

Supplementary Material

Unsupervised Panoptic Interpretation of Latent Spaces in GANs Using Space-Filling Vector Quantization

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Reviewed on OpenReview: <https://openreview.net/forum?id=SEJatSGZX8>

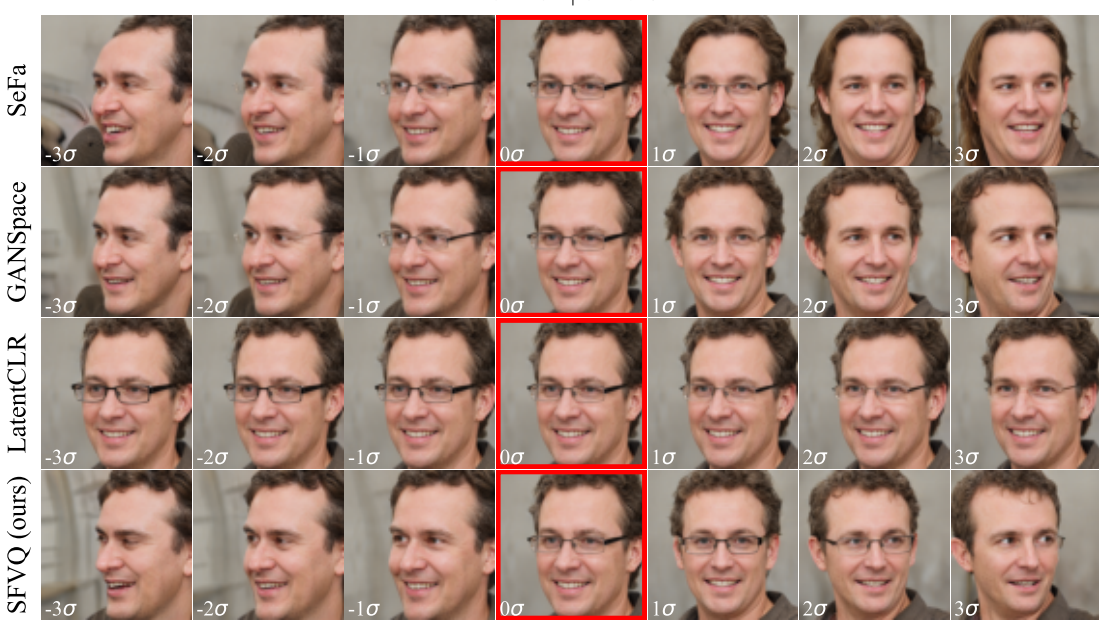
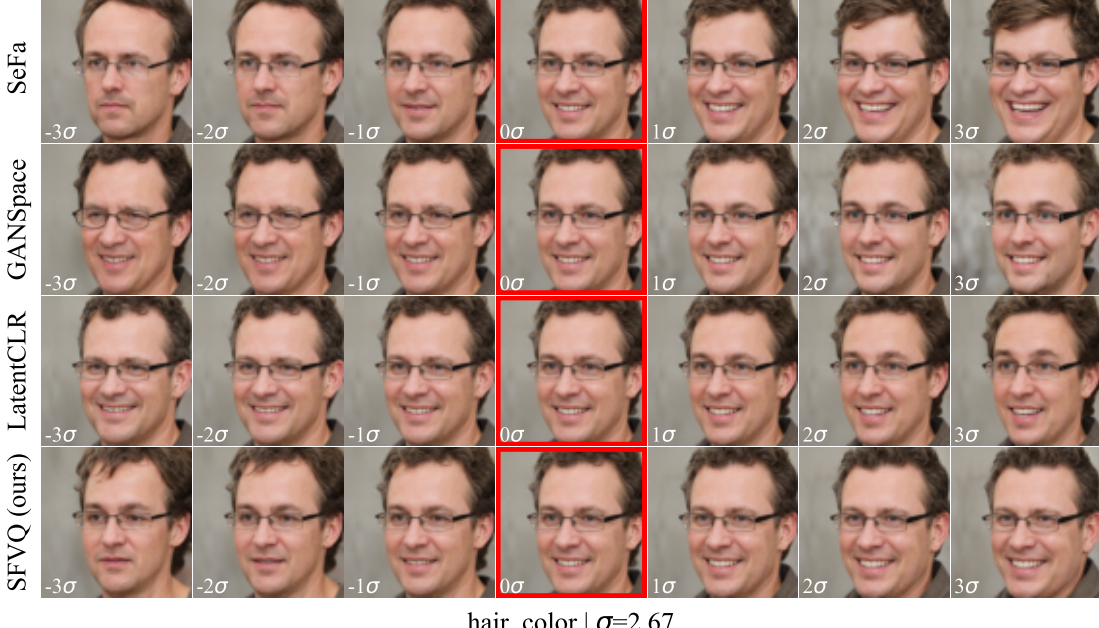
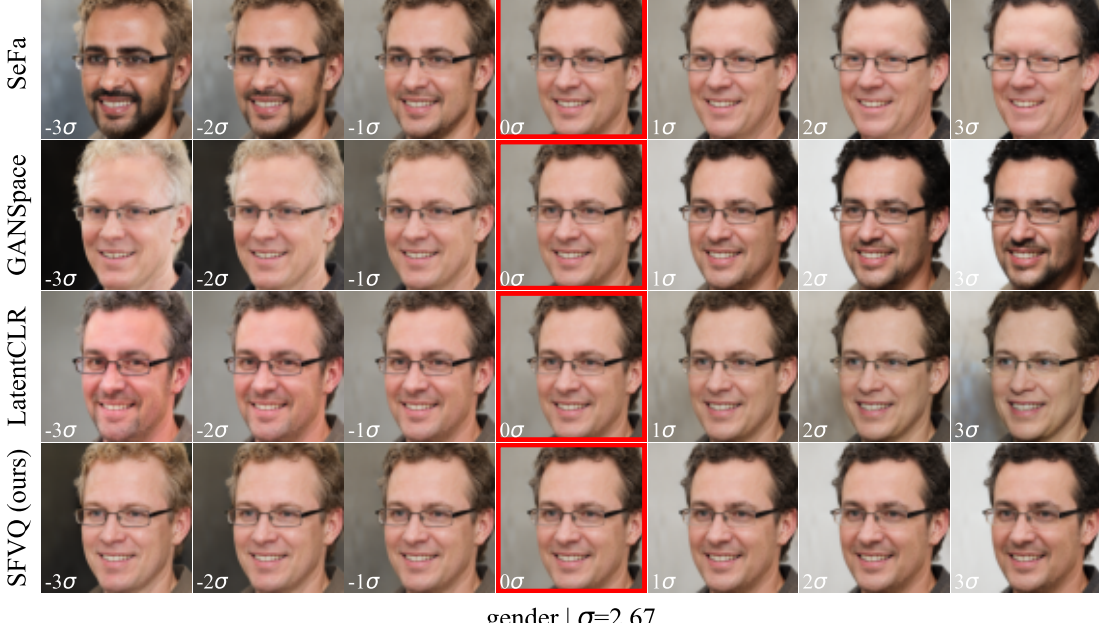
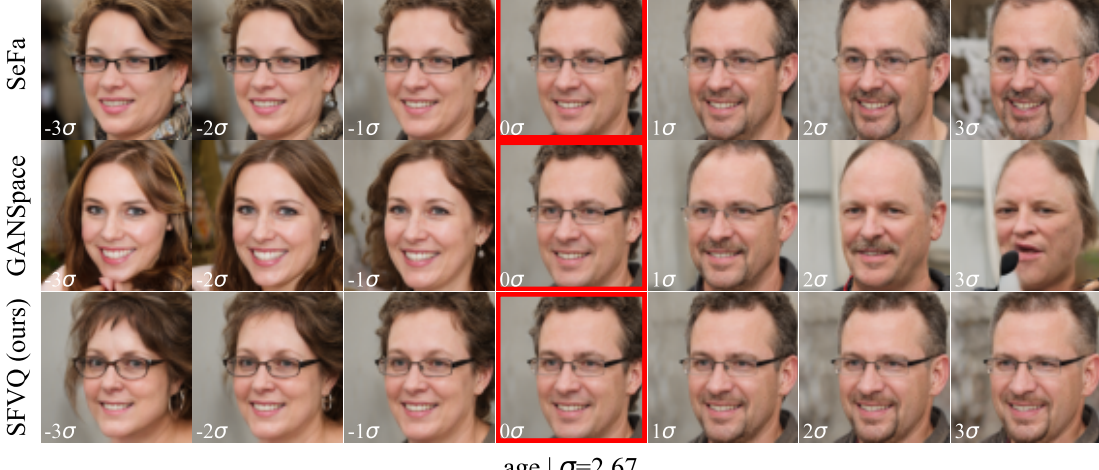
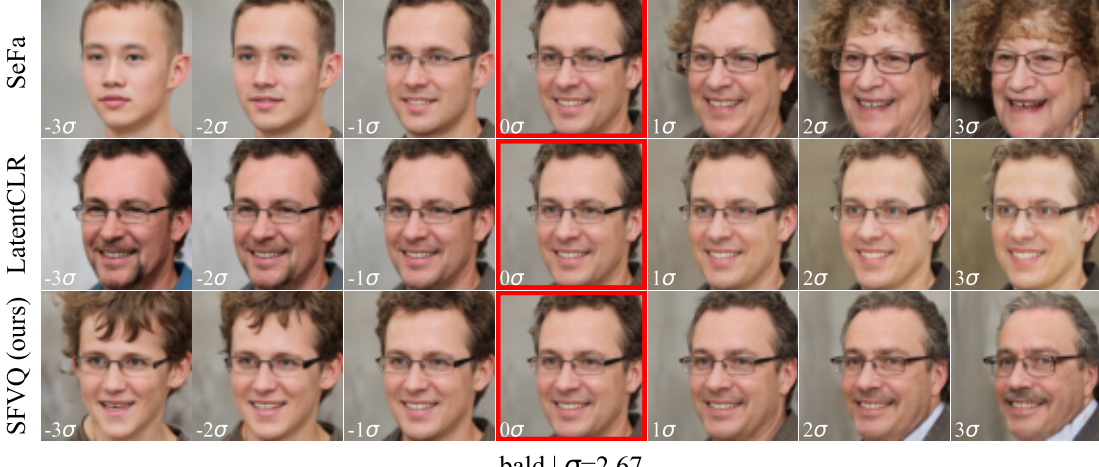
Subjective comparison with other methods

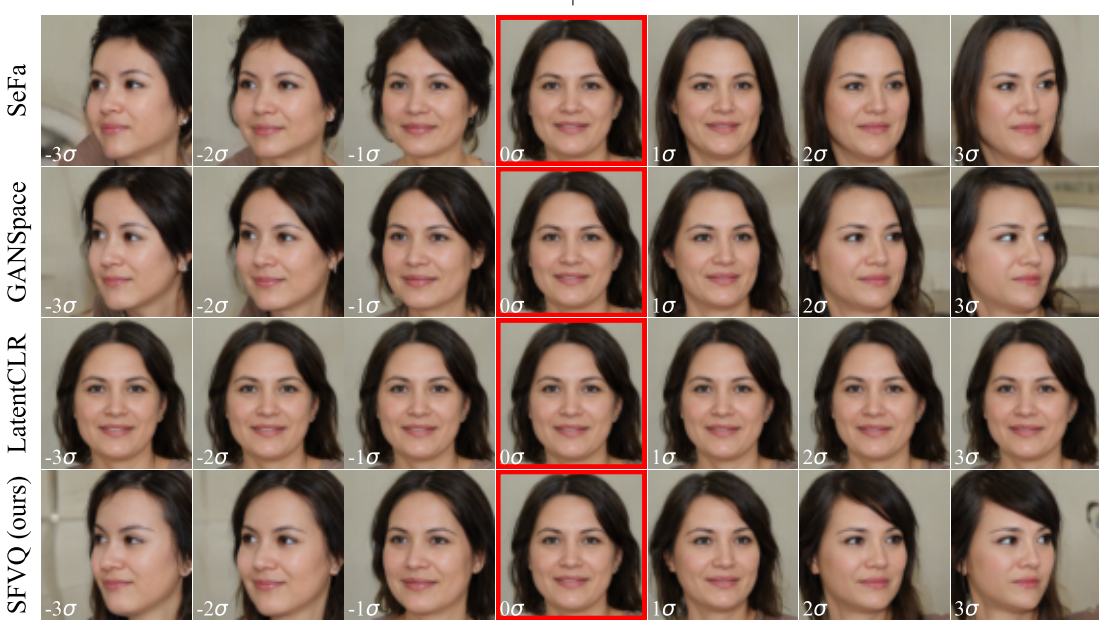
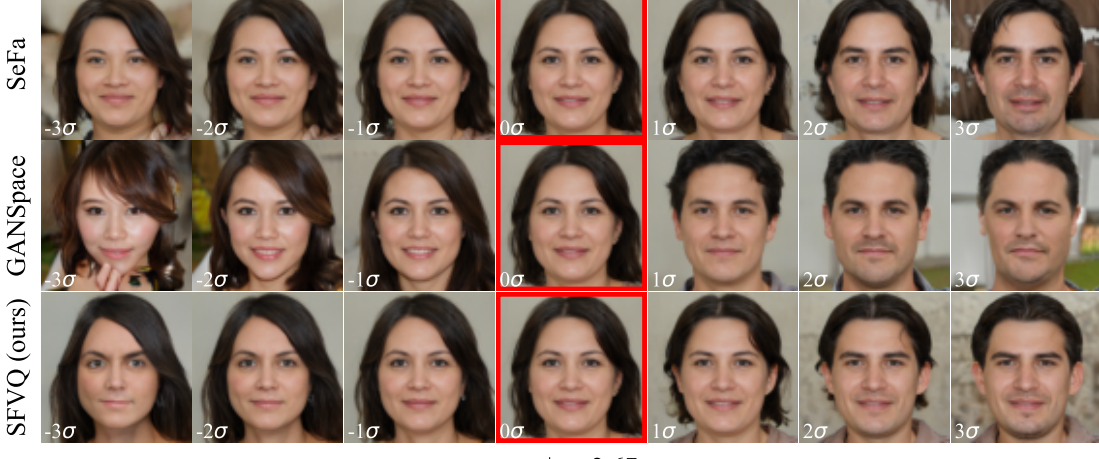
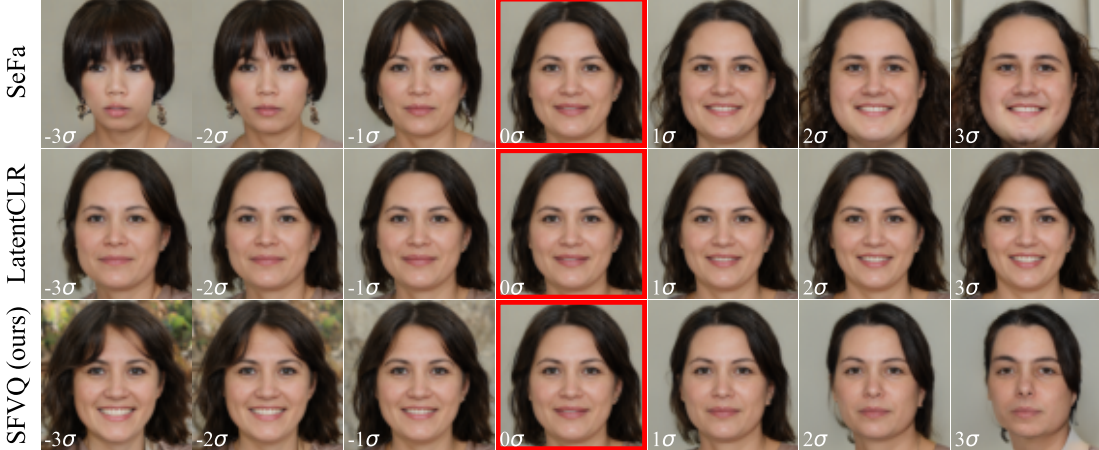
In this section, we subjectively compare the discovered directions by our proposed method (SFVQ) with GANSpace (Härkönen et al., 2020), LatentCLR (Yüksel et al., 2021) and SeFa (Shen & Zhou, 2021) methods. The figures in the following pages demonstrate the comparisons over 50 different random latent vectors. The readers can generate similar figures for comparison using `demo.py` code in our GitHub demo directory at <https://github.com/Speech-Interaction-Technology-Aalto-U/Interpretable-GANs-by-SFVQ.git>.

