk of general recidivism. Our goal was to synthesize findings of the American validation research to help policymakers, psychologists, and other professionals working in U.S. correctional settings choose from among the potentially overwhelming list of risk assessment instruments available. In the sections that follow, we discuss characteristics of risk assessment instruments, samples, and studies that may affect the performance of assessments, and that, as such, we will examine in our review.

Characteristics of Risk Assessment Instruments

Recidivism risk assessment instruments may be distinguished in terms of their approach, item type, and item content. First, there

are two broad categories that distinguish between approaches used by risk assessment instruments: actuarial and structured professional judgment. The actuarial approach represents a mechanical model of risk assessment in which offenders are scored on a series of items that were most strongly associated with recidivism in the development samples. Then, total scores are cross-referenced with actuarial risk tables (Hilton, Harris, & Rice, 2006). In contrast, the structured professional judgment approach guides assessors to consider a set number of factors that are empirically and theoretically associated with the outcome of interest. Though individual items are scored, assessors ultimately make a categorical judgment of risk level (e.g., low, moderate, high) based on their professional judgment rather than using total scores (Guy, Packer, & Warnken, 2012). Risk assessment instruments also can be differentiated by the type and content of their items, such as risk, protective, static, and dynamic factors. Risk factors are characteristics that are associated with increases in the likelihood of recidivism, whereas protective factors are characteristics associated with decreases in the likelihood of recidivism (de Ruiter & Nicholls, 2011). Risk and protective factors can either be static or dynamic in nature. Static factors are historical (e.g., history of antisocial behavior) or otherwise unchangeable characteristics (e.g., sex, race/ethnicity), whereas dynamic factors are characteristics that may change over time and/or when targeted in treatment (e.g., substance abuse; Douglas & Skeem, 2005).

Characteristics of Samples and Studies

Beyond the characteristics of the instruments, performance of risk assessments may differ as a function of the characteristics of the research samples and study designs. For instance, offender race/ethnicity and sex are potentially important sources of assessment bias (Scurich & Monahan, 2016). In fact, Former U.S. Attorney General Eric Holder recently spoke *against* the use of risk assessments to inform sentencing decisions due to concerns over bias against racial/ethnic and other minorities (Holder, 2014). Some reviews of personality assessment tools and violence risk assessment instruments support his perspective, finding that assessments may be more accurate for White offenders compared with those of other racial/ethnic backgrounds (Leistico, Salekin, DeCoster, & Rogers, 2008; Singh et al., 2011). However, other studies have failed to identify such racial/ethnic biases (e.g., Guy, Edens, Anthony, & Douglas, 2005). No reviews, to our knowledge, have explored racial/ethnic biases in assessments of risk for general recidivism. With respect to offender sex, meta-analytic research suggests that we may expect risk assessment instruments to differ in their predictive validity for male compared with female offenders (Leistico et al., 2008). Again, however, the research is mixed (e.g., Holtfreter & Cupp, 2007; Singh et al., 2011; Smith, Cullen, & Latessa, 2009). Given the higher proportion of female prisoners in the United States (8.8%) compared with other jurisdictions, such as the United Kingdom (5.4%) and Canada (5.1%; Walmsley, 2012), and the overrepresentation of racial/ethnic minorities among U.S. inmates (Carson & Sabol, 2012), there is a need to examine findings across studies conducted in U.S. correctional settings.

In addition to the characteristics of the offenders, there are aspects of the design of the studies themselves that may impact the reliability and validity of assessments completed using the recid-

ivism risk assessment tools under investigation. For instance, much of the extant knowledge stems from research-based studies, in which researchers can carefully train and monitor assessors. However, these conditions are not necessarily present or realistic in routine practice (Desmarais, Sellers, et al., 2012; Desmarais, Van Dorn, Telford, Petrla, & Coffey, 2012; Douglas, Otto, Desmarais, & Borum, 2012; Vincent, Guy, Fusco, & Gershenson, 2012). Though there has been considerable discussion regarding the reliability of risk assessments completed in routine practice compared with the reliability of those completed in research studies, we are not aware of any research reviews that have specifically examined the predictive validity of risk assessments—predicting general recidivism or other outcomes—completed in the context of research versus routine practice.

The Current Review

Herein we report findings of a systematic review of the U.S. research examining the validity of assessments completed using instruments designed to predict general recidivism among adult offenders. We sought to provide a comprehensive summary of the state of science and practice in the United States, acknowledging that, by design, our review focused on the context of the American penal system. Differences in the characteristics of offenders in the United States compared with those of offenders in other countries, combined with the remarkably high rate of incarceration in the United States, suggested the need for a review of the American empirical evidence and reflected recent calls for such data from clinicians tasked with conducting risk assessments in U.S. correctional settings and policymakers alike (Holder, 2014). Our specific aims were to (a) identify and describe the characteristics and content of risk assessment instruments designed to predict general recidivism that have been validated in the United States; (b) summarize the characteristics of the studies that have been conducted in U.S. correctional settings; and (c) synthesize the findings regarding the interrater reliability and predictive validity of risk assessments completed using these instruments on adult offenders in the United States.

Method

Review Protocol

We used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement (Moher, Liberati, Tetzlaff, Altman, & The PRISMA Group, 2009), a 27-item checklist of review characteristics, to enable a transparent and consistent reporting of results.

Search Strategy

Identification of recidivism risk assessment instruments. We identified risk assessment instruments designed to predict the likelihood of general recidivism, including new offenses and the violation of probation or parole conditions, in adult offenders by searching PsycINFO, the U.S. National Criminal Justice Reference Service Abstracts, and Google using combinations of the following keywords: *risk assessment, instrument, tool, general, recidivism, offending, parole violation, and prediction*. We located additional

instruments using references in related systematic reviews (e.g., Fazel et al., 2012; Gendreau et al., 1996), surveys of clinicians (e.g., Viljoen, McLachlan, & Vincent, 2010; Singh et al., 2014), and through discussion with risk assessment experts. We restricted the search to instruments whose calibration studies (for actuarial instruments) or manuals (for structured professional judgment instruments) had been published by December 31, 2012. We excluded instruments if they (a) were designed to predict specific forms of recidivism or criminal behavior (e.g., violence, sexual violence, or domestic violence), (b) were intended for guiding the assessment of juvenile offenders, (c) had not been validated in the United States, or (d) were developed for use in a specific jurisdiction or institution and had not been implemented elsewhere.

We also excluded violence risk assessment instruments (e.g., Historical, Clinical, Risk Management-20 [Webster, Douglas, Eaves, & Hart, 1997], Violence Risk Appraisal Guide [Quinsey, Harris, Rice, & Cormier, 2006]), clinical and behavioral inventories (e.g., Beck Depression Inventory [Beck, Steer, & Carbin, 1988; Novaco Anger Scale [Novaco, 1994], Lifestyle Criminality Screening Form [Walters, White, & Denney, 1991]), personality assessment tools (e.g., Psychopathy Checklist—Revised [Hare, 2003], Personality Assessment Inventory [Morey, 1991]), and criminal thinking scales (e.g., TCU Criminal Thinking Scales [Knight, Garner, Simpson, Morey, & Flynn, 2006], Psychological Inventory of Criminal Thinking [Walters, 1995]). Though often used to aid in the risk assessment process, these instruments were not designed to assess risk of general recidivism per se. Moreover, systematic reviews of their predictive validity have been reported elsewhere (e.g., Gendreau et al., 1996; Singh et al., 2011; Walters, 2003, 2012).

