





Figure A.2. The structure of the DSVM-MSS study [11].

**APPENDIX B: The BN model variables that have been downgraded in terms of complexity**

Table B.1. The BN model variables, from both the DSVM-P and DSVM-MSS studies, that have been downgraded, in terms of complexity, in order to reduce the risk of model *overfitting* as a result of limited data.

Model	Model variable	Values from data	States in the BN
DSVM-MSS	Age	18 to 64 years	18-21/22-25/26-29/30-34/35-39/40-49/50-59/60+
DSVM-MSS	Prior serious offences	0 to max	None/One/2+
DSVM-MSS	Length of stay as inpatient	7 to 7299 days	Up to 1 year/Up to 2 years/Up to 5 years/5+ years
DSVM-MSS	PCLSVF1	Score 1 to 12	Low=0-1, Medium=2-5, High=6+
DSVM-MSS	PCLSVF2	Score 1 to 12	Low=0-1, Medium=2-5, High=6+
DSVM-MSS	PCLSVF3	Score 1 to 6	Low=0-1, Medium=2-3, High=4+
DSVM-MSS	IQ	Score 0 to max	Low average/Average/High average
DSVM-MSS	Uncooperativeness	Score from 1 to 7	No=1, Partly=2-4, Yes=5+
DSVM-MSS	Social avoidance	Score from 1 to 7	No=1, Partly=2-4, Yes=5+
DSVM-MSS	Tension	Score from 1 to 7	No=1, Partly=2-4, Yes=5+
DSVM-MSS	Guilt feelings	Score from 1 to 7	No=1, Partly=2-4, Yes=5+
DSVM-MSS	Affective lability	Score from 1 to 7	No=1, Partly=2-4, Yes=5+
DSVM-MSS	Anger	Score from 1 to 7	No=1, Partly=2-4, Yes=5+
DSVM-MSS	Excitement	Score from 1 to 7	No=1, Partly=2-4, Yes=5+
DSVM-MSS	Suspiciousness	Score from 1 to 7	No=1, Partly=2-4, Yes=5+
DSVM-MSS	Hostility	Score from 1 to 7	No=1, Partly=2-4, Yes=5+
DSVM-MSS	Difficulty delaying gratification	Score from 1 to 7	No=1, Partly=2-4, Yes=5+
DSVM-MSS	Emotional withdrawal	Score from 1 to 7	No=1, Partly=2-4, Yes=5+
DSVM-MSS	Delusions	Score from 1 to 7	No=1, Partly=2-4, Yes=5+
DSVM-MSS	Hallucination	Score from 1 to 7	No=1, Partly=2-4, Yes=5+
DSVM-MSS	Grandiosity	Score from 1 to 7	No=1, Partly=2-4, Yes=5+
DSVM-MSS	Anxiety	Score from 1 to 7	No=1, Partly=2-4, Yes=5+
DSVM-MSS	Depression	Score from 1 to 7	No=1, Partly=2-4, Yes=5+
DSVM-P	Age	18 to 75 years	18-19/20-21/22-25/ 26-29/30-34/35-39/ 40-49/50-59/60+
DSVM-P	Domestic stability	a) Frequent address change: <i>Integer</i> , b) Eviction: <i>Boolean</i> , c) Family/friends unsupportive: <i>Score 1 to 10</i> .	a) Frequent address change: No=0-3, Yes=4+, b) Eviction: No=false, Yes=true, c) Family/friends unsupportive: No=0-3, Yes=4+.  <u>Rule introduced:</u> if at least two of the three variables above returns <i>Yes</i> , then <i>Domestic stability</i> =Low, otherwise <i>Domestic stability</i> =High.
DSVM-P	Financial difficulties	a) Behind paying bills: <i>Boolean</i> , b) Services cut off: <i>Boolean</i> , c) Low income: <i>Score from 0 to max</i> .	a) Behind paying bills: No=false, Yes=true, b) Services cut off: No=false, Yes=true, c) Low income: No=50+, Yes=0-49.  <u>Rule introduced:</u> if at least one of the three variables above returns <i>Yes</i> , then <i>Financial difficulties</i> =Yes, otherwise <i>Financial difficulties</i> =No.
DSVM-P	Hazardous drinking	Alcohol use disorder identification test (AUDIT): Score 0 to 32.	No=0-1, Yes=8+
DSVM-P	Problematic life events	a) Separation/divorce: <i>Boolean</i> , b) Problems with friends/family/neighbour: <i>Boolean</i> , c) Redundant/sucked: <i>Boolean</i> .	a) Separation/divorce: No=false, Yes=true, b) Problems with friends/family/neighbour: No=false, Yes=true, c) Redundant/sucked: No=false, Yes=true,  <u>Rule introduced:</u> if at least one of the three variables above returns <i>Yes</i> , then <i>Problematic life events</i> =Yes, otherwise <i>Problematic life events</i> =No.
DSVM-P	Stress	High stress score 0 to max	No=0-17, Yes=18+
DSVM-P	Intelligence	IQ Score 0 to 130	Extremely Low/ Borderline/ Low Average/Average/ High Average/Superior
DSVM-P	Criminal network	a) Family/friends have criminal convictions: <i>Boolean</i> , b) Family/friends offered	a) Family/friends have criminal convictions: No=false, Yes=true, b) Family/friends offered drugs: No=false, Yes=true,

