Latent variables affecting mean and covariace

$$p(g) = \mathrm{Gam}(g; \alpha_g, \theta_g) \tag{1}$$
$$p(z) = \mathrm{Gam}(z; \alpha_z, \theta_z) \tag{2}$$
$$p(x \mid v, z) = \mathcal{N}(x; zAv, \sigma_x I) \tag{3}$$
$$p_c(v \mid g) = \mathcal{N}(v; 0, \sum_{k=1}^{K} g_k C_k) \tag{4}$$
$$p_m(v \mid g) = \mathcal{N}(v; Bg, \sigma_v I) \tag{5}$$

$$p(x) = \sum_z \sum_g p(x \mid g, z) p(g) p(z) \tag{6}$$
$$p(v) = \sum_g p(v \mid g) p(g) \tag{7}$$
$$p(x \mid v) = \sum_z p(x \mid v, z) p(z) \tag{8}$$
$$p(v \mid x) = \frac{p(x \mid v) p(v)}{p(x)} \tag{9}$$
$$\sum_z \sum_g p(x \mid v, g) p() \tag{10}$$