Using these inclusion and exclusion criteria, we identified the 19 assessment instruments or systems designed for predicting risk of general recidivism that are listed in Table 1. We also identified 47 instruments designed for use in specific jurisdictions or institutions. Detailed review of the latter is beyond the scope of the current analysis; however, we list these instruments in the Appendix.

Identification of U.S. validation studies. We identified studies conducted in the United States investigating the predictive validity of the 19 recidivism risk assessment instruments through the same search engines and secondary sources as above, using both the acronyms and full names of the instruments as search criteria (see Figure 1). Investigations published in peer-reviewed journals were considered for inclusion, as were government reports, master's theses, and doctoral dissertations. We included studies if their titles, abstracts, or methods sections described evaluations of validity in predicting general recidivism, including new offenses and violations of probation or parole conditions, conducted in U.S. correctional settings. When multiple instruments were administered to the same participants, we extracted predictive validity estimates for each instrument separately. When samples overlapped, we included the predictive validity estimate from the sample with the most participants to avoid double-counting. When predictive validity estimates were reported for more than one outcome, we included the estimate from the most sensitive outcome; for example, if a study reported predictive validity estimates for both arrest and incarceration, we included the arrest estimate in our analyses. We excluded studies if they only examined predictive validity of select items or scales of an instrument.

Table 1
 Characteristics of 19 Recidivism Risk Assessment Instruments Implemented and Validated in the United States

Instrument	Characteristics				
	<i>k</i>	Number of items	Target population	Target outcome	Administration time (minutes)
Correctional Offender Management Profile for Alternative Sanctions (Brennan et al., 2009)	3	70	All offenders	Any recidivism	10–60
Inventory of Offender Risks, Needs, and Strengths (Miller, 2006b)	1	130	All offenders	Any recidivism	15–20
Level of Service Inventory–Revised (Andrews & Bonta, 1995)	25	54	All offenders	Any recidivism	30–40
Level of Service Inventory–Revised: Screening Version (Andrews & Bonta, 1998)	2	8	All offenders	Any recidivism	10–15
Ohio Risk Assessment System–Pretrial Assessment Tool (Latessa, Smith, Lemke, Makarios, & Lowenkamp, 2009)	3	7	All offenders	New offenses	10–15
Ohio Risk Assessment System–Community Supervision Tool (Latessa et al., 2009)	1	35	All offenders	New offenses	30–45
Ohio Risk Assessment System–Community Supervision Screening Tool (Latessa et al., 2009)	1	4	All offenders	New offenses	5–10
Ohio Risk Assessment System–Prison Intake Tool (Latessa et al., 2009)	1	31	All offenders	New offenses	—
Ohio Risk Assessment System–Reentry Tool (Latessa et al., 2009)	1	20	All offenders	New offenses	—
Federal Post Conviction Risk Assessment (Johnson, Lowenkamp, VanBenschoten, & Robinson, 2011)	2	30	All offenders	Any recidivism	15–30
Risk Management System (Dow, Jones, & Mott, 2005)	2	65	All offenders	New offenses	—
Self-Appraisal Questionnaire (Loza, 2005)	2	72	All offenders	New offenses	15
Salient Factor Score: Salient Factor Score–1974 Version (Hoffman & Beck, 1974)	3	9	Parolees	New offenses	—
Salient Factor Score–1976 Version (Hoffman & Beck, 1980)	4	7	Parolees	New offenses	—
Salient Factor Score–1981 Version (Hoffman, 1983)	8	6	Parolees	New offenses	—
Service Planning Instrument–Women (Millson, Robinson, & Van Dieten, 2010)	2	100	All offenders	New offenses	—
Static Risk and Offender Needs Guide (Barnoski & Drake, 2007) ^a	1	26	All offenders	New offenses	—
Wisconsin Risk and Needs (Baird, Heinz, & Bemus, 1979)	9	53	All offenders	New offenses	—
Wisconsin Risk and Needs–Revised (Eisenberg, Bryl, & Fabelo, 2009)	1	52	All offenders	New offenses	—

Note. A dash indicates data are not provided. *k* = number of samples; All offenders = inmates, probationers, and/or parolees; New offenses = new charge, arrest, conviction, or incarceration; Violations = violations of conditions of probation or parole; Any recidivism = new offenses or violations; Time = as reported in the instrument manual; — data not available.

^a The STRONG includes three parts; table values reflect only the first part, which is used to assess risk of recidivism.

Using this search strategy, we filtered an initial total of 173 records to a final count of 53 studies (*k* samples = 72), including 26 journal articles (*k* = 30), 16 government reports (*k* = 31), two master’s theses (*k* = 2), and nine doctoral dissertations (*k* = 9). References for the 53 included studies are marked with an asterisk in the reference list. As no validation studies investigating the Correctional Assessment and Intervention System (National Council on Crime and Delinquency, 2006), Community Risk/Needs Management Scale (Motiuk & Porporino, 1989), Dynamic Factor Identification and Analysis (Brown & Motiuk, 2005), Level of Service/Case Management Inventory (Andrews, Bonta, & Wormith, 2004), the Level of Service/Risk-Need-Responsivity (Andrews, Bonta, & Wormith, 2008), Level of Service Inventory (Andrews, 1982), Offender Group Reconviction Scale (Copas & Marshall, 1998), Offender Assessment System (HM Prison Service and National Probation Directorate, 2001), Recidivism Risk Assessment Scales (Van der Knaap & Alberda, 2009), Risk of Reconviction (Bakker, Riley, & O’Malley, 1999), Salient Factor Score–1998 (United States Parole Commission, 2003), Statistical Information of Recidivism Scale (Nuffield, 1982), or Service Planning Instrument (Van Dieten & Robinson, 2007) met our inclusion criteria at the time of data analysis, we excluded these instruments from further review.

Data extraction. Three research assistants enrolled in a doctoral program in psychology extracted the following information from each study: (a) demographics and design characteristics, including characteristics of the study samples (population, sample size, sex, race/ethnicity, age, psychiatric diagnoses), the assess-

ment process (setting, timing, format, assessor, sources of information used to administer, amount of time needed to administer and score), and study designs and procedures (geographic location, research or practice context, temporal design, outcome, length of follow-up); (b) characteristics of the risk assessment instruments (assessment approach, number of items, types of items, domains measured, intended population, and predicted outcome); and (c) performance of the risk assessments (estimates of interrater reliability and predictive validity). Where possible, we collected information on reliability and validity as a function of offender sex, race/ethnicity, and psychiatric diagnosis.

The research assistants were provided with a standardized extraction sheet and received training in its use by the first and second author. As a measure of quality control, 11 (20.8%) of the included studies were randomly selected and coded by all three assistants, establishing a high level of interrater reliability ($\kappa = 0.88$; Landis & Koch, 1977). Disagreements were settled by consensus of the authors.

