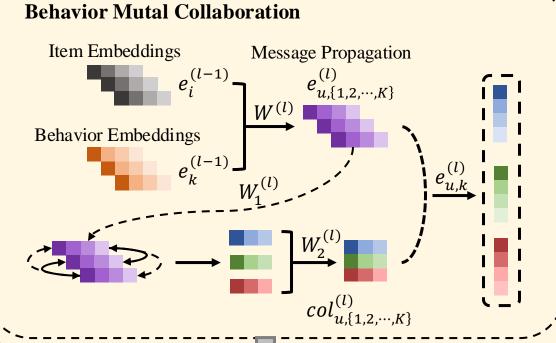
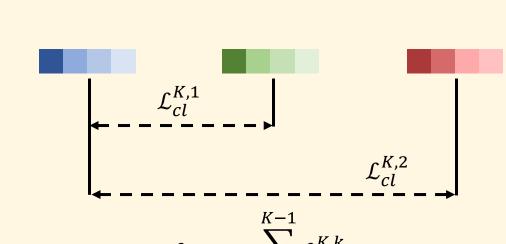
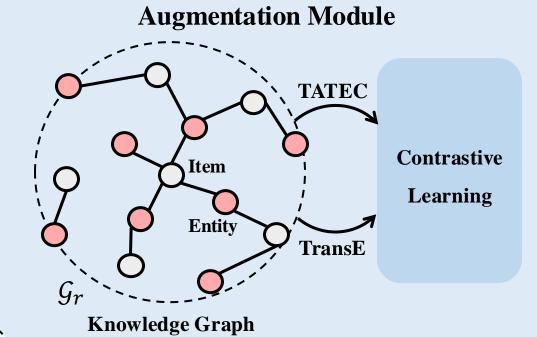


i) Multi-behavior Representation and Augmentation Module





Cross-behavior Contrastive Learning



ii) Knowledge Graph Representation and

iii) Joint Optimization Module

 $KG ext{-}CL \ Loss$ \mathcal{L}_{kgcl}

Cross-CL Loss \mathcal{L}_{mbcl}

 \mathcal{L}_{rec}