

Quick Risk Screen Reliability and Validity Study in a Large Sample of Offenders

Donald D Davignon, Ph.D.

10-21-02

ABSTRACT

The Quick Risk Screen (originally designated the SAQ-Short Form) is an adult offender assessment test that accurately measures offender risk of violence (lethality) and substance (alcohol and drugs) abuse. There were 7,986 adult offenders used in this study. Reliability analyses showed that all QRS scales had very high reliability coefficient alphas of between .85 and .89. QRS scales were validated in several tests of validity. Discriminant validity was shown by significant differences on QRS scale scores between first and multiple offenders. The Alcohol Scale correctly identified 100% of the offenders who had alcohol problems. The Drugs Scale accurately identified 100% of offenders who had drug problems. The Risk Scale correctly identified 100% of the offenders who admitted assault and violence problems. QRS classification of offender risk was shown to be very accurate. All QRS scale scores were within 1.7% of predicted risk range percentile scores. QRS scale scores are highly correlated with SAQ-Adult Probation III scale scores. This study demonstrated that the QRS is a reliable, valid and accurate adult offender assessment test.

Quick Risk Screen Reliability and Validity Study in a Large Sample of Offenders

Introduction

In everyday assessment settings, many practitioners want reliable, valid and accurate tests that can be completed in as little time as possible. The Quick Risk Screen was designed for this purpose. The Quick Risk Screen is used in high volume testing settings, for reading impaired assessment, in court settings and probation departments. It is a shortened version of the SAQ-Adult Probation III. It was designed to be much shorter, yet retain very high statistical reliability, validity and accuracy. The SAQ-Adult Probation III (SAQ-AP III) is an adult offender risk and needs test that has been shown to be reliable, valid and accurate. The SAQ-AP III and Quick Risk Screen evaluate violent and antisocial prone offenders and substance (alcohol and other drugs) abusers. They can be used to measure the severity of offender problems in judicial, correctional and probation systems.

This study validates the Quick Risk Screen. The Quick Risk Screen (QRS) is a multidimensional test that was developed to meet the needs of adult offender screening and assessment. QRS scales measure alcohol and drug abuse severity (Alcohol & Drugs Scales) and risk of violence and antisocial attitudes (Risk Scale). In addition, the Truthfulness Scale measures offender truthfulness while completing the test. Offenders who deny or minimize their problems are detected with the Truthfulness Scale. Truthfulness Scale scores are used to truth-correct other scale scores. The present study investigated the reliability, validity and accuracy of the QRS. The correlation between QRS scale scores and SAQ-Adult Probation III scale scores also was studied.

For ease in interpreting offender risk, the QRS scoring methodology classifies offender scale scores into one of four risk ranges: low risk (zero to 39th percentile), medium risk (40 to 69th percentile), problem risk (70 to 89th percentile), and severe problem risk (90 to 100th percentile). By definition the expected percentages of offenders scoring in each risk range (for each scale) is: low risk (39%), medium risk (30%), problem risk (20%), and severe problem risk (11%). Offenders who score at or above the 70th percentile are identified as having problems. Offenders scale scores at or above the 90th percentile identify severe problems. The accuracy of the QRS in terms of risk range percentages was examined in this study.

This study validates the QRS in a sample of adult offenders who were tested in court referral and corrections services programs. Two methods for validating the QRS were used in this study. The first method (discriminant validity) compared first and multiple offenders' scale scores. Multiple offenders were offenders with two or more misdemeanor convictions and first offenders had one or no conviction. A test that measures severity level ought to show on average that multiple offenders score higher than first offenders. It was hypothesized that statistically significant differences between multiple and first offenders would exist and QRS scales would differentiate between first and multiple offenders. Multiple offenders would be expected to score higher on QRS scales because having a second conviction is indicative of serious problems.

The second validation method (predictive validity) examined the accuracy at which the QRS identified violence prone offenders, problem drinkers and problem drug abusers. In the QRS, violence, alcohol and drug problem information is obtained from the offenders' responses to test items. Offenders who admit problems would be expected to score in the corresponding scale's problem range. For problem information the following test items were used, "I go to Alcoholics Anonymous or AA meetings for help with my drinking." "I am dependent on drugs and may be addicted to them." "I have been convicted of assault, domestic violence or a violent crime."

