**Insula**

**NAc**

**mPFC**

AV

**DA**

**Key**

excitatory

inhibitory

modulatory

is integrated

**Insula**

**Striatum**

**mPFC**

**VTA**

**Key**

excitatory

inhibitory

modulatory

CS

CS

**Insula**

**Striatum**

**mPFC**

AV

**DA**

**Key**

excitatory

inhibitory

modulatory

is integrated

NS

NS

**Insula**

**Striatum**

**mPFC**

AV

**DA**

**Key**

excitatory

inhibitory

modulatory

is integrated

**Insula**

**Insula**

*Drive*

*Drive*

State

**AIC**

**NAc**

***mPFC***

**mPFC-AIC-NAc-DLS Binge Circuit**

**Control**

APS

NS

State variable

NS

APS

*↑ state var*

**AIC**

**NAc**

***mPFC***

**mPFC-AIC-NAc-DLS Binge Circuit**

**Habitual, Non-Compulsive**

APS

State variable

NS

NS

**AIC**

**NAc**

***mPFC***

**mPFC-AIC-NAc-DLS Binge Circuit**

**Compulsive, Non-Habitual**

APS

State variable

NS

NS

**NAc**

APS

**NAc**

APS

**AIC**

**NAc**

NS

**AIC**

**NAc**

NS

APS