

Name of Tool	Level of Service Inventory Revised (LSI-R)
Category	General Risk Assessment (Validated)
Author / Publisher	Andrews and Bonta
Year	(1995)

### Description

- LSI-R is a 54-item actuarial tool of the individual's attributes and their circumstances. It is designed to assess criminogenic risk and identify the needs of those who have offended ([Watkins, 2011](#)).
- Information is collected via a semi-structured interview, a review of case records and collateral verification ([Wilson et al., 2016](#)).
- The tool centres on the principles of risk, need and responsivity, maintaining that those who are at high risk of reoffending should receive higher intensity interventions, supervision and monitoring ([Watkins, 2011](#)).
- Thirty-four items are subdivided across ten subsections. The total score is used to calculate recidivism risk, categorised as either 'minimum,' 'medium' or 'maximum.' Subscale scores are used to identify criminogenic needs ([Watkins, 2011](#)).
- In addition to recidivism, composite scores help to predict parole outcomes and the presence or risk of institutional misconduct ([Wilson et al., 2016](#)).
- Normed on North American prison, parole and probation populations.

### Age Appropriateness

16+

### Assessor Qualifications

Assessors must possess advanced training, certification and experience in psychological assessment or a related discipline, or satisfactorily complete a training course certified by the publishers. Can be used by a large range of professionals including social work and probation services.

### Strengths

- Ability to discriminate risk across various outcome measures such as spousal abuse recidivism ([Hendricks et al., 2006](#)).
- Provides structured professional decision-making in a way that is comprehensive and consistent regardless of the case presented ([Campbell et al., 2009](#)).
- Both criminal history and the needs are captured with the tool. There is also an override feature to allow for the exercising of professional judgment to be exercised ([Wilson et al., 2016](#)).

- [Wilson and Stevenson \(2017\)](#) claimed that the semi-structured interview component of the instrument is a helpful framework for treatment and supervision, since it addresses learning, behavioural and developmental issues.
- The LS instruments are based on ‘General Personality and Cognitive Social Learning theory,’ which is a *general* theory of criminal conduct entrenched in social learning perspectives ([Wormith and Bonta, 2018](#)).

### Empirical Grounding



- The LSI-R is supported by and reflective of three primary sources of information: (1) prior literature on recidivism, (2) professional opinions of probation officers and (3) social learning theory of criminal behaviours (Andrews and Bonta, 1995: 1).
- The subscales reflect the main risk factors identified in the research literature ([Andrews and Bonta, 2010](#)).
- Subject to a number of meta-analyses ([Olver et al., 2014](#))

### Inter-Rater Reliability



a) UK Research

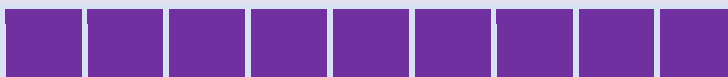
- [Palmer and Hollin \(2007\)](#) - inter-rater agreement levels of 95% for females.
- [Hollin and colleagues \(2003\)](#) found a 90% agreement rate in a sample of males.

b) International Research

- [Dahle \(2006\)](#) found excellent inter-rater reliability generating an ICC value of .93 in a sample of German individuals who had offended.
- [Lowenkamp et al. \(2004\)](#) - moderate to high levels of agreement observed across all ten subsections ranging from 61.5% to 97.7%.
- [Andrews \(1982\)](#) - excellent inter-rater reliability coefficients ranging between .80 to .99.
- [Persson et al. \(2017\)](#) found that the inter-rater reliability for the LSI-R was excellent (ICC=.92).

### Validation History


#### General Predictive Accuracy



a) UK Research

- [Raynor and Miles \(2007\)](#) - predictive accuracy ranging from 65.4% to 71.6%.