Data analysis. First, sample, study design, and instrument characteristics were descriptively analyzed using measures of central tendency and dispersion parameters. Second, the item type and content of the instruments was summarized. Third, median interrater reliability and predictive validity estimates for total scores and risk classifications were calculated and compared across instruments, where possible. Predictive validity was assessed for any recidivism, new offenses only, and violations only as outcomes. Extracted predictive validity estimates included the area under the receiver operating characteristic curve (AUC), the point-biserial correlation coef-

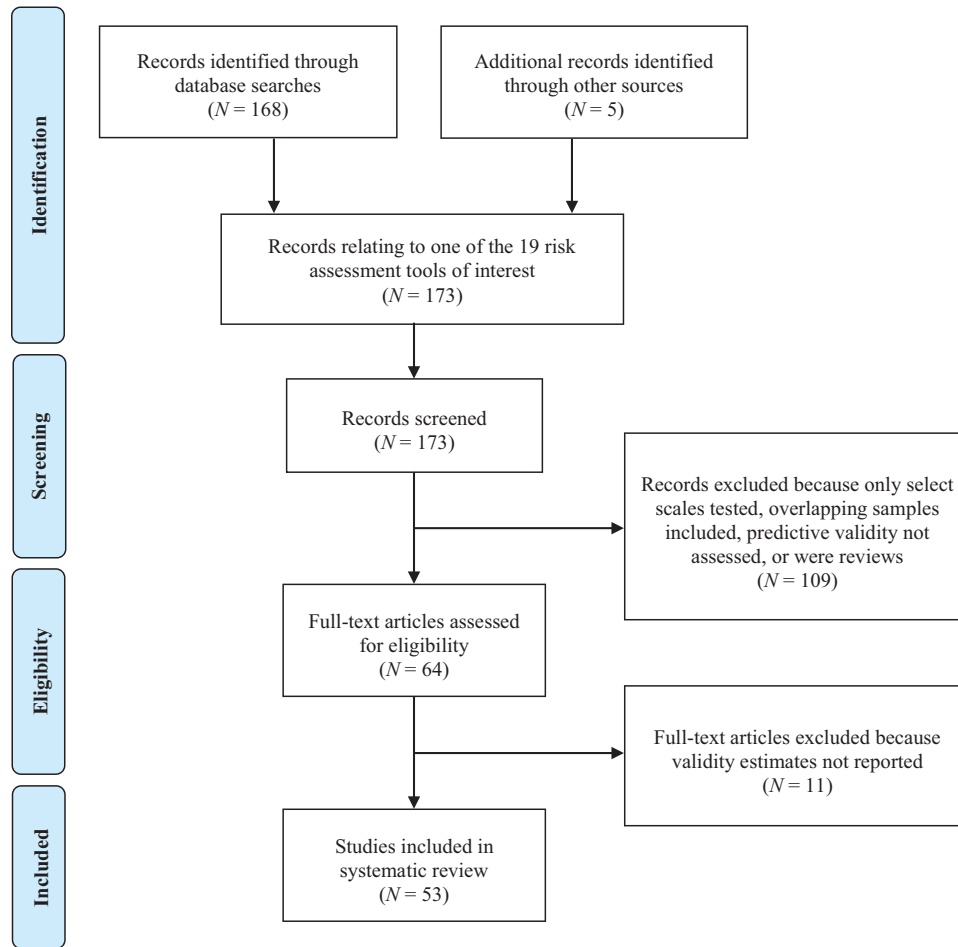


Figure 1. Systematic search conducted to identify U.S. validation studies. See the online article for the color version of this figure.

efficient (r_{pb}), the odds ratio (OR), and Somer's d , the indices most commonly reported in the field (Singh, Desmarais & Van Dorn, 2013). Briefly, AUC represents the probability that a randomly selected recidivist would have received a higher risk rating than a randomly selected nonrecidivist; r_{pb} represents the direction and strength of association between risk rating and recidivism; OR represents the ratio of the odds of a lower risk rating in those who did not recidivate to the odds of a higher classification in those who did; and Somer's d represents the direction and strength of the association between an ordinal predictor (e.g., estimate of risk as low, moderate, or high) and a dichotomous outcome (e.g., recidivating vs. not; see Singh, 2013). A supplemental table providing guidance regarding benchmarks and equivalency across indices of predictive validity is available online. Finally, subgroup analyses were conducted by offender sex, race/ethnicity, psychiatric diagnosis, and study context (research or practice), when possible.

Results

Characteristics and Content of Instruments

Table 1 describes the characteristics of instruments included in this review. The number of items ranged widely across instru-

ments, from four for the Ohio Risk Assessment System–Community Supervision Screening Tool (ORAS-CSST) to 130 for the Inventory of Offender Risks, Needs, and Strengths (IORNs), with an average of 41.00 ($SD = 35.08$, range = 4–130). All instruments were intended for use across offender populations, with the exception of the Salient Factor Score–1974 Version (SFS74), Salient Factor Score–1976 Version (SFS76), and Salient Factor Score–1981 Version (SFS81), which were intended for use with parolees, specifically. Most (n instruments = 14, 73.7%) were designed to assess risk of new offenses, excluding violations. Estimated administration time was reported in the manuals of about half of the instruments ($n = 9$, 47.4%) and when reported, ranged from 5–10 min for the ORAS-CSST up to 60 min for the Correctional Offender Management Profile for Alternative Sanctions (COMPAS). All instruments used the actuarial approach to risk assessment.

The type and content of items included in the 19 recidivism risk assessment instruments are summarized in Table 2. Only two instruments, the IORNs and the Service Planning Instrument–Women (SPIn-W), included protective factors; all others included risk factors exclusively. The majority of instruments ($n = 15$, 78.9%) included a combination of static and dynamic factors, with the exception of the SFS instruments and the Static Risk and Offender Needs Guide

Table 2
Type and Content of Items Included in the 19 Recidivism Risk Assessment Instruments Implemented and Validated in the United States

Instrument	Types					Content domains								
	Risk	Protective	Static	Dynamic	Attitudes	Associates/ peers	Antisocial behavior	Personality problems	Relationships	Work/ school	Leisure activities	Substance use problems	Mental health problems	Housing status
COMPAS	X		X	X	X	X	X	X	X	X	X	X	X	X
IORNS	X	X	X	X	X	X	X	X	X	X	X	X	X	X
LSI-R	X		X	X	X	X	X	X	X	X	X	X	X	X
LSI-R:SV	X		X	X	X	X	X		X	X		X	X	
ORAS-PAT	X		X	X			X			X		X		X
ORAS-CST	X		X	X	X	X	X	X	X	X	X	X		X
ORAS-CSST	X		X	X		X	X			X		X		
ORAS-PIT	X		X	X		X	X	X	X	X	X	X	X	X
ORAS-RT	X		X	X	X		X	X	X	X		X	X	
PCRA	X		X	X	X	X	X		X	X		X		
RMS	X		X	X	X	X	X	X	X	X		X	X	X
SAQ	X		X	X	X	X	X	X				X		
SFS74	X		X				X			X		X		X
SFS76	X		X				X			X		X		
SFS81	X		X				X					X		
SPIn-W	X	X	X	X	X	X	X	X	X	X	X	X	X	X
STRONG	X		X				X					X		
WRN	X		X	X	X	X	X	X	X	X		X	X	
WRN-R	X		X	X	X	X	X	X	X	X		X	X	

Note. COMPAS = Correctional Offender Management Profile for Alternative Sanctions; IORNS = Inventory of Offender Risks, Needs, and Strengths; LSI-R = Level of Service Inventory–Revised; LSI-R:SV = Level of Service Inventory–Revised: Screening Version; ORAS-PAT = Ohio Risk Assessment System–Pretrial Assessment Tool; ORAS-CST = Ohio Risk Assessment System–Community Supervision Tool; ORAS-CSST = Ohio Risk Assessment System–Community Supervision Screening Tool; ORAS-PIT = Ohio Risk Assessment System–Prison Intake Tool; ORAS-RT = Ohio Risk Assessment System–Reentry Tool; PCRA = Federal Post Conviction Risk Assessment; RMS = Risk Management System; SAQ = Self-Appraisal Questionnaire; SFS74 = Salient Factor Score–1974 Version; SFS76 = Salient Factor Score–1976 Version; SFS81 = Salient Factor Score–1981 Version; SPInW = Service Planning Instrument–Women; STRONG = Static Risk and Offender Needs Guide; WRN = Wisconsin Risk and Needs; WRN-R = Wisconsin Risk and Needs–Revised.