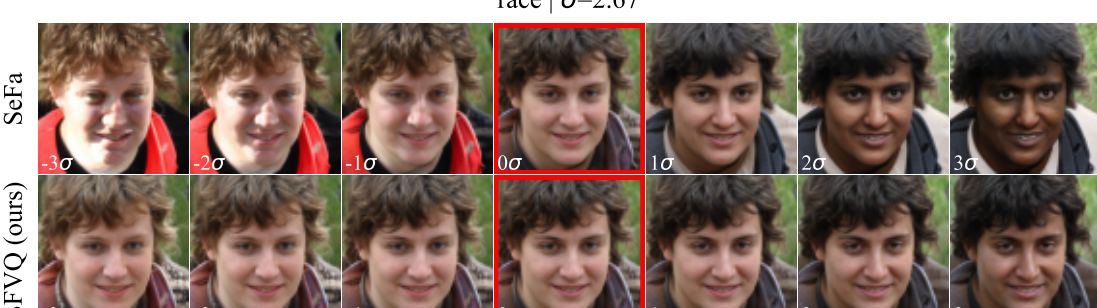
Note that the transformations for the discovered directions are restricted by the dataset bias (Jahanian et al., 2019). Hence, the *Bald* direction is expected to work properly for males, as there are no female faces with bald characteristics in the FFHQ dataset.

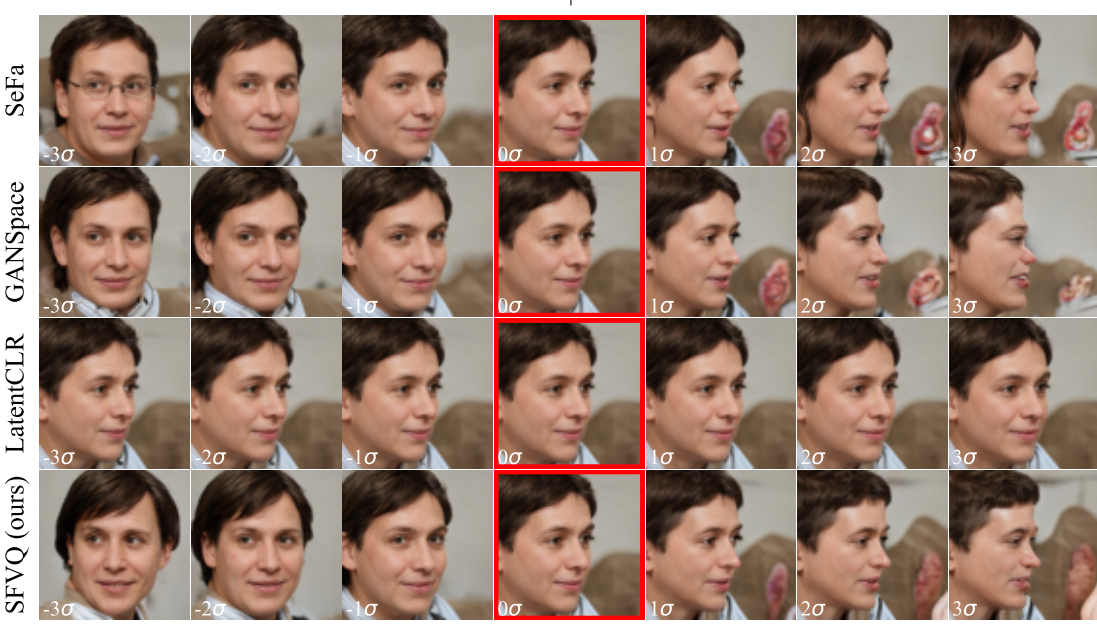
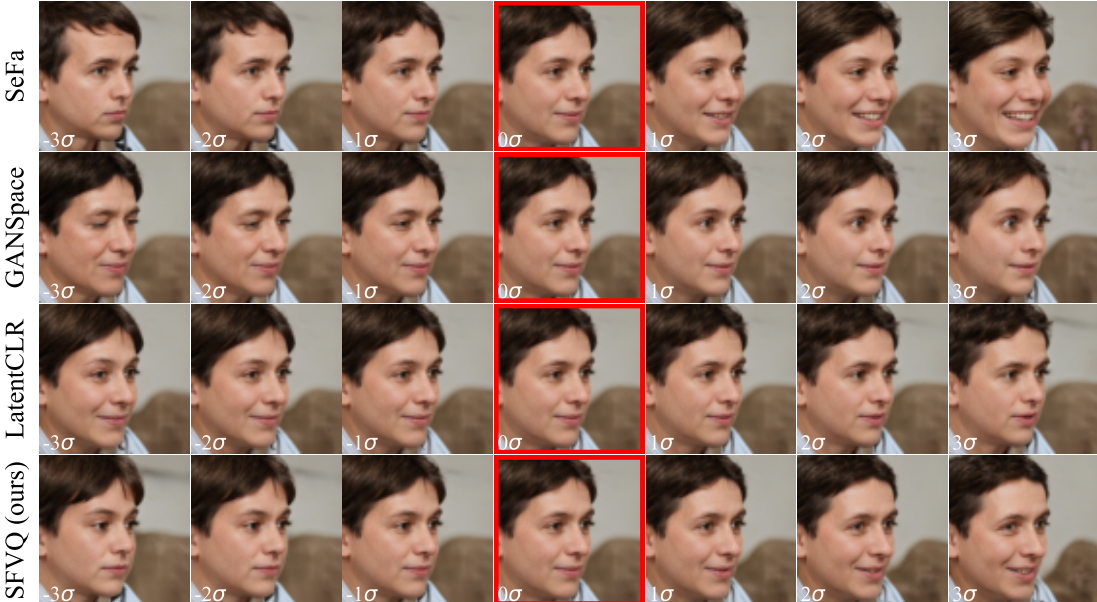
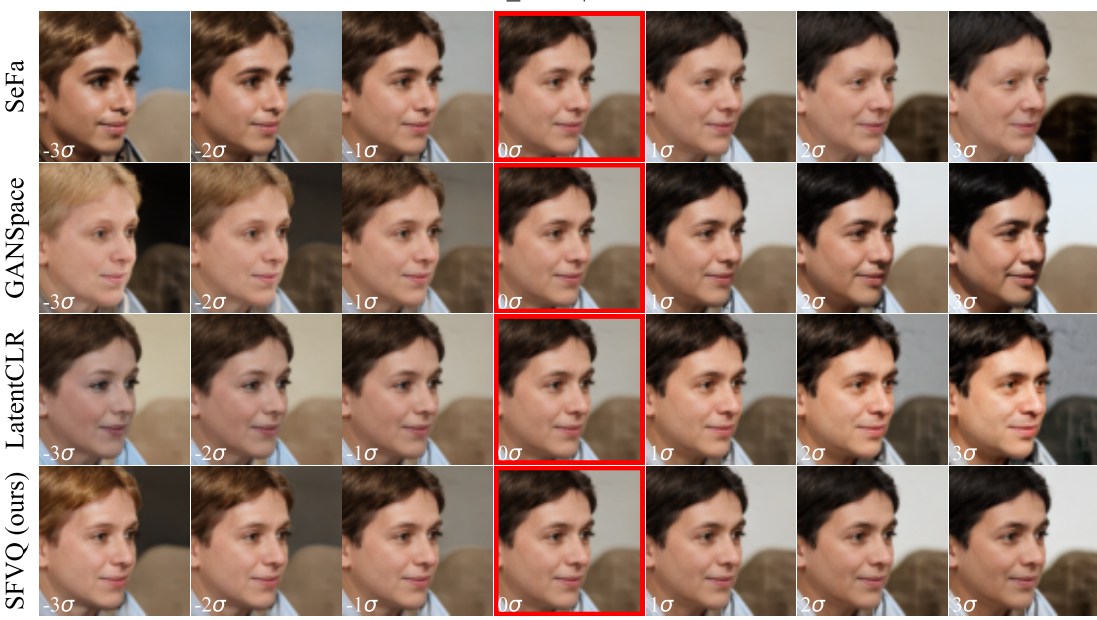
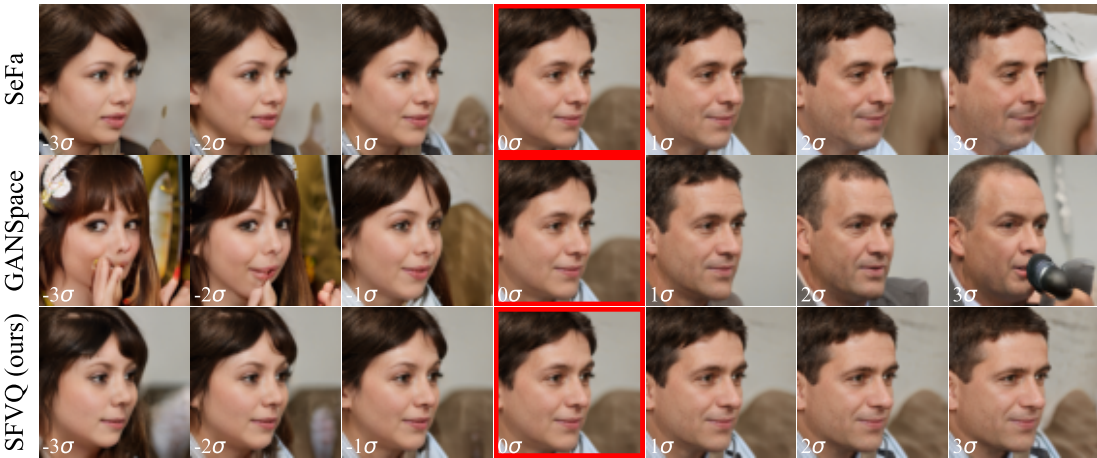
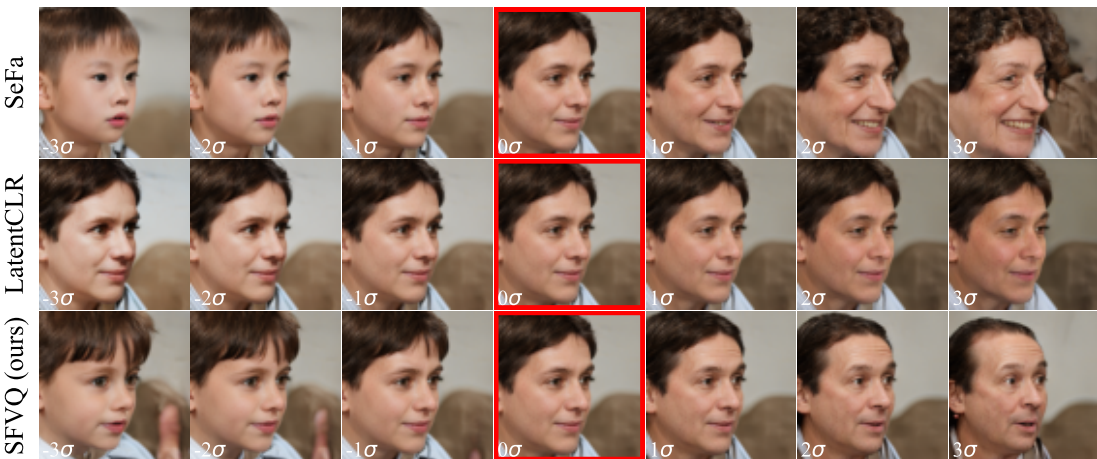
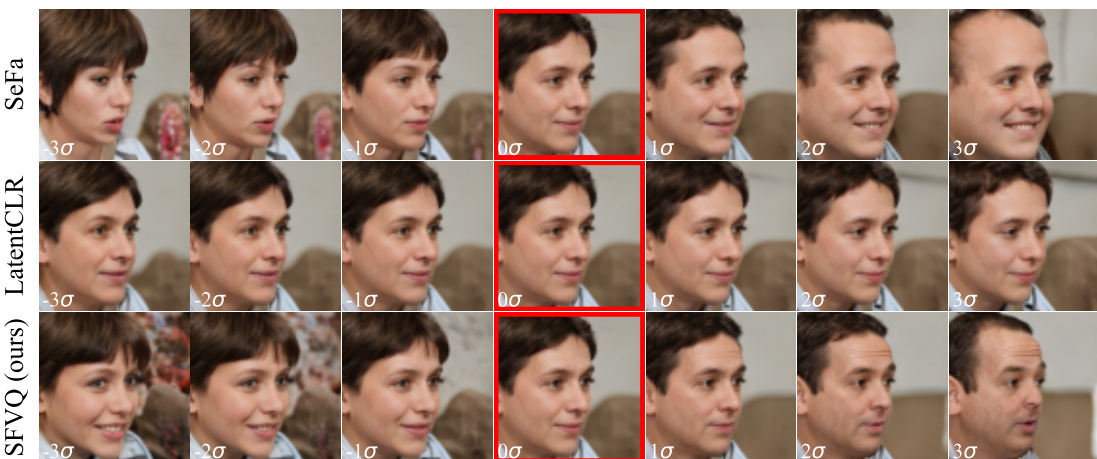
References

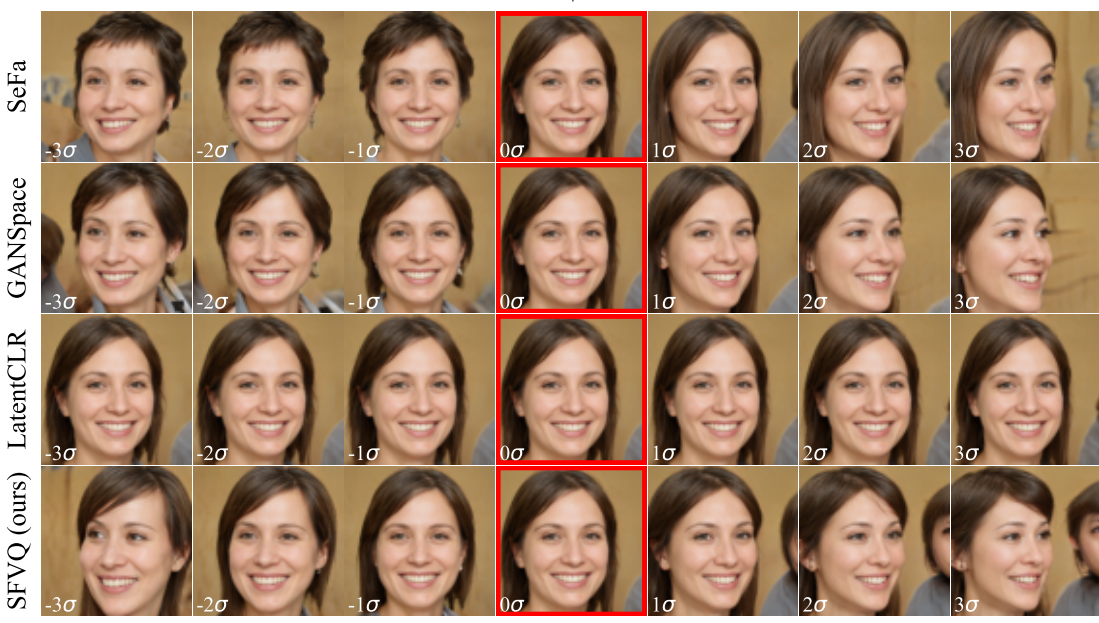
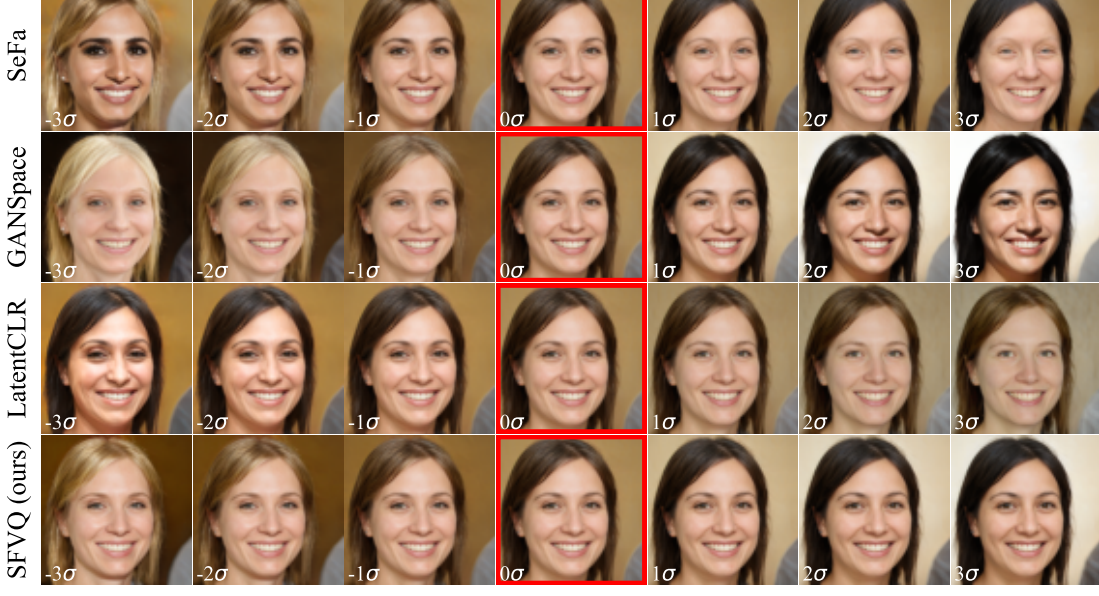
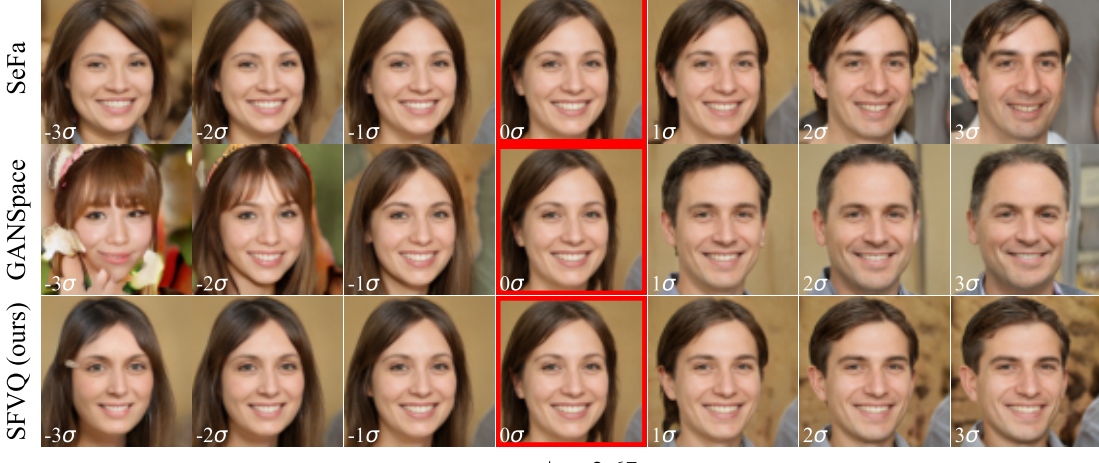
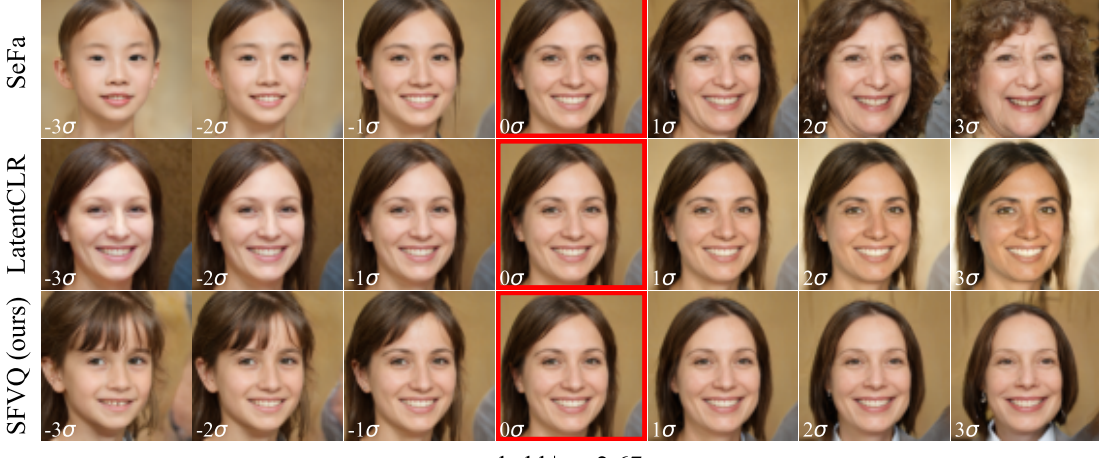
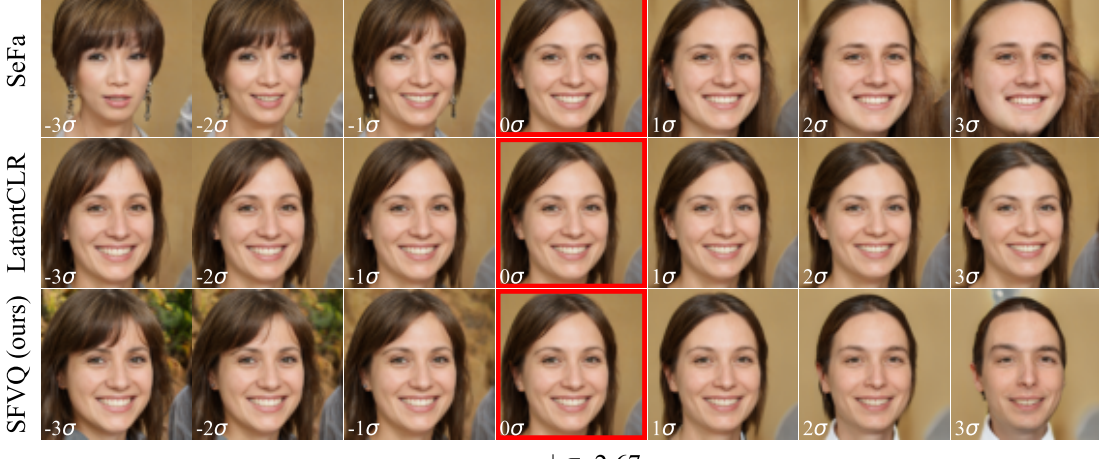
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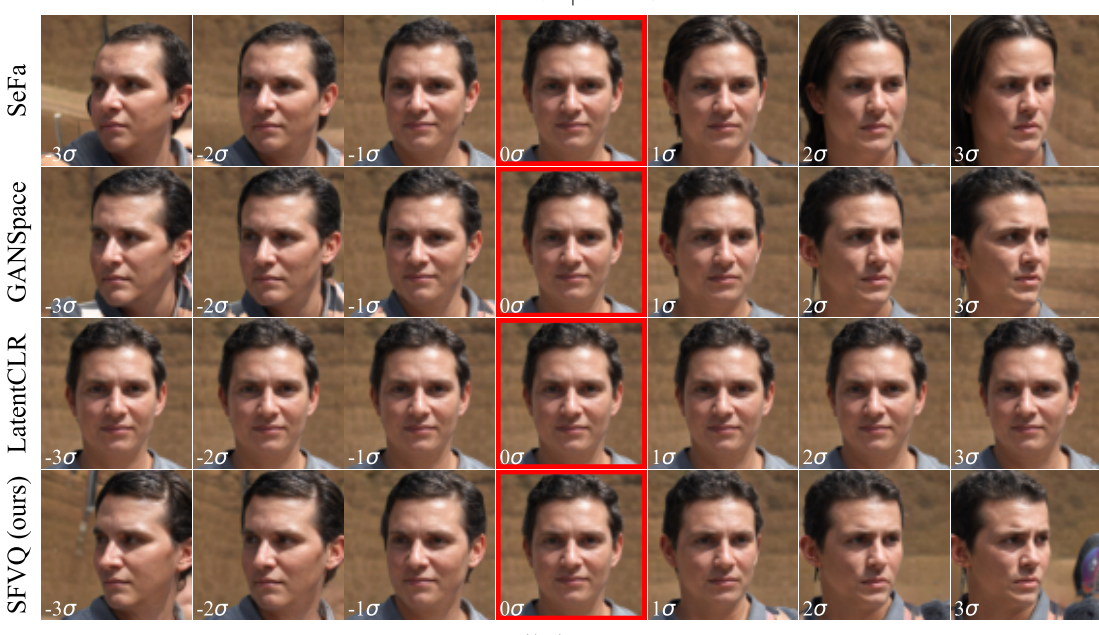
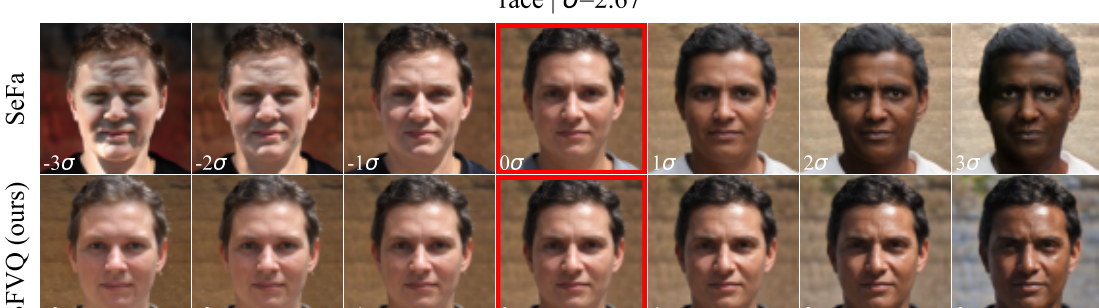
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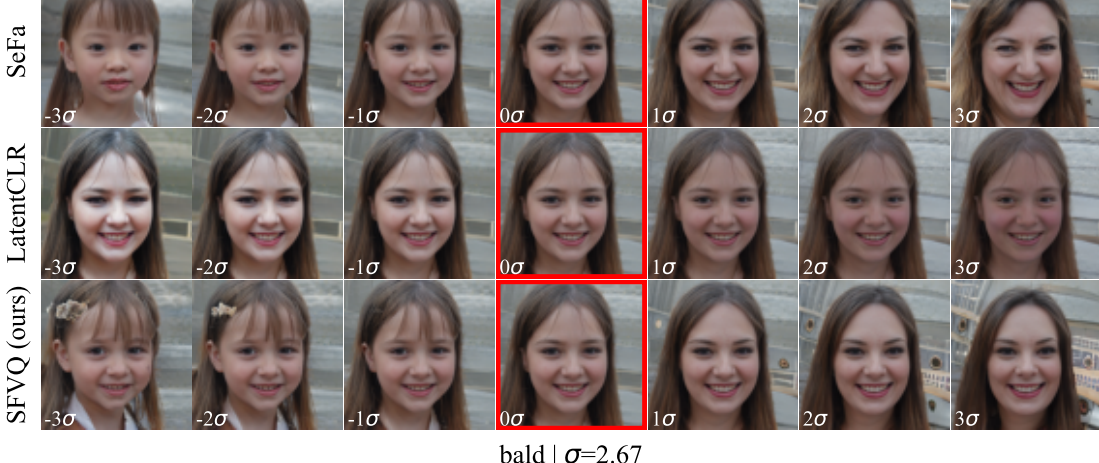
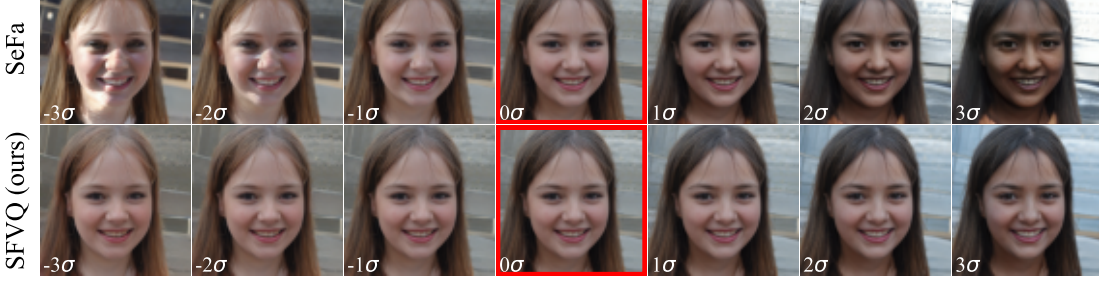
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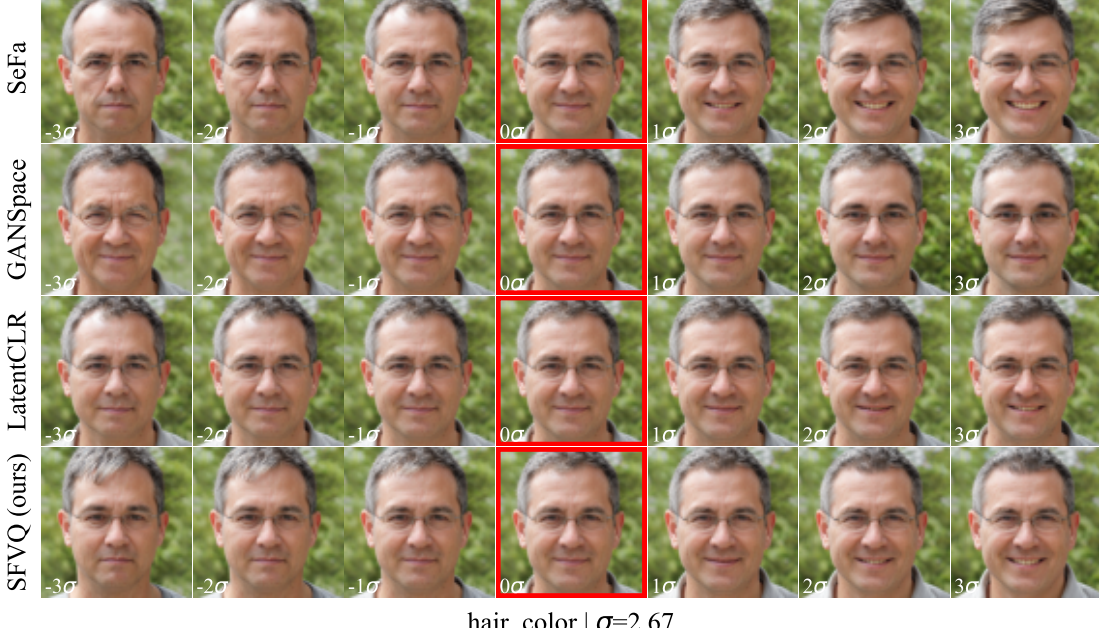
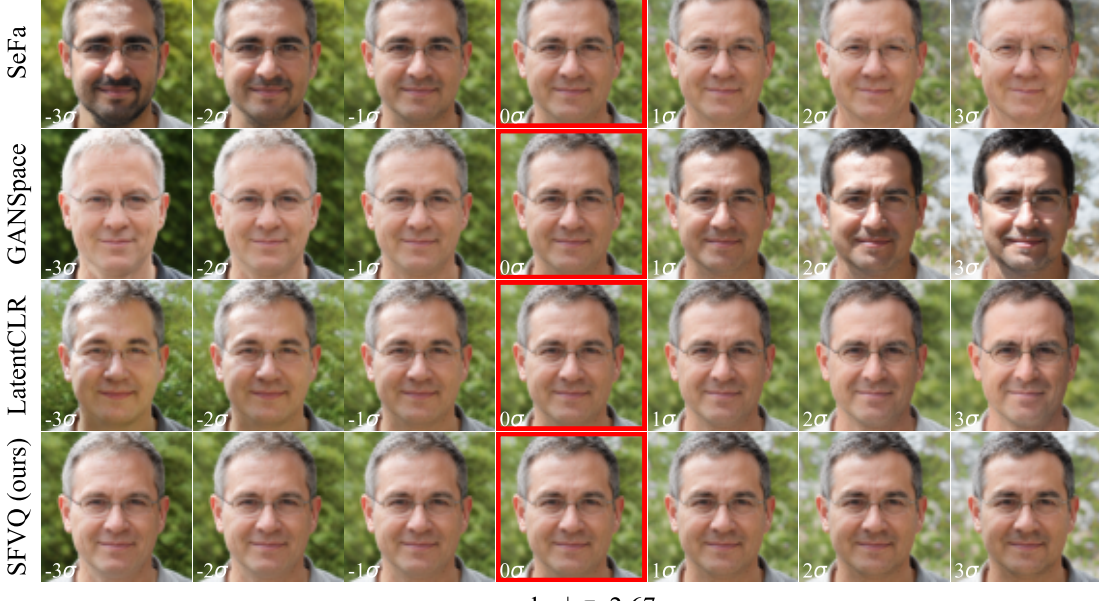
