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An exemplar-based approach to risk assessment: Validating the risk management systems instrument

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An Exemplar-Based Approach to Risk Assessment:
Validating the Risk Management Systems Instrument

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Abstract

Using a sample of federal probationers, this study examines the predictive validity of the Risk Management Systems assessment instrument. The results indicate the RMS is predictive of arrest, technical violation, and unsuccessful termination from supervision.

Introduction

In 2007, 2.9 million people entered community supervision in the United States. Effective classification is necessary for managing resources, determining supervision levels, and maintaining public safety. Effective classification relies on the "risk principle," which contends that supervision and treatment services should be matched to offenders' risk of recidivism. Risk assessment instruments aid correctional agencies in determining offenders' risk of recidivism and subsequent decision making. The use of valid assessments is necessary to avoid misclassification, which can result in higher rates of recidivism due to inappropriate service delivery.

RMS

The Risk Management Systems (RMS; Modeling Solutions, LLC, 2005) is an unique approach to risk assessment that utilizes exemplar-based empirical modeling to determine risk of recidivism. Offenders' risk scores are calculated based on matches to similar offenders in a database of over 10,000 offenders. The RMS produces scores on two scales: risk of recidivism and risk of violent recidivism. Each scale ranges from 1.00 (low risk) to 2.00 (high risk) in .01 increments. The current study uses a sample of 830 Federal Probationers to assess the predictive validity of the RMS.

Methods

Sample

The sample consists of offenders assessed on the RMS in the District of Nevada (Las Vegas) between April 1 and October 31, 2007. The majority were male (81%), and were white (53%), with a mean age of 40 years. A 12-26 month follow-up period was used.
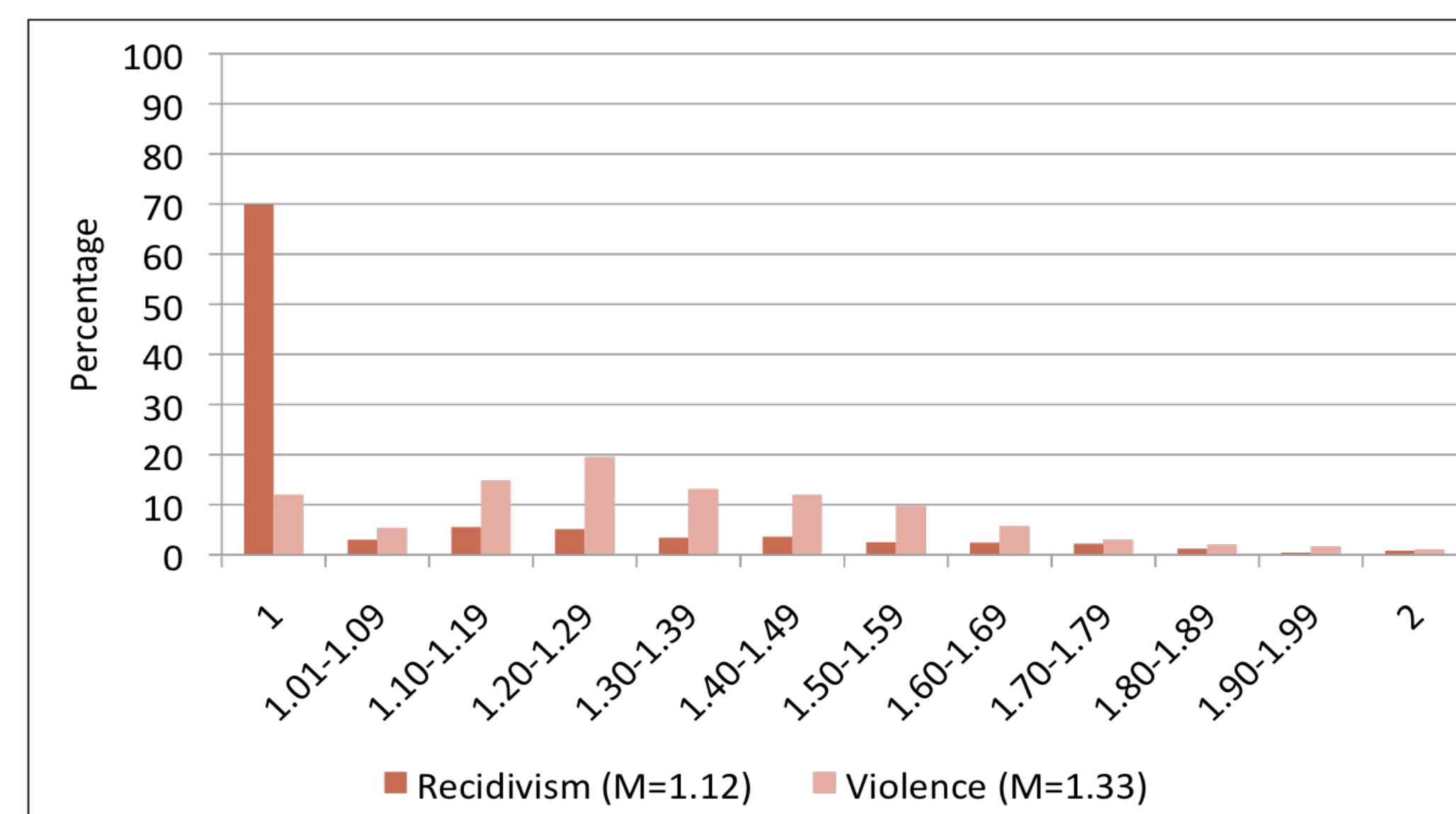
Measures