	<ul style="list-style-type: none"> <li>• <a href="#">Raynor (2007)</a> - LSI-R presented ability to discriminate between reconvicted individuals who received a fine and those serving community/probationary sentences.</li> <li>• <a href="#">Hollin and Palmer (2006)</a> found a moderate correlation between the LSI-R composite score and reconviction status.</li> </ul>
b) International Research	<ul style="list-style-type: none"> <li>• <a href="#">Duwe and Rocque (2016)</a> administered the LSI-R to 26,000 prisoners in Minnesota for the time period of 2003 to 2011. The results gave an AUC of 0.628, providing moderate support for the LSI-R's ability to assess need.</li> <li>• In a study of 828 prisoners in Midwest of the United States, the LSI-R was able to predict recidivism (<a href="#">Smith et al., 2014</a>).</li> <li>• A study in Australia found that the LSI-R yielded an acceptable level of reliability, with internal consistency estimates in the range of 0.59 to 0.784 (<a href="#">Watkins, 2011</a>).</li> <li>• <a href="#">Campbell French and Gendreau (2009)</a> - the LSI-R displayed one of the largest mean effect sizes in predicting violent recidivism (<math>Z+ = .28</math>).</li> <li>• A study by <a href="#">Lowenkamp et al. (2009)</a> found moderate correlations between both re-arrest (<math>r = .36</math>) and re-incarceration rates (<math>r = .33</math>) and the LSI-R composite score.</li> <li>• <a href="#">Manchak et al. (2008)</a> - the LSI-R yielded an AUC value of .73 for both general and violent recidivism.</li> <li>• <a href="#">Dahle (2006)</a> - the LSI-R achieved moderate accuracy in violence prediction over a 10-year period (AUC = .65) in a sample of Germans.</li> </ul>

Validation History	
Applicability: Females	
a) UK Research	<ul style="list-style-type: none"> <li>• <a href="#">Raynor and Miles (2007)</a> - for females in England and Wales (<math>n = 163</math>) the LSI-R mean score = 21.2, % correctly predicted = 65%.</li> <li>• <a href="#">Palmer and Hollin (2007)</a> found that for female prisoners in England and Wales (<math>n = 150</math>) the LSI-R mean score = 23.0. There were significant differences between male and female scores on seven subscales, but not in</li> </ul>

	<p>the overall score. Scores significantly predicted reconviction and time to reconviction. The composite score correctly classified 74%, with 79.7% correct classification for those not reconvicted and 64.9% for those who were convicted.</p>
<p>b) International Research</p>	<ul style="list-style-type: none"> <li>• An Australian study found that the correlations between criminal history items and recidivism rates decreased in magnitude and significance when the LSI-R was applied to females. The author posited that the LSI-R subscales may not be suitable for fully assessing the criminogenic needs of females who offend (<a href="#">Watkins, 2011</a>).</li> <li>• <a href="#">Hogg (2011)</a> found the LSI to be gender neutral.</li> <li>• <a href="#">Manchak et al. (2008)</a> - the LSI-R attained excellent predictive accuracy in relation to recidivism in a sample of female who offended (AUC = .77).</li> <li>• In a meta-analysis by <a href="#">Smith and colleagues (2009)</a>, it was found that the LSI-R demonstrated a correlation of <math>r=.35</math> for recidivism in females.</li> <li>• <a href="#">Vose et al. (2008)</a> - the LSI-R was found to be a valid predictor of recidivism in females, achieving a composite score of 71.4% accuracy.</li> </ul>

Validation History	
<p>Applicability: Ethnic Minorities</p>	
<p>a) UK Research</p>	<p>None at present.</p>
<p>b) International Research</p>	<ul style="list-style-type: none"> <li>• <a href="#">Hsu, Caputi and Byrne (2010)</a> - the LSI-R demonstrated small correlations with recidivism in a sample of male and female Australian Indigenous individuals (<math>r_s = .12</math> and <math>.16</math> respectively). Indigenous individuals were found to score consistently higher on every item of the LSI-R.</li> <li>• <a href="#">Fass et al. (2008)</a> - inconsistent validity with ethnic minority groups. LSI-R had better predictive accuracy with Caucasians (80.4%) and Hispanics (82.4%) than African Americans (43.4%).</li> <li>• <a href="#">Schlager and Simourd (2007)</a> - few statistically significant correlations between LSI-R composite scores and recidivism amongst ethnic minority groups.</li> </ul>