(STRONG), both of which only included static factors. None of the instruments were comprised uniquely of dynamic factors. All instruments included items assessing history of antisocial behavior and substance use problems. Items assessing leisure activities, in contrast, were included relatively infrequently (*n* instruments = 5, 26.3%). Overall, the COMPAS and the Level of Service Inventory–Revised (LSI-R) included items that captured the most content domains. The Ohio Risk Assessment System–Community Supervision Tool (ORAS-CST), Ohio Risk Assessment System–Prison Intake Tool, Risk Management System (RMS), and SPIn-W evaluated all but one of the 10 domains; the exception varied for each instrument (see Table 2). The SFS81 and STRONG instruments considered the fewest of the domains, at two each.

Sample and Study Characteristics

Characteristics of the 72 included samples can be found in Table 3. Risk assessments were completed by professionals in correctional settings for over three-quarters of the samples (81.9%); the remainder were conducted by the researchers (15.3%) or self-administered (2.8%). Assessments were most often completed in prison (27.8%) or community corrections (37.5%) settings, but also were conducted in jail (9.7%), a clinic or hospital (4.2%), or at other settings (5.6%). Setting was unstated or unclear for the remaining 11 samples (15.3%). In terms of timing, approximately one third of samples (36.1%) included assessments conducted during community supervision, one

fourth of samples included assessments completed prior to release (26.4%), and the remaining reported assessments conducted either prior to incarceration (11.1%) or upon admission (9.7%). Timing was unstated or unclear for the remaining 12 samples (16.7%). File reviews were used to complete assessments in 24 samples (33.3%), interviews in 12 samples (16.7%), and offender self-report in two samples (2.8%).

More than two thirds of samples (69.4%) were investigated using a prospective study design. The average length of follow-up was almost two years (*M* = 23.5 months, *SD* = 6.3, range = 6–138). Samples were most frequently drawn from Midwestern states (37.5%) followed by southwestern and northeastern states (11.1% each). For the majority of samples (69.4%) any recidivism as the outcome; roughly one-quarter (26.4%) reported on a variety of recidivism outcomes; and the remainder (18.1%) focused specifically on violations. The operational definition of recidivism varied, but arrest was used most frequently (30.6%), followed by conviction (12.5%), incarceration (9.7%), revocation of probation or parole (4.2%) and charge (2.8%). Assessments for the majority of samples (65.3%) were conducted in the context of routine practice rather than for the purposes of research. Nearly one third of samples (30.6%) were from studies conducted by an author of the tool under investigation. For five instruments—the IORNS, the Federal Post Conviction Risk Assessment (PCRA), the ORAS instruments, the STRONG, and the Wisconsin Risk and Needs–

Table 3
Characteristics of 72 Samples Investigating the Predictive Validity of Recidivism Risk Assessment Instruments in the United States

Category	Group	Number of <i>k</i> = 72 (%)
Assessment process		
Risk assessor	Researcher	11 (15.3)
	Professional	59 (81.9) ^a
	Self-administered	2 (2.8) ^b
Risk assessment setting	Jail	7 (9.7)
	Prison	20 (27.8)
	Clinic/Hospital	3 (4.2)
	Community	27 (37.5)
	Other	4 (5.6)
	Unstated/Unclear	11 (15.3)
Timing of risk assessment	Pre-incarceration	8 (11.1)
	At admission	7 (9.7)
	Pre-release	19 (26.4)
	During community supervision	26 (36.1)
	Unstated/Unclear	12 (16.7)
Source of information	File review	24 (33.3)
	Interview	12 (16.7)
	Self-report	2 (2.8)
	Mixed	18 (25.0)
	Unstated/Unclear	16 (22.2)
Study design		
Study context	Research	25 (34.7)
	Practice	47 (65.3)
Temporal design	Prospective	50 (69.4)
	Retrospective	22 (30.6)
Geographical region	Northwest	2 (2.8)
	Southwest	8 (11.1)
	Midwest	27 (37.5)
	Northeast	8 (11.1)
	Southeast	5 (6.9)
	Noncontinental	1 (1.4)
	Mixture	1 (1.4)
	Unstated/unclear	20 (27.8)
Population	Inmates (prerelease)	29 (40.3)
	Probationers	16 (22.2)
	Parolees	8 (11.1)
	Inmates + parolees	5 (6.9)
	Probationers + parolees	8 (11.1)
	Other	6 (8.3)
Type of outcome	General recidivism	50 (69.4)
	Violation/breach of conditions	13 (18.1)
	Mixed	19 (26.4)
Length of follow-up (months)	<i>M</i> (<i>SD</i>) ^d	23.5 (6.3)
Source of outcome detection	Arrest	22 (30.6)
	Charge	2 (2.8)
	Conviction	9 (12.5)
	Incarceration	7 (9.7)
	Violation of terms	3 (4.2)
	Mixed	29 (40.3)
Sample demographics ^c		
Sample size after attrition	<i>M</i> (<i>SD</i>)	5,032 (12,599)
Male participants (per sample)	<i>M</i> (<i>SD</i>)	3,256 (8,965)
White participants (per sample)	<i>M</i> (<i>SD</i>)	1,879 (6,148)
Black participants (per sample)	<i>M</i> (<i>SD</i>)	906 (2,524)
Hispanic participants (per sample)	<i>M</i> (<i>SD</i>)	685 (1,792)
Age at risk assessment (in years)	<i>M</i> (<i>SD</i>) ^d	33.5 (10.0)

Note. Percentages may not sum to exactly 100% because of rounding. *k* = number of samples.

^a Correctional officer (*k* = 35, 48.6%), parole service associate (*k* = 2, 2.8%), probation officer (*k* = 1, 1.4%), other trained staff (*k* = 14, 19.4%), unstated/unclear (*k* = 7, 9.7%). ^b The Self-Appraisal Questionnaire, the only included instrument designed to be self-administered, was not administered by either a researcher or professional. ^c Of those eight (11.1%) samples for which demographic characteristics were reported for samples before participant attrition, five (6.9%) had more than 25% attrition during follow-up (Dow et al., 2005; Fass et al., 2008; Holland et al., 1983; Miller, 2006a; Millson et al., 2010). ^d Fixed-effects mean.

Revised (WRN-R)—all studies included in our review were completed by an author of the instrument under investigation. For another three instruments—the RMS, the COMPAS, and the SFS family of instruments—at least half of the studies were completed by an author of the instrument under investigation.