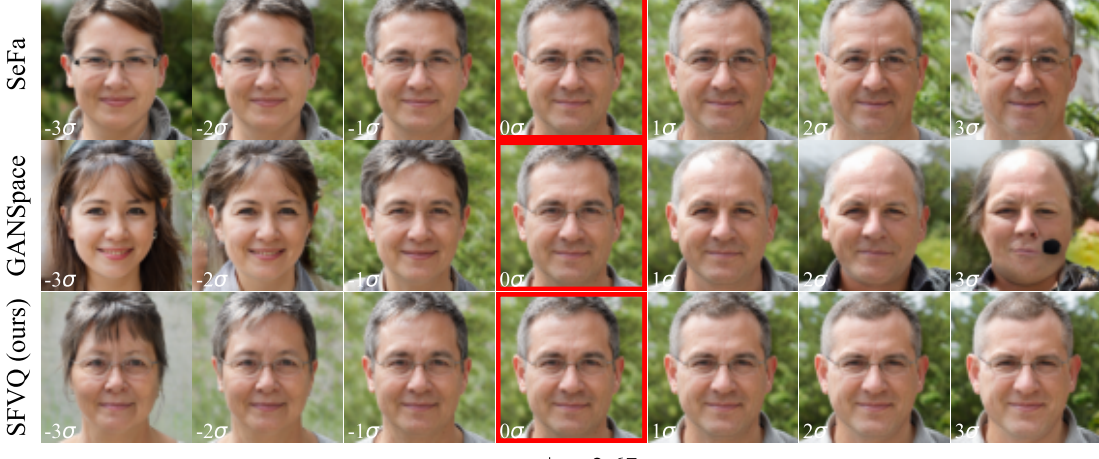
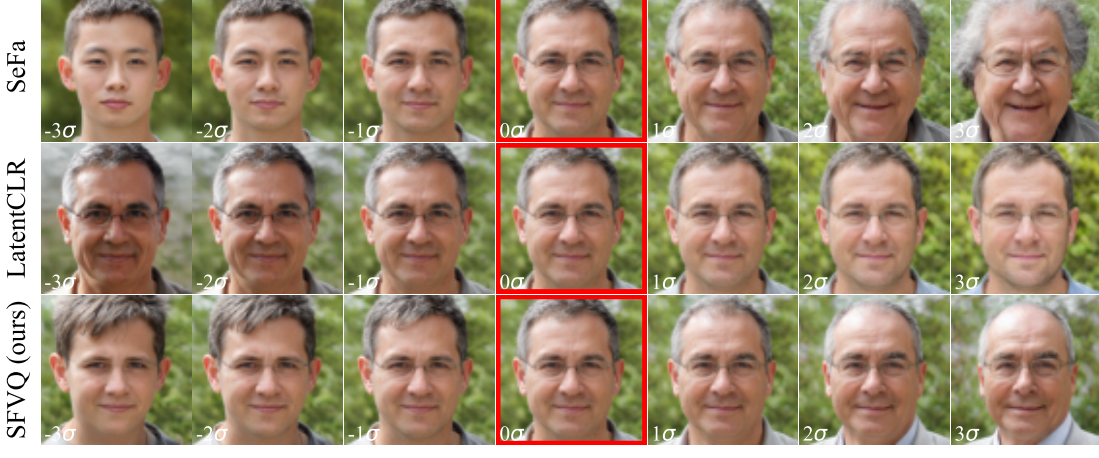
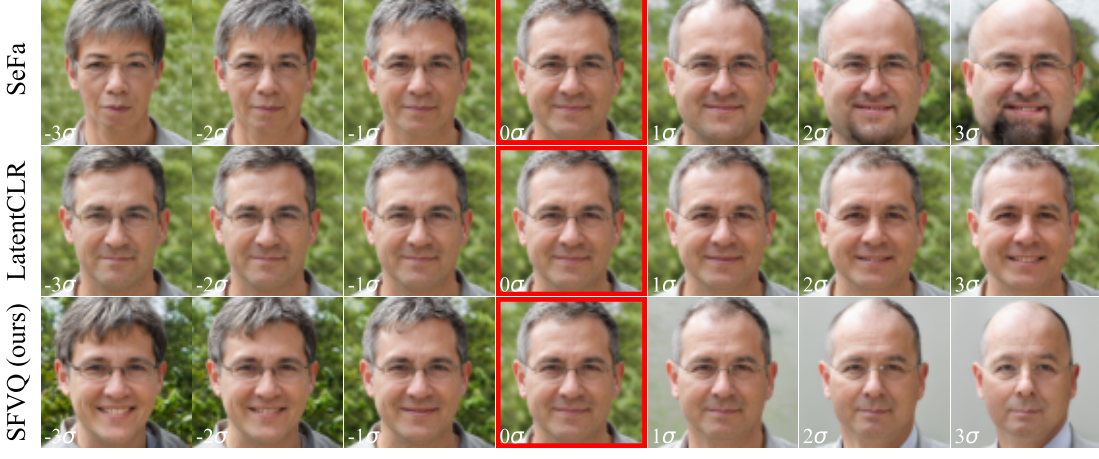
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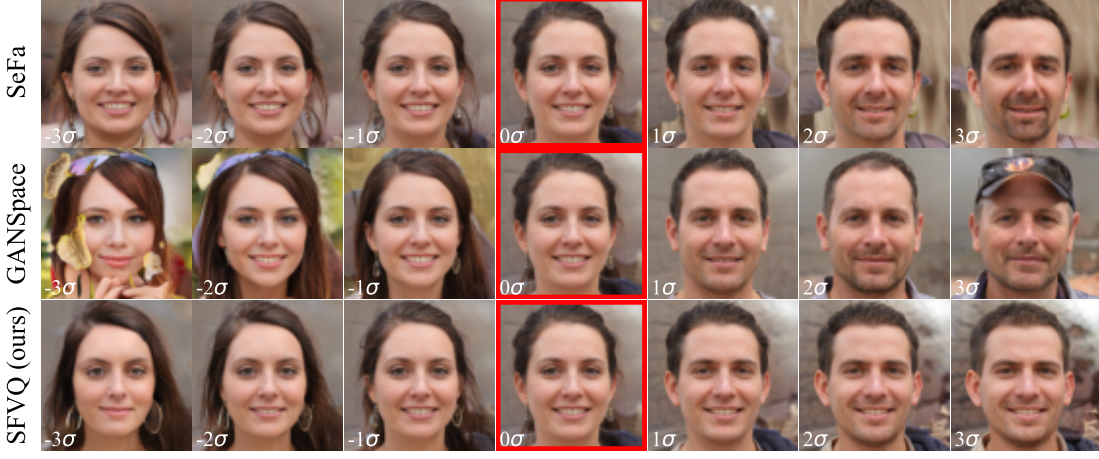
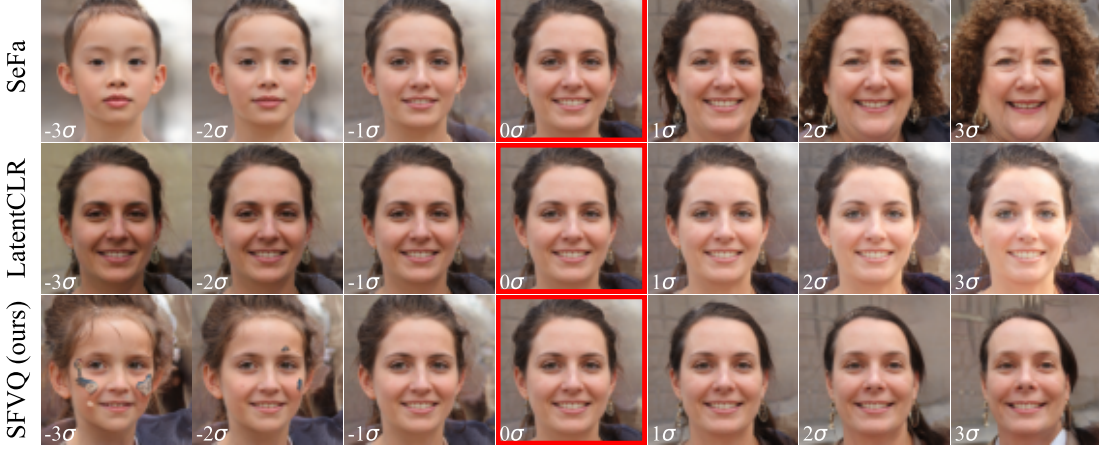
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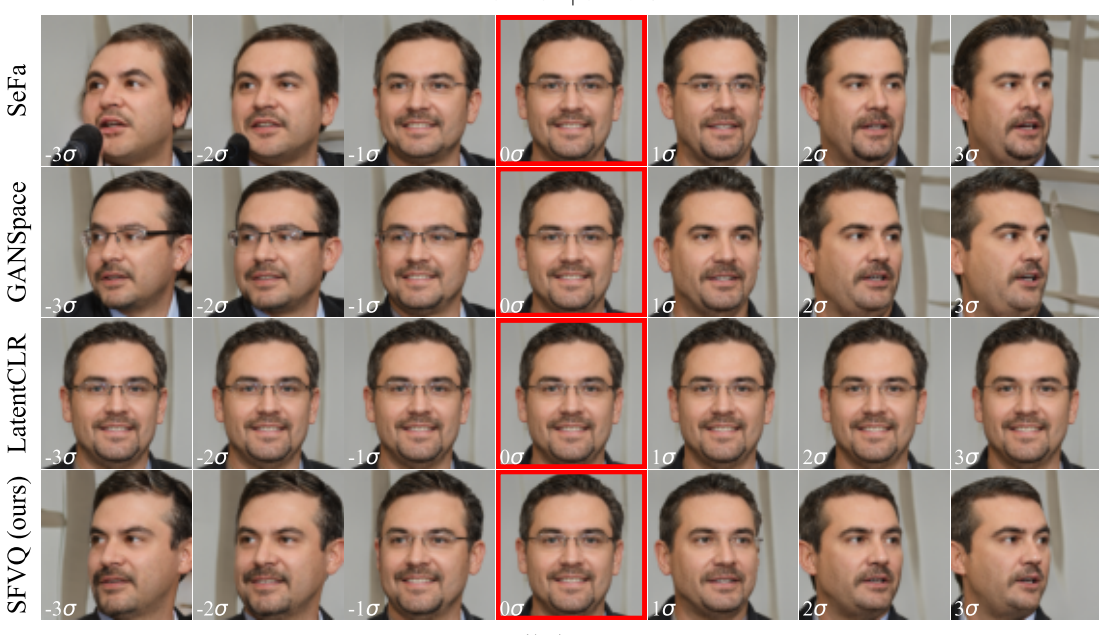
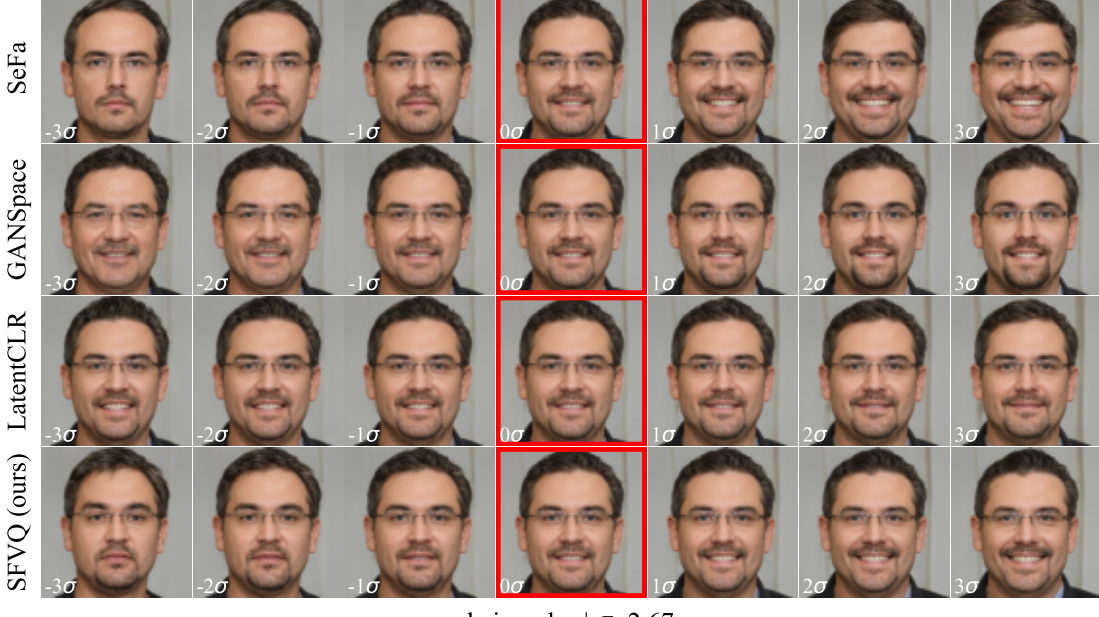
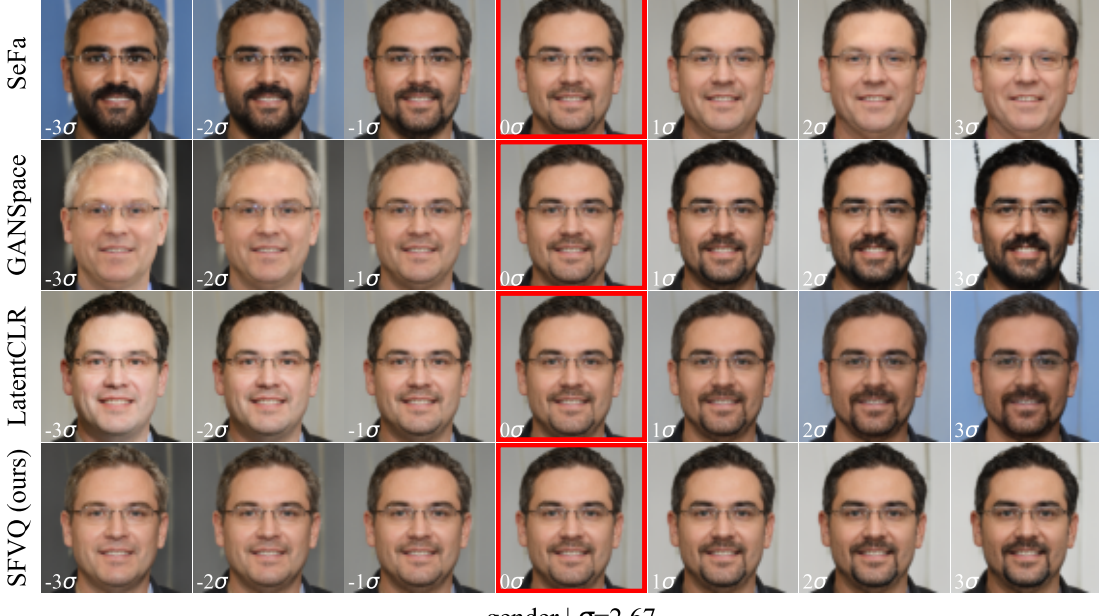
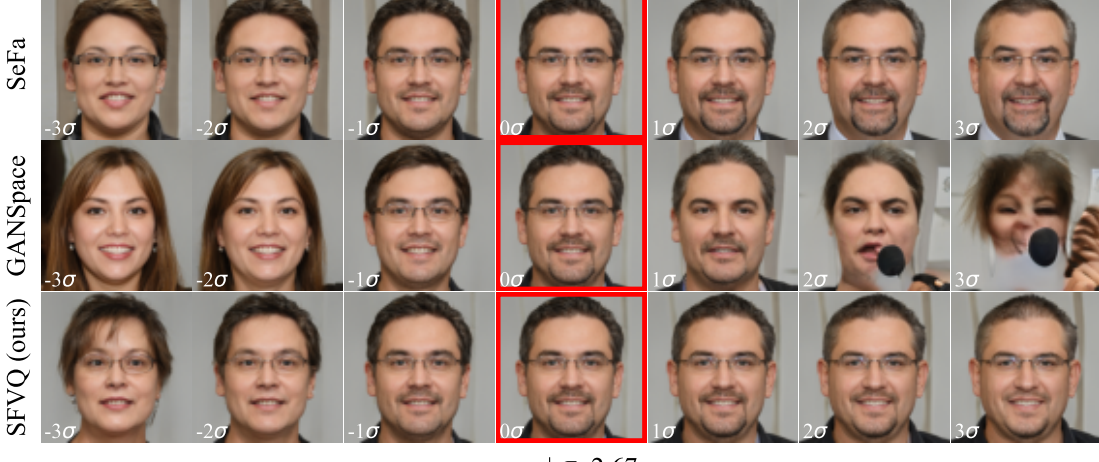
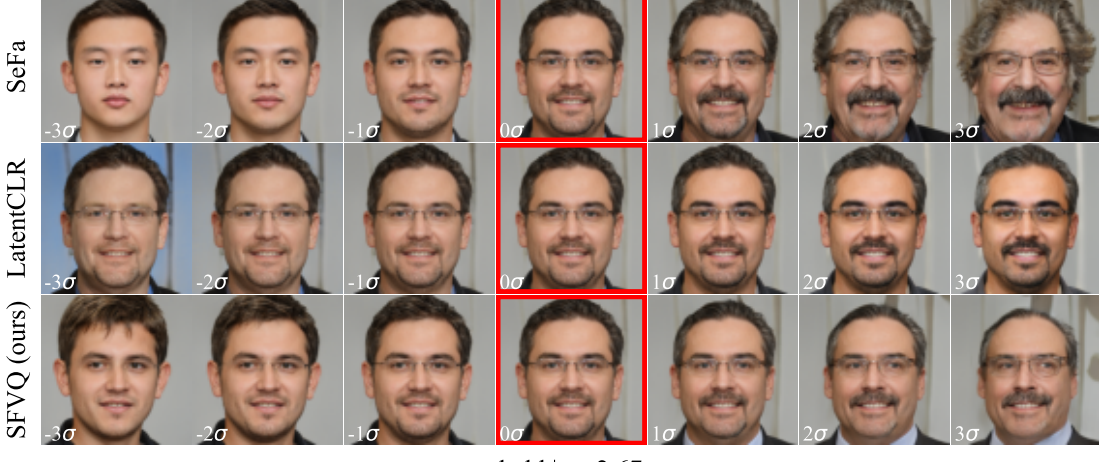
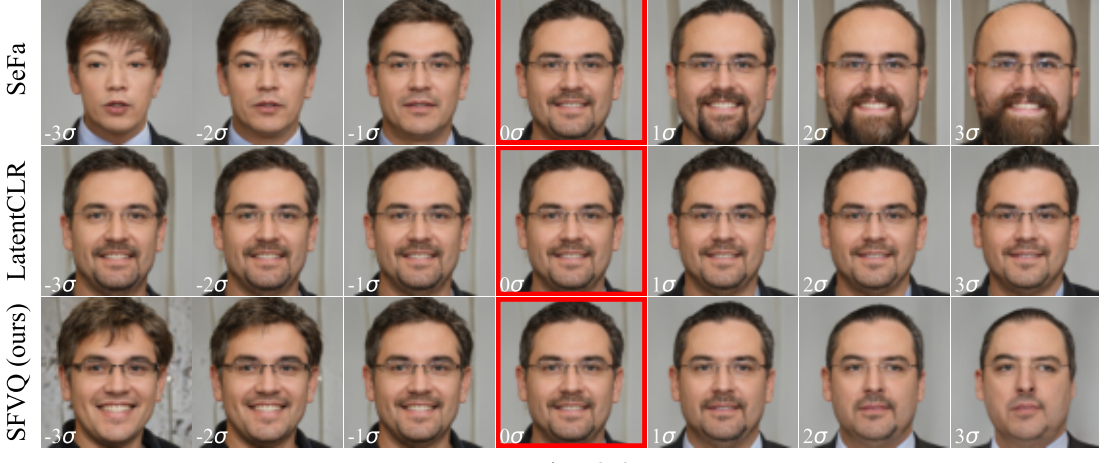
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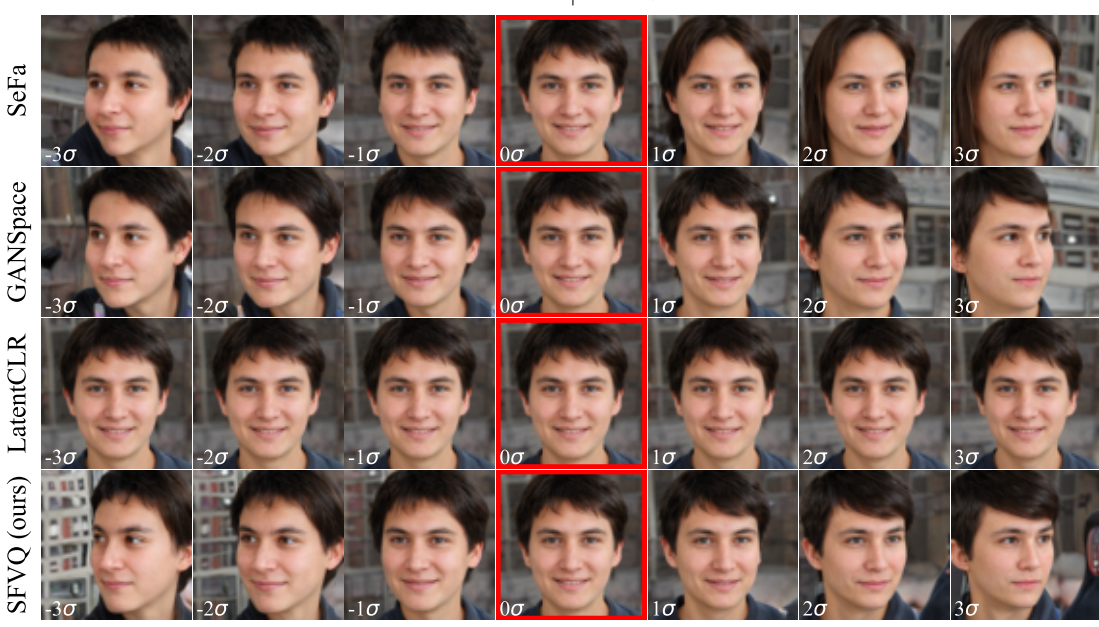
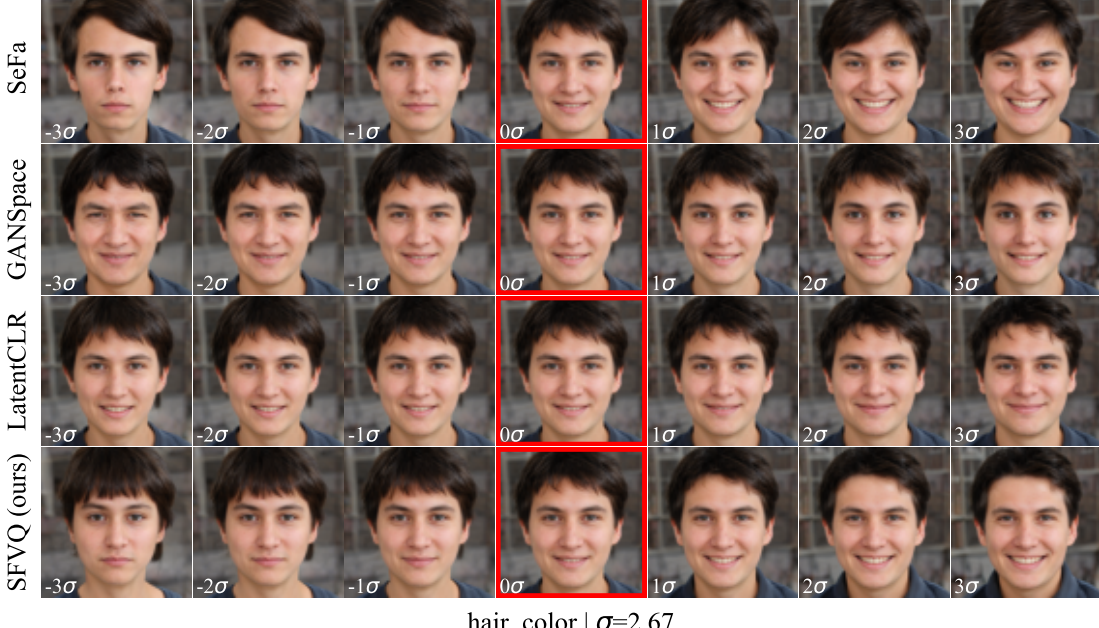
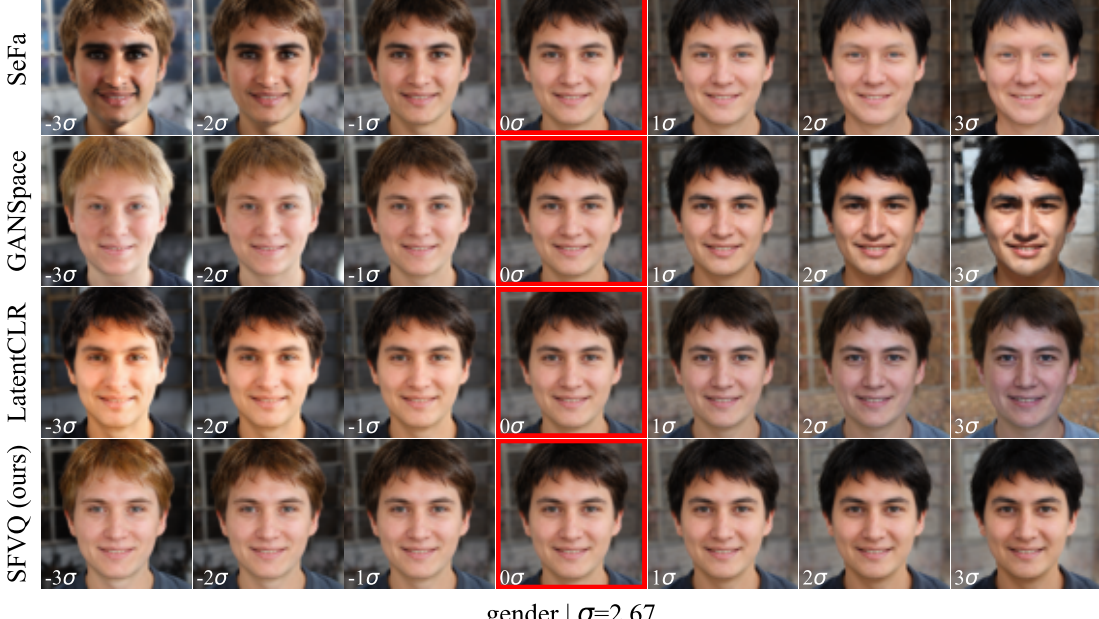
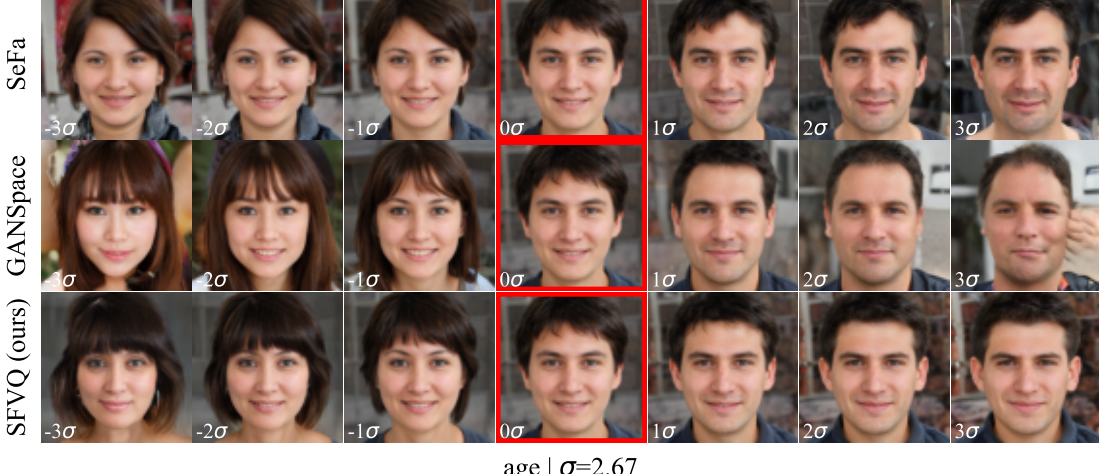
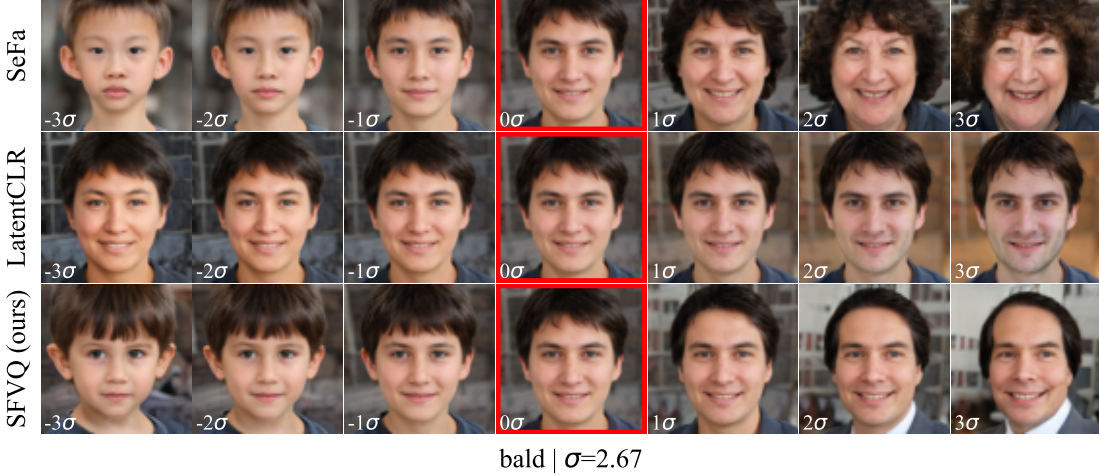
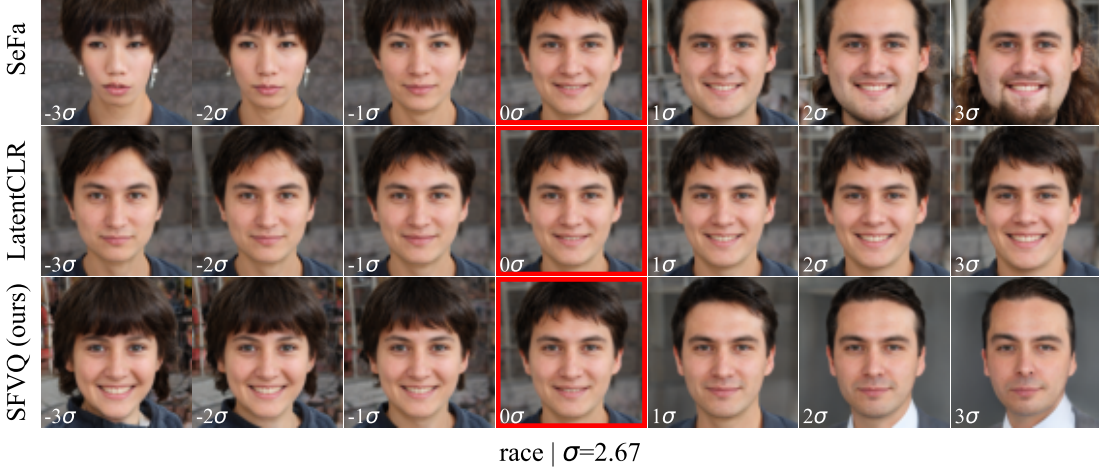
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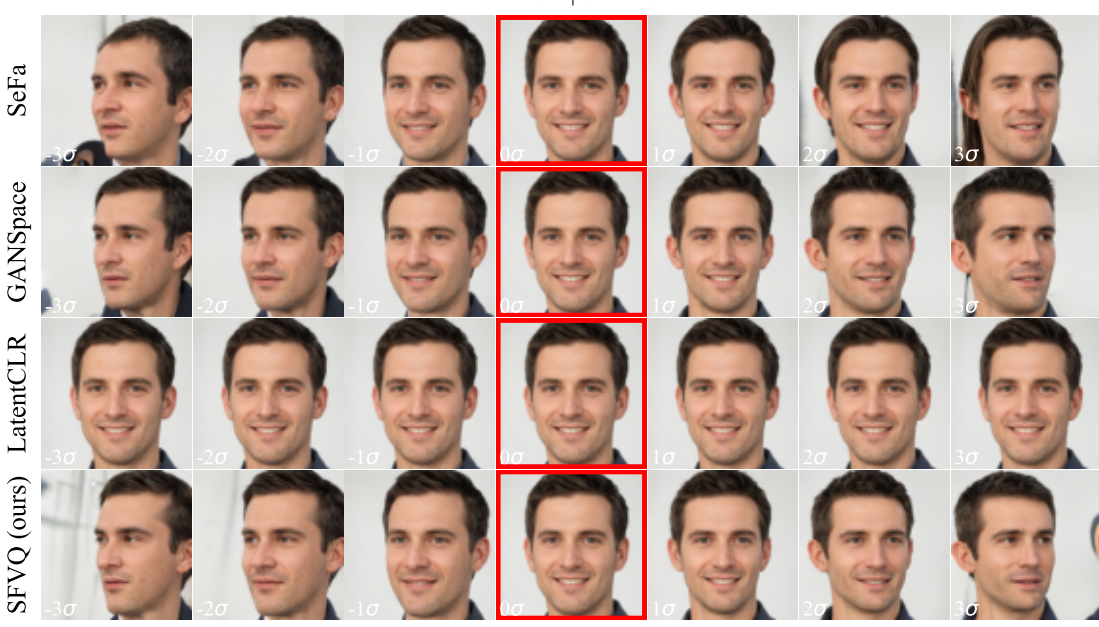
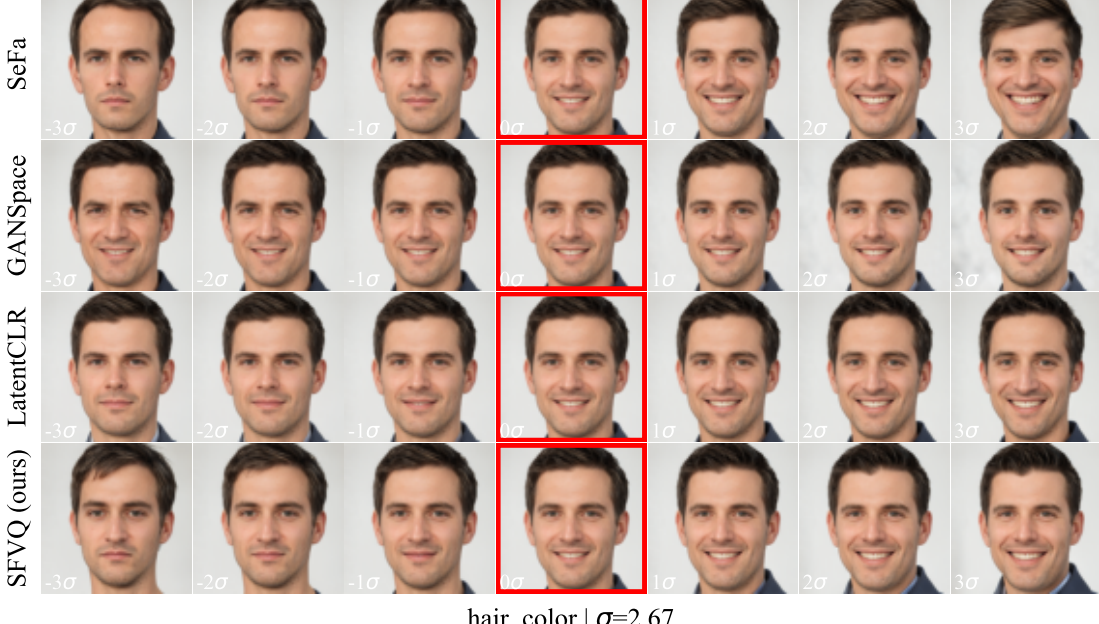
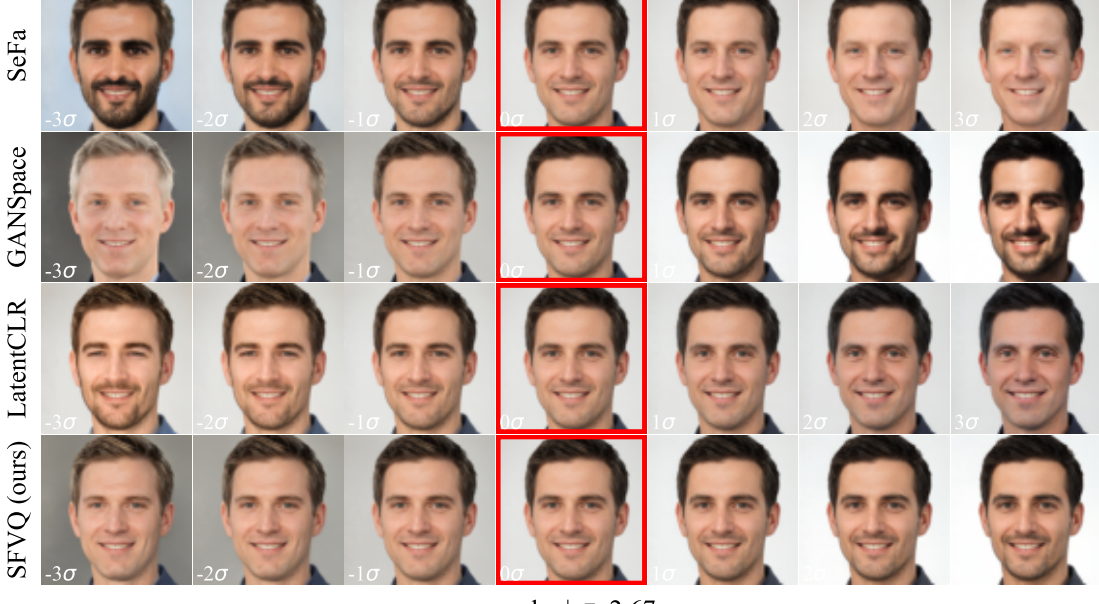
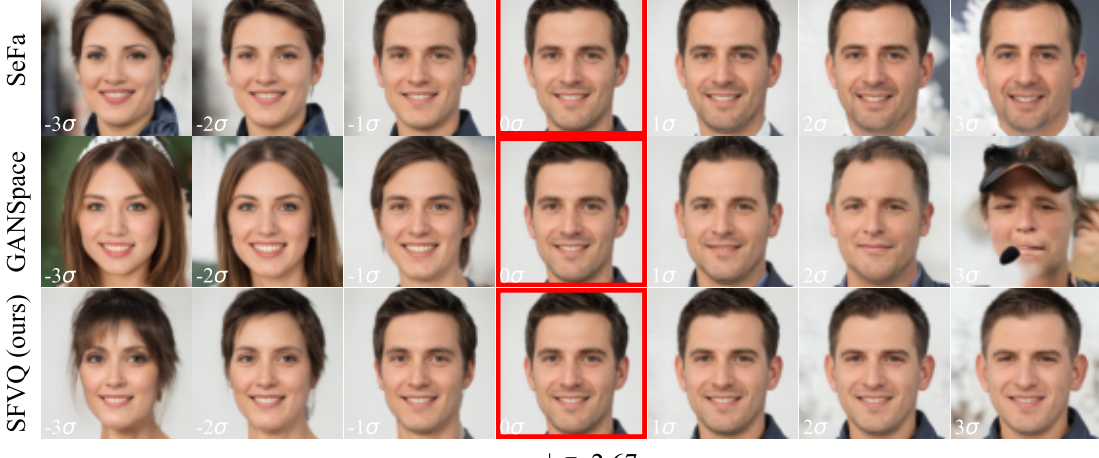
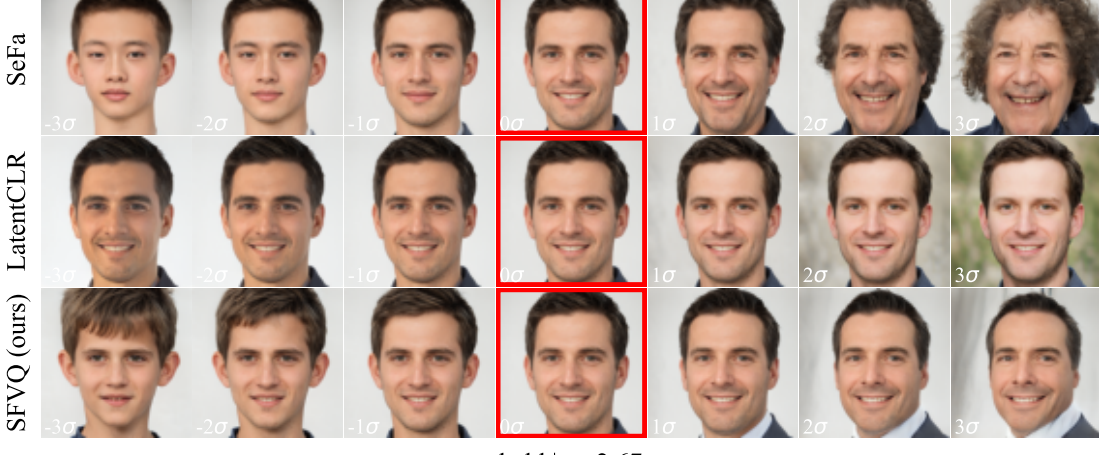
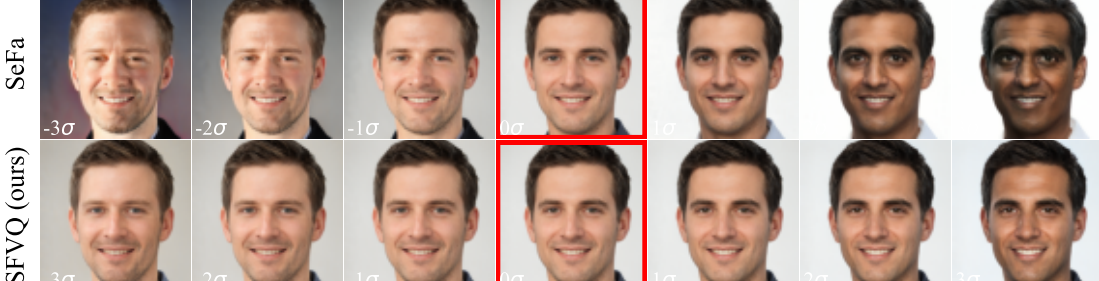