For the predictive validity analyses offenders were separated into two groups, those who admitted problems and those who did not admit to problems. Then, offender scores on the relevant QRS scales were compared. It was predicted that offenders with an alcohol problem history would score in the problem risk range (70th percentile and above) on the Alcohol Scale. Similarly, offenders who had drug and violence problems are predicted to score higher than offenders not admitting to these problems. Non-problem is defined in terms of low risk scores (39th percentile and below). The percentage of offenders who admit problems and also score in the 70th percentile range and above is a measure of how accurate QRS scales are. High percentages of offenders who admit problems and have elevated problem risk scores indicate the scales are accurate.

Method

Subjects

There were 7,986 adult offenders tested with the QRS. There were 6,373 males (79.9%) and 1,613 females (20.2%). The ages of the participants ranged from 20 through 50 as follows: 20-29 (50.9%); 30-39 (27.7%); 40-49 (16.4%); 50-59 (4.0%) and 60 & Over (1.0%). Demographic composition of the participants was as follows. Race/Ethnicity: Caucasian (73.4%); Black (24.9%), Hispanic (1.3%) and Other (0.4%). Education: Eighth grade or less (7.9%); Some high school (35.2%); High school graduate/GED (42.8%); Some college (11.2%) and College graduate (2.9%). Marital Status: Single (60.0%); Married (22.5%); Divorced (12.4%); Separated (4.4%) and Widowed (0.8%).

Nearly 80 percent of the participants had one or more misdemeanor convictions. Over 41 percent of the offenders had two or more misdemeanor convictions. Over one-fourth (27.8%) of the offenders had one or more felony arrests. Nearly 20 percent of the participants had two or more alcohol convictions and 14.5 percent of the offenders had two or more drug convictions. Nearly 10 percent of the offenders had their first arrest before the age of 17 and half were arrested by the age of 21.

Procedure

Participants completed the QRS as part of offender screening and assessment in court referral and corrections services programs. The QRS contains four measures or scales. These scales are briefly described as follows. The Truthfulness Scale measures the truthfulness of the respondent while taking the QRS. The Alcohol Scale measures severity of alcohol use or abuse. The Drugs Scale measures severity of drug use or abuse. The Risk Scale measures risk of problem prone behaviors such as aggressiveness, dangerousness, and antisocial attitudes.

Results and Discussion

The inter-item reliability coefficient alphas for the four QRS scales are presented in Table 1. All scales were highly reliable. Reliability coefficient alphas for all QRS scales were at or above 0.85. These results demonstrate that the QRS is a very reliable adult offender assessment test.

**Table 1. Reliability of the QRS (N=7,986)
All coefficient alphas are significant at p<.001.**

<u>QRS SCALES</u>	<u>Coefficient Alphas</u>
Truthfulness Scale	.85
Alcohol Scale	.89
Drugs Scale	.88
Risk Scale	.85

In the following analyses the answer sheet item “Number of misdemeanor convictions” was used to define first offenders and multiple offenders (2 or more convictions). T-test comparisons were used to study the statistical significance between first and multiple offenders. There were 4,798 first offenders and 3,187 multiple offenders.

Table 2. Comparisons between first offenders and multiple offenders.

<u>Quick Risk Screen Scale</u>	<u>First Offenders Mean</u>	<u>Multiple Offenders Mean</u>	<u>T-value</u>	<u>Level of Significance</u>
Truthfulness Scale	8.25	7.66	t = 5.94	p<.001
Alcohol Scale	2.69	5.29	t = 21.49	p<.001
Drugs Scale	7.18	8.54	t = 8.19	p<.001
Risk Scale	9.04	13.79	t = 30.12	p<.001

Table 2 shows that mean (average) scale scores of first offenders were significantly lower than scores for multiple offenders on all Quick Risk Screen scales with the exception of the Truthfulness Scale. Truthfulness Scale results suggest that first offenders tried to minimize their problems, or fake good when tested, more than did multiple offenders. The QRS accurately differentiated between first offenders and multiple offenders. These results support the validity of the QRS.

As shown in Table 2, Alcohol, Drugs and Risk Scales demonstrate significantly higher scale scores for multiple offenders. As expected, offenders with a history of criminal arrests and convictions have higher levels of severity than first-time offenders. These results demonstrate that these QRS scales discriminate between first offenders and multiple offenders. Higher QRS scale scores mean more severity of problem behavior. These results support the hypothesis that multiple offenders, because of their history of arrests, score higher than offenders with little history of arrests.