More than one third of samples (40.3%) comprised inmates and roughly one-quarter (22.2%) comprised probationers; the remainder included either parolees only (11.1%), inmates and parolees (6.9%), or probationers and parolees (11.1%). Offender legal status was not reported in six samples (8.3%). The average sample size after attrition was 5,032 (*SD* = 12,599; range = 49–51,648). The average offender age at the time of risk assessment was 33.5 years (*SD* = 10.0). In samples where sex was reported (83.3%), the majority of offenders (85.5%) were male. In samples where race/ethnicity was reported (76.4%), almost two thirds of offenders (60.8%) were White and close to one third (28.3%) were Black, with 13.6% identified as Hispanic. Psychiatric diagnoses were very rarely reported: Only five studies reported on the prevalence of major mental disorders, substance use disorders, or personality disorders in their samples. Each of these studies used different diagnostic categories, precluding comparisons of findings across subgroups.

Performance of Recidivism Risk Assessment Instruments

Interrater reliability. Interrater reliability was evaluated in only two studies that met inclusion criteria, one examining the

LSI-R (Simourd, 2006) and the other, the Level of Service Inventory–Revised: Screening Version (LSI-R:SV; Walters, 2011). In both studies, interrater reliability was excellent: 90% agreement and intraclass correlation coefficient = .80, respectively. Assessments in these studies were conducted by professionals rather than research assistants, providing strong evidence of interrater reliability in the field, specifically.

Predictive validity. Table 4 presents the median validity estimates by instrument for the prediction of any recidivism (i.e., new offenses and/or violations), collapsed across total scores and risk classifications. Overall, no one instrument stood out as producing more accurate assessments than the others, with validity varying with the indicator reported. Specifically, the instruments that produced the risk assessments with the highest AUCs were the STRONG, SPIn-W, and PCRA. The instruments that produced the risk assessments with the highest *r_{pb}* values were the SFS81 and the SFS76. The instrument that produced the risk assessments with the highest OR was the SFS81. Finally, the instrument that produced the risk assessments with the highest Somer’s *d* value was the SFS81 (see Table 4).

Table 5 presents the median validity estimates for total scores in predicting any recidivism, new offenses, and violations, in turn. Validity varied by outcome and indicator. For any recidivism (i.e., new offenses and/or violations), for example, the instrument that produced the risk assessments with the highest OR for any recidivism was the SFS81, whereas the instruments that produced the

Table 4
Predictive Validity Estimates Produced by Total Scores or Risk Classifications for Any Recidivism

Instrument	Predictive validity estimates											
	AUC			<i>r_{pb}</i>			OR			Somers’ <i>d</i>		
	<i>k</i>	Mdn	<i>IQR</i>	<i>k</i>	Mdn	<i>IQR</i>	<i>k</i>	Mdn	<i>IQR</i>	<i>k</i>	Mdn	<i>IQR</i>
COMPAS	3	.67	.64–.69	1	.31	—	1	1.3	—	—	—	—
LSI-R	5	.64	.60–.71	21	.25	.11–.28	6	1.10	1.04–1.09	2	.26	.23–.28
LSI-R:SV	1	.57	—	1	.27	—	—	—	—	—	—	—
ORAS-PAT	—	—	—	5	.24	.22–.27	—	—	—	—	—	—
ORAS-CST	—	—	—	1	.37	—	—	—	—	—	—	—
ORAS-CSST	—	—	—	1	.38	—	—	—	—	—	—	—
ORAS-PIT	—	—	—	1	.36	—	—	—	—	—	—	—
ORAS-RT	—	—	—	1	.36	—	—	—	—	—	—	—
PCRA	2	.71	.71–.71	—	—	—	—	—	—	—	—	—
RMS	3	.67	.64–.94	—	—	—	—	—	—	—	—	—
SFS74	—	—	—	—	—	—	—	—	—	2	.34	.32–.36
SFS76	—	—	—	1	.40	—	—	—	—	2	.36	.34–.37
SFS81	—	—	—	4	.44	.39–.46	2	3.00	0.76–5.23	5	.41	.38–.52
SPIn-W	1	.73	—	—	—	—	1	0.91	—	—	—	—
STRONG	1	.74	—	—	—	—	—	—	—	—	—	—
WRN	3	.67	.61–.74	6	.19	.10–.21	1	0.98	—	—	—	—
WRN-R	1	.66	—	—	—	—	—	—	—	—	—	—

Note. Estimates were calculated using either total scores or risk classifications. *k* = number of samples; Mdn = median; *IQR* = interquartile range; AUC = area under the receiver operating characteristic curve; *r_{pb}* = point-biserial correlation coefficient; OR = odds ratio; — data were not reported; COMPAS = Correctional Offender Management Profile for Alternative Sanctions; IORNS = Inventory of Offender Risks, Needs, and Strengths; LSI-R = Level of Service Inventory–Revised; LSI-R:SV = Level of Service Inventory–Revised: Screening Version; ORAS-PAT = Ohio Risk Assessment System–Pretrial Assessment Tool; ORAS-CST = Ohio Risk Assessment System–Community Supervision Tool; ORAS-CSST = Ohio Risk Assessment System–Community Supervision Screening Tool; ORAS-PIT = Ohio Risk Assessment System–Prison Intake Tool; ORAS-RT = Ohio Risk Assessment System–Reentry Tool; PCRA = Federal Post Conviction Risk Assessment; RMS = Risk Management System; SAQ = Self-Appraisal Questionnaire; SFS74 = Salient Factor Score–1974 Version; SFS76 = Salient Factor Score–1976 Version; SFS81 = Salient Factor Score–1981 Version; SPIn-W = Service Planning Instrument–Women; STRONG = Static Risk and Offender Needs Guide; WRN = Wisconsin Risk and Needs; WRN-R = Wisconsin Risk and Needs–Revised.

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Table 5
 Predictive Validity Estimates Produced by Total Scores for Any Recidivism, New Offenses, and Violations

Outcomes and instruments	Predictive validity estimates											
	AUC			r_{pb}			OR			Somers's d		
	k	Mdn	IQR	k	Mdn	IQR	k	Mdn	IQR	k	Mdn	IQR
Any recidivism				2	.28	.27-.28	1	1.09	—	—	—	—
LSI-R	—	—	—	1	.23	—	—	—	—	—	—	—
ORAS-PAT	—	—	—	1	.40	—	—	—	—	—	—	—
SFS76	—	—	—	3	.45	.34-.47	2	3.00	0.76-5.23	1	.55	—
SFS81	—	—	—	—	—	—	1	0.91	—	—	—	—
SPIn-W	—	—	—	—	—	—	—	—	—	—	—	—
New offenses												
COMPAS	3	.67	.66-.70	1	.31	—	1	1.30	—	—	—	—
LSI-R	4	.66	.61-.71	17	.16	.11-.26	5	1.08	1.04-1.10	1	.28	—
LSI-R:SV	1	.57	—	1	.27	—	—	—	—	—	—	—
ORAS-PAT	—	—	—	2	.23	.21-.24	—	—	—	—	—	—
ORAS-CST	—	—	—	1	.37	—	—	—	—	—	—	—
ORAS-CSST	—	—	—	1	.38	—	—	—	—	—	—	—
ORAS-PIT	—	—	—	1	.36	—	—	—	—	—	—	—
ORAS-RT	—	—	—	1	.36	—	—	—	—	—	—	—
PCRA	2	.71	.71-.71	—	—	—	—	—	—	—	—	—
RMS	1	.67	—	—	—	—	—	—	—	—	—	—
STRONG	1	.74	—	—	—	—	—	—	—	—	—	—
WRN	2	.64	.61-.67	5	.19	.10-.21	1	0.98	—	—	—	—
WRN-R	1	.66	—	—	—	—	—	—	—	—	—	—
Violations												
COMPAS	1	.61	—	—	—	—	—	—	—	—	—	—
LSI-R	1	.62	—	4	.24	.16-.30	1	1.09	—	1	.23	—
ORAS-PAT	—	—	—	2	.27	.26-.28	—	—	—	—	—	—
RMS	1	.64	—	—	—	—	—	—	—	—	—	—
WRN	1	.74	—	—	—	—	—	—	—	—	—	—