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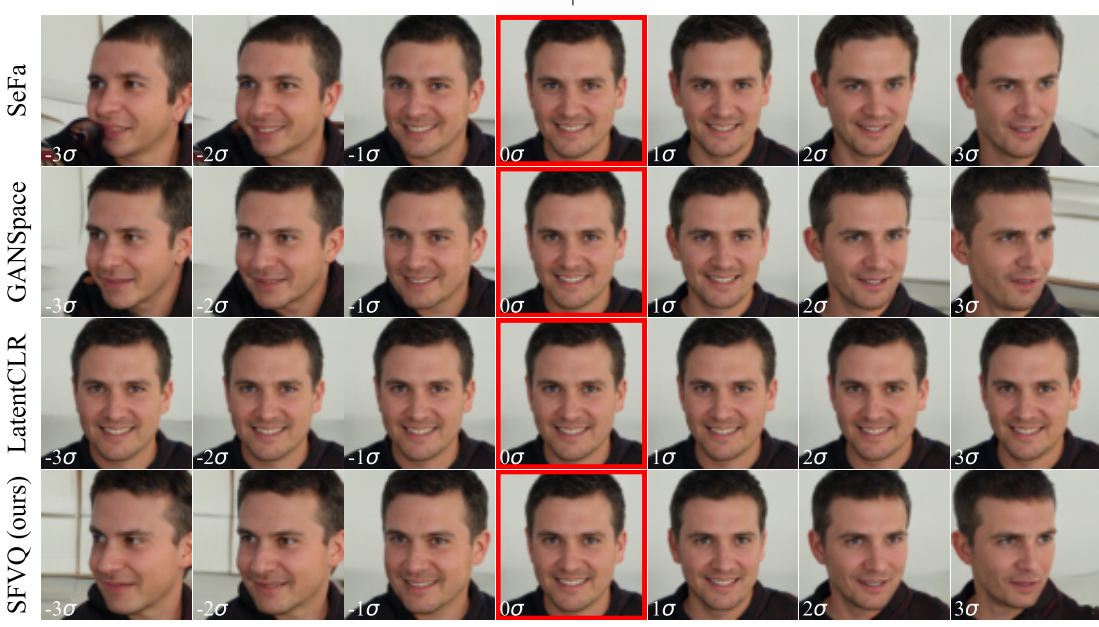
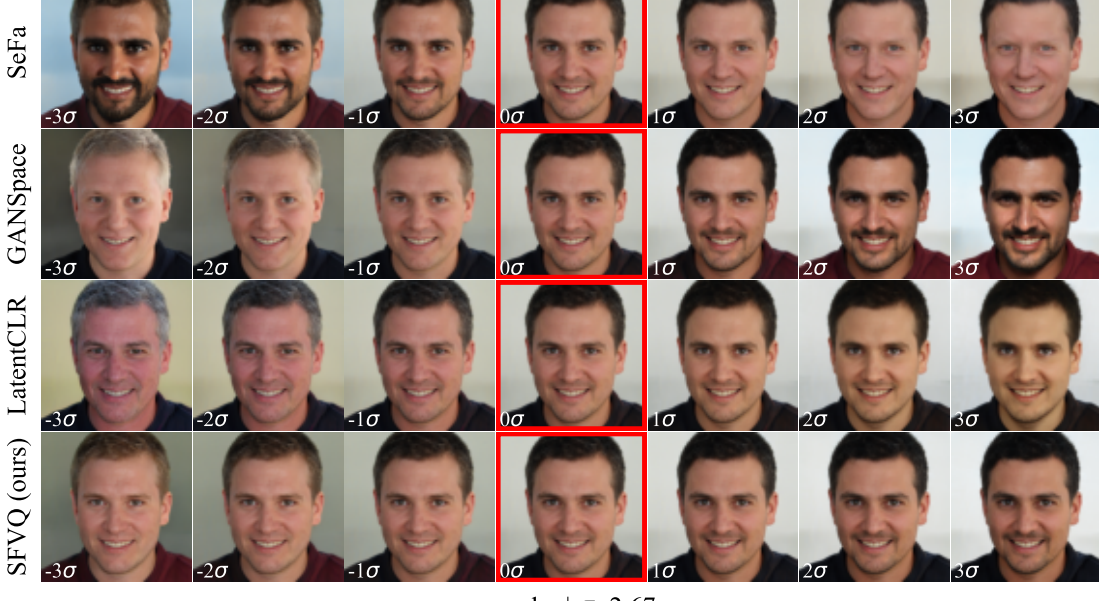
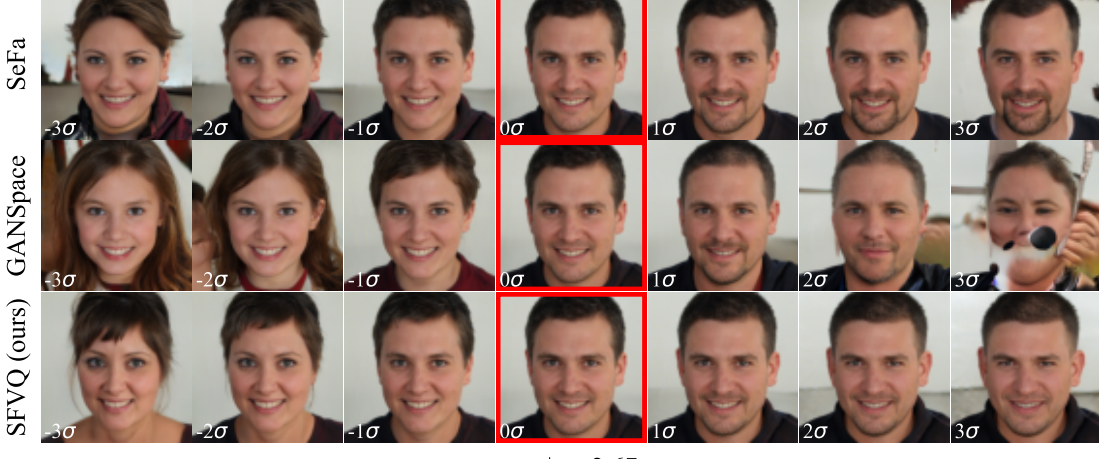
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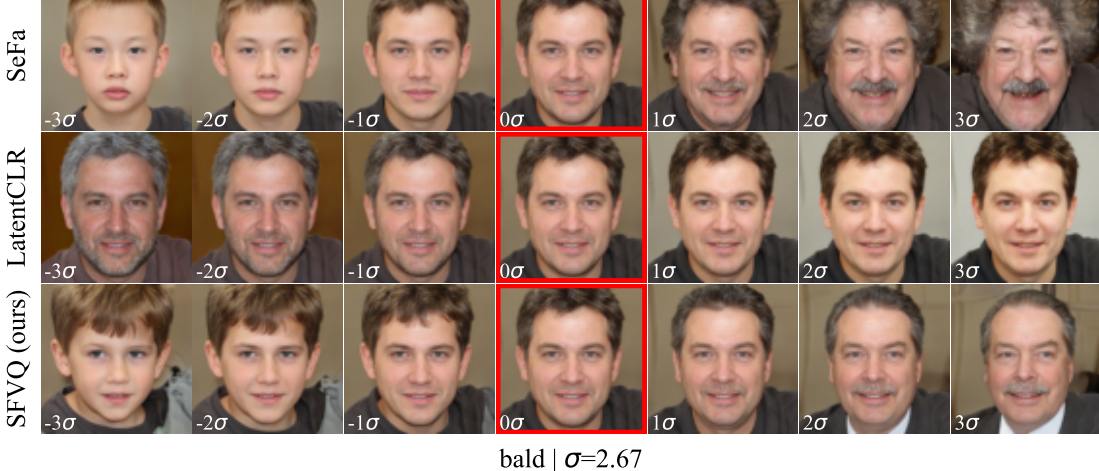
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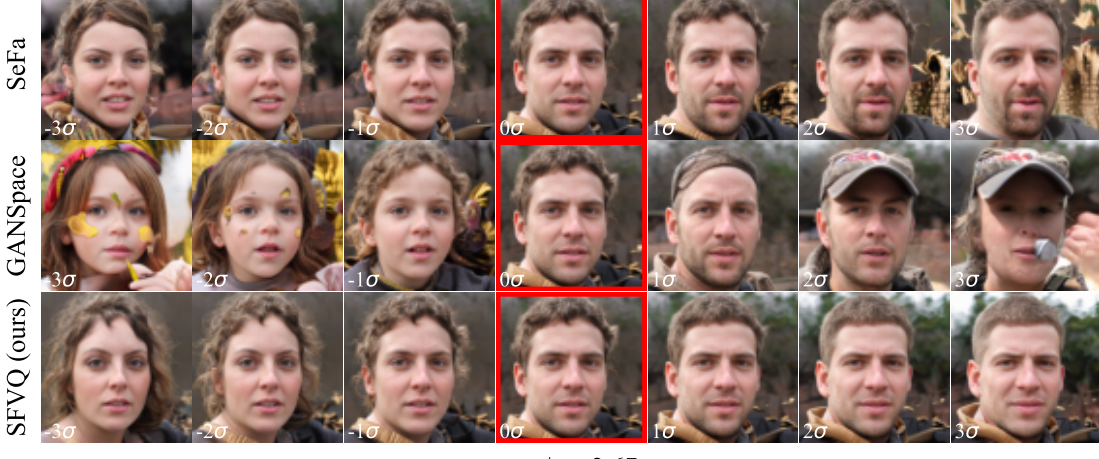
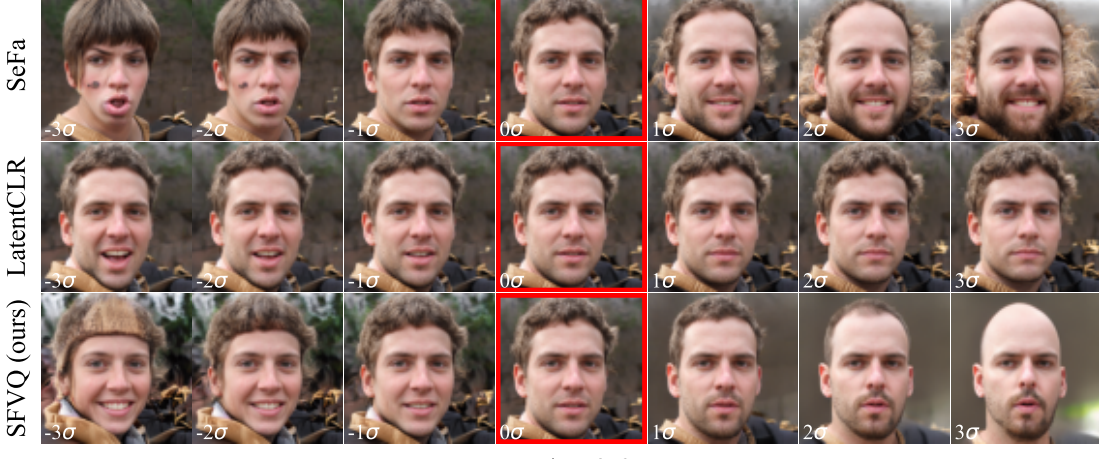
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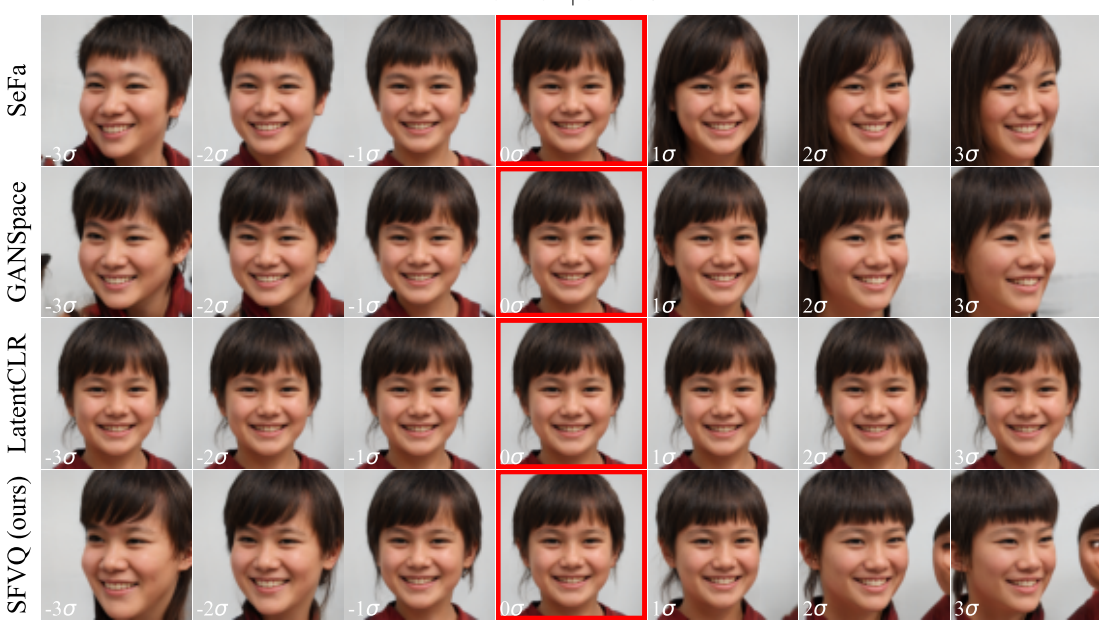
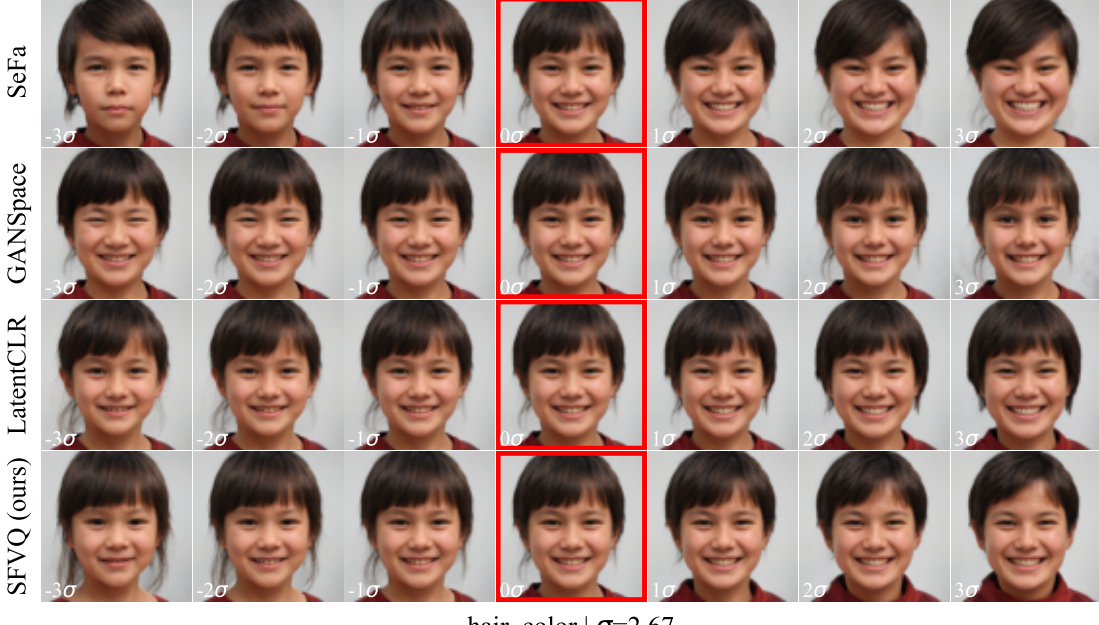
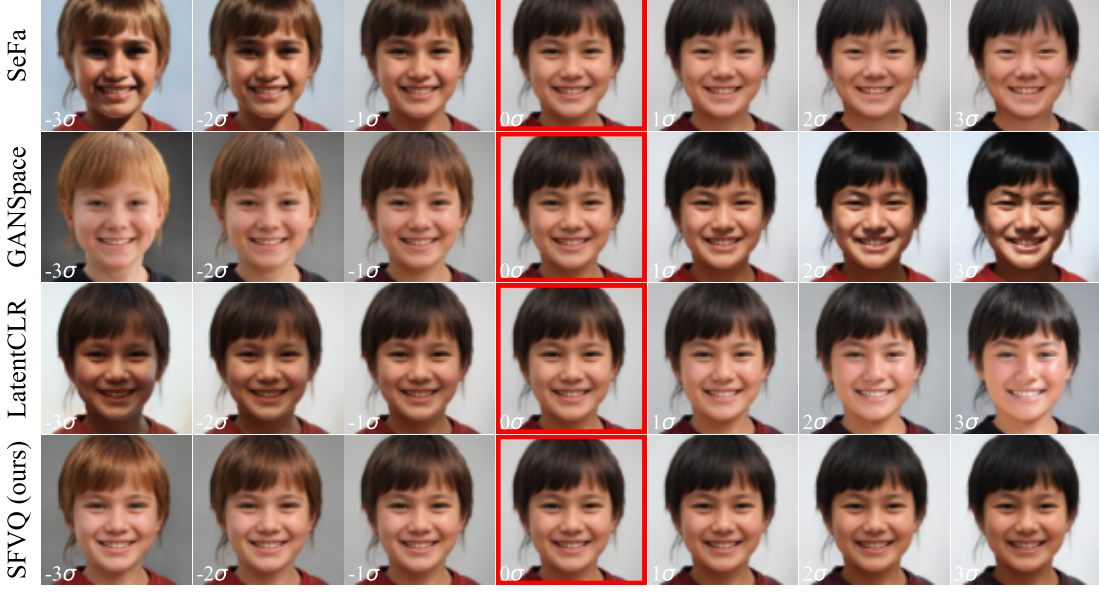
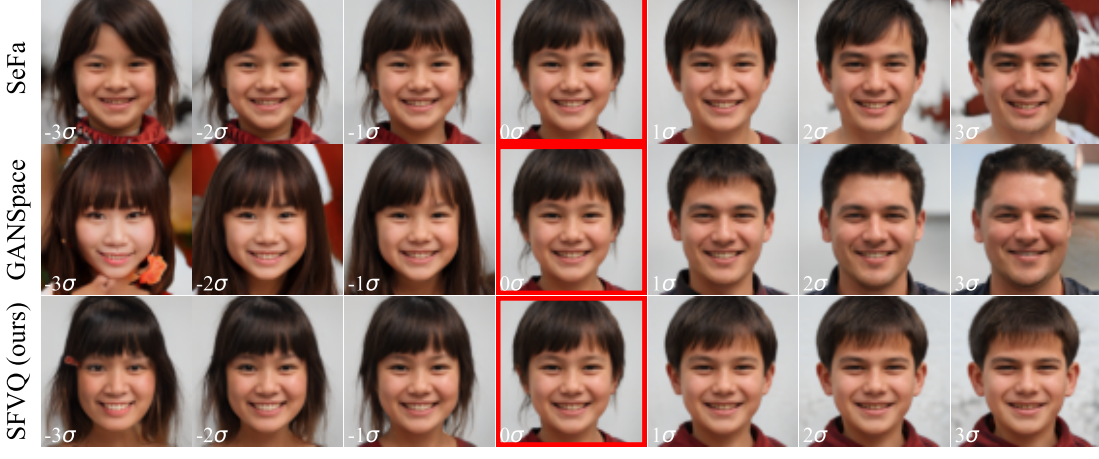
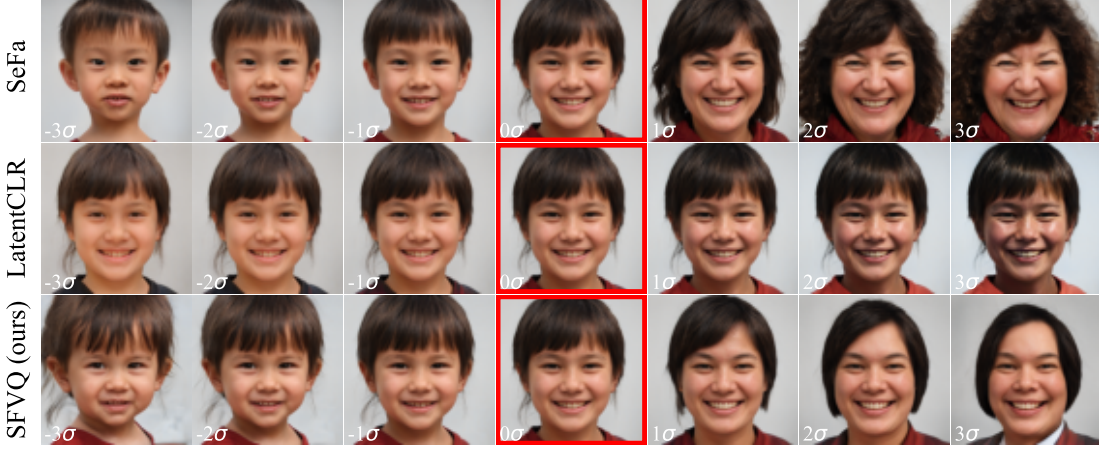
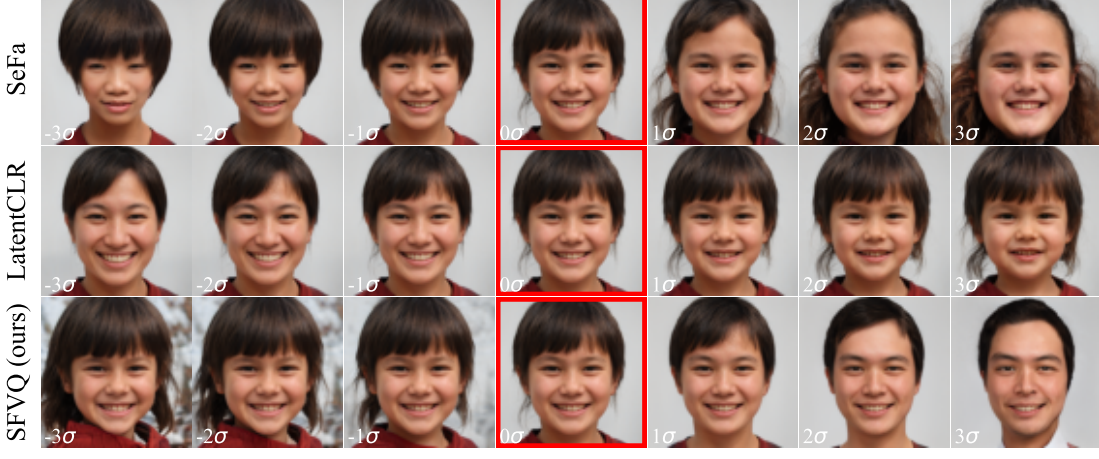
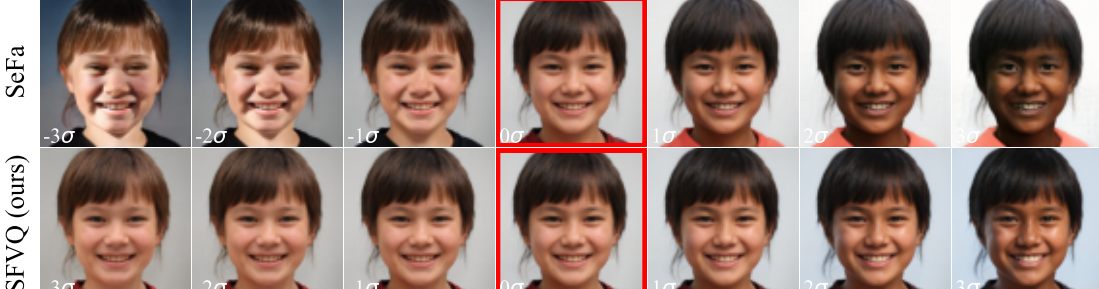
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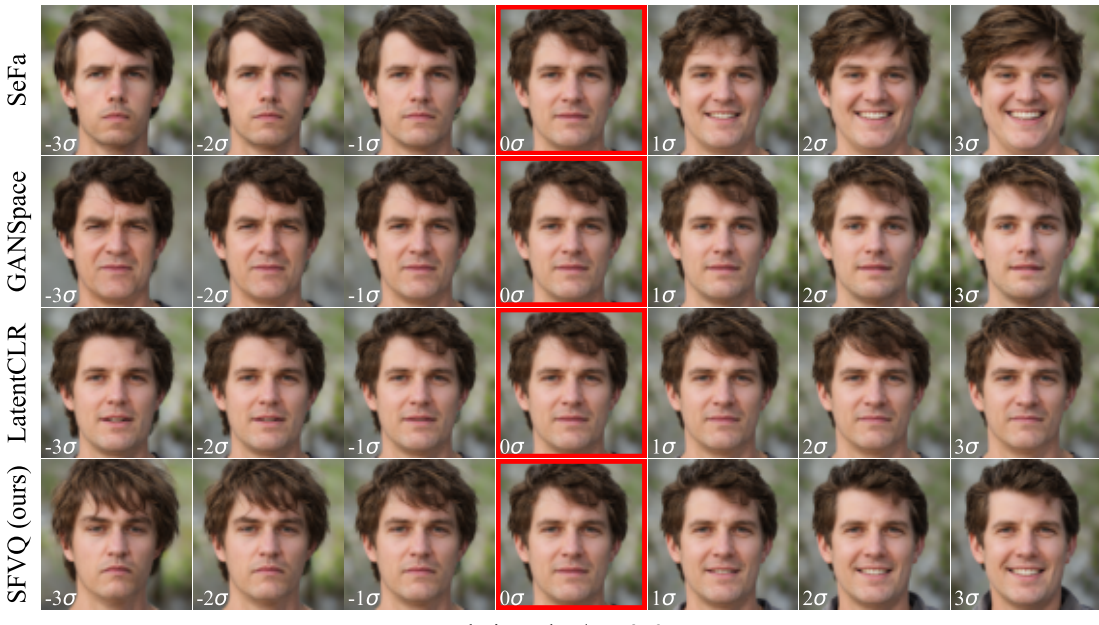
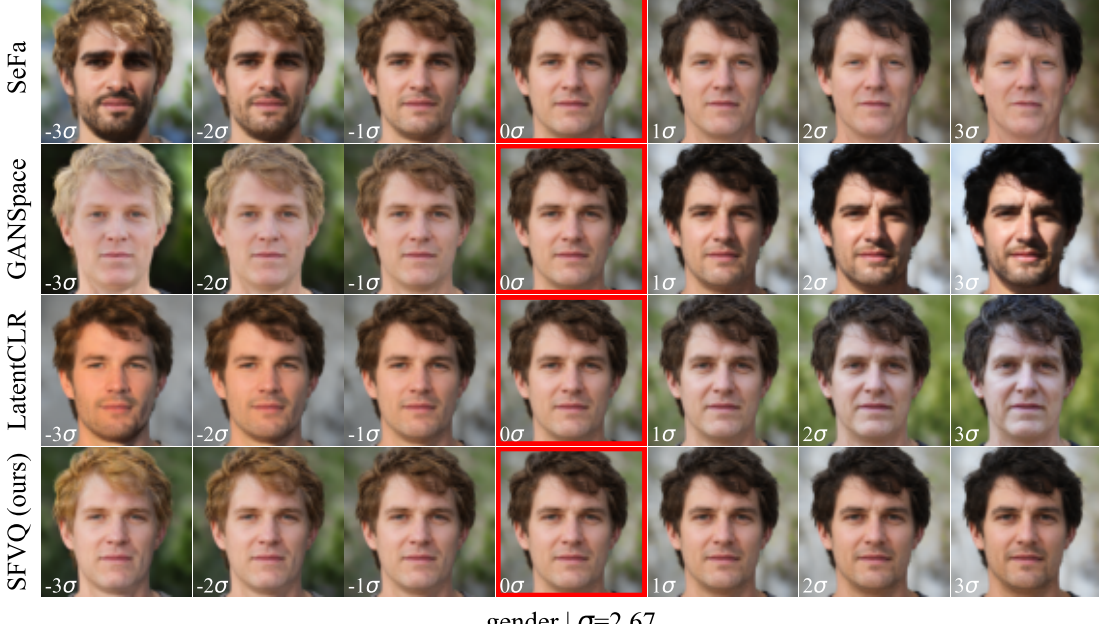
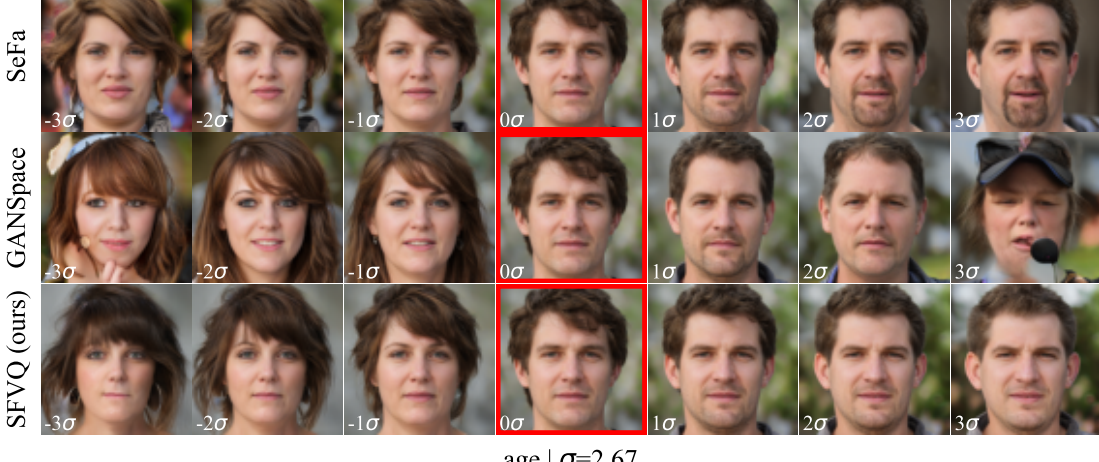
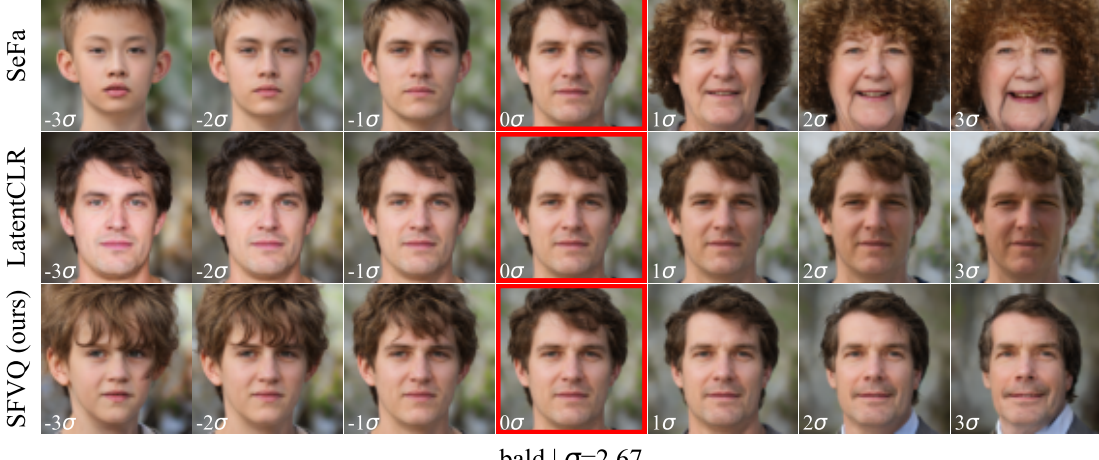
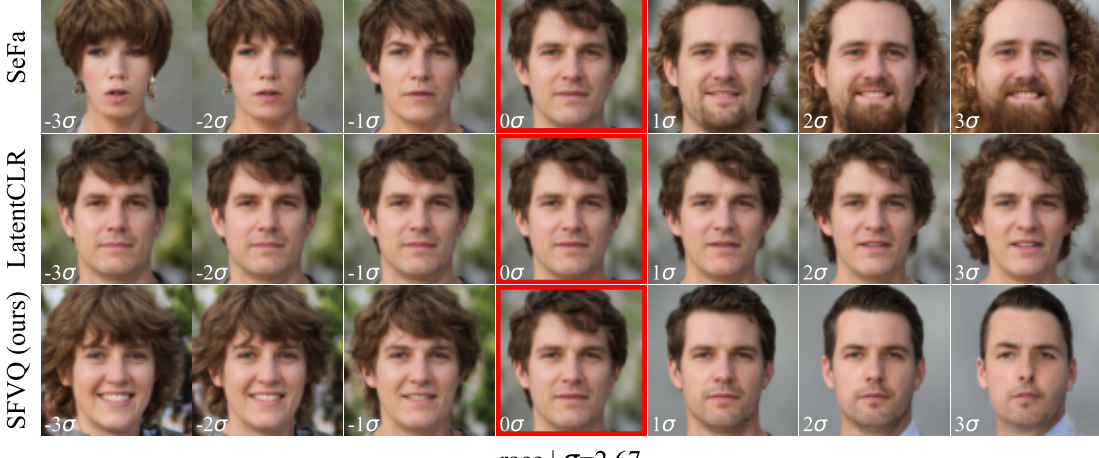
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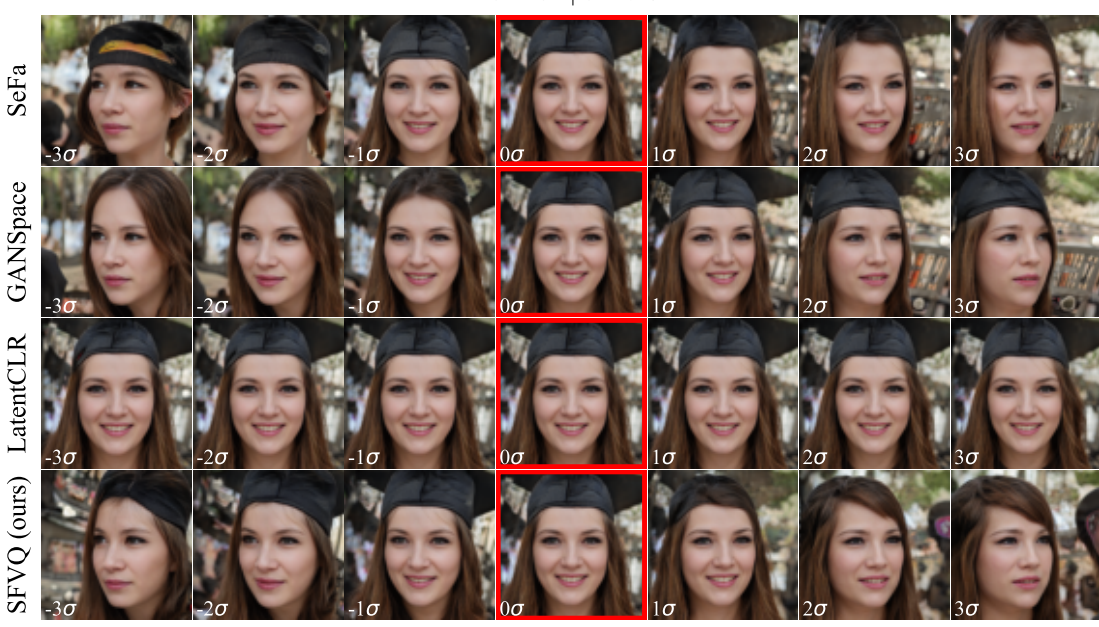
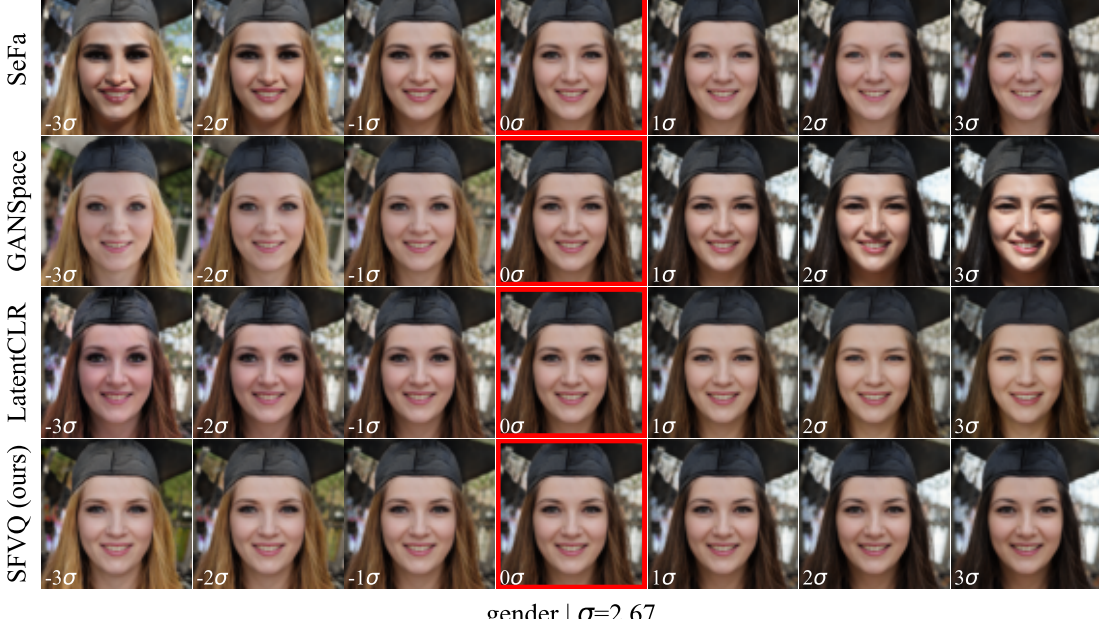