Independent variables were the RMS Recidivism score and RMS Violence score.

Dependent variables included arrest, unsuccessful termination, and technical violations.

Control variables included age, race, gender, treatment referral, and length of follow-up.
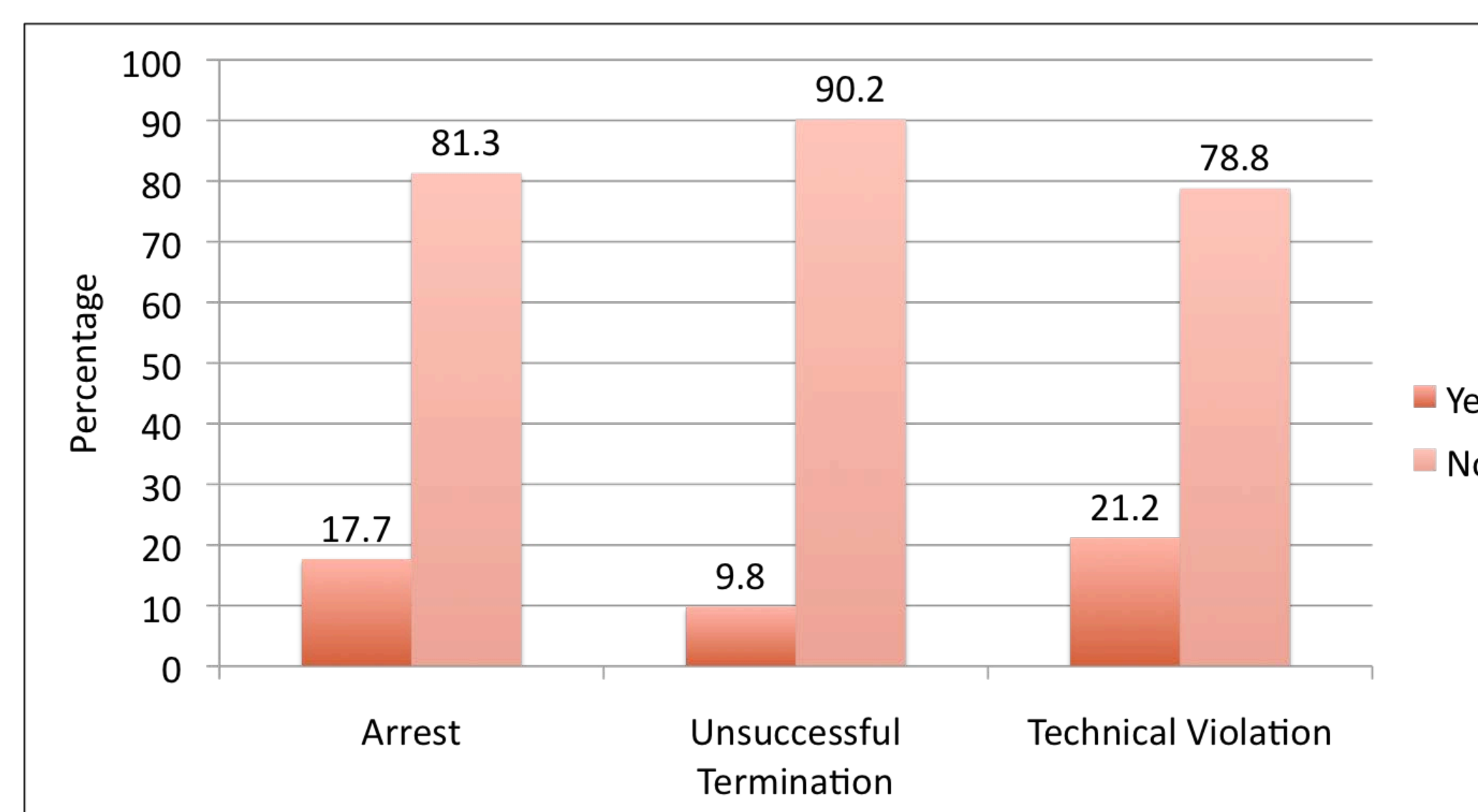
Results