Note. k = number of samples; Mdn = median; IQR = interquartile range; AUC = area under the receiver operating characteristic curve; r_{pb} = point-biserial correlation coefficient; OR = odds ratio; — data were not reported; COMPAS = Correctional Offender Management Profile for Alternative Sanctions; LSI-R = Level of Service Inventory-Revised; LSI-R:SV = Level of Service Inventory-Revised: Screening Version; ORAS-PAT = Ohio Risk Assessment System-Pretrial Assessment Tool; ORAS-CST = Ohio Risk Assessment System-Community Supervision Tool; ORAS-CSST = Ohio Risk Assessment System-Community Supervision Screening Tool; ORAS-PIT = Ohio Risk Assessment System-Prison Intake Tool; ORAS-RT = Ohio Risk Assessment System-Reentry Tool; PCRA = Federal Post Conviction Risk Assessment; RMS = Risk Management System; SAQ = Self-Appraisal Questionnaire; SFS76 = Salient Factor Score-1976 Version; SFS81 = Salient Factor Score-1981 Version; SPIn-W = Service Planning Instrument-Women; STRONG = Static Risk and Offender Needs Guide; WRN = Wisconsin Risk and Needs; WRN-R = Wisconsin Risk and Needs-Revised.

risk assessments with the highest r_{pb} values were the SFS76 and SFS81 (see Table 5). For new offenses, the instrument that produced the risk assessments with the highest AUC value was the STRONG. The instruments that produced the risk assessments with the highest r_{pb} values were the ORAS-CST and ORAS-CSST. Although the r_{pb} value and OR for risk assessments completed using the LSI-R were poor for the prediction of new offenses, the Somers's d and AUC values were stronger (see Table 5). For violations, the AUC value for risk assessments completed using the Wisconsin Risk and Needs (WRN) was higher than for those completed using any other instrument (see Table 5).

Table 6 presents the median validity estimates for risk classifications in predicting any recidivism. Overall, risk classifications were found to produce robust levels of predictive validity. Specifically, RMS and SPIn-W produced risk assessments with excellent AUC values, and strong Somers's d values were reported for risk assessments completed using the SFS74, SFS76 and SFS81 (see Table 6). The instrument that produced the risk assessments with the highest r_{pb} value was the SFS81, and the r_{pb} value for risk assessments completed using the WRN was much lower (see Table 6). There were too few studies to examine predictive validity of new offenses to the exclusion of violations. No studies that met our

inclusion criteria reported on the validity of risk classifications in predicting violations to the exclusion of new offenses.

Table 7 presents the median validity estimates for risk assessments in predicting any general recidivism by offender sex. When validity estimates were reported by offender sex, instruments generally produced similar predictive validity estimates for men and women. However, predictive validity was slightly better for men than women for risk assessments completed using the LSI-R:SV and ORAS-CST, whereas the reverse was true for assessments completed using the ORAS-Reentry Tool (see Table 7). Comparisons of predictive validity by offender race/ethnicity were possible only for assessments completed using the COMPAS and LSI-R. For COMPAS assessments, predictive validity was found in a single study to be identical for White and Black offenders (AUCs = .69; Brennan, Dieterich, & Ehret, 2009). For LSI-R assessments, predictive validity also was similar across offender race/ethnicity in the two studies reporting this data (White: r_{pb} = .22; OR = 1.04, Cramer's V = 0.13; Black: OR = 1.03, Cramer's V = 0.09; Hispanic: OR = 1.03, Cramer's V = 0.10; non-White: r_{pb} = .24; Lowenkamp & Bechtel, 2007; Kim, 2010).

Finally, comparisons between the predictive validity of risk assessments completed in the context of research or routine prac-

Table 6
Predictive Validity Estimates Produced by Risk Classifications for Any Recidivism (Including New Offenses and Violations)

Instrument	Predictive validity estimates								
	AUC			r_{pb}			Somers's d		
	k	Mdn	IQR	k	Mdn	IQR	k	Mdn	IQR
RMS ^a	1	.94	—	—	—	—	—	—	—
SFS74	—	—	—	—	—	—	2	.34	.32–.36
SFS76	—	—	—	—	—	—	2	.36	.34–.37
SFS81 ^a	—	—	—	1	.43	—	4	.40	.38–.45
SPIn-W	1	.73	—	—	—	—	—	—	—
WRN ^a	—	—	—	1	.18	—	—	—	—

Note. Odds ratios were not calculated for any samples using risk classifications to measure predictive validity. The risk classifications evaluated were those recommended by instrument authors. k = number of samples; Mdn = median; IQR = interquartile range; AUC = area under the receiver operating characteristic curve; r_{pb} = point-biserial correlation coefficient; — data were not reported; RMS = Risk Management System; SAQ = Self-Appraisal Questionnaire; SFS74 = Salient Factor Score–1974 Version; SFS76 = Salient Factor Score–1976 Version; SFS81 = Salient Factor Score–1981 Version; SPIn-W = Service Planning Instrument–Women; WRN = Wisconsin Risk and Needs.

^a One or more estimates exclude technical violations as an outcome.

tice were possible for the LSI-R, RMS, SPIn-W, and WRN. Table 8 presents the median validity estimates for risk assessments completed using these instruments in predicting any recidivism by study context. Whereas both LSI-R and WRN total scores performed comparably whether conducted in the context of research or practice, RMS risk classifications demonstrated better predictive validity when completed by researchers than by practitioners (see Table 8). In contrast, SPIn-W assessments performed better in the context of practice than research (see Table 8), though the former estimate was for total scores and the latter for risk classi-

fications. No comparisons were possible for risk assessments completed using the COMPAS IORNS, SFS76, and SFS81 because they were only evaluated in the context of practice. Conversely, risk assessments completed using the LSI-R:SV, ORAS tools, PCRA, Self-Appraisal Questionnaire, SFS74, STRONG, and WRN-R were only evaluated in the context of research.

Discussion

With staggering numbers of adults under correctional supervision in the United States, ending mass incarceration has been identified as a national priority (Obama, 2015). Efforts are underway across the United States to adopt evidence-based correctional approaches that will more appropriately and effectively incapacitate and rehabilitate offenders at greater risk of recidivism, while diverting lower risk offenders to alternative settings and punishments. Risk assessment figures prominently in many of these strategies (Casey et al., 2011). As a result, psychologists and other professionals working in U.S. correctional settings are increasingly being required to use risk assessments to inform decisions regarding incarceration, diversion, and release, and to guide the development of interventions to reduce recidivism risk (Monahan & Skeem, 2016). However, relatively little is known regarding the accuracy and reliability of recidivism risk assessments completed on adult offenders in U.S. correctional settings. Instead, prior research reviews have been characterized by relatively short lists of instruments designed to predict specific forms of recidivism, namely violent and sexually violent offending, or studies conducted in other jurisdictions, notably Canada and the United Kingdom. This review summarized the state of science and practice in the United States with respect to the performance of risk assessments completed using instruments designed to predict general recidivism, including committing a new crime and violating conditions of probation or parole, among adult offenders.