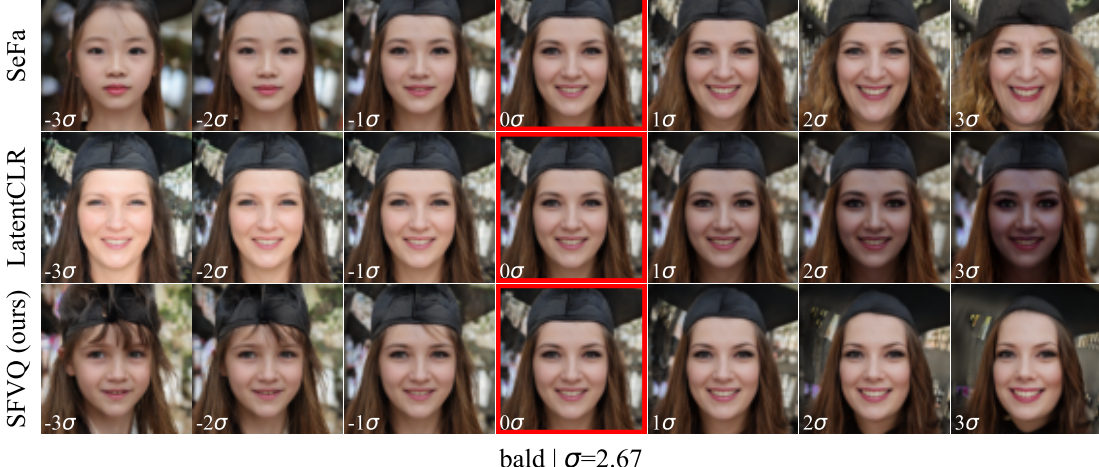
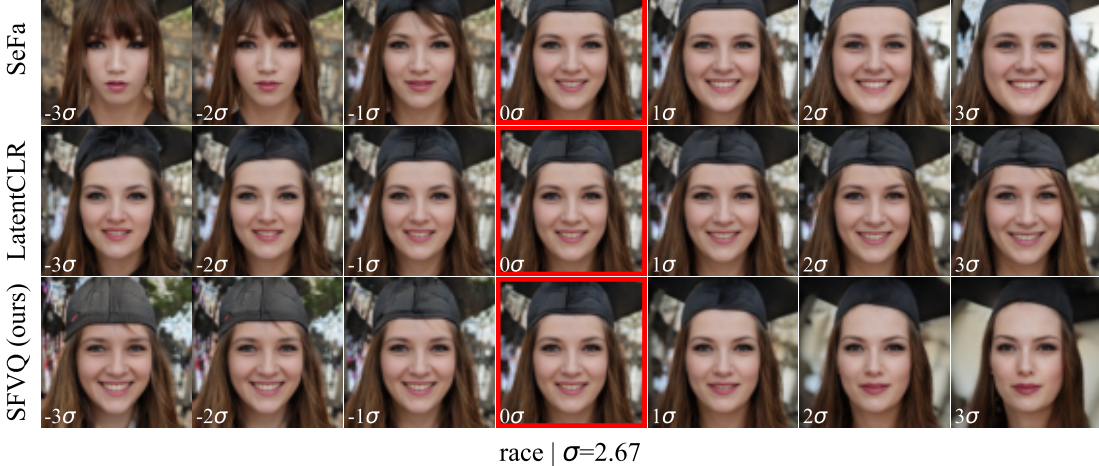
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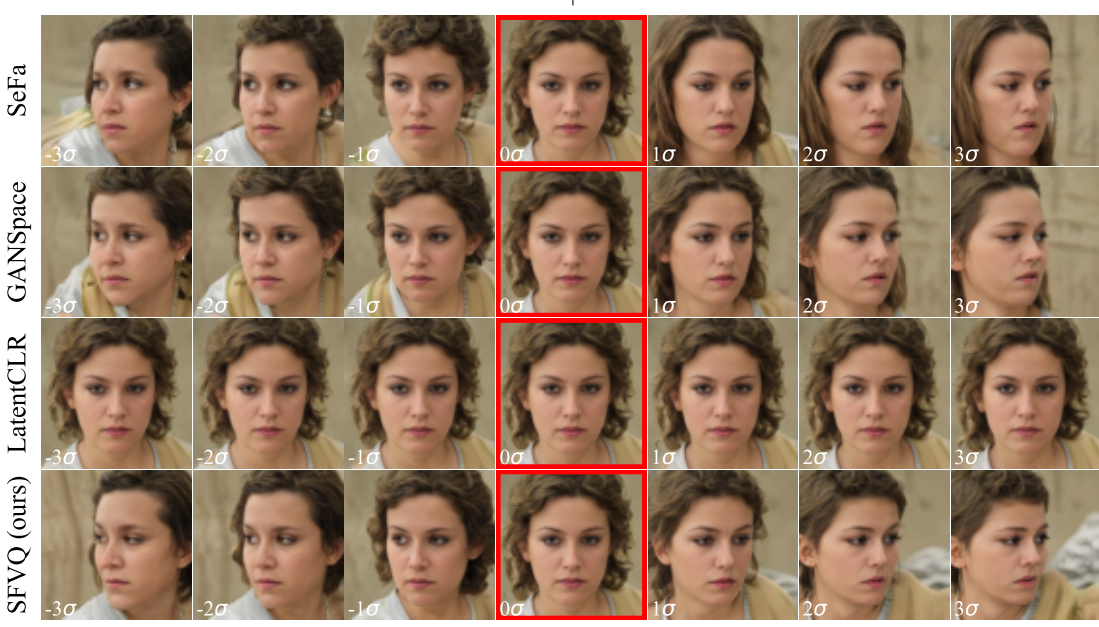
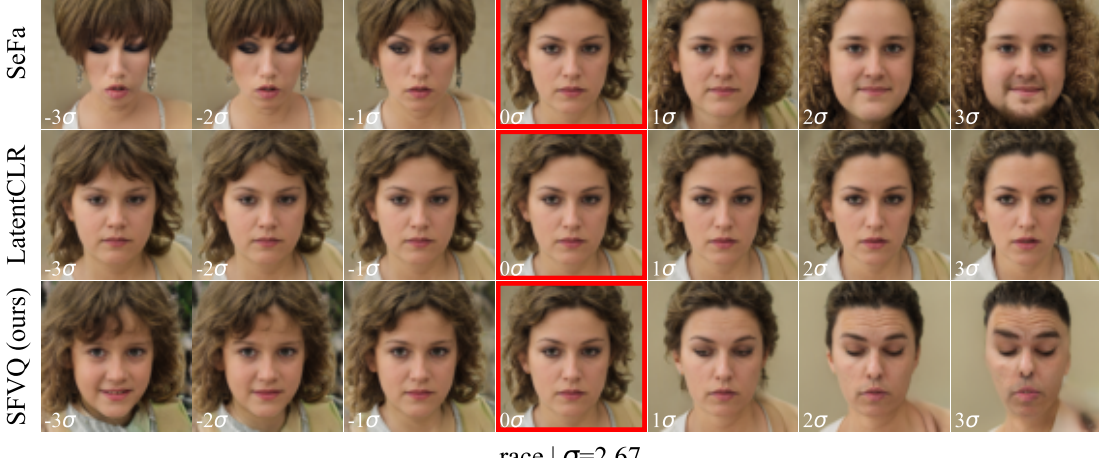
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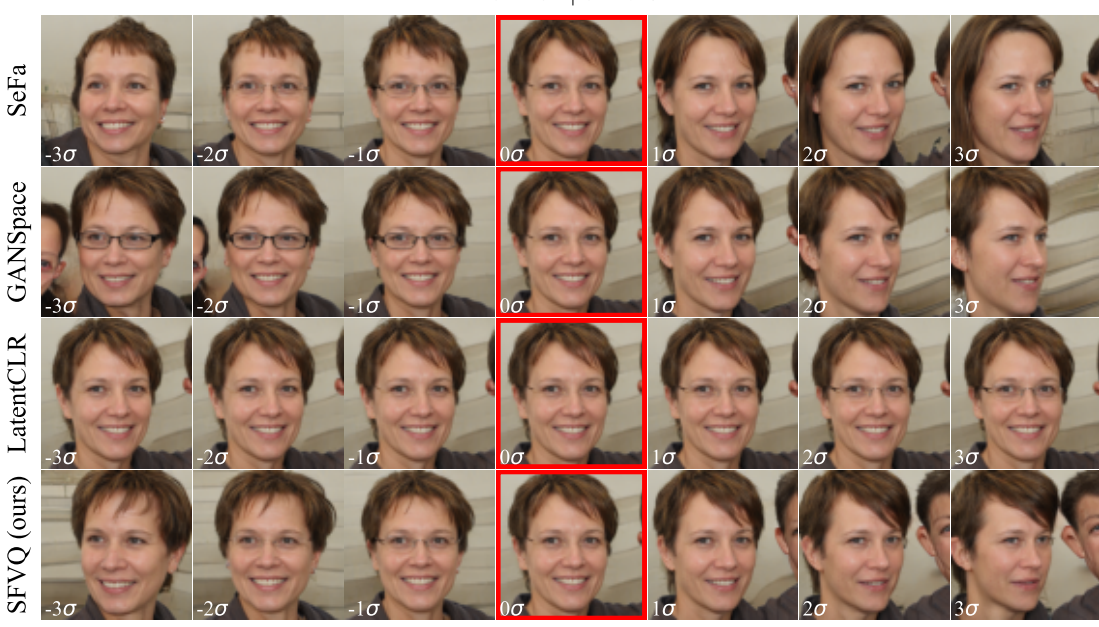
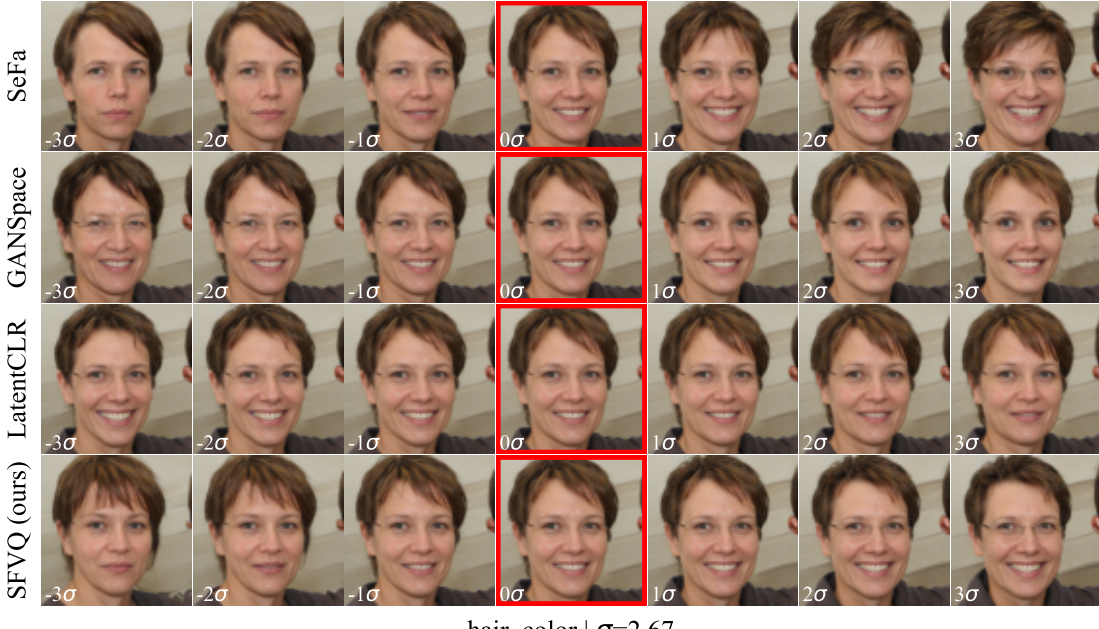
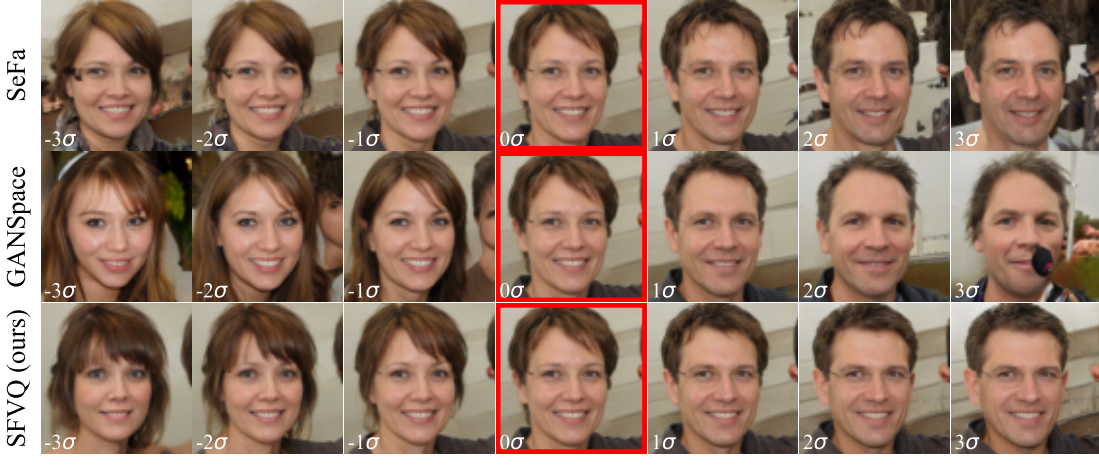
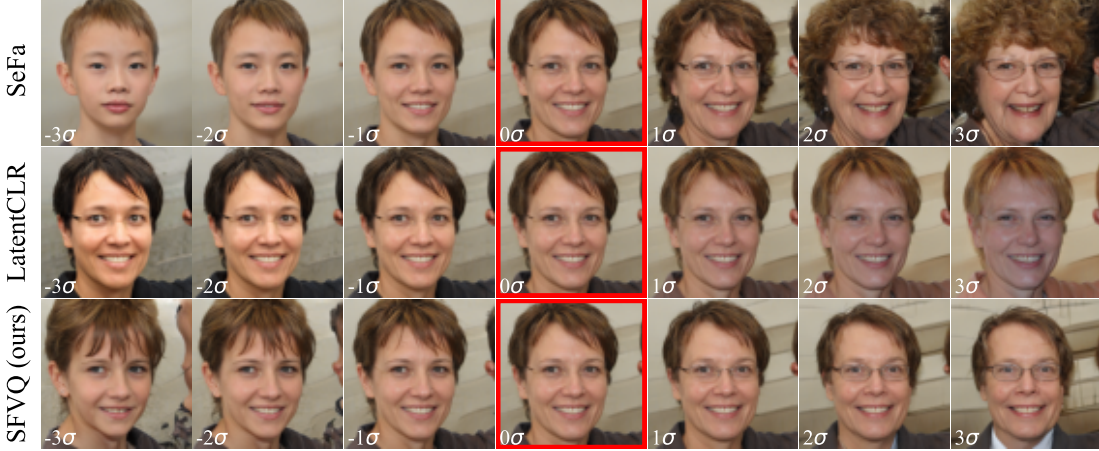
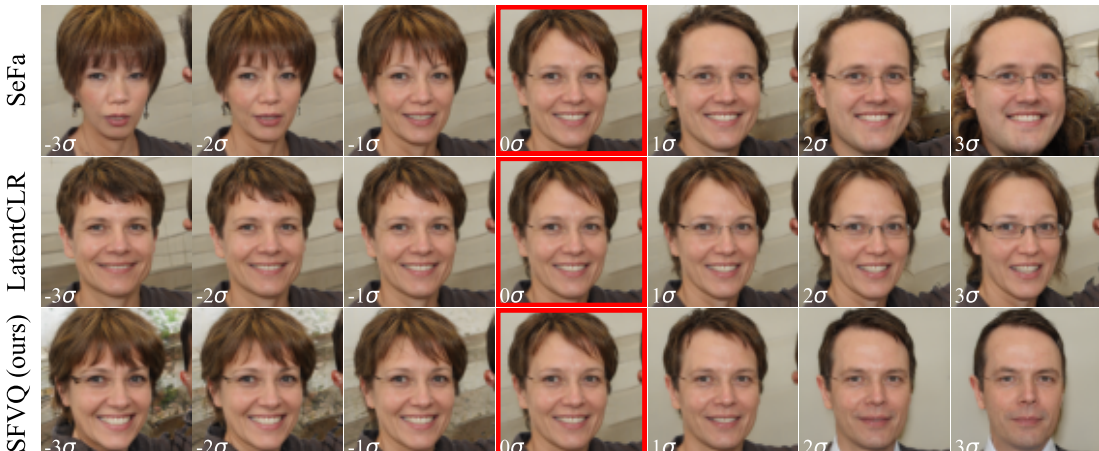
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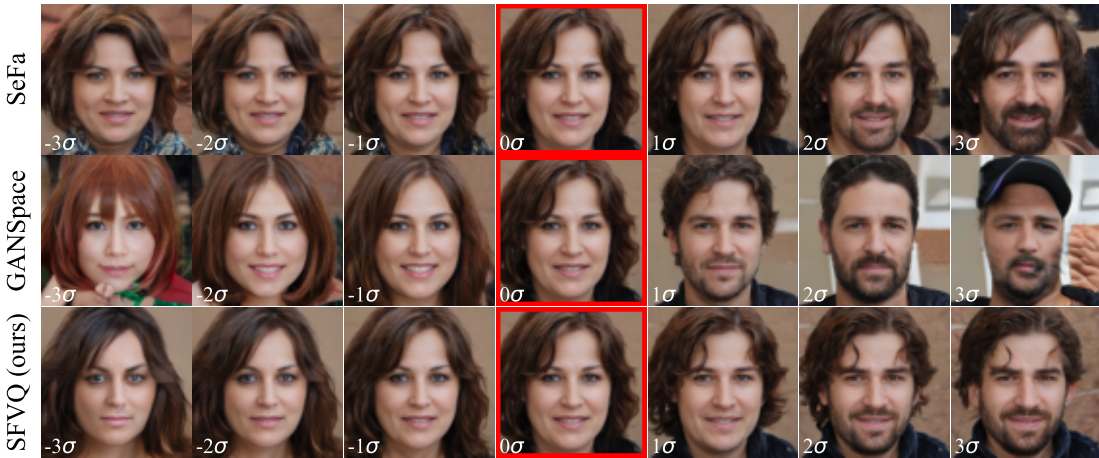
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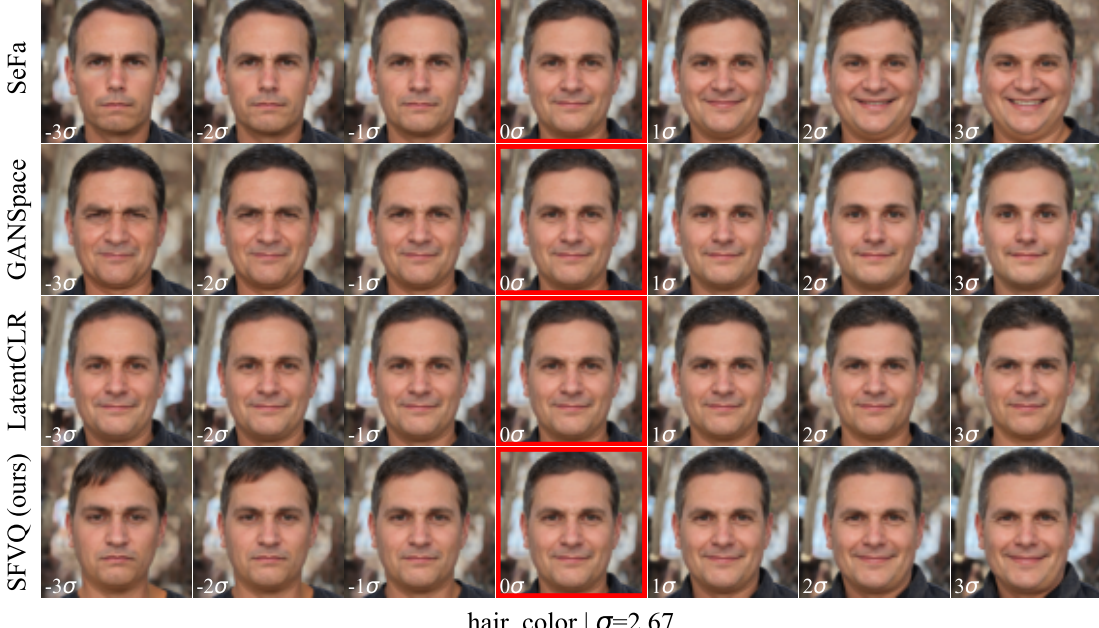
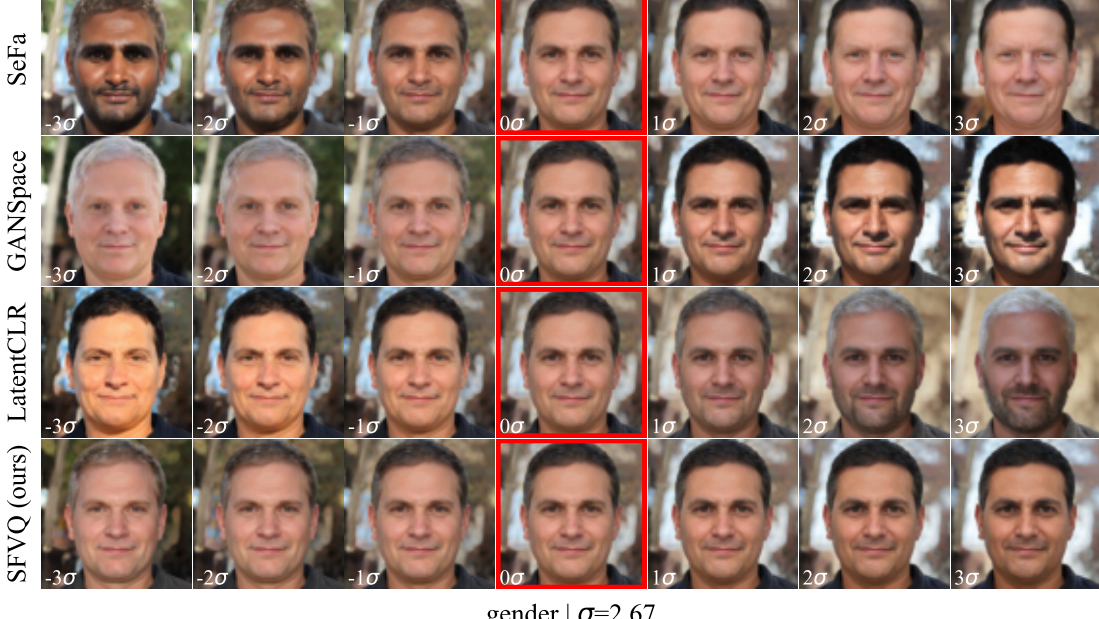
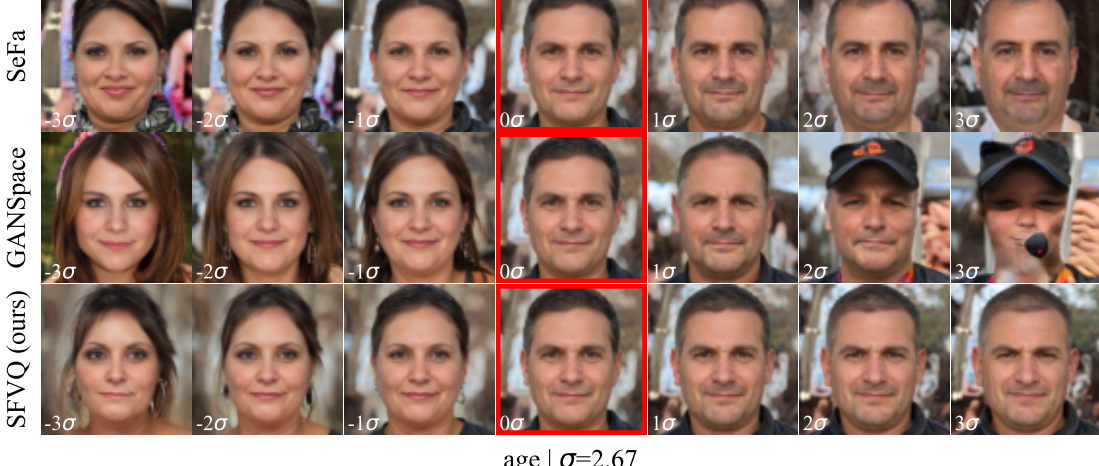
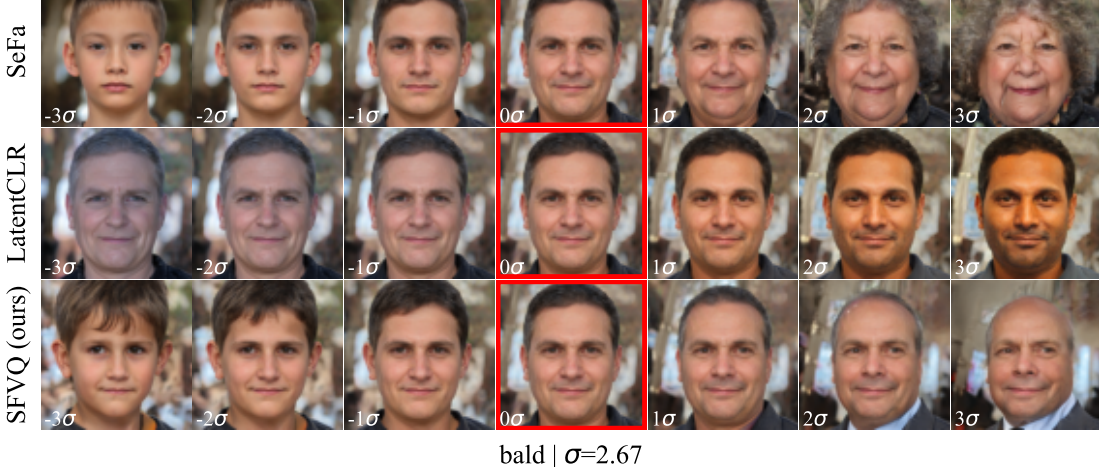
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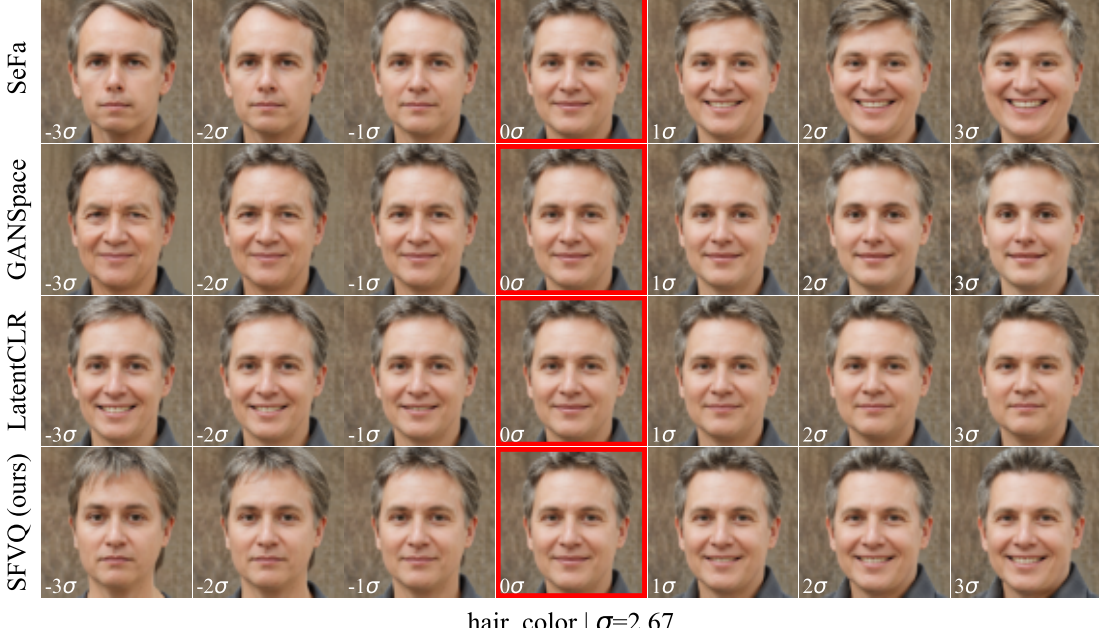
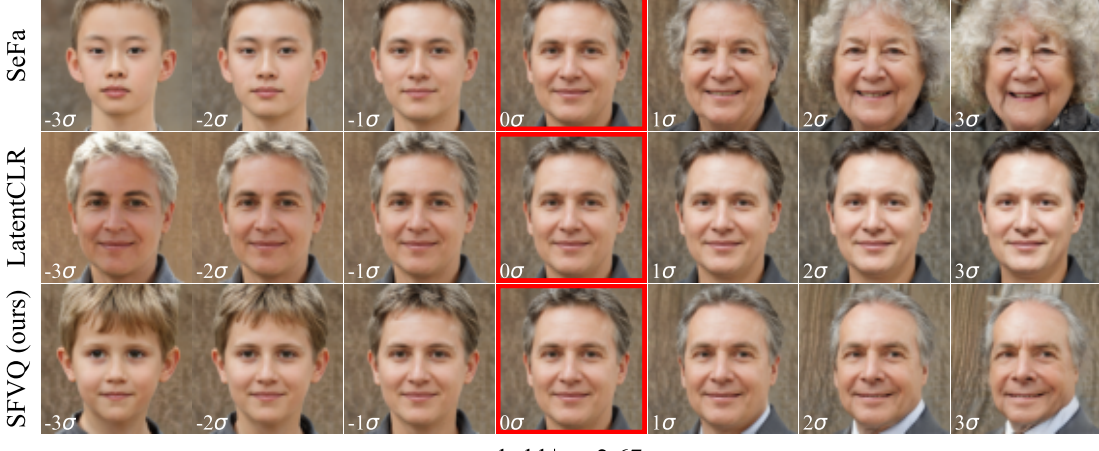
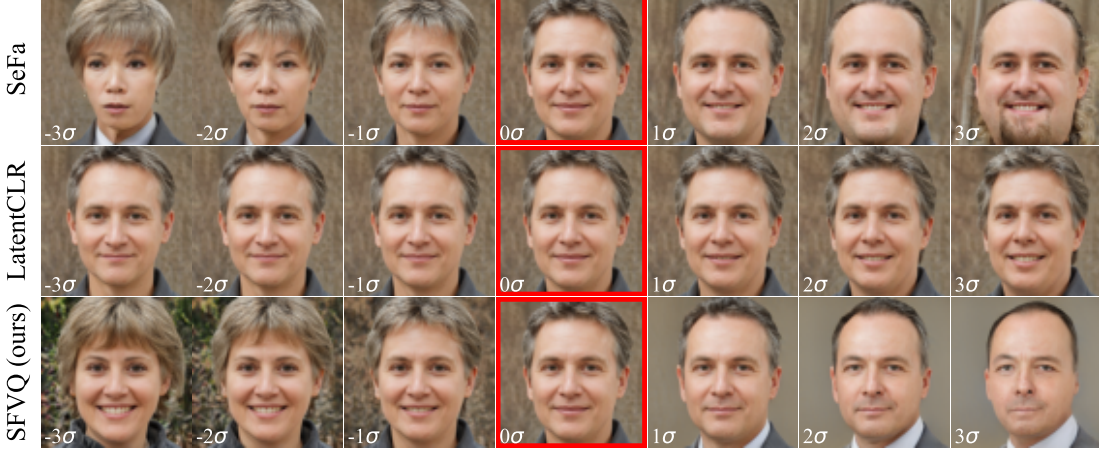
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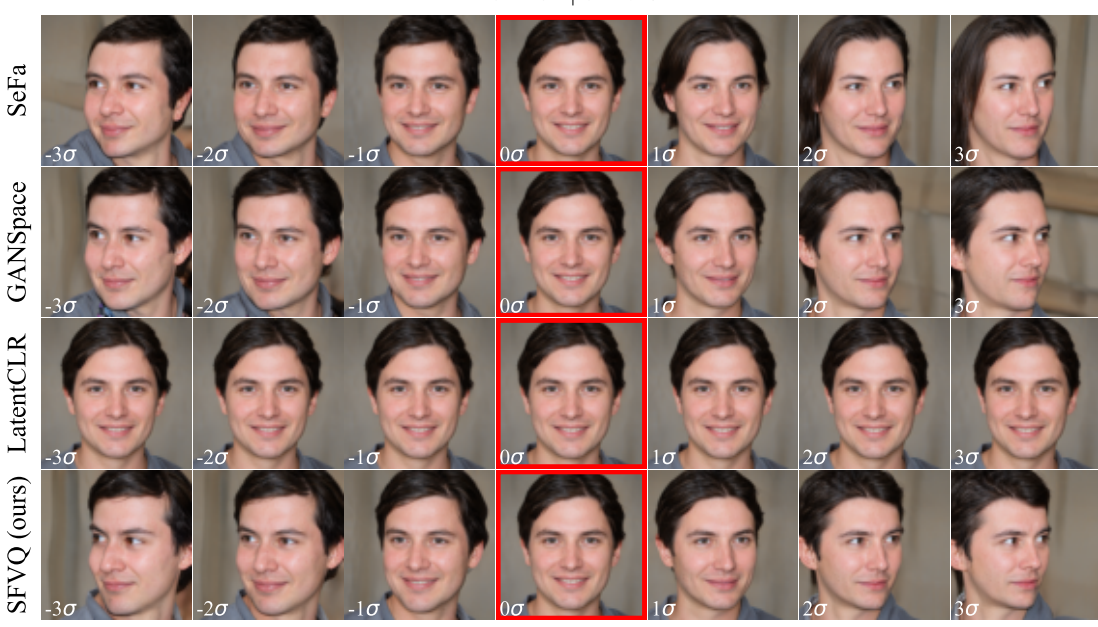
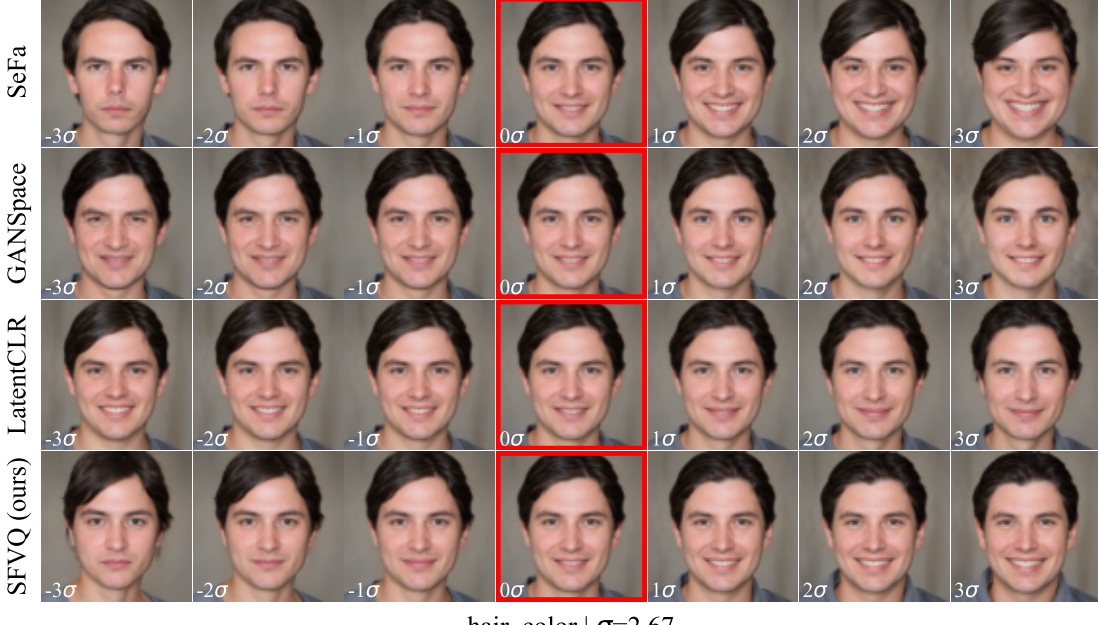
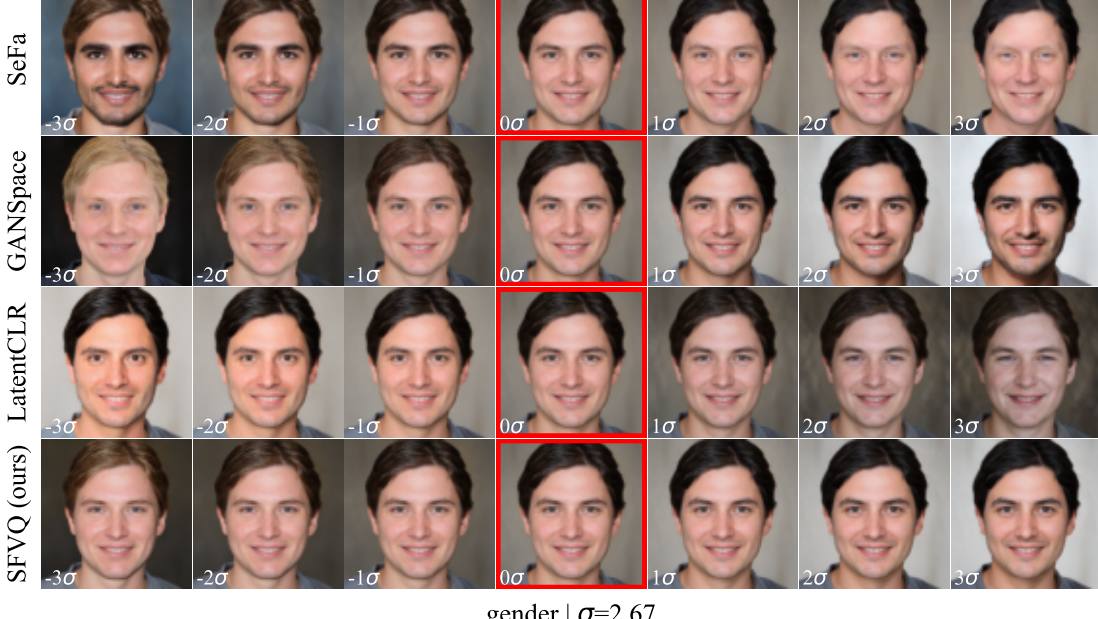