Distribution of RMS Scores

Seventy percent of offenders scored 1.00 on the recidivism scale and 77% scored less 1.50 on the violence scale.

Recidivism Rates

17.7% of offenders in the sample were arrested, 9.8% unsuccessfully terminated, and 21.2% received a technical violation during the follow-up time.

Bivariate Correlations

Predictors	Arrest	Unsuccessful Termination	Technical Violation
RMS Recidivism	.296*	.332*	.237*
RMS Violence	.221*	.234*	.225*

*p<.05

Correlation coefficients show statistically significant positive correlations for both recidivism and violence scores across all outcomes.

Receiver Operating Characteristic (ROC) Analyses

Variable	Arrest		Unsuccessful Termination		Technical Violations	
	AUC	95% CI	AUC	95% CI	AUC	95% CI
RMS Recidivism	.672*	.620-.725	.719*	.651-.787	.640*	.591-.689
RMS Violence	.642*	.590-.695	.708*	.646-.769	.649*	.602-.695

*p<.05

ROC analyses control for low base rates in the dependent variable. Values significantly greater than 0.50 indicate an improvement over chance. Results show statistically significant relationships providing further evidence of the RMS' predictive validity.

Multivariate Logistic Regression

Multivariate logistic regression was used to test the predictive validity of the RMS while controlling for demographics, treatment referrals, and differences in the length of follow-up. All models revealed that the positive associations between scores and outcome held while controlling for other variables. These analyses also showed that those who were referred to treatment were more likely to recidivate.

Conclusions and Implications

The RMS was found to be a valid predictor of recidivism. These findings support the use of an exemplar-based approach to risk assessment.

Because the majority of this sample was found by the RMS to be low risk, the sensitivity and utility of the instrument is questionable. Research has suggested that an effective instrument would better distinguish groups of offenders with a wider dispersion of risk levels.

Additionally, the lack of guidance on how to interpret mid-range scores leaves decision making open to professional judgment, which defeats the purpose of using an empirically-derived risk assessment instrument.

Future research should utilize a larger sample, which may result in a different distribution of RMS scores. Future research should also control for treatment dosage and allow for a longer follow-up period.