- [Ostermann and Salerno \(2016\)](#) applied the LSI-R to 9454 individuals in New Jersey to gauge its validity in predicting recidivism within a year of their release from prison. It was found that the LSI-R displayed low capacity for distinguishing between recidivists and non-recidivists when applied to Black males.
- A study by [Watkins \(2011\)](#) found that the discriminatory power on the LSI-R were very low for those with Aboriginal/Torres Strait Islander status in a sample of Australian individuals
- [Chenane et al. \(2015\)](#) examined the predictive validity of the LSI-R in 2778 male prisoners in the Midwest of the United States across White, Black and Hispanic ethnic groups. Results indicated that the LSI-R was better-suited to predicting institutional misconduct for White prisoners than the other two groups. It was suggested by the authors that the tool is modified to adhere to the risks and needs of Black and Hispanic prisoners.
- Applying the LSI-R to 95 clients within a mental health jail diversion program, [Lowder et al. \(2017\)](#) determined that the LSI-R showed weak predictive validity for African Americans than Caucasian clients. Moreover, the risk estimate was found to under-classify African Americans for the moderate risk category; whilst over-classifying them for high risk.
- Research by [Lowder and colleagues \(2019\)](#) suggested that there was no racial bias in the LSI-R. Analysis focused on 11792 probationers in Kansas (74.7% White and 25.3% Black). Risk classifications and total scores produced similar levels of predictive accuracy between the two groups.
- A meta-analysis of 32 articles and 12 data sets was undertaken to examine whether the LSI-R was applicable to Aboriginal individuals. Results indicated that all of the Central Eight risk/need factors were predictive of general and violent recidivism for Aboriginal individuals. Some of the factors demonstrated significantly better predictive validity for non-Aboriginal individuals: criminal history, alcohol/drug and antisocial pattern ([Gutierrez et al., 2013](#)).

## Validation History

Applicability: Mental Disorders



a) UK Research	None at present.
b) International Research	<ul style="list-style-type: none"> <li>• <a href="#">Harris, Rice and Quinsey (1993)</a> found large weighted correlations ranging between .43 and .53 between items in the LSI and violent recidivism in a male psychiatric sample. Recidivists also tended to attain significantly higher scores on the tool than non-recidivists.</li> <li>• A study assessed 193 detainees who were undergoing a forensic psychiatric investigation in Stockholm. The predictive validity of the LSI-R was medium, generating an AUC of .70 (<a href="#">Persson et al., 2017</a>).</li> </ul>

### Contribution to Risk Practice

- The LSI-R has the ability to create awareness of a number of static and dynamic risk factors pertinent to the individual's general risk of recidivism. Information obtained through the LSI-R can inform the level and focus of monitoring and supervision strategies.
- The tool can aid on-going evaluation of an individual's risk of reoffending and their criminogenic needs.

### Other Considerations

- Fewer validation studies conducted with other populations such as ethnic minority groups and mentally disordered individuals.
- Requires refresher training - experience and training in the LSI-R can affect the reliability of the instrument ([Lowenkamp et al., 2009](#)).
- The tool is a quantitative survey of risk-need factors that are supported by research, professional opinion and social learning theory on criminal behaviour. It is not a comprehensive measure of mitigating and aggravating risk factors related to risk practices for offending (Andrews and Bonta, 1995).
- The LSI-R should be completed using information obtained from interviews with the individual and other collateral sources of information.
- The score of the LSI-R was found to correlate with the HCR-20<sup>v3</sup> and the SAPROF at a considerable rate; although the correlations between the risk or protection categories were poorer ([Persson et al., 2017](#)).