Data: $\boldsymbol{x}$, G, H

Result: A sequence $(\boldsymbol{v}, \boldsymbol{w}, \boldsymbol{\theta}, \hat{\boldsymbol{x}})^{(q)}$ for $q \in \{1, ..., nbSEM\}$

Initialization of $\hat{\boldsymbol{x}}$, $\boldsymbol{v}$, $\boldsymbol{w}$ and $\boldsymbol{\theta}$ by $\hat{\boldsymbol{x}}^{(0)}$, $\boldsymbol{v}^{(0)}$, $\boldsymbol{w}^{(0)}$ and $\boldsymbol{\theta}^{(0)}$, respectively;

for *q in 1:nbSEM* **do**

1. SE-step.

1.1 Sample the row partitions for all $1 \leq i \leq N$, $1 \leq g \leq G$:

$$p\left(v_{ig} = 1 | \boldsymbol{x}^{(q-1)}, \boldsymbol{w}^{(q-1)}; \boldsymbol{\theta}^{(q-1)}\right) \propto \gamma_g^{(q-1)} \prod_{j,h} p\left(x_{ij}; \mu_{gh}^{(q-1)}, \pi_{gh}^{(q-1)}\right)^{w_{jh}^{(q-}}$$

1.2 Sample the column partitions for all $1 \leq j \leq J$, $1 \leq h \leq H$:

$$p\left(w_{jh} = 1 | \boldsymbol{x}, \boldsymbol{v}^{(q)}; \boldsymbol{\theta}^{(q-1)}\right) \propto \rho_h^{(q-1)} \prod_{i,g} p\left(x_{ij}; \mu_{gh}^{(q-1)}, \pi_{gh}^{(q-1)}\right)^{v_{ig}^{(q)}}.$$

1.3 Generate the missing data:

$$p\left(\hat{x}_{ij}^{(q)} | \check{\boldsymbol{x}}, \boldsymbol{v}^{(q)}, \boldsymbol{w}^{(q)}; \boldsymbol{\theta}^{(q-1)}\right) = \prod_{g,h} p\left(\hat{x}_{ij}; {\mu_{gh}}^{(q-1)}, {\pi_{gh}}^{(q-1)}\right)^{v_{ig}^{(q)} {w_{gh}}^{(q)}}.$$

2. M-step.

2.1 Update the mixing proportions:

$$\rho_h^{(q)} = \frac{1}{J} \sum_j w_{jh}^{(q)} \text{ and } \gamma_h^{(q)} = \frac{1}{N} \sum_i v_{ig}^{(q)}.$$

2.2 Update the parameters $\boldsymbol{\mu}^{(q)}$ and $\boldsymbol{\pi}^{(q)}$ (see Biernacki and Jacques (2016)).

end