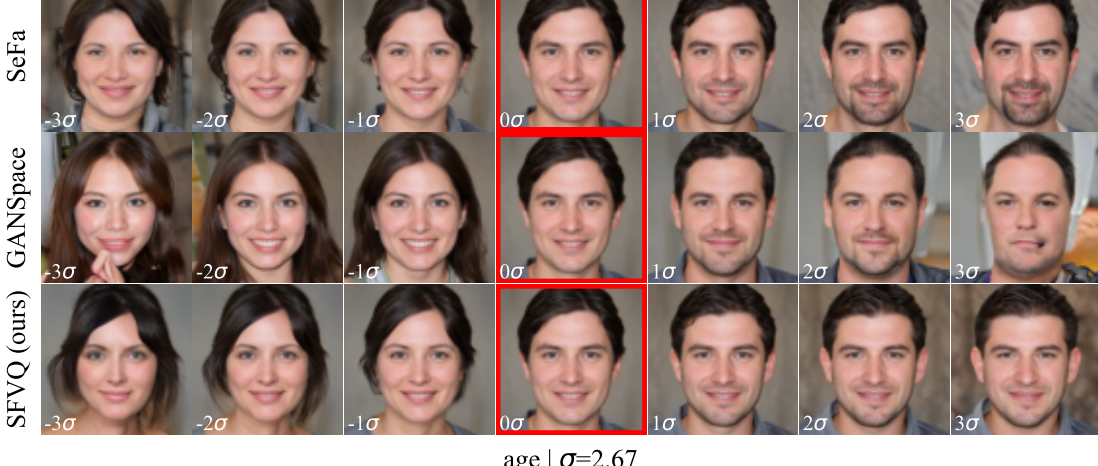
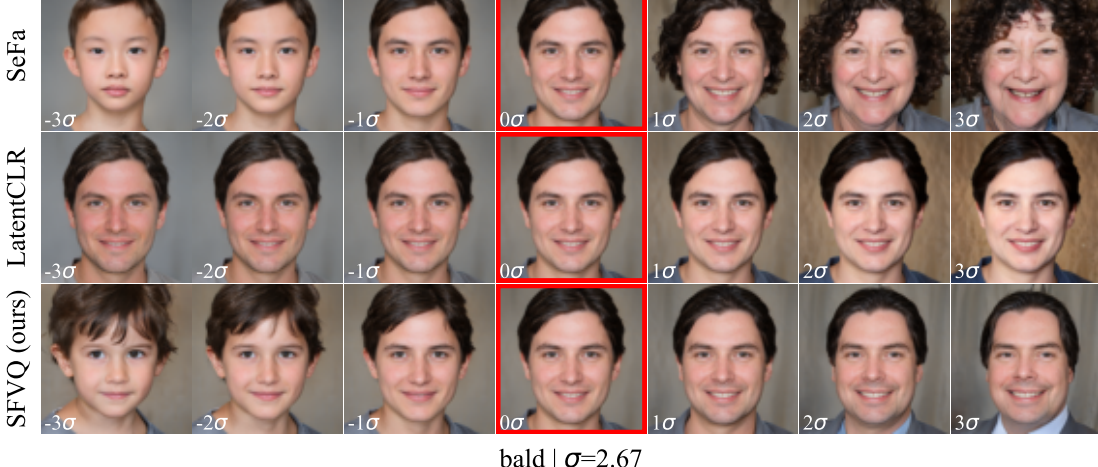
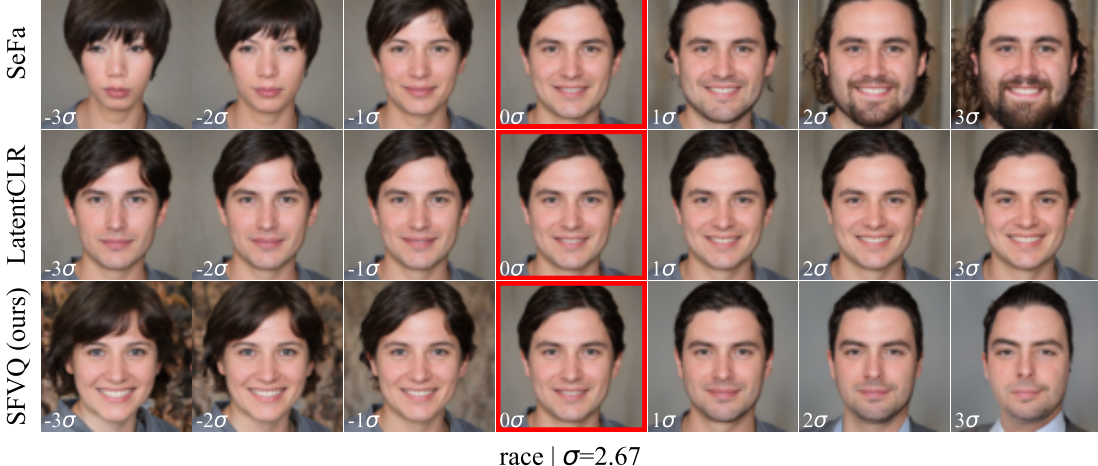
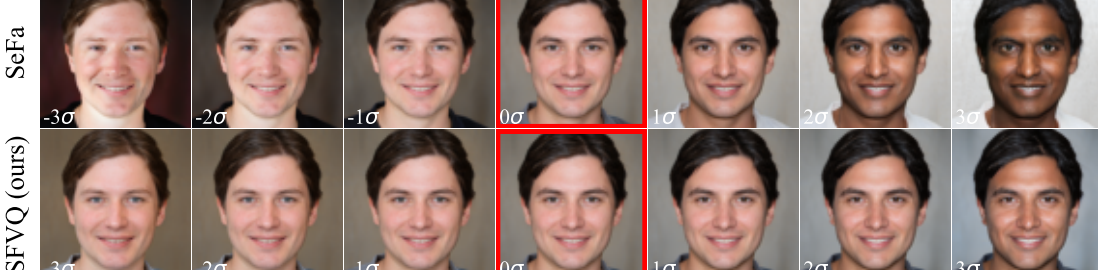
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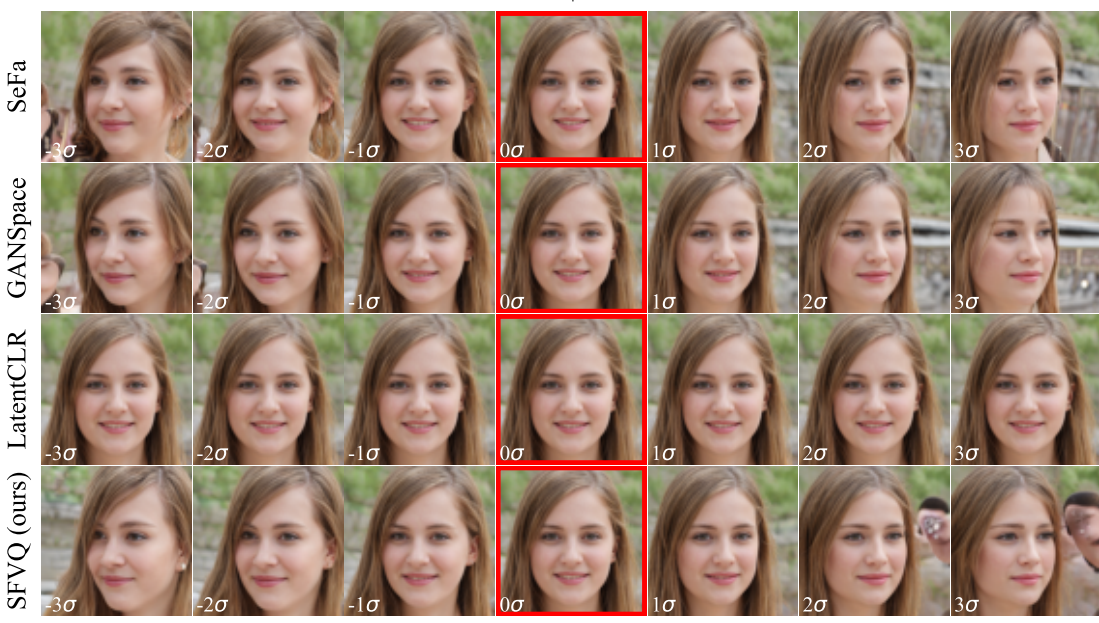
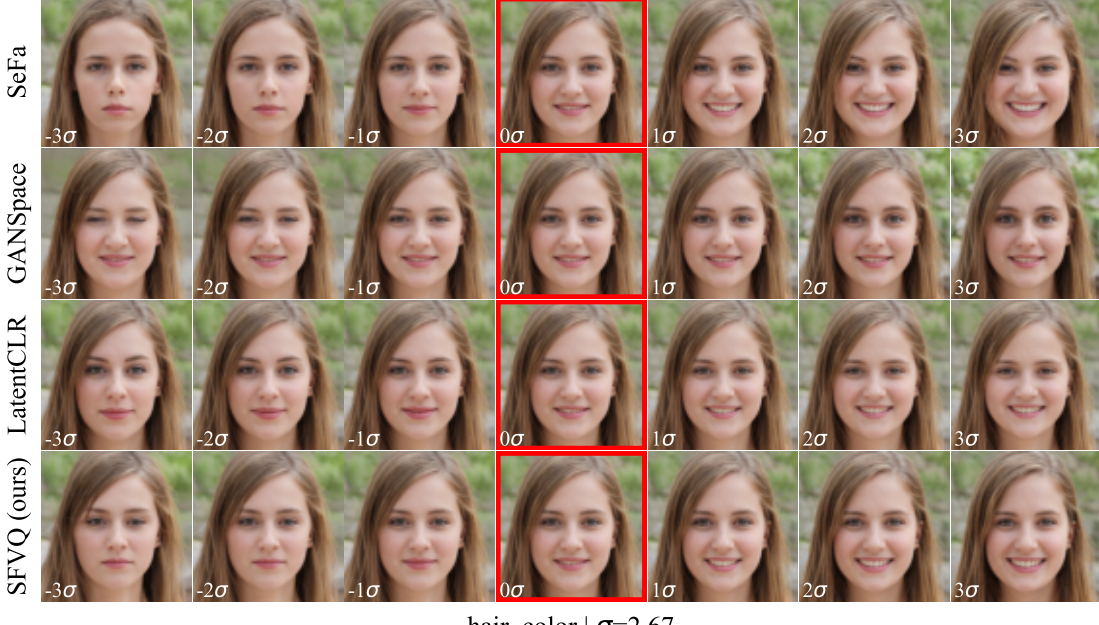
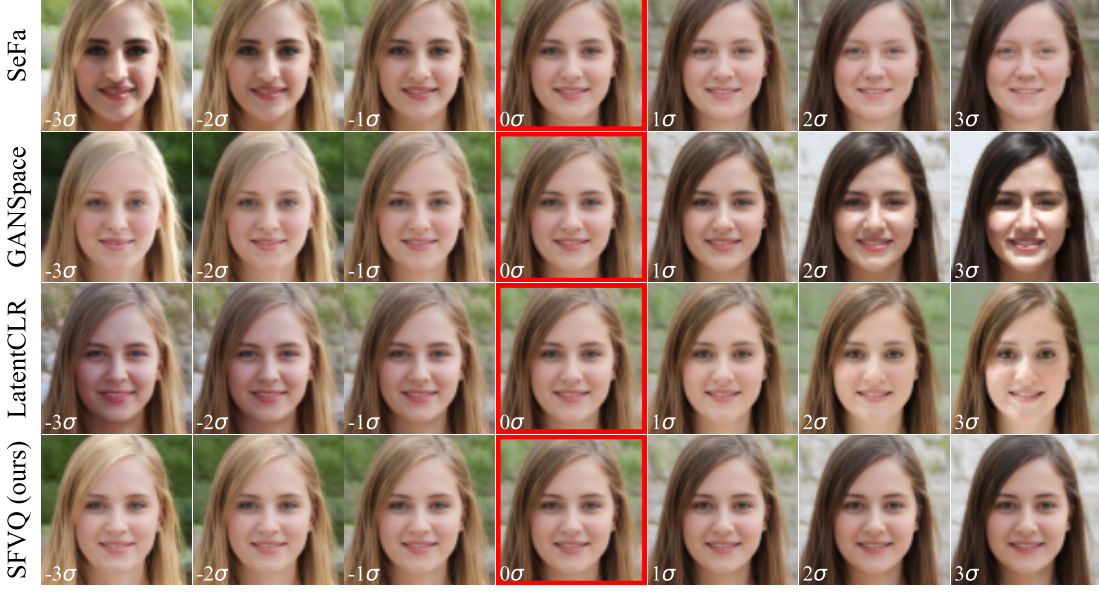
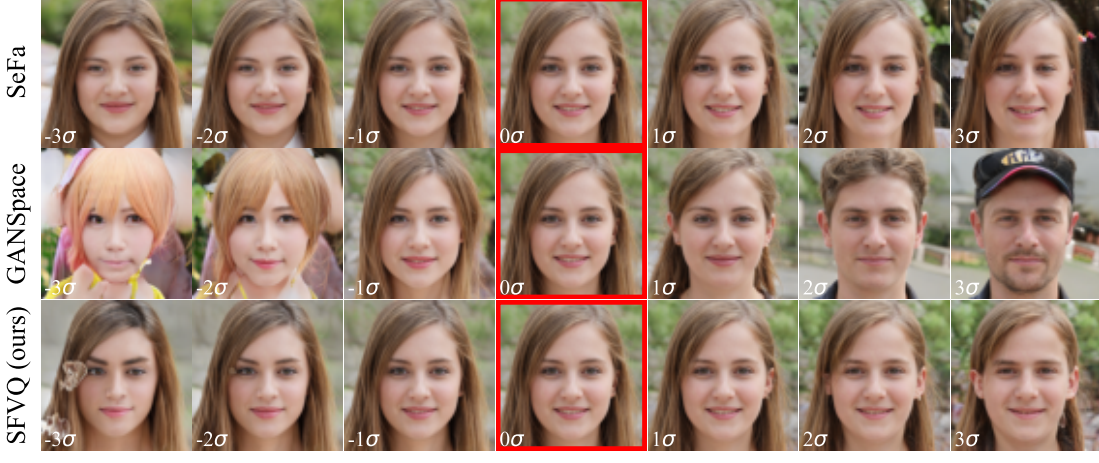
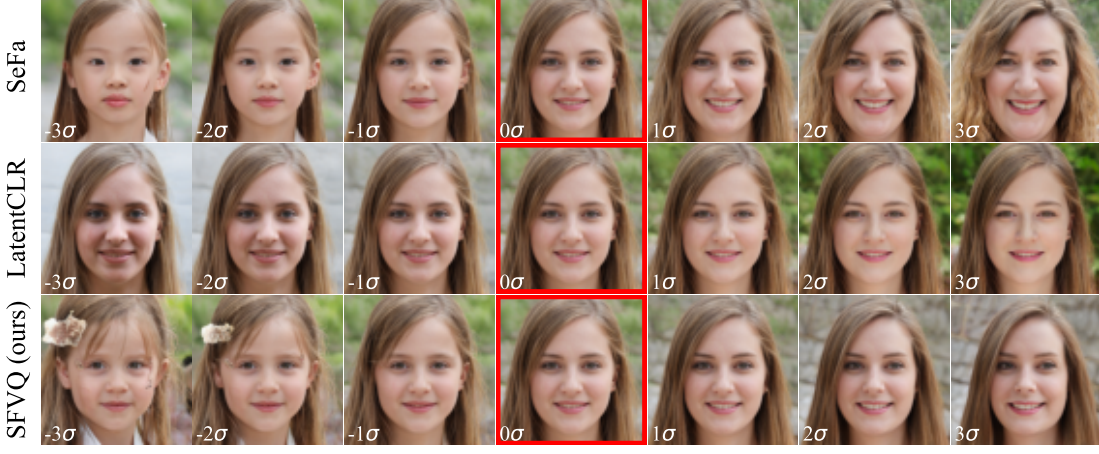
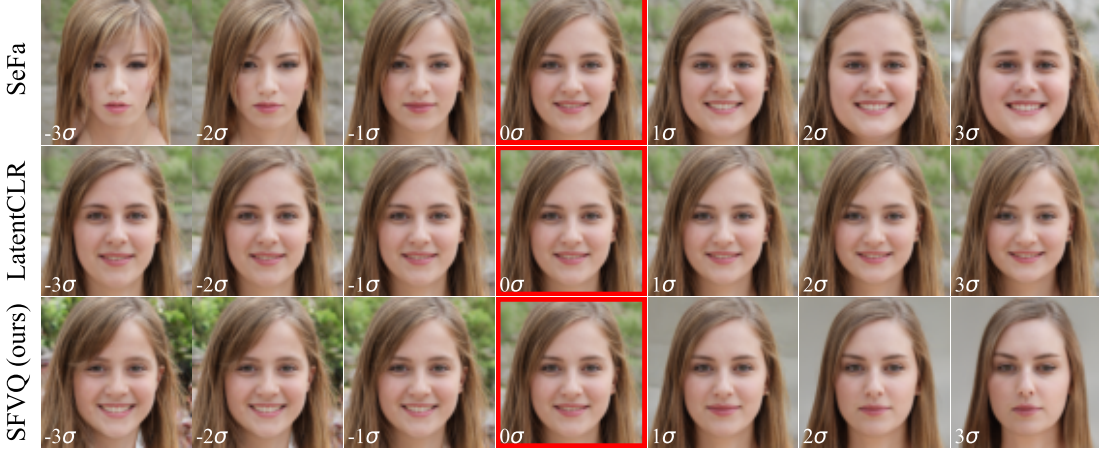
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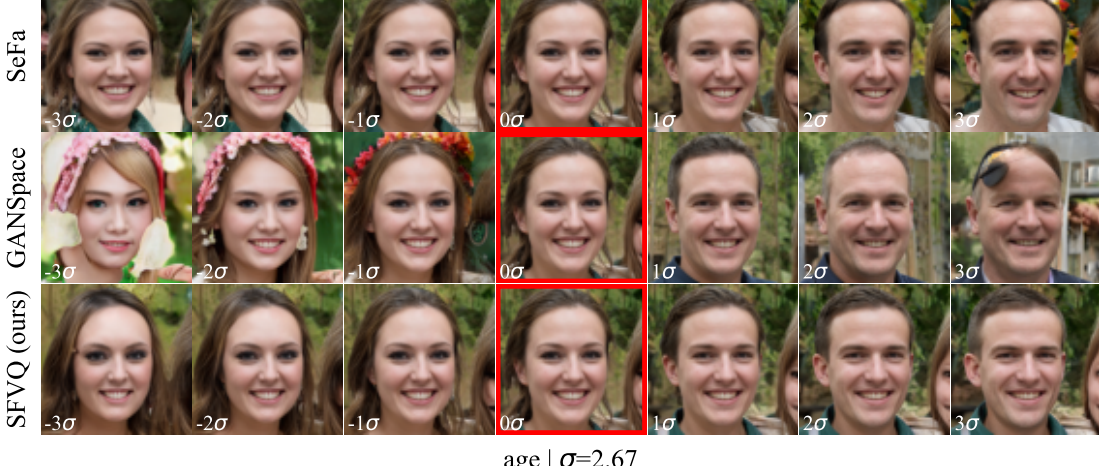
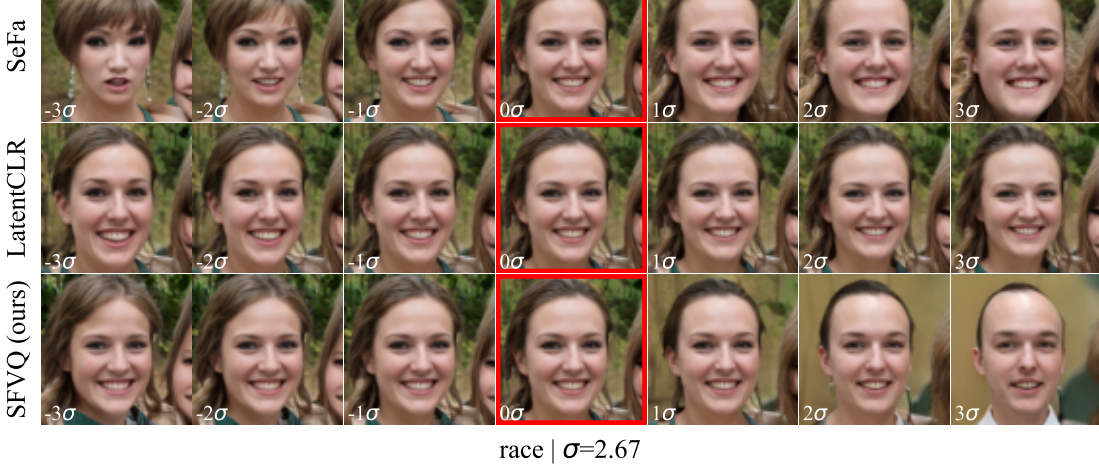
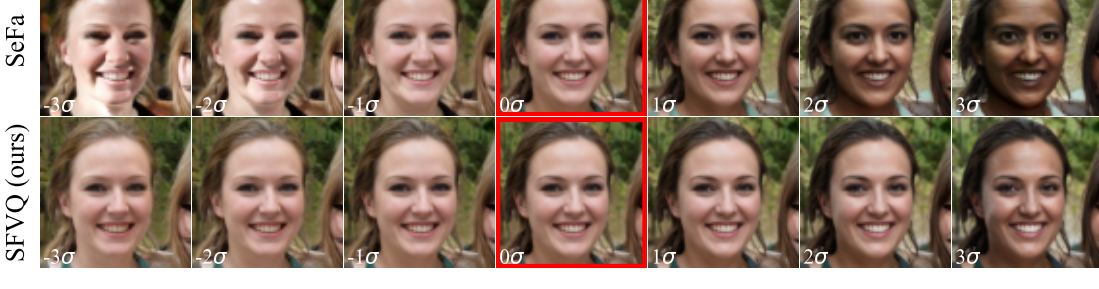
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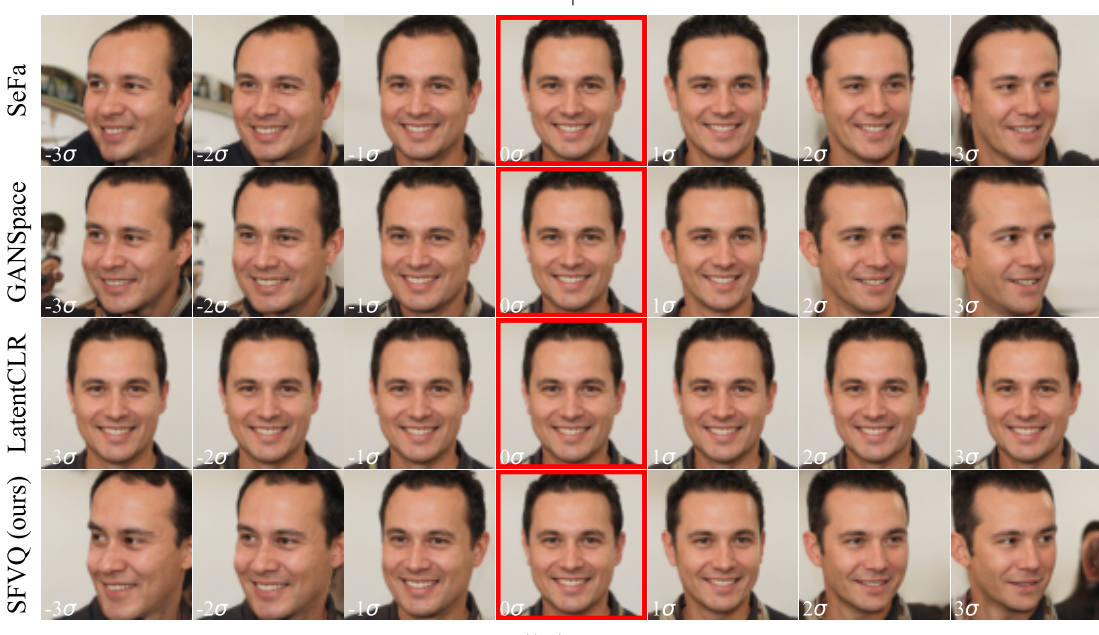
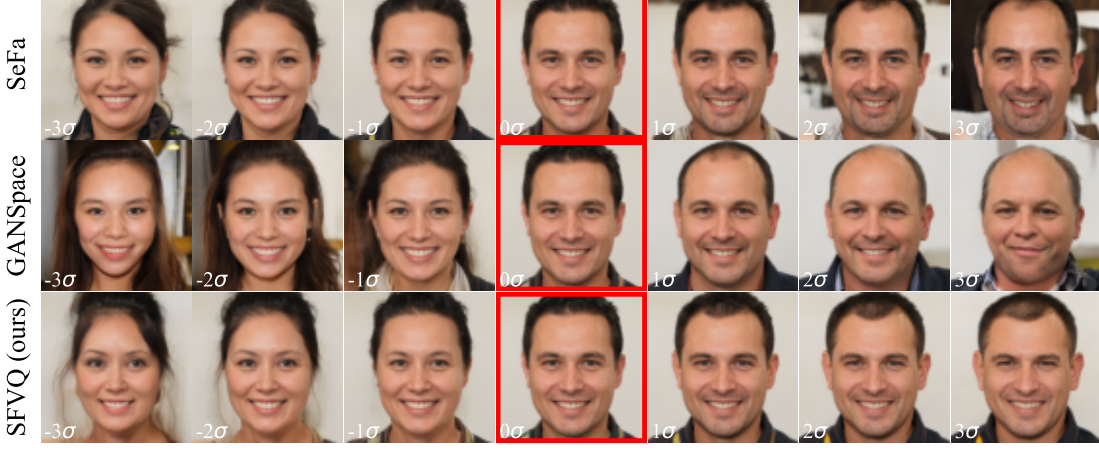
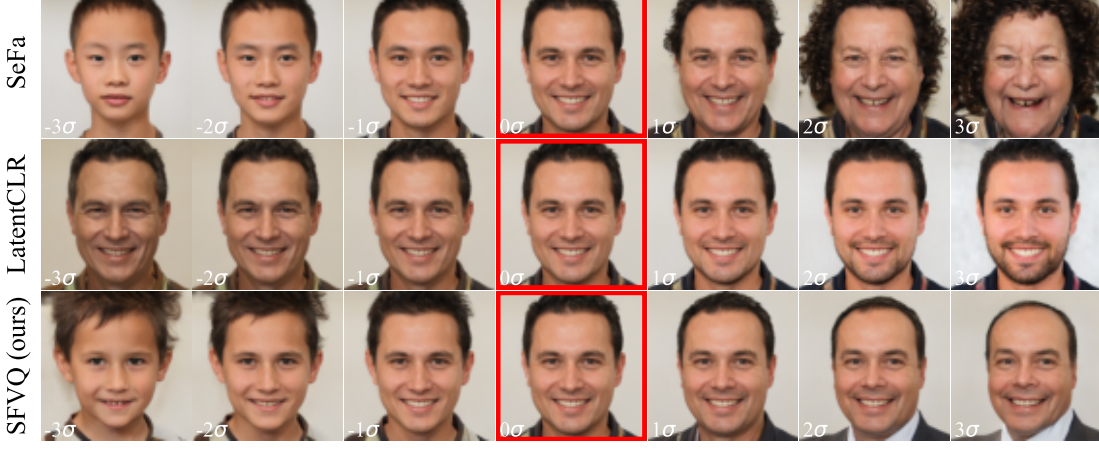
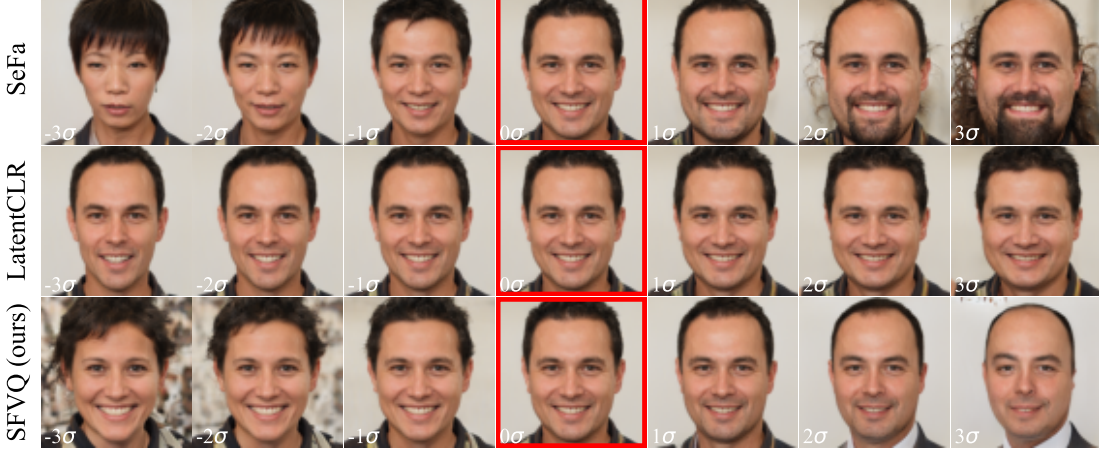
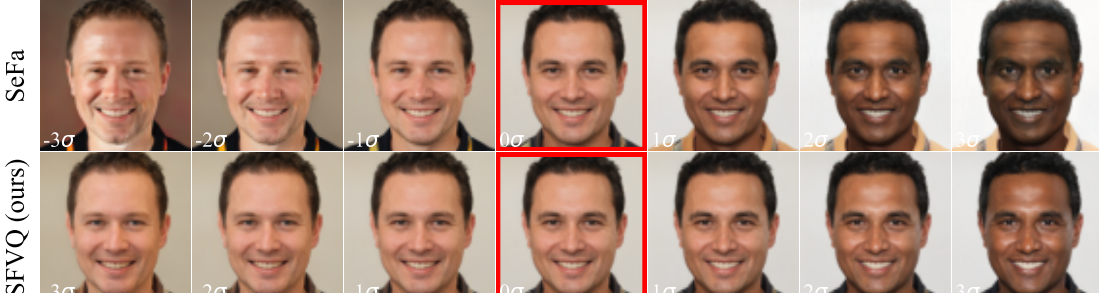
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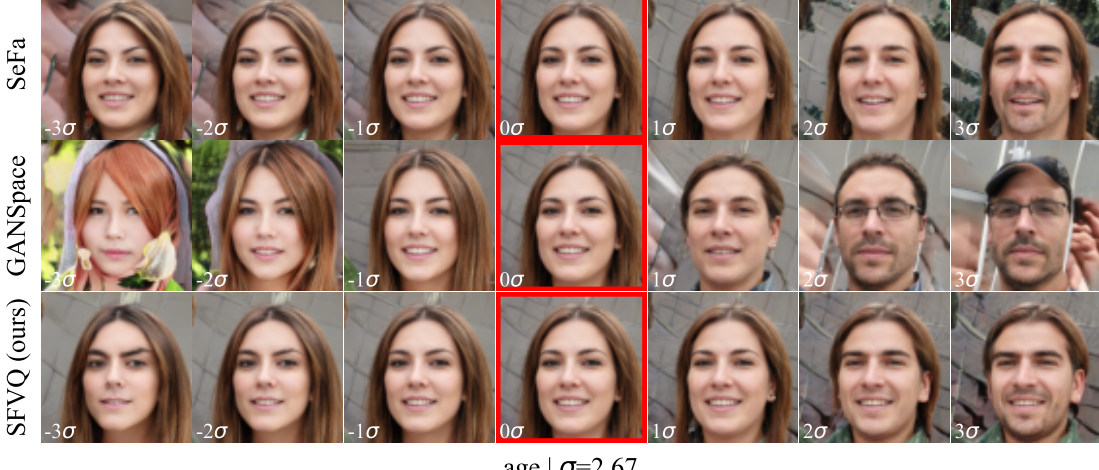
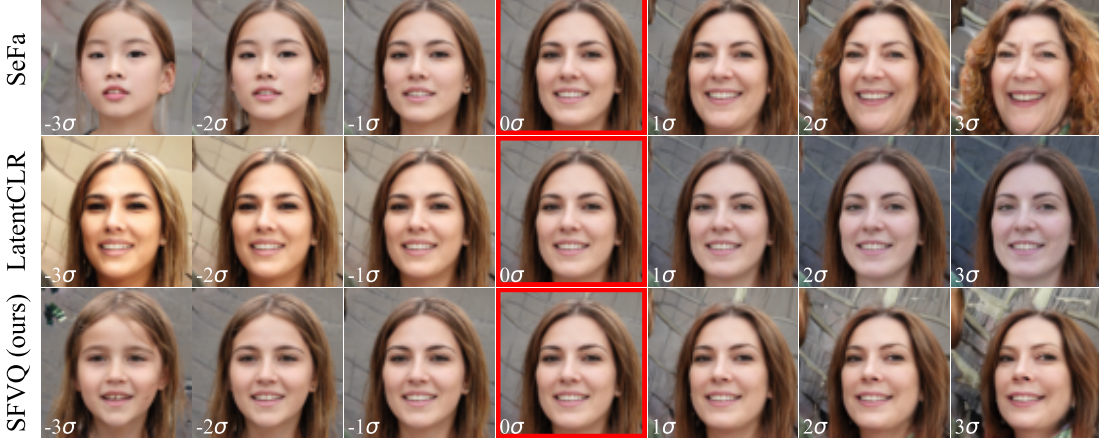
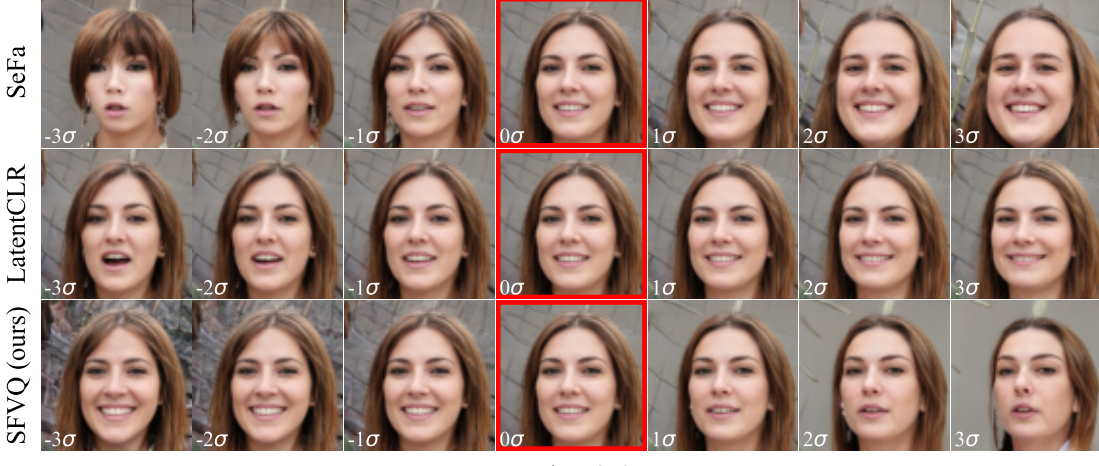
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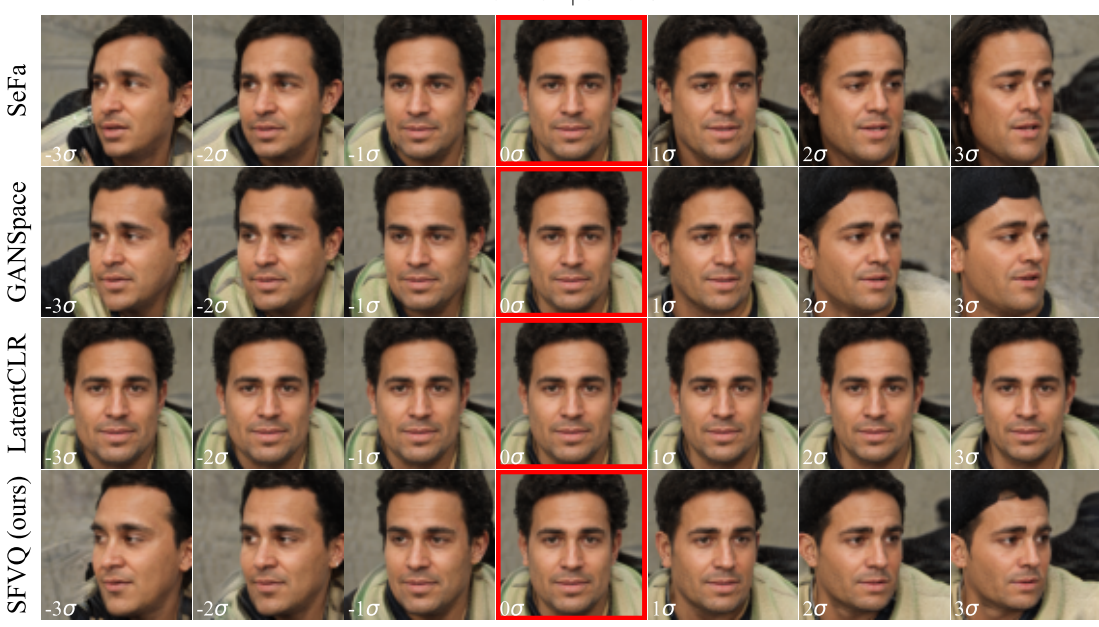