Table 7
Predictive Validity Estimates Produced by Total Scores for Male and Female Offenders in U.S. Correctional Settings

Instrument	Predictive validity estimates														
	AUC				r_{pb}				OR						
	k	Mdn _{Men}	IQR _{Men}	Mdn _{Women}	IQR _{Women}	k	Mdn _{Men}	IQR _{Men}	Mdn _{Women}	IQR _{Women}	k	Mdn _{Men}	IQR _{Men}	Mdn _{Women}	IQR _{Women}
COMPAS	1	.67	—	.69	—	1	.32	—	.32	—	—	—	—	—	—
LSI-R	—	—	—	—	—	7	.25	.18–.32	.23	.26–.30	2	1.06	1.03–1.09	1.03	—
LSI-R:SV	1	.57	—	—	—	1	.29	—	.22	—	—	—	—	—	—
ORAS-CST	—	—	—	—	—	1	.37	—	.30	—	—	—	—	—	—
ORAS-CSST	—	—	—	—	—	1	.36	—	.37	—	—	—	—	—	—
ORAS-PIT	—	—	—	—	—	1	.32	—	.35	—	—	—	—	—	—
ORAS-RT	—	—	—	—	—	1	.30	—	.44	—	—	—	—	—	—
SFS76	—	—	—	—	—	1	.40	—	—	—	—	—	—	—	—
SFS81	—	—	—	—	—	1	.34	—	—	—	1	5.23	—	—	—
SPIn-W	1	—	—	.73 ^f	—	—	—	—	—	—	1	—	—	.91	—
STRONG	1	.74	—	.72	—	—	—	—	—	—	—	—	—	—	—
WRN	—	—	—	—	—	1	.21	—	—	—	—	—	—	—	—

Note. Somers's d was not calculated for any samples reporting sex-specific estimates. k = number of samples; Mdn = median; IQR = interquartile range; AUC = area under the receiver operating characteristic curve; r_{pb} = point-biserial correlation coefficient; OR = odds ratio; — data were not reported; COMPAS = Correctional Offender Management Profile for Alternative Sanctions; LSI-R = Level of Service Inventory–Revised; LSI-R:SV = Level of Service Inventory–Revised: Screening Version; ORAS-CST = Ohio Risk Assessment System–Community Supervision Tool; ORAS-CSST = Ohio Risk Assessment System–Community Supervision Screening Tool; ORAS-PIT = Ohio Risk Assessment System–Prison Intake Tool; ORAS-RT = Ohio Risk Assessment System–Reentry Tool; SFS76 = Salient Factor Score–1976 Version; SFS81 = Salient Factor Score–1981 Version; SPIn-W = Service Planning Instrument–Women; STRONG = Static Risk and Offender Needs Guide; WRN = Wisconsin Risk and Needs.

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Table 8
Predictive Validity Estimates Produced by Total Scores or Risk Classifications by Study Context

Study context and instrument	Predictive validity estimates											
	AUC			r_{pb}			OR			Somers's d		
	k	Mdn	IQR	k	Mdn	IQR	k	Mdn	IQR	k	Mdn	IQR
Research												
LSI-R	1	.74	—	3	.14	.11–.16	—	—	—	—	—	—
RMS	1	.94	—	—	—	—	—	—	—	—	—	—
SPIn-W	—	—	—	—	—	—	1	0.91	—	—	—	—
WRN	—	—	—	3	.19	.08–.21	—	—	—	—	—	—
Practice												
LSI-R	4	.63	.60–.66	18	.25	.10–.28	6	1.09	1.04–1.09	2	.26	.23–.28
RMS	2	.66	.64–.67	—	—	—	—	—	—	—	—	—
SPIn-W	1	.73	—	—	—	—	—	—	—	—	—	—
WRN	3	.67	.61–.74	3	.18	.10–.21	1	0.98	—	—	—	—

Note. Estimates were calculated using either total scores or risk classifications. k = number of samples; Mdn = median; IQR = interquartile range; AUC = area under the receiver operating characteristic curve; r_{pb} = point-biserial correlation coefficient; OR = odds ratio; — data were not reported; COMPAS = Correctional Offender Management Profile for Alternative Sanctions; IORNS = Inventory of Offender Risks, Needs, and Strengths; LSI-R = Level of Service Inventory-Revised; RMS = Risk Management System; SAQ = Self-Appraisal Questionnaire; SFS74 = Salient Factor Score-1974 Version; SPIn-W = Service Planning Instrument-Women; WRN = Wisconsin Risk and Needs.

Our literature review identified 19 risk assessment instruments that had been evaluated in 53 studies published between January 1970 and December 2012 representing 72 unique samples of adult offenders in U.S. correctional settings. The risk assessment instruments varied widely in the number, type, and content of their items, but generally were characterized by static risk factors to the exclusion of dynamic risk factors and protective factors. For most instruments, predictive validity had been evaluated in one or two studies that met our inclusion criteria. Those studies often were completed by the developers of the instrument under investigation. Perhaps one our most striking findings, only two of the 53 studies reported on the interrater reliability of the risk assessments. These two studies revealed very high rates of field reliability for the LSI-R and LSI-R:SV. Whether risk assessments completed using the other 17 instruments are consistent across assessors in U.S. correctional settings was not addressed in the reviewed literature, though findings of recent research are promising (e.g., Lowenkamp, Johnson, Holsinger VanBenschoten, & Robinson, 2013). Interrater reliability is relevant to any forensic assessment involving the rating or coding of items (Douglas et al., 2012) and a necessary criteria for validity (Douglas, Skeem, & Nicholson, 2011; Gottfredson & Moriarty, 2006). Consequently, there is a critical need for data on the interrater reliability of recidivism risk assessments completed on adult offenders in U.S. correctional settings.

No one instrument emerged as producing the “most” accurate risk assessments in U.S. correctional settings; however, findings of our review suggest that some instruments may perform better in predicting particular outcomes compared with others. Risk assessments completed using the SFS instruments, for example, performed especially well in predicting any recidivism (i.e., new offenses and/or violations), whereas risk assessments completed using the ORAS-CST, ORAS-CSST, PCRA, and STRONG performed especially well in predicting new offenses. WRN assessments stood out in the prediction of violations. These findings suggest that certain risk assessment instruments may be appropriately used to inform at least some sentencing decisions, such as the

allocation of probation conditions and frequency of contact. However, the more widespread use of risk assessment instruments in the sentencing process is a topic of continued debate (Monahan & Skeem, 2016).

Additionally, findings of our review suggest that some instruments produced risk assessments that perform better for male compared with female offenders in U.S. correctional settings. In particular, the LSI instruments produced assessments with only fair validity for female offenders, though predictive validity was generally good for male offenders. In contrast, a large meta-analytic review of LSI assessments reported similar effect sizes for male and female offenders (Smith et al., 2009), suggesting that our findings may be specific to the two studies that met our inclusions criteria. Other instruments, such as the COMPAS, ORAS, and STRONG, produced risk assessments with good validity for both male and female offenders. That said, our findings regarding parity or differences in the predictive validity of risk assessments for male and female offenders in U.S. correctional settings are limited by the small number of studies that provided sex-specific validity estimates. Given the rising numbers of women in U.S. jails (Glaze & Kaeble, 2014), continued efforts are needed to evaluate the validity of instruments being used to predict recidivism risk among female offenders in U.S. correctional settings.