Relationships between offenders’ criminal history and their QRS scale scores are presented in Table 3. Statistically significant correlation coefficients between QRS scales and criminal history variables are measures that also help to validate QRS scale scores. QRS scales that measure problem-prone behavior were expected to be correlated with variables that indicate offender problems, such as the number of times they have been arrested, their age at first arrest and probation records. For example, the QRS Alcohol Scale should be correlated with number of alcohol-related arrests and the Drugs Scale should be correlated with drug-related arrests. Offender criminal history variables were obtained from QRS answer sheets that were completed by the offenders and verified by staff.

The QRS scales included in this analysis were the Alcohol, Drugs and Risk Scales. These scales measure problem-prone behavior that can result in offender arrests. The Truthfulness Scale is not included because this scale measures truthfulness and minimization of problems.

Table 3. Relationships between Criminal History Variables and QRS Scales

	<u>Alcohol Scale</u>	<u>Drugs Scale</u>	<u>Risk Scale</u>
Age at first conviction	.012**	.059*	.367*
Number of misdemeanors	.265*	.120*	.396*
Times on probation	.183*	.117*	.452*
Alcohol arrests	.469*	-	.298*
		.021**	
Drug arrests	.040*	.371*	.257*

Note: * significant at $p < .001$, ** not significant.

These correlation results show that the Alcohol Scale is significantly correlated with alcohol-related arrests. The Drugs Scale is significantly correlated with drug-related arrests. These results are in agreement with the discriminant validity results reported above. Significant correlation with alcohol and drug arrests supports the validity of the Alcohol and Drugs Scales, respectively. Age at first arrest is correlated with the Risk Scale. Number of misdemeanors is significantly correlated with the Alcohol and Risk Scales. Number of times on probation is also significantly correlated with the Risk Scale. These significant correlation coefficients provide validation for these QRS scales. However, the magnitude of the correlations is moderate and indicates that criminal history variables alone do not predict offender problems. QRS scales, that measure problem-prone behaviors, are needed for accurate prediction of offender problems.

Predictive validity results for the correct identification of problem behavior (violence tendencies, drinking and drug abuse problems) are presented in Table 4. Table 4 shows the percentages of offenders that had or admitted to having problems and who scored in the problem risk range. For the Alcohol and Drugs Scales criteria, problem behavior means the offender admitted alcohol and drug problems. For the Risk Scale criterion the offender admitted having been arrested for assault or a violent crime. In these analyses scale scores in the Low risk range (zero to 39th percentile) represent “no problem,” whereas, scores in the Problem and Severe Problem risk ranges (70th percentile and higher) represent alcohol, drugs or violence problems.

The QRS Alcohol Scale is very accurate in identifying offenders who have alcohol problems. There were 1,118 offenders who admitted alcohol problems and these offenders were classified as problem drinkers. All 1,118 offenders, or 100 percent, had Alcohol Scale scores at or above the 70th percentile. The Alcohol Scale correctly identified all of the offenders categorized as problem drinkers.

The QRS Drugs Scale was also very accurate in identifying offenders who have drug problems. There were 771 offenders who admitted being dependent on drugs, all 771 offenders, or 100 percent, had Drugs Scale scores at or above the 70th percentile. These results strongly substantiate the accuracy of the QRS Drugs Scale.

Table 4. Predictive Validity of the Quick Risk Screen

QRS Scale	Correct Identification of Problem Behavior
Alcohol	100%
Drugs	100%
Risk	100%

The Risk Scale accurately identified offenders (**100%**) who admitted violence problems. Offenders who had been arrested for assault or a violent crime scored in the problem range. The direct admission of a violence problem validates the Risk Scale. The Alcohol and Drugs Scale accurately identified offenders who had alcohol and drug problems. These results strongly support the validity of the QRS Risk, Alcohol and Drugs Scales. The Truthfulness Scale has been validated in previous research using MMPI L and F scales as criterion measures.

Risk range percentile scores are derived from scoring equations based on offenders' pattern of responding to scale items and criminal history, when applicable. These results are presented in Table 5. There are four risk range categories: Low Risk (zero to 39th percentile), Medium Risk (40 to 69th percentile), Problem Risk (70 to 89th percentile) and Severe Problem or Maximum Risk (90 to 100th percentile). Risk range percentile scores represent degree of severity. The higher the percentile score is the higher the severity of the offender's problems.