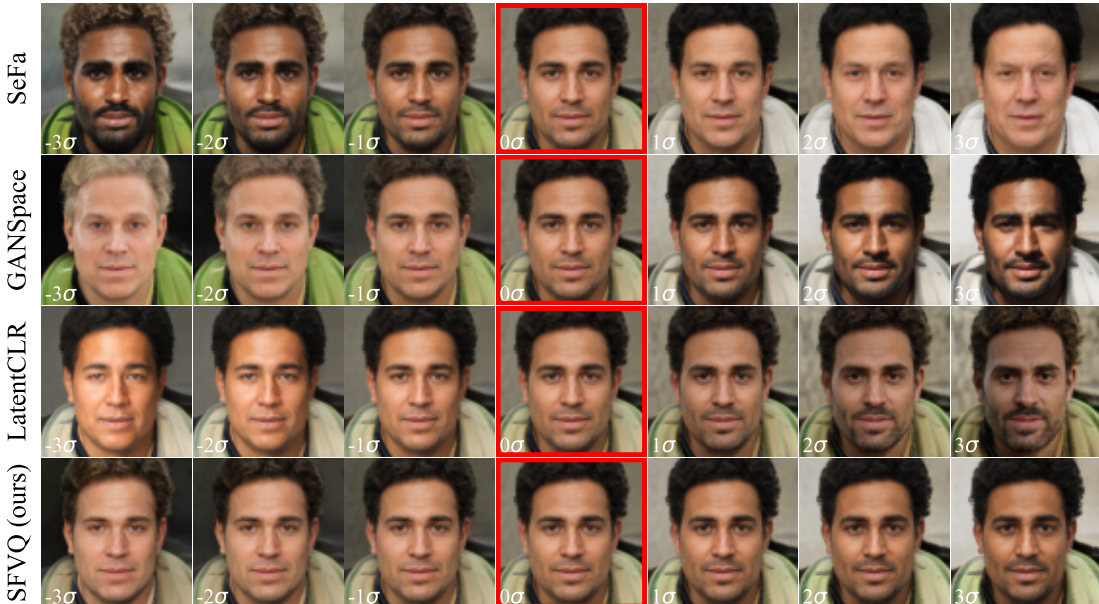
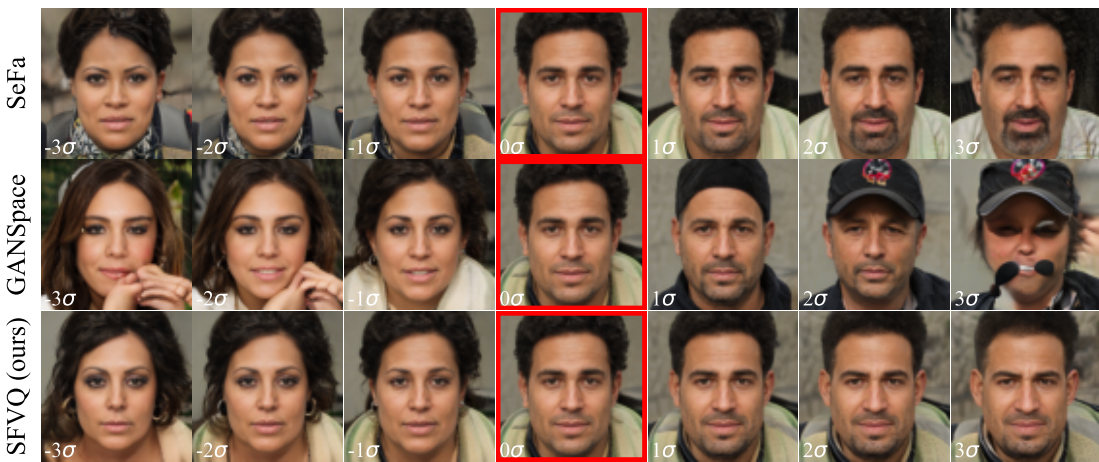
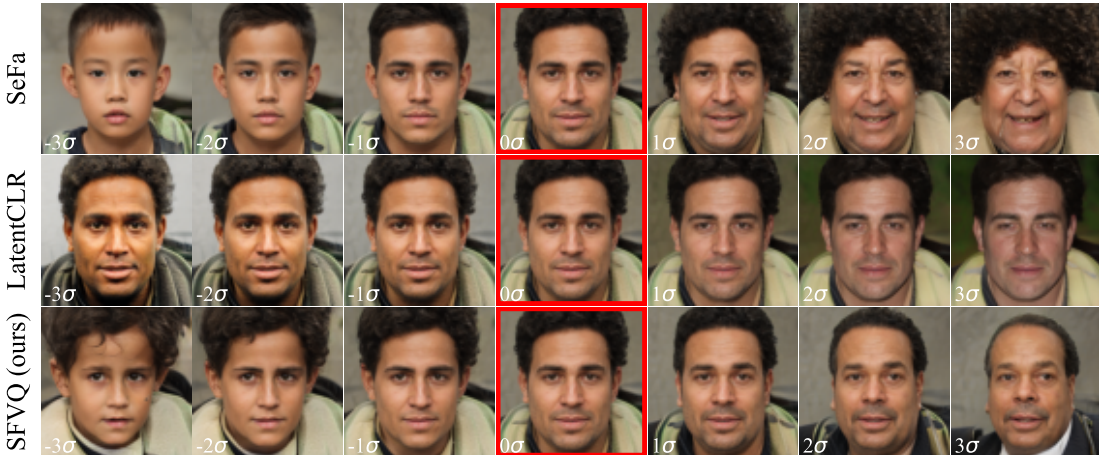
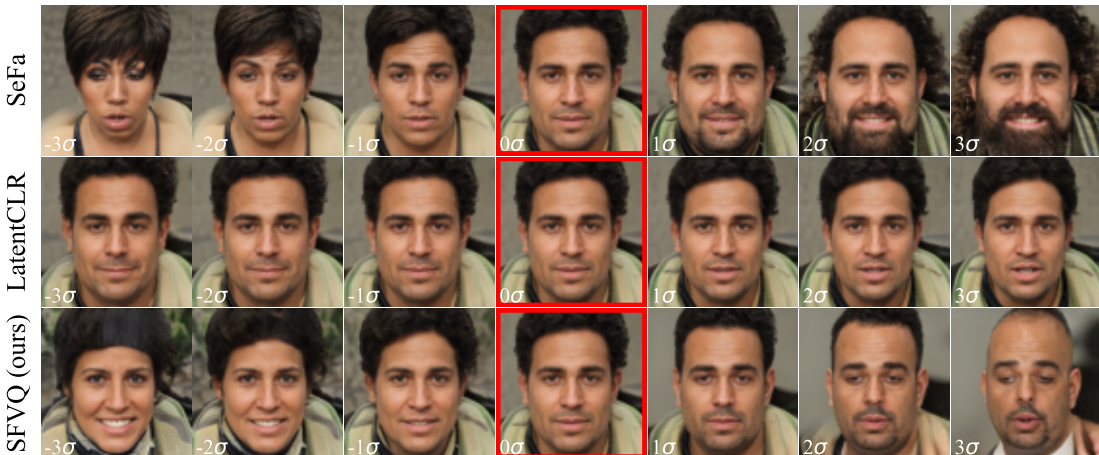
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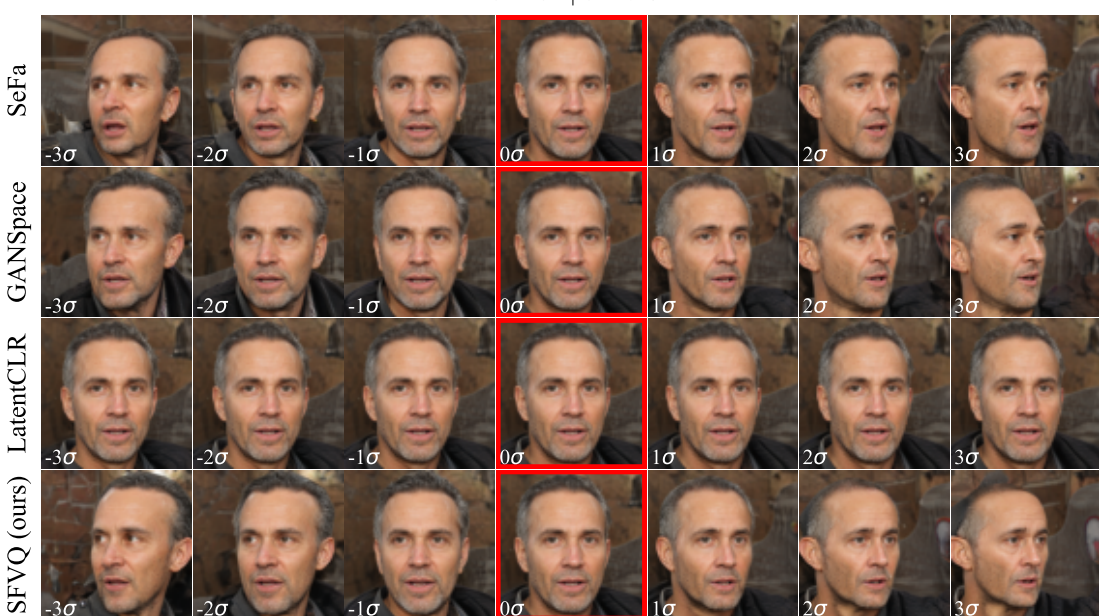
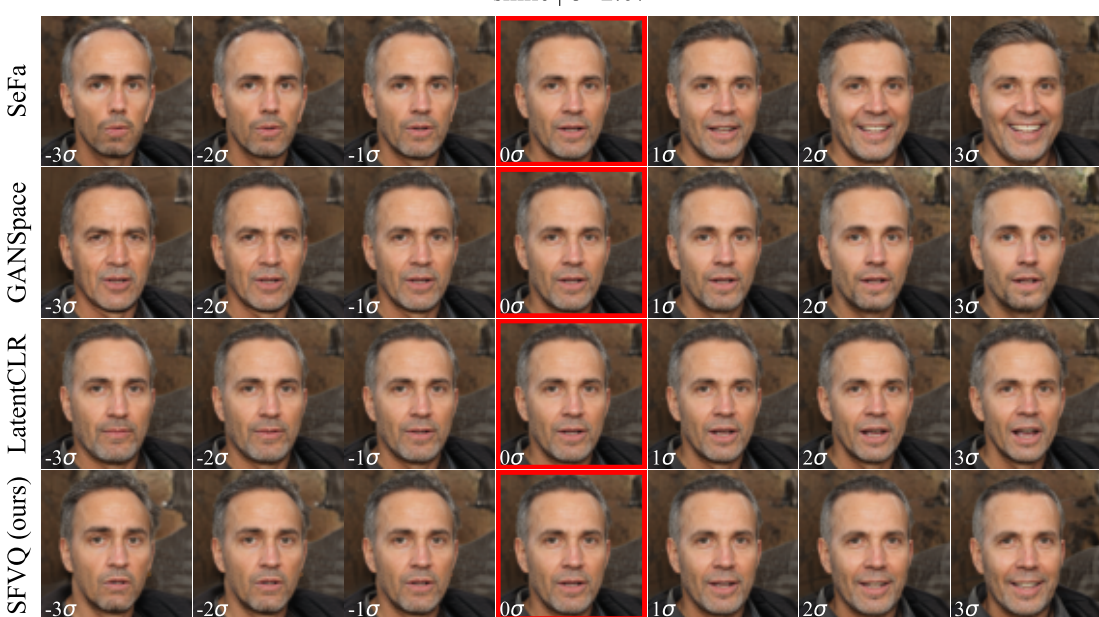
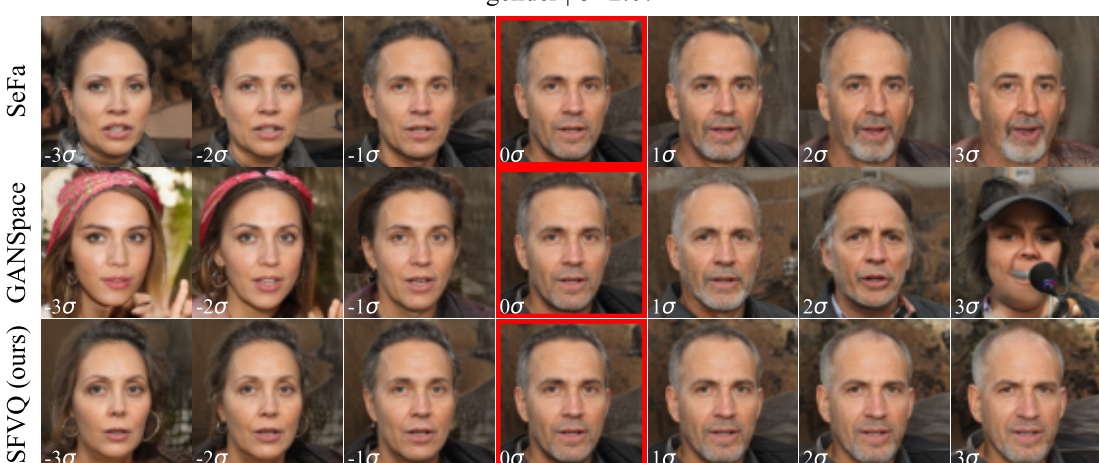
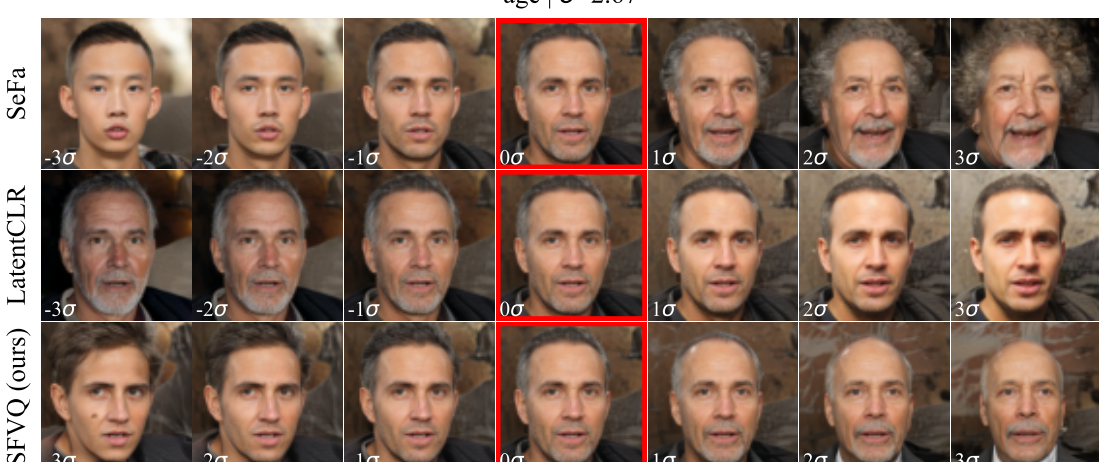
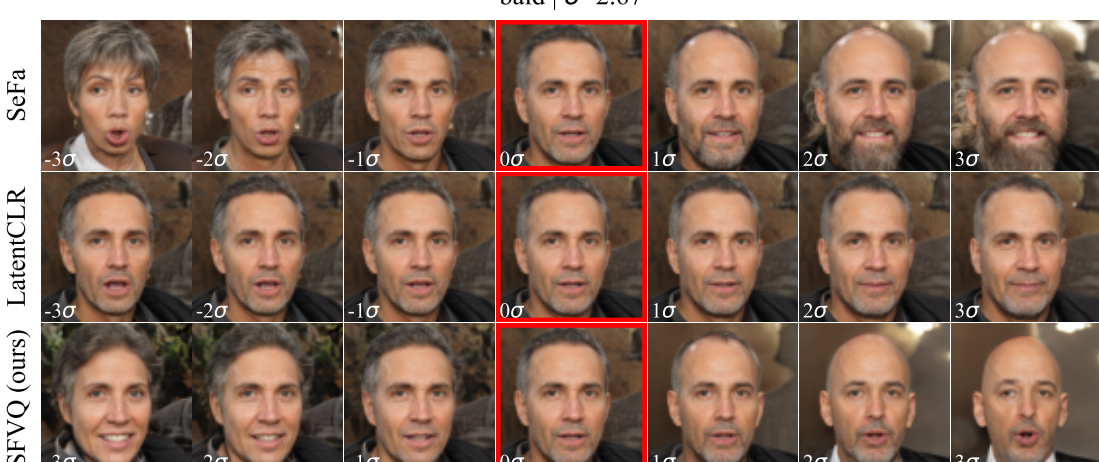
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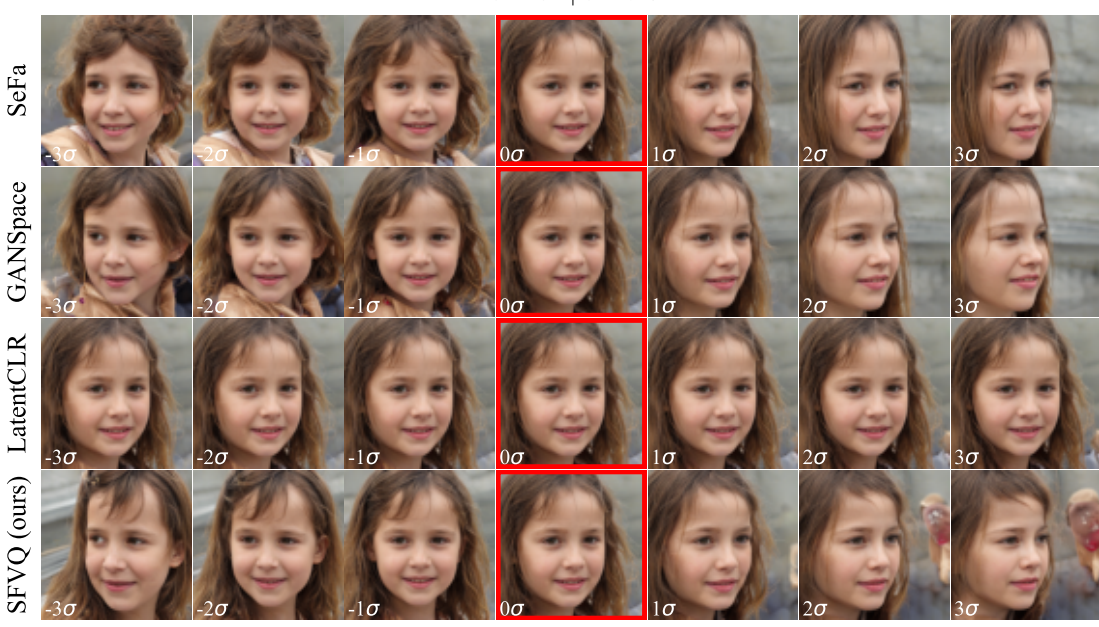
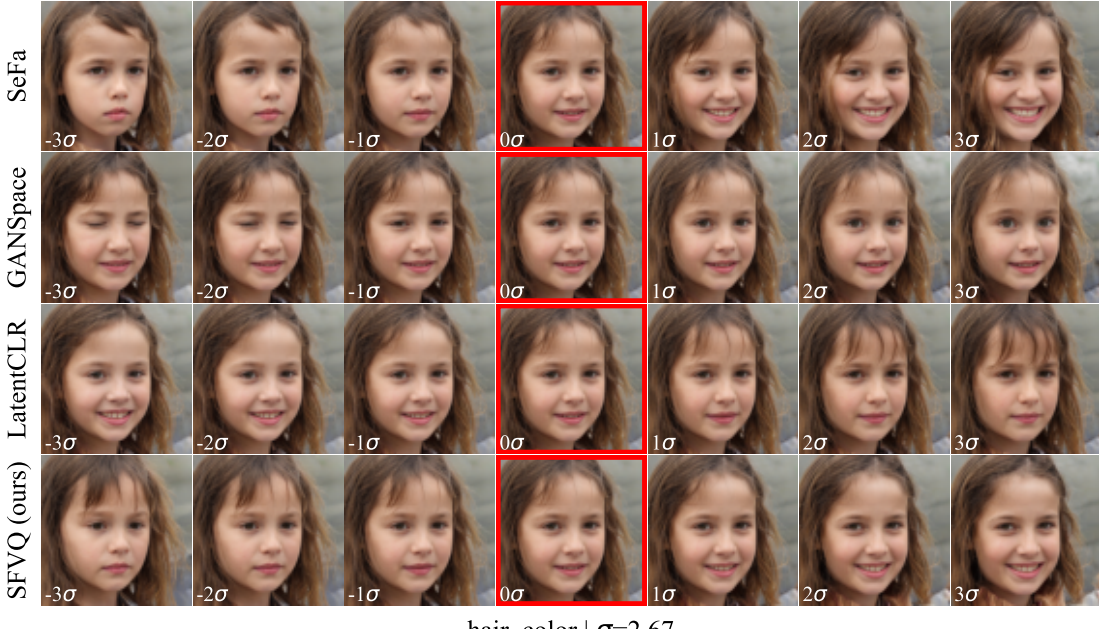
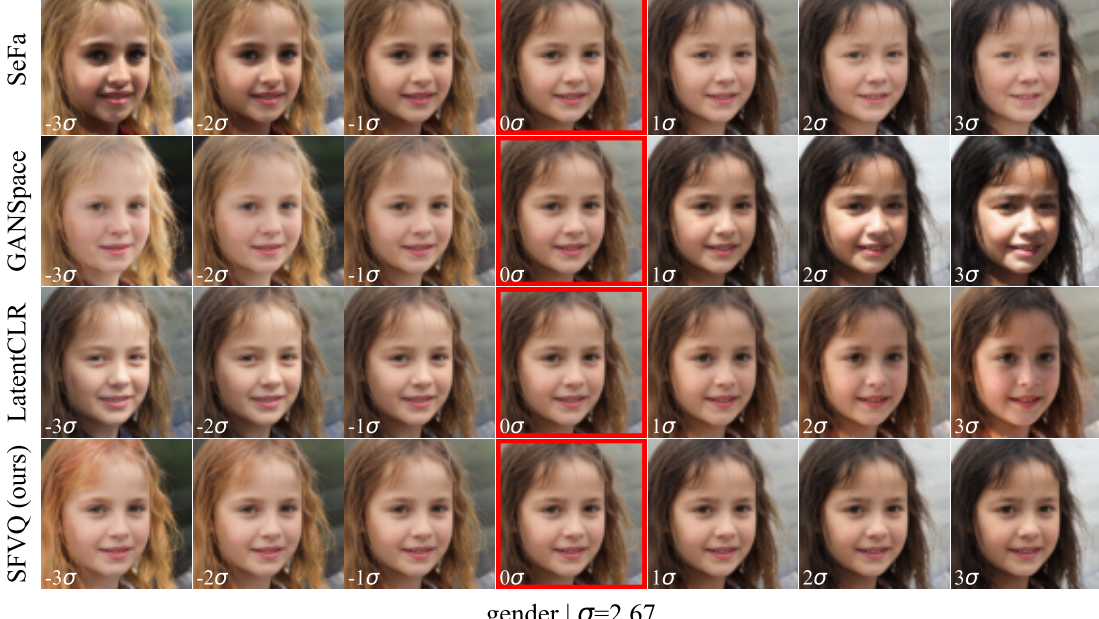
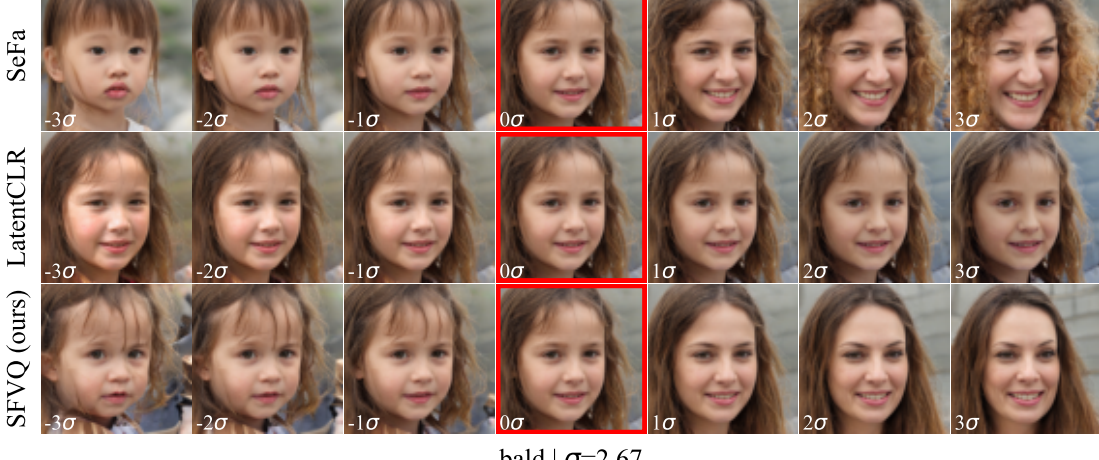
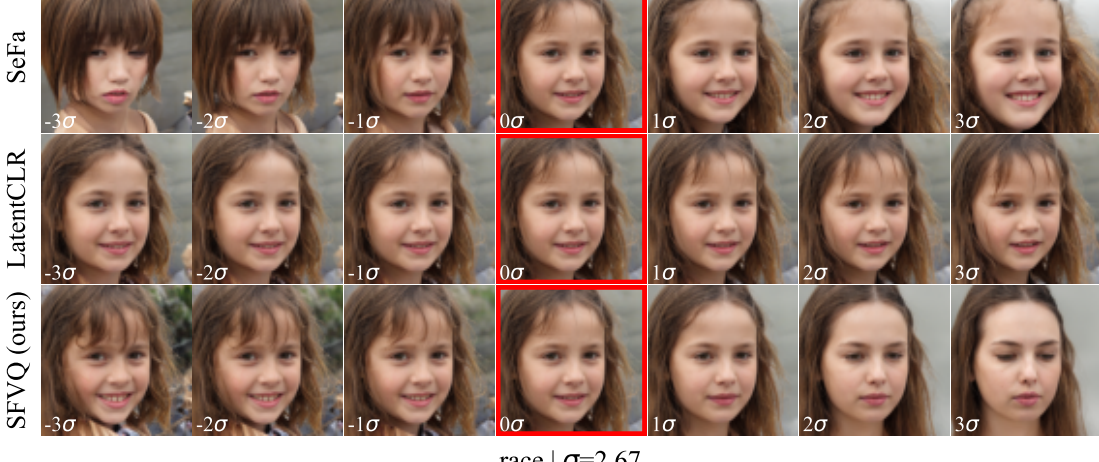
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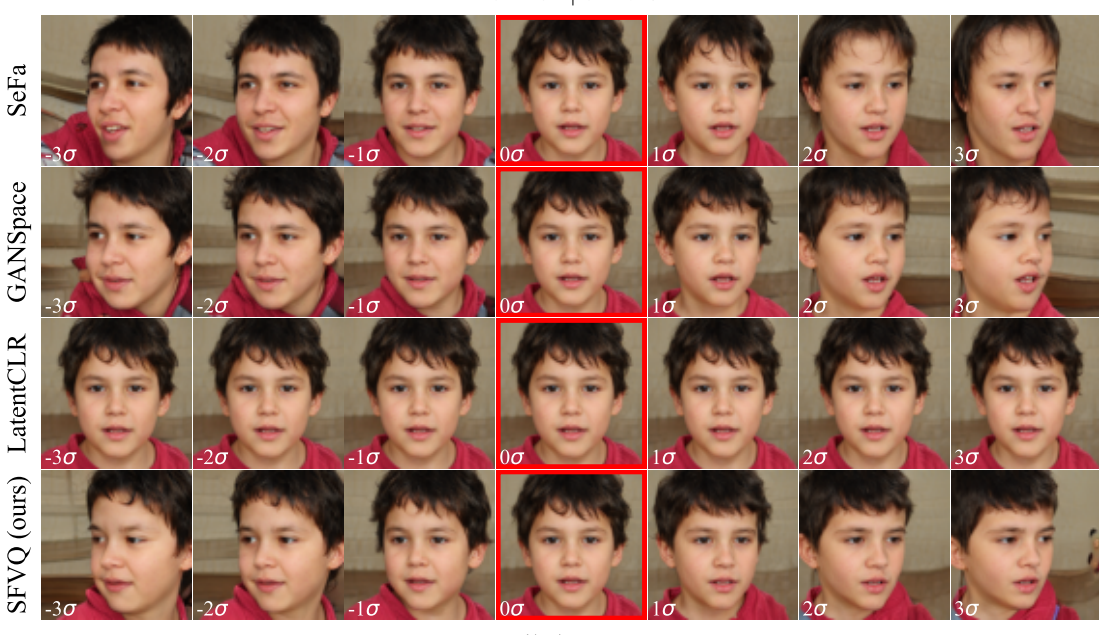
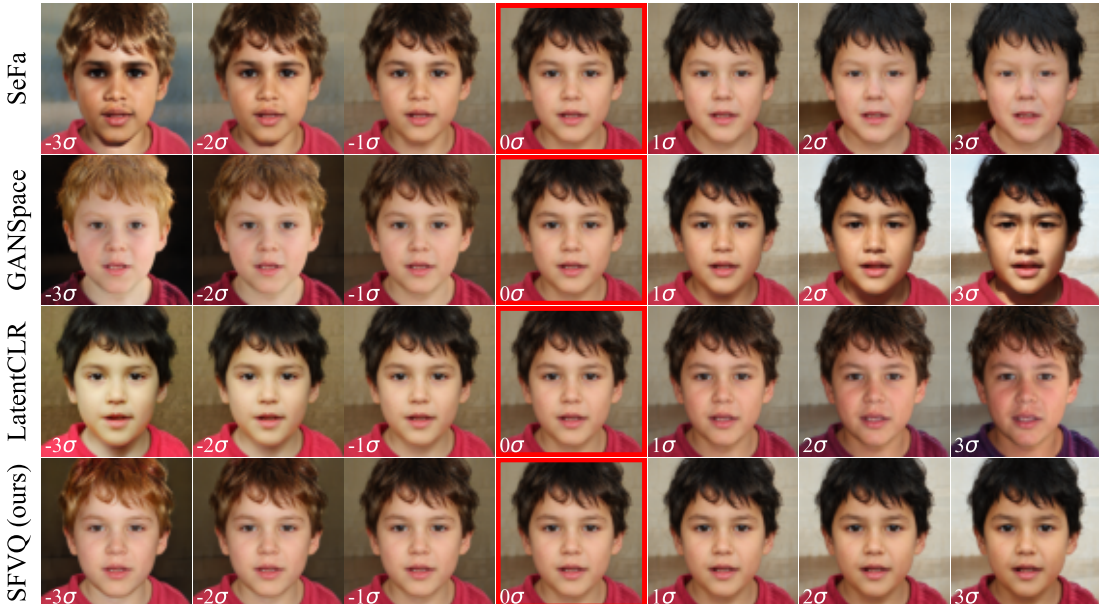
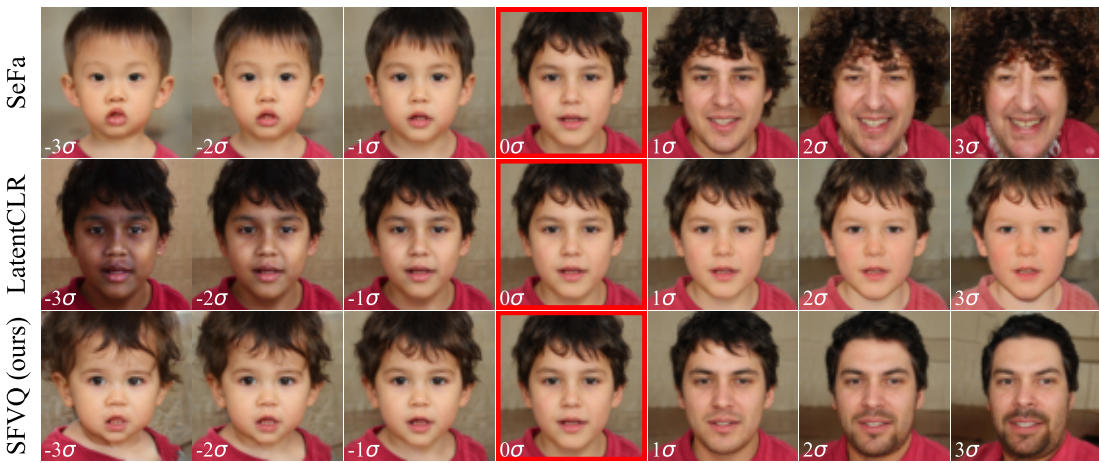
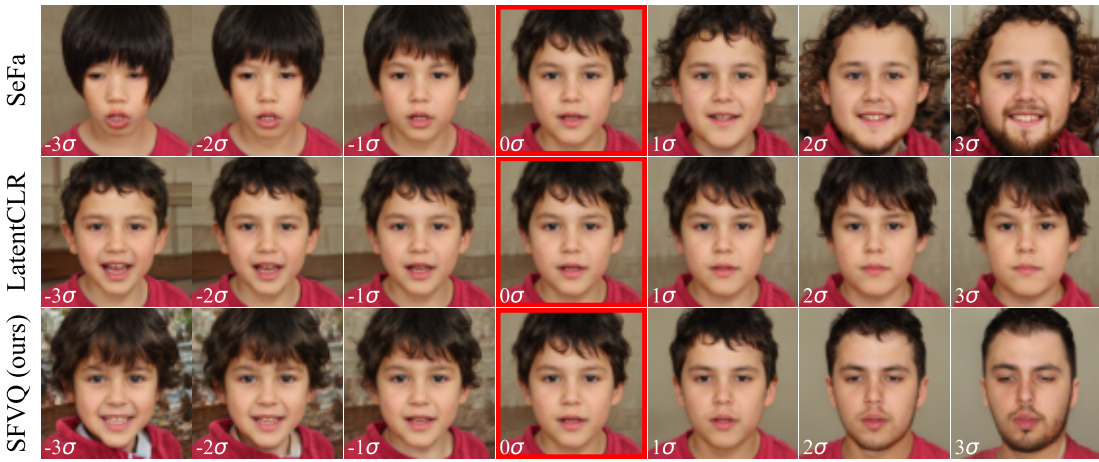
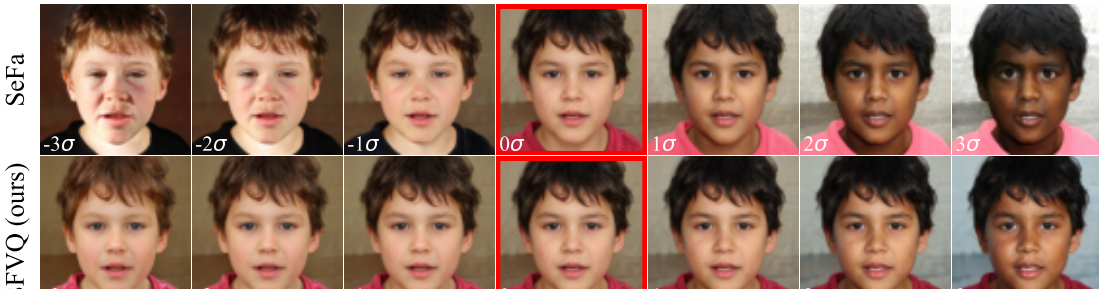
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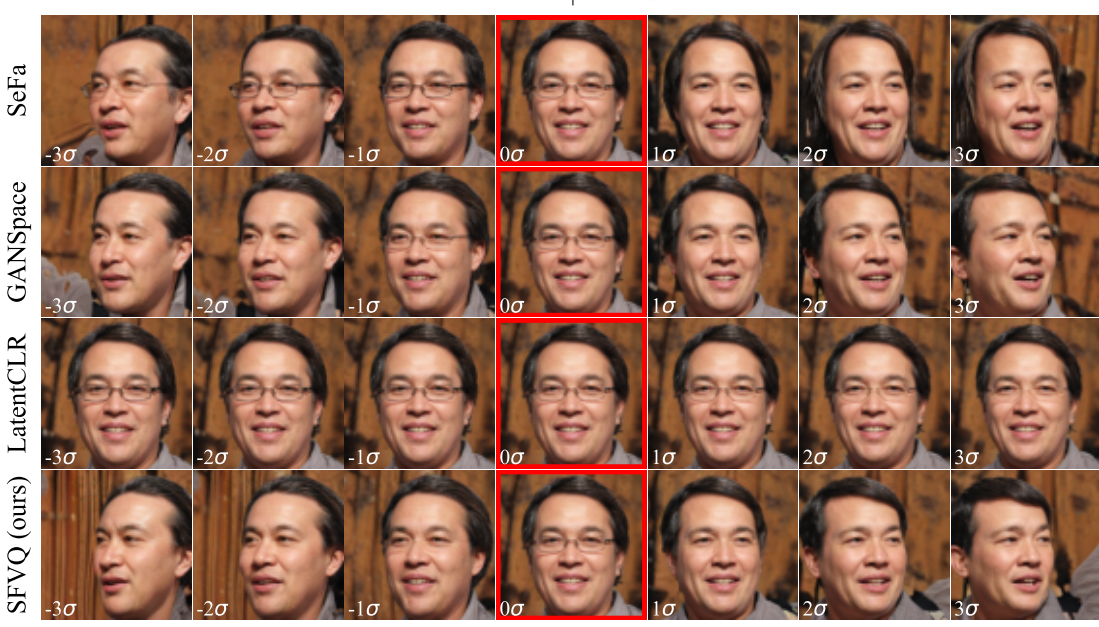
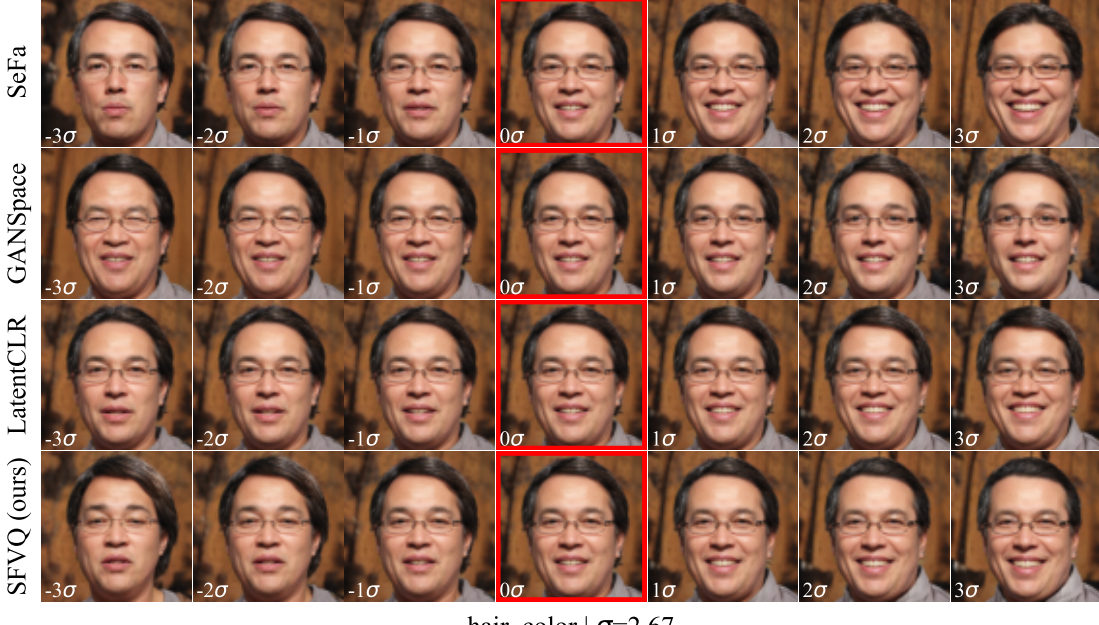
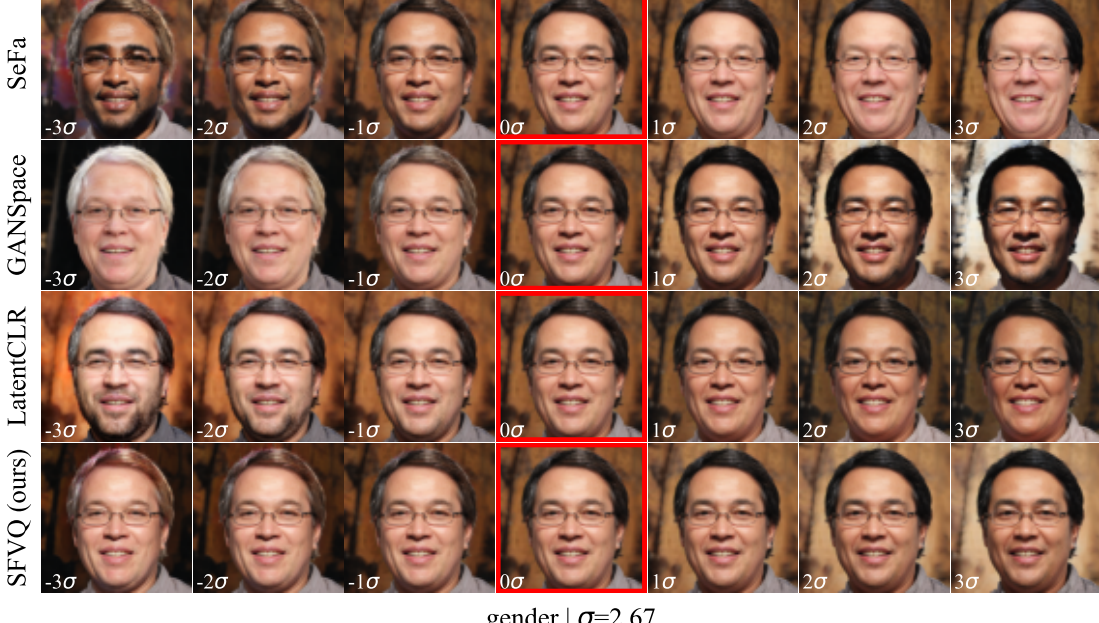
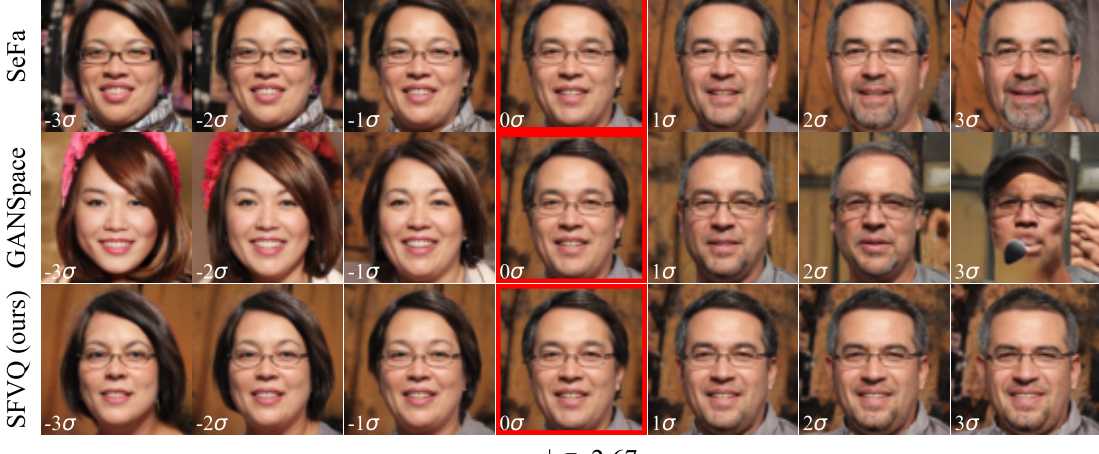
