must be gauge independent in lowest order, could have any sign at $g=0$. We have calculated Z_1 and Z_3 for the above Lagrangian, and we find that[12]

$$\beta_V = -(g^3/16\pi^2)\tfrac{11}{3}C_2(G) + O(g^5), \tag{8}$$

where $C_2(G)$ is the quadratic Casimir operator of the adjoint representation of the group G: $\sum_{b,c} c_{abc} \times c_{dbc} = C_2(G)\delta_{ad}$ [e.g., $C_2(\mathrm{SU}(N)) = N$]. The solution of (3) is then $\bar{g}^2(t) = g^2/(1-2\beta_V g^{-1}t)$, and $\bar{g} \to 0$ as $t \to \infty$ as long as the physical coupling constant g is in the domain of attraction of the origin.[13]