n data points for p_x exposure, p_m mediator, and p_y response variables

$$\begin{pmatrix} X_{1,1}, X_{1,2}, \dots, X_{1,p_X} & M_{1,1}, M_{1,2}, \dots, M_{1,p_m} & Y_{1,1}, Y_{1,2}, \dots, Y_{1,p_y} \\ \vdots & \vdots & \vdots & \vdots \\ X_{n,1}, X_{n,2}, \dots, X_{n,p_X} & M_{n,1}, M_{n,2}, \dots, M_{n,p_m} & Y_{n,1}, Y_{n,2}, \dots, Y_{n,p_y} \end{pmatrix}$$

$$\begin{pmatrix} X_{1,1}, X_{1,2}, \dots, X_{1,p_X} & M_{1,1}, M_{1,2}, \dots, M_{1,p_m} & Y_{1,1}, Y_{1,2}, \dots, Y_{1,p_y} \\ \vdots & \vdots & \vdots & \vdots \\ Y_{n,1}, Y_{n,2}, \dots, Y_{n,p_y} & Y_{n,1}, Y_{n,2}, \dots, Y_{n,p_y} \end{pmatrix}$$

$$\begin{pmatrix} X_{1,1}, X_{1,2}, \dots, X_{1,p_X} & M_{1,1}, M_{1,2}, \dots, M_{1,p_m} & Y_{1,1}, Y_{1,2}, \dots, Y_{1,p_y} \\ \vdots & \vdots & \vdots & \vdots \\ Y_{n,1}, Y_{n,2}, \dots, Y_{n,p_y} & Y_{n,1}, Y_{n,2}, \dots, Y_{n,p_y} \end{pmatrix}$$

$$\begin{pmatrix} X_{1,1}, X_{1,2}, \dots, X_{1,p_X} & M_{1,1}, M_{1,2}, \dots, M_{1,p_m} & Y_{1,1}, Y_{1,2}, \dots, Y_{1,p_y} \\ \vdots & \vdots & \vdots \\ X_{n,1}, X_{n,2}, \dots, X_{n,p_X} & M_{n,1}, M_{n,2}, \dots, M_{n,p_m} & Y_{n,1}, Y_{n,2}, \dots, Y_{n,p_y} \end{pmatrix}$$

$$\begin{pmatrix} X_{1,1}, X_{1,2}, \dots, X_{1,p_X} & M_{1,1}, M_{1,2}, \dots, M_{1,p_m} & Y_{1,1}, Y_{1,2}, \dots, Y_{1,p_y} \\ \vdots & \vdots & \vdots & \vdots \\ X_{n,1}, X_{n,2}, \dots, X_{n,p_X} & M_{n,1}, M_{n,2}, \dots, M_{n,p_m} & Y_{n,1}, Y_{n,2}, \dots, Y_{n,p_y} \\ \vdots & \vdots & \vdots & \vdots \\ X_{n,1}, X_{n,2}, \dots, X_{n,p_X} & M_{n,1}, M_{n,2}, \dots, M_{n,p_m} & Y_{n,1}, Y_{n,2}, \dots, Y_{n,p_y} \\ \vdots & \vdots & \vdots & \vdots \\ X_{n,1}, X_{n,2}, \dots, X_{n,p_X} & M_{n,1}, M_{n,2}, \dots, M_{n,p_m} & Y_{n,1}, Y_{n,2}, \dots, Y_{n,p_y} \\ \vdots & \vdots & \vdots & \vdots \\ X_{n,1}, X_{n,2}, \dots, X_{n,p_X} & M_{n,1}, M_{n,2}, \dots, M_{n,p_m} & Y_{n,1}, Y_{n,2}, \dots, Y_{n,p_y} \\ \vdots & \vdots & \vdots & \vdots \\ X_{n,1}, X_{n,2}, \dots, X_{n,p_X} & M_{n,1}, M_{n,2}, \dots, M_{n,p_m} & Y_{n,1}, Y_{n,2}, \dots, Y_{n,p_y} \\ \vdots & \vdots & \vdots & \vdots \\ X_{n,1}, X_{n,2}, \dots, X_{n,p_X} & M_{n,1}, M_{n,2}, \dots, M_{n,p_X} \\ \vdots & \vdots & \vdots & \vdots \\ X_{n,1}, X_{n,2}, \dots, X_{n,p_X} & M_{n,1}, M_{n,2}, \dots, M_{n,p_X} \\ \vdots & \vdots & \vdots & \vdots \\ X_{n,1}, X_{n,2}, \dots, X_{n,p_X} & M_{n,1}, M_{n,2}, \dots, M_{n,p_X} \\ \vdots & \vdots & \vdots \\ X_{n,1}, X_{n,2}, \dots, X_{n,p_X} & M_{n,1}, X_{n,2}, \dots, X_{n,p_X} \\ \vdots & \vdots & \vdots \\ X_{n,1}, X_{n,2}, \dots, X_{n,p_X} & M_{n,1}, M_{n,2}, \dots, X_{n,p_X} \\ \vdots & \vdots & \vdots & \vdots \\ X_{n,1}, X_{n,2}, \dots, X_{n,p_X} & M_{n,1}, X_{n,2}, \dots, X_{n,p_X} \\ \vdots & \vdots & \vdots & \vdots \\ X_{n,1}, X_{n,2}, \dots, X_{n,p_X} & M_{n,1}, \dots, X_{n,p_X} \\$$

$$(*) = \begin{pmatrix} d_X(X_{1,.}, X_{1,.}) = 0 & d_X(X_{1,.}, X_{2,.}) & \cdots & d_X(X_{1,.}, X_{n,.}) \\ d_X(X_{2,.}, X_{1,.}) & \ddots & d_X(X_{2,.}, X_{n,.}) \\ \vdots & & \vdots & \vdots \\ d_X(X_{n,.}, X_{1,.}) & d_X(X_{n,.}, X_{2,.}) & \cdots & d_X(X_{n,.}, X_{n,.}) = 0 \end{pmatrix}$$