Due to data restrictions, we were unable to systematically compare performance of risk assessments as a function of race/ethnicity, a topic receiving considerable attention in contemporary public, political, and academic discourse (Hamilton, 2015; Holder, 2014; Scurich & Monahan, 2016; Starr, 2014). We found some evidence suggesting comparable predictive validity of COMPAS and LSI-R for White and non-White offenders. However, only three studies conducted in the United States at the time of our review provided estimates of predictive validity by racial/ethnic group: one for risk assessments completed using the COMPAS and two for risk assessments completed using the LSI-R. Findings of prior reviews and studies of individual risk assessment instruments have found evidence of racial bias in the effectiveness of risk assessments (e.g., Chenane, Brennan, Steiner, & Ellison, 2015;

Leistico et al., 2008; Singh et al., 2011). Conversely, other studies have failed to find differences in risk assessment accuracy as a function of offender race (e.g., Lowenkamp, Holsinger, & Cohen, 2015; H. A. Miller, 2006b). As the use and consequences of risk assessments in the American penal system continue to grow, there is a pressing need for research that investigates potential racial disparities in assessments of risk for general recidivism.

Finally, no studies that met our inclusion criteria provided estimates of predictive validity as a function of mental disorders, substance use disorders, or personality disorders. Even when the diagnostic characteristics of the study samples were reported, predictive validity estimates were not provided by subgroup. Recent research suggests that mentally disordered and nondisordered offenders share many of the same predictors of recidivism (Skeem, Winter, Kennealy, Loudon, & Tatar, 2014), suggesting that risk assessments also may perform comparably across these subgroups of offenders. Yet, this remains an empirical question to be answered through further research.

Limitations

The methodology of our review limits its findings in three ways. First, our review focused on the state of risk assessment science and practice in United States. Our search strategy resulted in the exclusion of some recently revised versions of well-known risk assessment instruments that either had not been validated in the United States within our search time frame or that were not identifiable by their current name, but that show very positive results, such as the LS/CMI (Andrews, Bonta, & Wormith, 2004) and the Women’s Risk/Need Assessment (Van Voorhis, Wright, Salisbury, & Bauman, 2010). Our interest in risk assessments completed on adult offenders in U.S. correctional settings also resulted in the exclusion of studies conducted in other jurisdictions. There have been several evaluations of the interrater reliability and predictive validity of assessments completed in other jurisdictions, most often Canada and the United Kingdom, or that have been published since the time of our literature review (e.g., Lowenkamp et al., 2015).

Second, our intent was to present a representative sample of all the U.S. validation research available on a comprehensive list of risk assessment instruments. Accordingly, we used an inclusive selection strategy and did not conduct a systematic assessment of study quality. For this reason, we did not undertake a formal meta-analysis and did not compute inferential statistics, but rather compared the effect sizes reported across studies descriptively. Third, although we strove to include all studies conducted in the United States published in both the peer-reviewed and gray literatures between January 1970 and December 2012, our review was still subject to publication bias. There also may be studies that met inclusion criteria but were inadvertently and unintentionally excluded by our search strategy.

Conclusions

Despite these limitations, this review represents a comprehensive summary of the interrater reliability and validity of risk assessments in predicting general recidivism in adult offenders in the United States. With efforts underway across the United States to reduce mass incarceration through evidence-based criminal jus-

tice practices, our overarching goal was to provide information that would assist clinicians and policymakers alike in selecting from the many different risk assessment tools available for implementation in U.S. correctional settings. Instead of identifying one instrument that produced the “best” or “most accurate” risk assessments, our findings suggest that predictive validity may vary as a function of offender characteristics, settings, and recidivism outcomes. Our review also identified important gaps in the U.S. validation research, such as limited reporting of interrater reliability and few comparisons of predictive validity between offender subgroups. In light of these findings, decisions regarding which recidivism risk assessment instrument to use should be guided by the empirical evidence—or lack thereof—supporting the instrument’s use with a given population (e.g., inmates, probationers, parolees) and for the outcome of interest (e.g., new offenses, violations). Practical issues should be taken into consideration as well, such as the sources of information needed to complete the assessments (e.g., self-report, interview, review of official records), instrument length and administration time, instrument cost, and training requirements. These issues may impact the feasibility of implementing recidivism risk assessment instruments, even those that have been well-validated in a given jurisdiction and population, with fidelity (Monahan & Skeem, 2016).

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Appendix

List of Jurisdiction- or Institution-Specific Risk Assessment Instruments

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| 1. Alabama Risk and Needs Assessment | 14. Hawaii Risk and Needs Assessment |
| 2. Allegheny County Risk Assessment | 15. Illinois Risk Assessment Instrument |
| 3. Arizona Risk Assessment Suite | 16. Illinois Risks, Assets and Needs Assessment Tool |
| 4. Arkansas Post-Prison Board Transfer Risk Assessment | 17. Indiana Risk Assessment System |
| 5. California Parole Violation Decision Making Instrument | 18. Kentucky Pretrial Risk Assessment Instrument |
| 6. California Static Risk Assessment | 19. Kentucky Parole Guidelines Risk Assessment Instrument |
| 7. Colorado Actuarial Risk Assessment Scale | 20. Iowa Board of Parole Risk Assessment |
| 8. Connecticut Salient Factor Score | 21. Louisiana Risk Needs Assessment |
| 9. Delaware Parole Board Risk Assessment | 22. Maryland Public Safety Risk Assessment |
| 10. Georgia Board of Pardons and Parole's Field Log of Interaction Data | 23. Michigan Parole Guidelines Score Sheet |
| 11. Georgia Parole Behavior Response and Adjustment Guide | 24. Mississippi Parole Risk Instrument |
| 12. Georgia Parole Decisions Guidelines Grid System | 25. Missouri Sentencing Assessment Risk Instrument |
| 13. Georgia Department of Corrections Offender Tracking Information System | 26. Missouri Parole Board Salient Factor Guidelines |
| | 27. Montana Risk Assessment Instrument |
| | 28. Nebraska Criminal History Assessment instrument |

(Appendix continues)

29. Nevada Parole Risk Assessment
30. New Mexico Risk and Needs Assessment
31. North Carolina Risk Needs Assessment
32. Oregon Criminal History/Risk Assessment
33. Public Safety Checklist for Oregon
34. Orange County Pretrial Risk Assessment
35. Rhode Island Parole Risk Assessment
36. South Carolina Parole Risk Assessment Instrument
37. South Dakota Initial Community Risk/Needs Assessment
38. State of Hawaii LSI-R Proxy
39. Tennessee Offender Risk Assessment/Needs Assessment
40. Tennessee Parole Grant Prediction Scale and Guidelines
41. Texas Parole Risk Assessment Instrument
42. Utah Criminal History Assessment
43. Vermont Parole Board Risk Assessment
44. Virginia Pretrial Risk Assessment Instrument
45. Virginia Risk Assessment Tool
46. Washington Risk Level Classification
47. West Virginia Parole Board Assessment

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