Analysis of the accuracy of QRS risk range percentile scores involved comparing the offender's obtained risk range percentile scores to predicted risk range percentages as defined above. The percentages of offenders expected to fall into each risk range are: Low Risk (**39%**), Medium Risk (**30%**), Problem Risk (**20%**) and Severe Problem or Maximum Risk (**11%**). These percentages are shown in parentheses in the top row of Table 5. The actual percentage of offenders falling in each of the four risk ranges, based on their risk range percentile scores, was compared to these predicted percentages. The differences between predicted and obtained are shown in parentheses.

As shown in Table 5, QRS scale scores are very accurate. The objectively obtained percentages of participants falling in each risk range are very close to the expected percentages for each risk category. All of the obtained risk range percentages were within 1.7 percentage points of the expected percentages and most (10 of the 16) were within 1.0 percentage points. Only one obtained percentage was more than 1.5% from the predicted, and this was within 1.7 percent. These results demonstrate that the QRS scale scores accurately identify offender risk.

Table 5. Accuracy of QRS Risk Range Percentile Scores

Scale	Low Risk (39% Predicted)	Medium Risk (30% Predicted)	Problem Risk (20% Predicted)	Severe Problem (11% Predicted)
Truthfulness	39.4 (0.4)	28.7 (1.3)	21.7 (1.7)	10.2 (0.8)
Alcohol	40.4 (1.4)	29.3 (0.7)	19.8 (0.2)	10.4 (0.6)
Drugs	40.1 (1.1)	30.6 (0.6)	19.2 (0.8)	10.1 (0.9)
Risk	40.4 (1.4)	29.6 (0.4)	18.7 (1.3)	11.3 (0.3)

As shown in Table 6, Quick Risk Screen scale scores were highly correlated with SAQ-Adult Probation III scores. A high correlation coefficient between the short form and the standard form means that there is a high degree of relationship between the two forms. Correlation

coefficients vary from zero to 1, where zero correlation means there is no relationship and 1 means that two variables are perfectly related. Correlation coefficients between Quick Risk Screen and SAQ-Adult Probation III were very close to perfect correlation. In terms of risk range percentile scores, offender risk measured with the Quick Risk Screen is as accurate as risk measured with the SAQ-Adult Probation III.

Table 6. Pearson Product-Moment Correlation Coefficients between QRS Scale Scores and SAQ-Adult Probation III Scale Scores

All coefficients are significant at the $p < .001$ level.

Scales	Truthfulness	Alcohol	Drugs	Risk
Correlation Coefficient	.98	.99	.98	.93

Conclusions

This study demonstrated that accurate offender assessment is achieved with the Quick Risk Screen. Results corroborate and support the QRS as an accurate assessment or screening test for adult offenders. The QRS accurately measures offender risk of violence (lethality) and problem-prone behaviors and substance (alcohol and drugs) abuse. In short, the QRS provides useful information concerning offenders' adjustment and problems that contributes to understanding the offenders.

Reliability analyses demonstrated that all four QRS scales are highly reliable. All coefficient alphas are at or above 0.85. Reliability is necessary in offender assessment or screening tests for accurate measurement of offender risk. Tests cannot be valid or accurate without being reliable.

Validity analyses confirm that the QRS measures what it purports to measure, that is, offender risk. Results demonstrate that repeat offenders exhibit more problem-prone behavior than first offenders. Multiple offenders (having 2 or more arrests) scored significantly higher than first offenders (discriminant validity). Moreover, the Risk Scale identified 100% of the offenders who admitted having violence problems. The Alcohol and Drugs Scales correctly identified all offenders who have alcohol or drugs problems (predictive validity). And, obtained risk range percentages on all QRS scales very closely approximated predicted percentages. These results strongly support the validity of the QRS.

Problem-prone individuals exhibit many characteristics that are identified with the QRS. Relationships between offenders' criminal history variables and QRS scale scores demonstrate that the QRS measures relevant behaviors that identify offenders as problem-prone. Identification of these problems and prompt intervention can reduce an offender's risk of future arrests or recidivism. The QRS facilitates understanding of offender violence tendencies and substance abuse problems. QRS results also provide an empirical basis for recommending appropriate supervision level, intervention and treatment programs.