		<p>drugs: <i>Boolean</i>,</p> <p>c) Family/friends asked for money/goods through crime: <i>Boolean</i>,</p> <p>d) Family/friends suggested to commit a crime: <i>Boolean</i>,</p> <p>e) Family/friends got into a fight: <i>Boolean</i>.</p>	<p>c) Family/friends asked for money/goods through crime: No=<i>false</i>, Yes=<i>true</i>,</p> <p>d) Family/friends suggested to commit a crime: No=<i>false</i>, Yes=<i>true</i>,</p> <p>e) Family/friends got into a fight: No=<i>false</i>, Yes=<i>true</i>,</p> <p><u>Rule introduced:</u> if at least one of the five variables above returns <i>Yes</i>, then <i>Criminal network=Yes</i>, otherwise <i>Criminal network=No</i>.</p>
DSVM-P	Criminal attitude	<p>a) OK to steal if very poor: Score 1 to 5,</p> <p>b) OK to steal from the rick: Score 1 to 5,</p> <p>c) OK to steal from shops that make lots of money: Score 1 to 5,</p> <p>d) Sometimes it is OK to break the law: Score 1 to 5,</p>	<p>a) OK to steal if very poor: No=0-1, Yes=2+,</p> <p>b) OK to steal from the rick: No=0-1, Yes=2+,</p> <p>c) OK to steal from shops that make lots of money: No=0-1, Yes=2+,</p> <p>d) Sometimes it is OK to break the law: No=0-1, Yes=2+.</p> <p><u>Rule introduced:</u> if at least one of the four variables above returns <i>Yes</i>, then <i>Criminal attitude=Yes</i>, otherwise <i>Criminal attitude=No</i>.</p>
DSVM-P	Victimisation	<p>a) Victim of theft/burglary: <i>Boolean</i>,</p> <p>b) Victim of threats: <i>Boolean</i>,</p> <p>c) Assaulted: <i>Boolean</i>.</p>	<p>a) Victim of theft/burglary: No=<i>false</i>, Yes=<i>true</i>,</p> <p>b) Victim of threats: No=<i>false</i>, Yes=<i>true</i>,</p> <p>c) Assaulted: No=<i>false</i>, Yes=<i>true</i>.</p> <p><u>Rule introduced:</u> if at least one of the three variables above returns <i>Yes</i>, then <i>Criminal network=Yes</i>, otherwise <i>Criminal network=No</i>.</p>
DSVM-P	Compliance with supervision	Number of appointments missed with probation officer: Score 0 to max	No=0-1, Yes=2+.
DSVM-P	Anger	STAXI trait score: Score 0 to 27	No=0-2, Yes=3+.
DSVM-P	Cocaine (applies to all three cocaine variables; before, during and post-release)	<p>a) Cocaine powder: <i>Boolean</i>,</p> <p>b) Crack cocaine: <i>Boolean</i>,</p>	<p>a) Cocaine powder: No=<i>false</i>, Yes=<i>true</i>,</p> <p>b) Crack cocaine: No=<i>false</i>, Yes=<i>true</i>,</p> <p><u>Rule introduced:</u> if at least one of the two variables above returns <i>Yes</i>, then <i>Cocaine=Yes</i>, otherwise <i>Cocaine=No</i>.</p>
DSVM-P	Responsiveness to treatment	<p>a) Not taken medication: <i>Boolean</i>,</p> <p>b) Missed injections: <i>Boolean</i>,</p>	<p>a) Not taken medication: No=<i>false</i>, Yes=<i>true</i>,</p> <p>b) Missed injections: No=<i>false</i>, Yes=<i>true</i>,</p> <p><u>Rule introduced:</u> if one of the two variables above returns <i>Yes</i>, then <i>Responsiveness to treatment=Partly</i>, if two of the variables above return <i>Yes</i>, then <i>Responsiveness to treatment=No</i>, otherwise <i>Responsiveness to treatment=Yes</i>.</p>
DSVM-P	PCLR Total score	PCL-R: Score 0 to 35	0-9/10-16/17-26/27+
DSVM-P	Prior convictions	Score 0 to max	0/1/2-5/6+
DSVM-P	Prior acquisitive crime convictions	Score 0 to max	0-2/3-12/13+