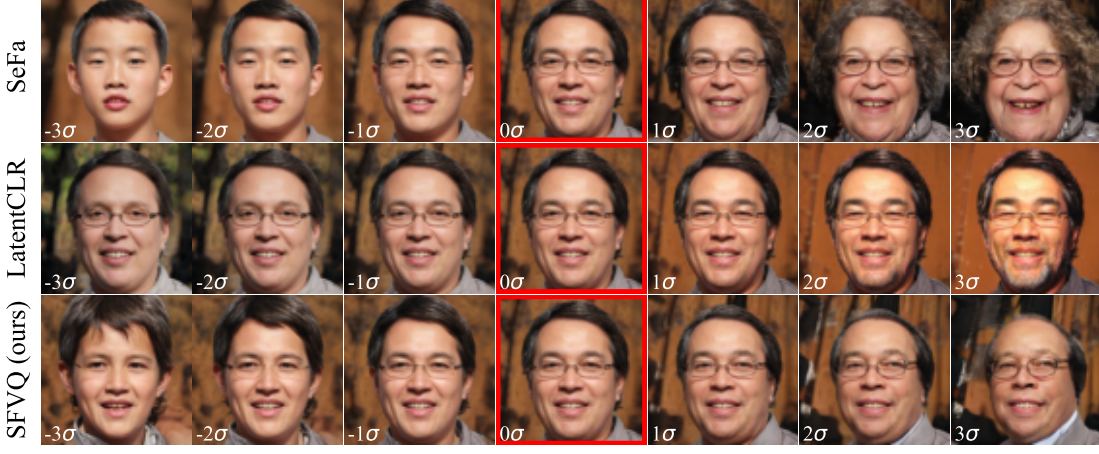
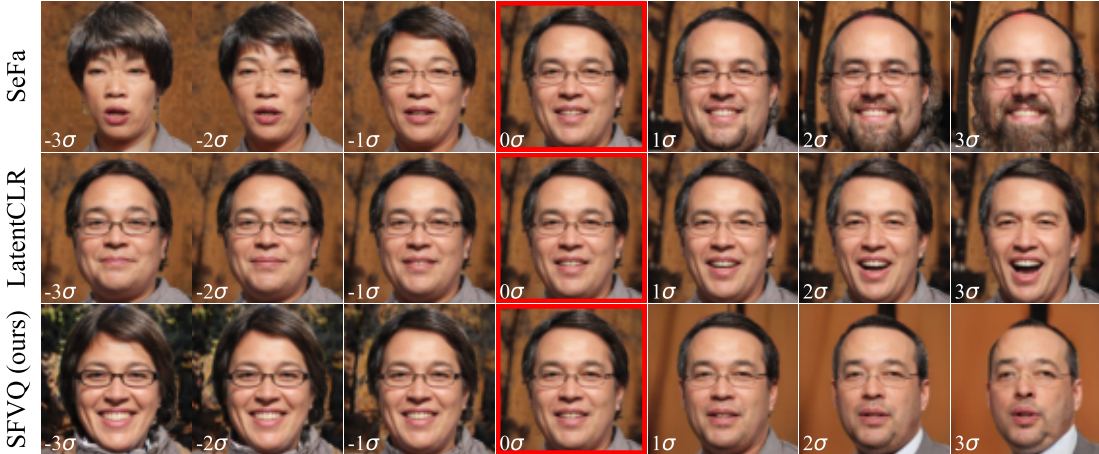
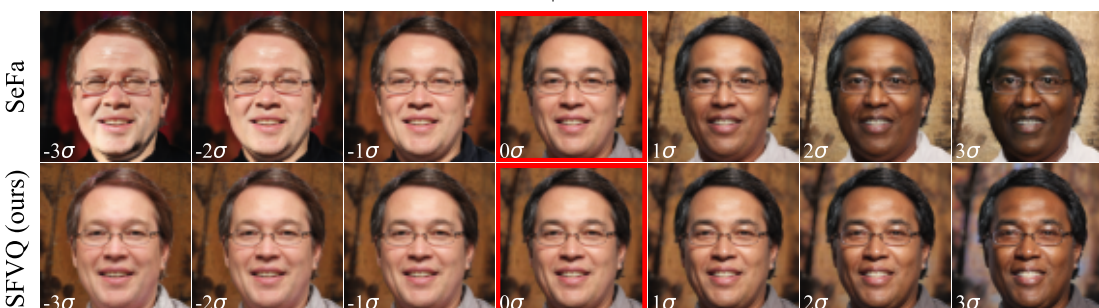
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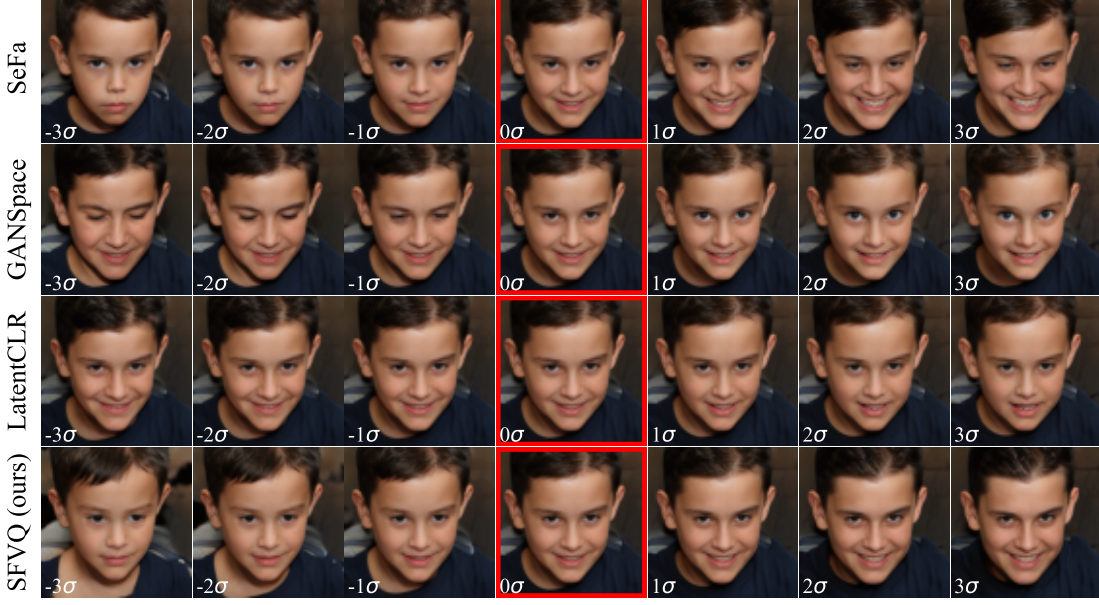
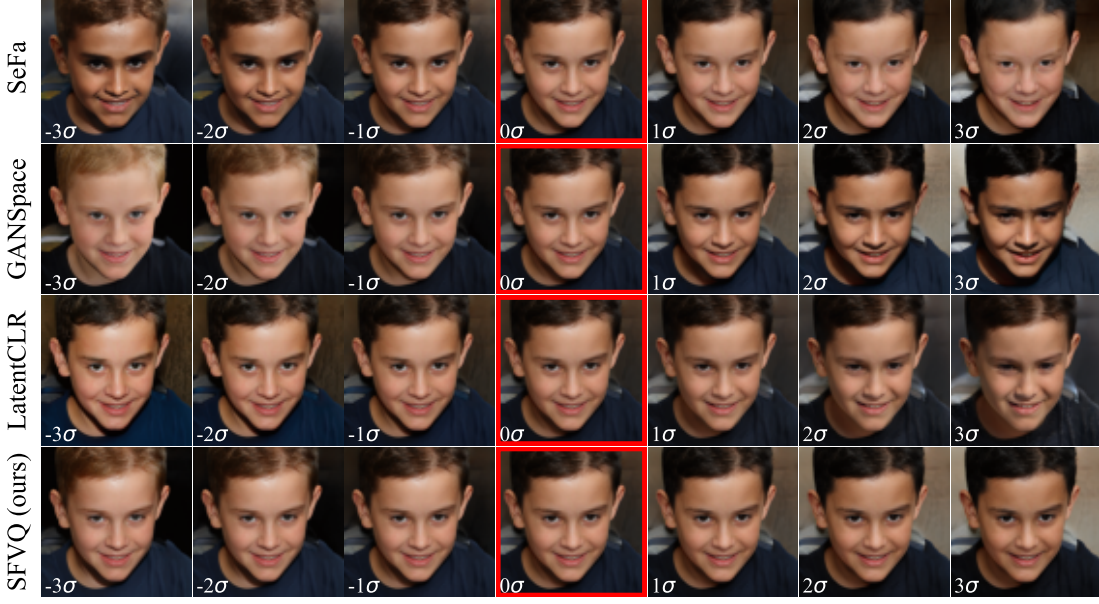
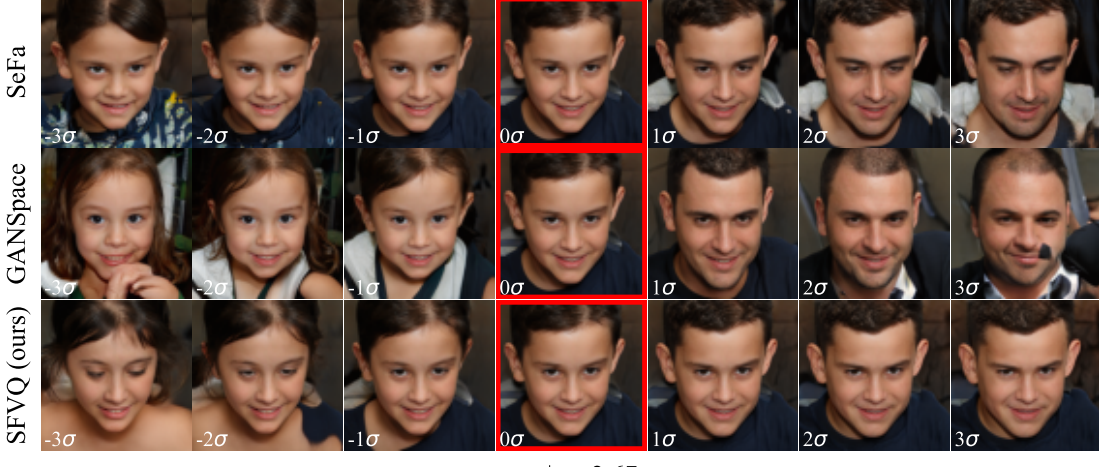
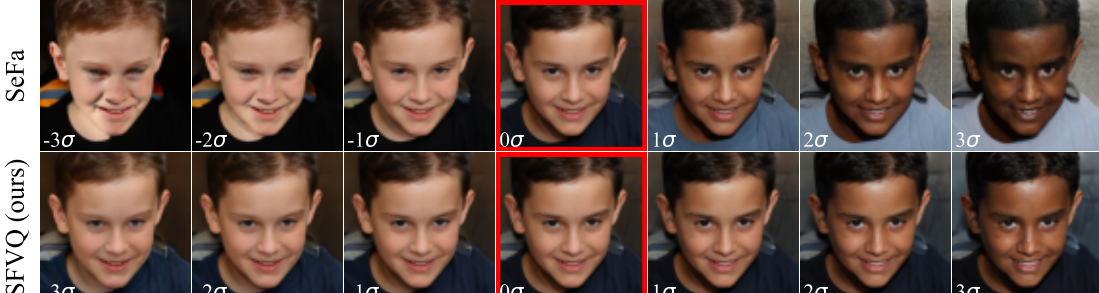
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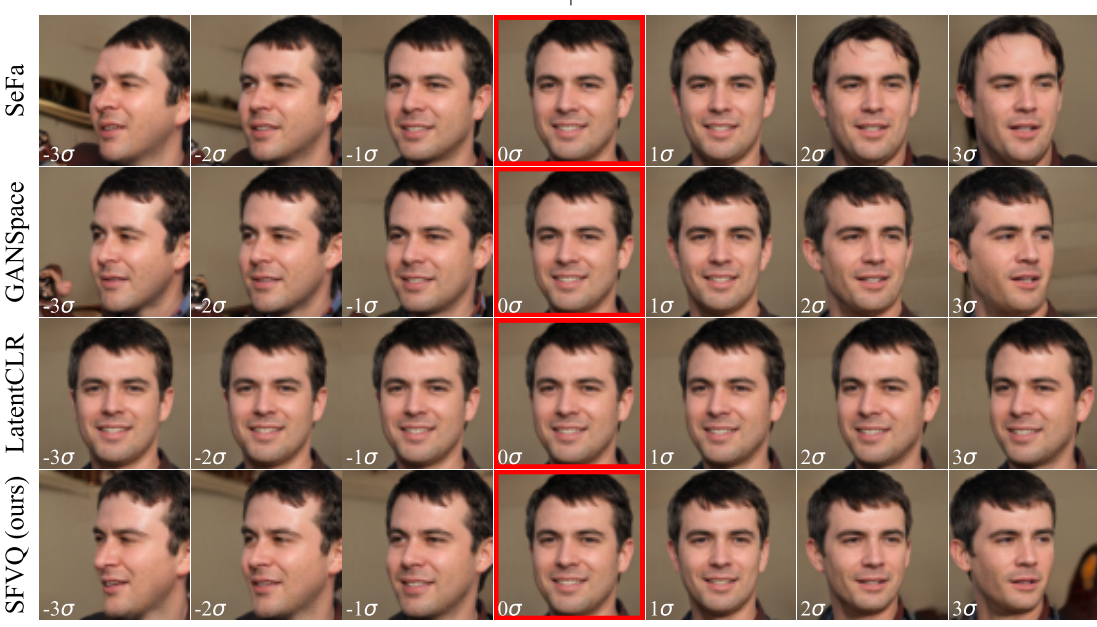
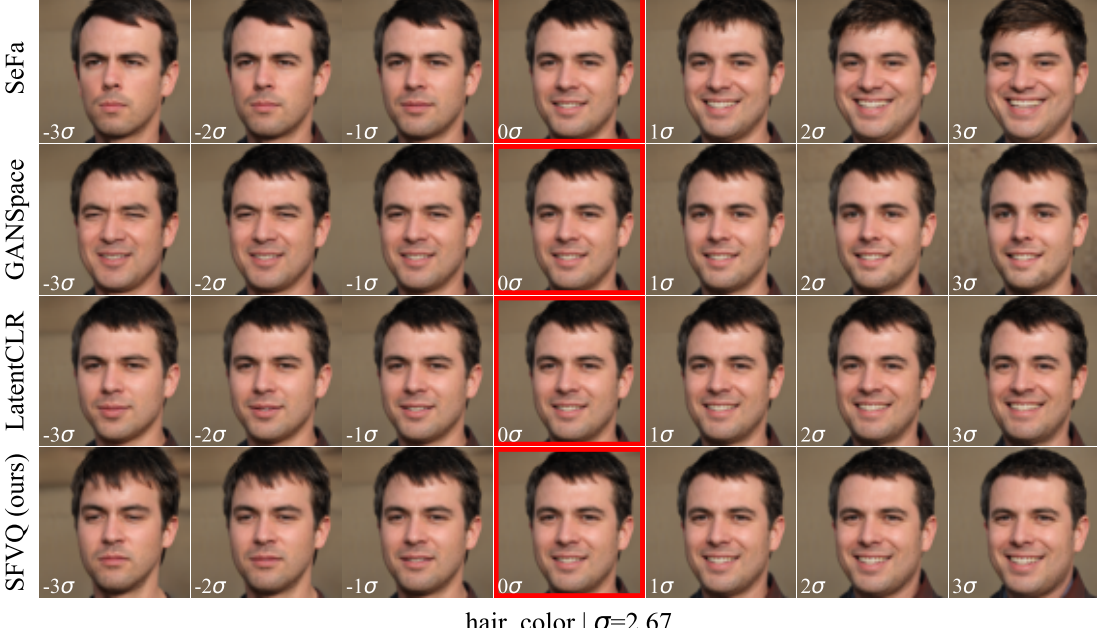
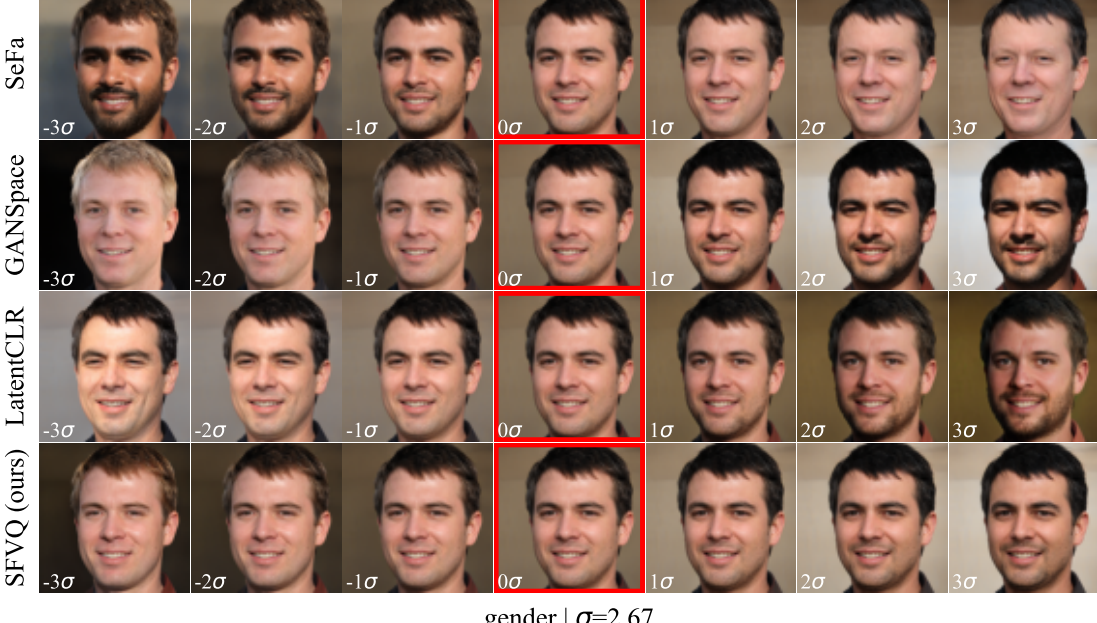
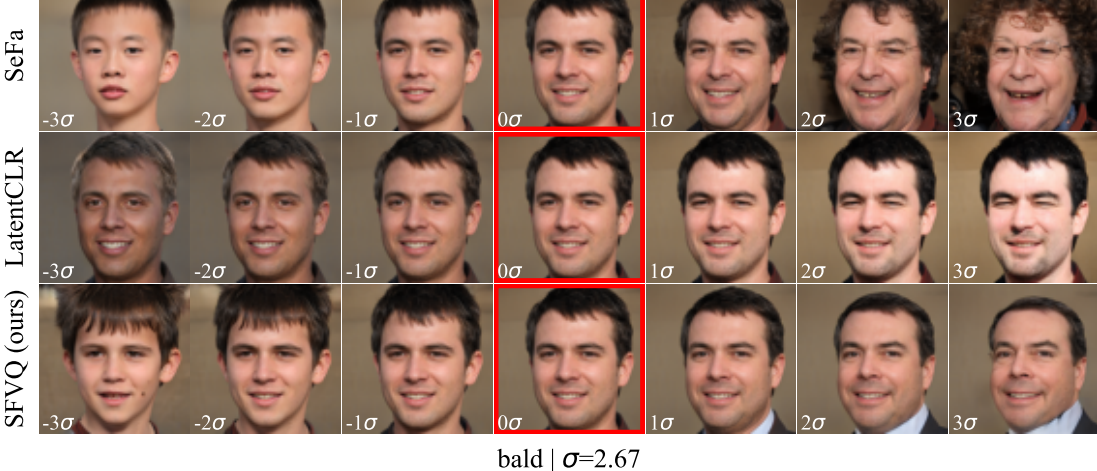
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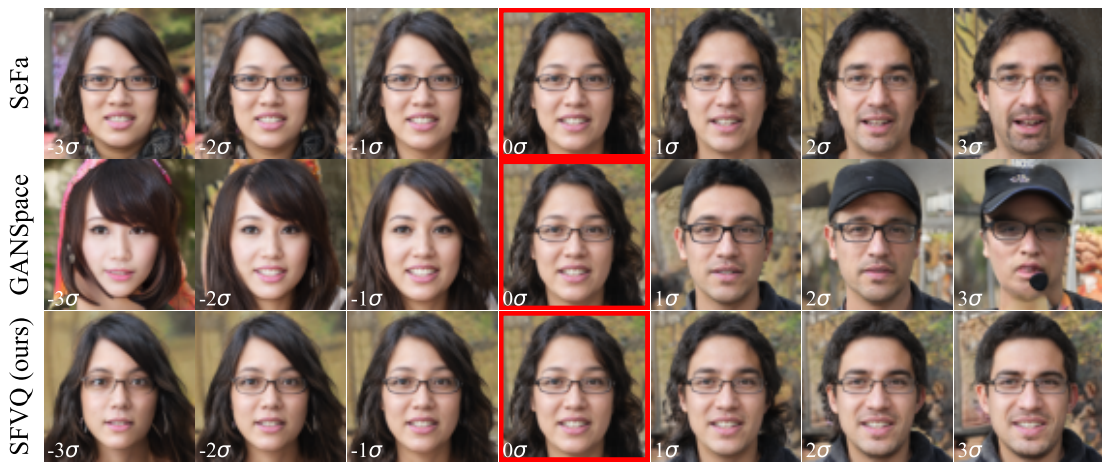
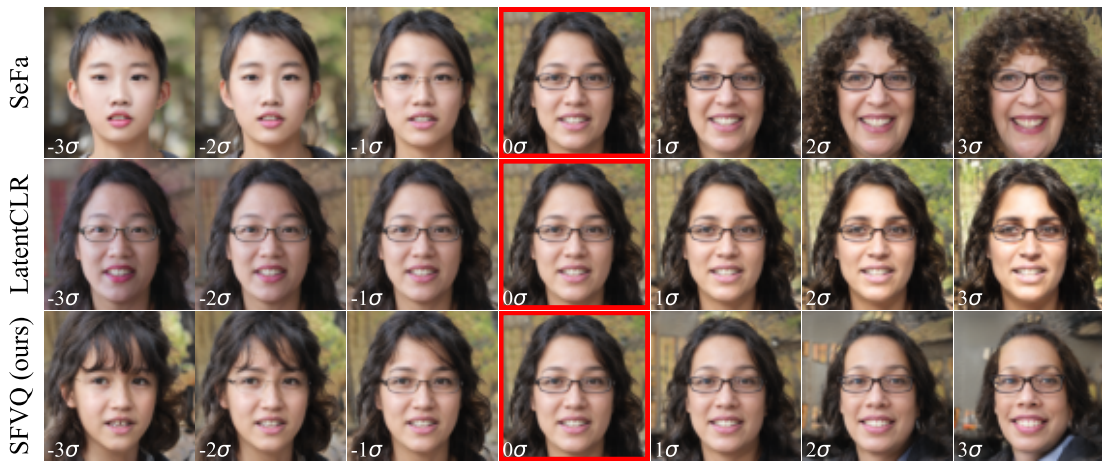
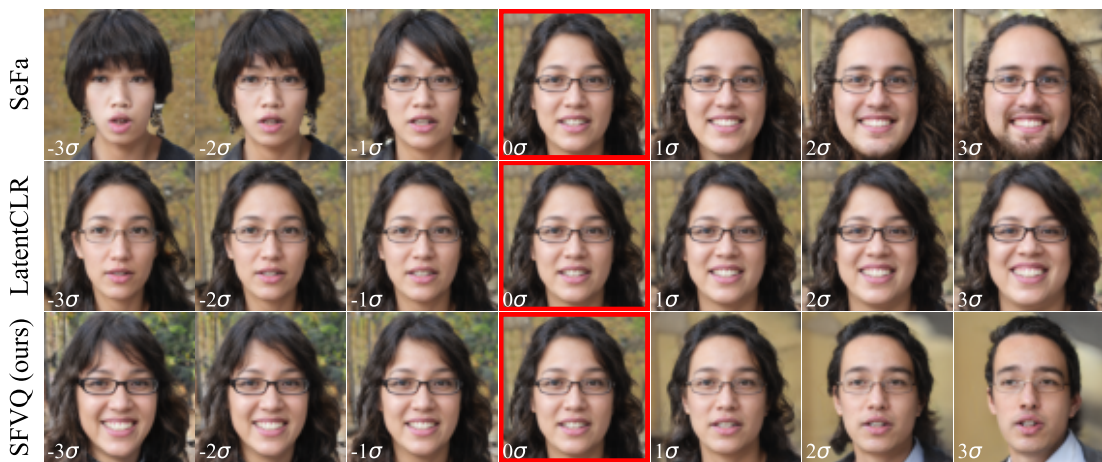
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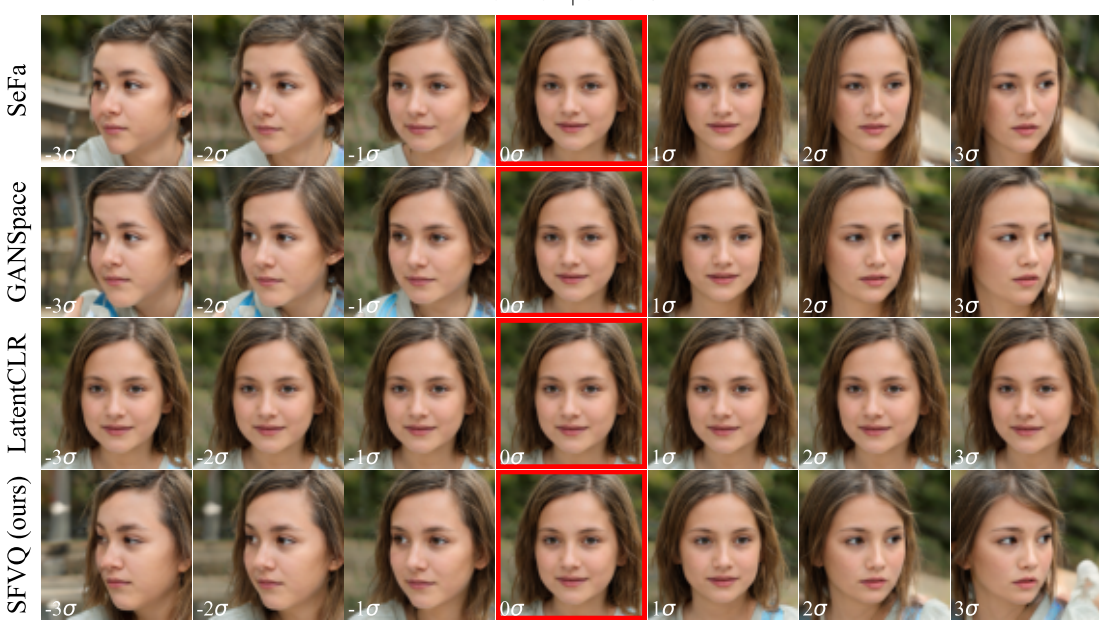
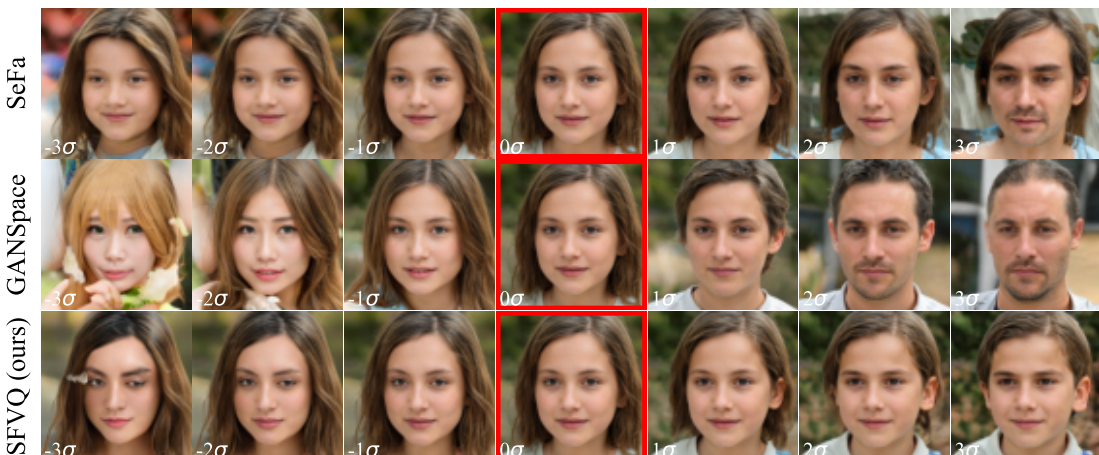
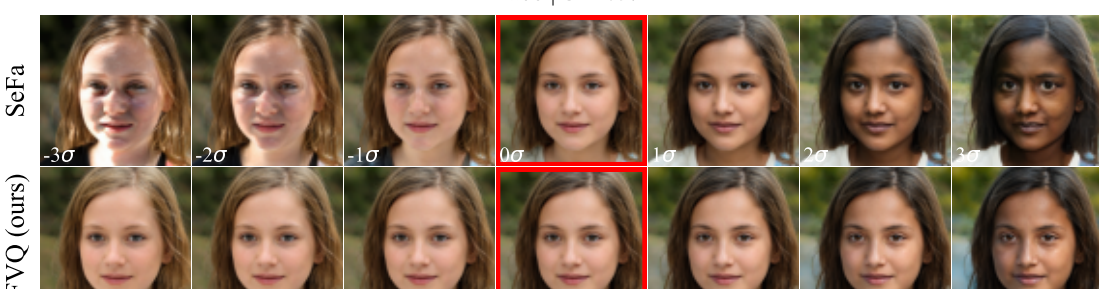
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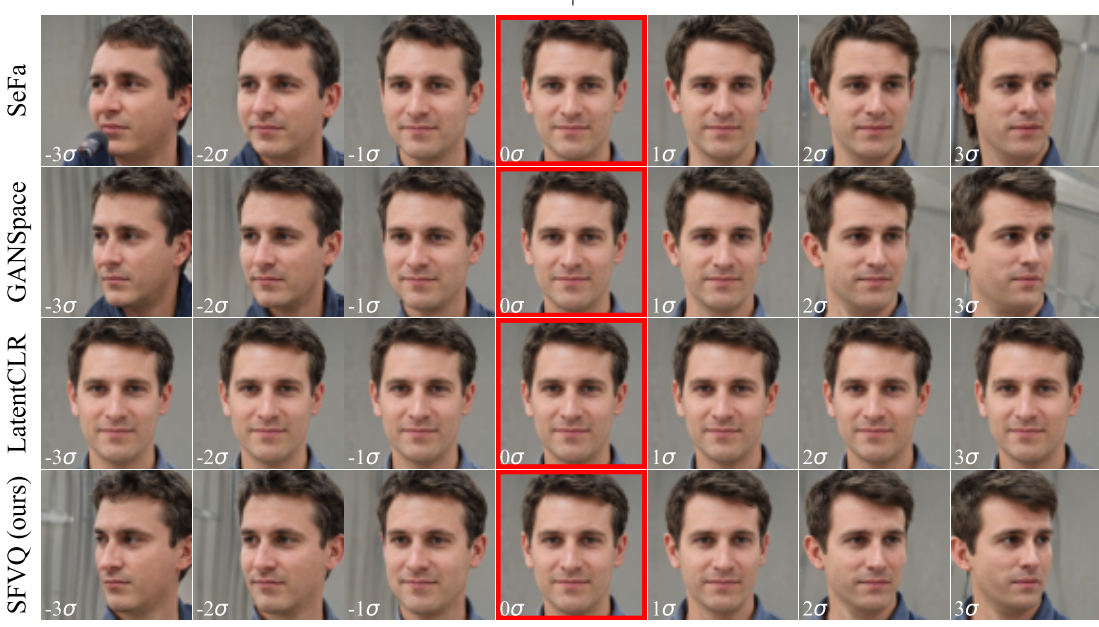
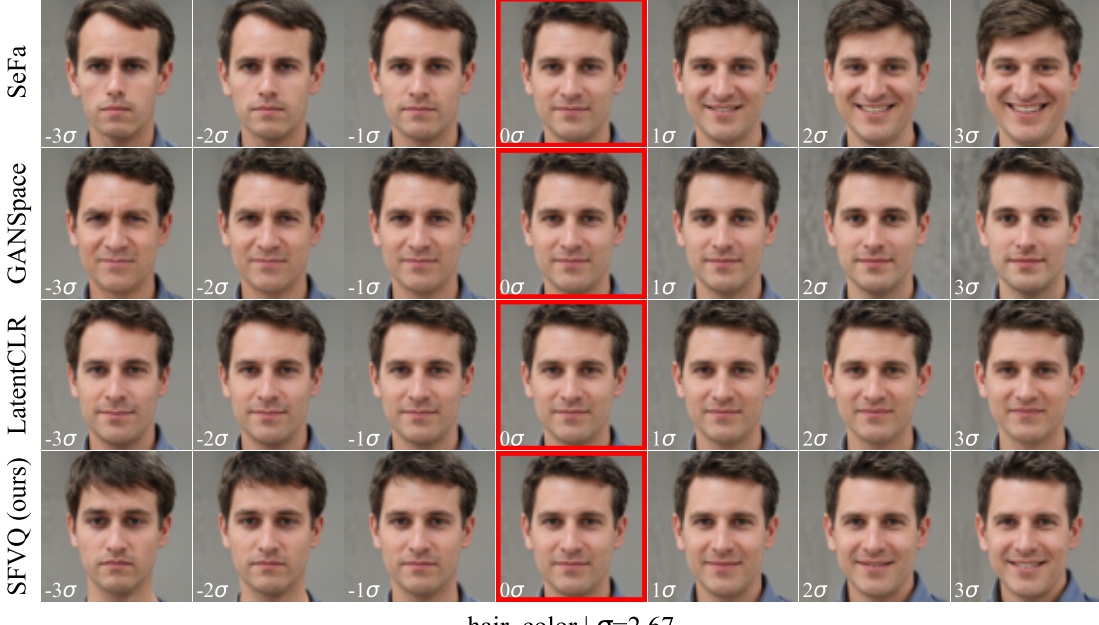
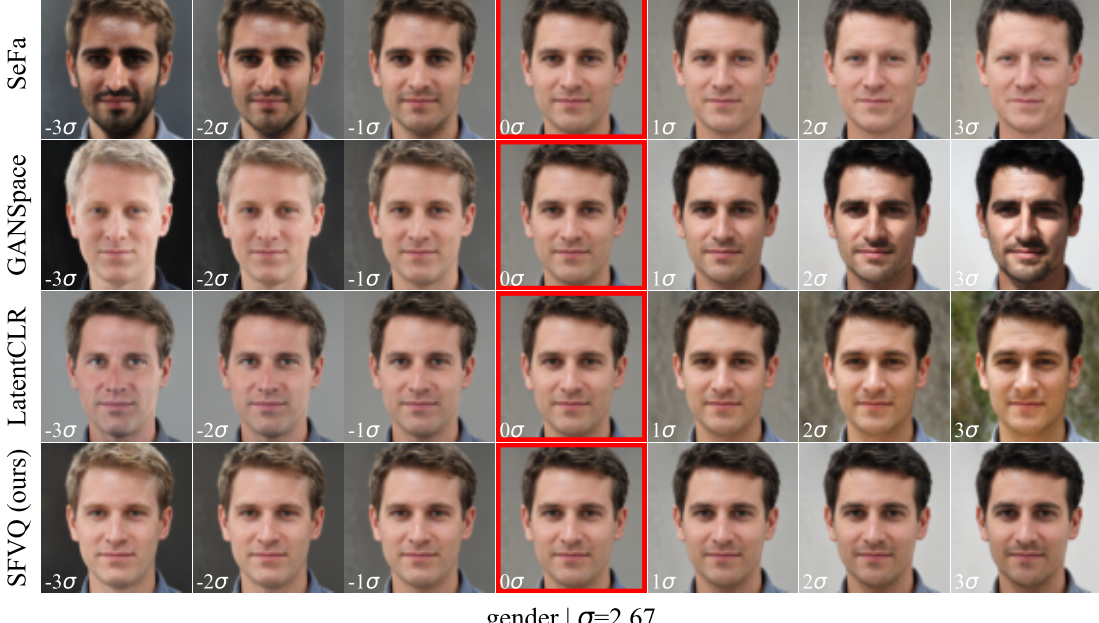
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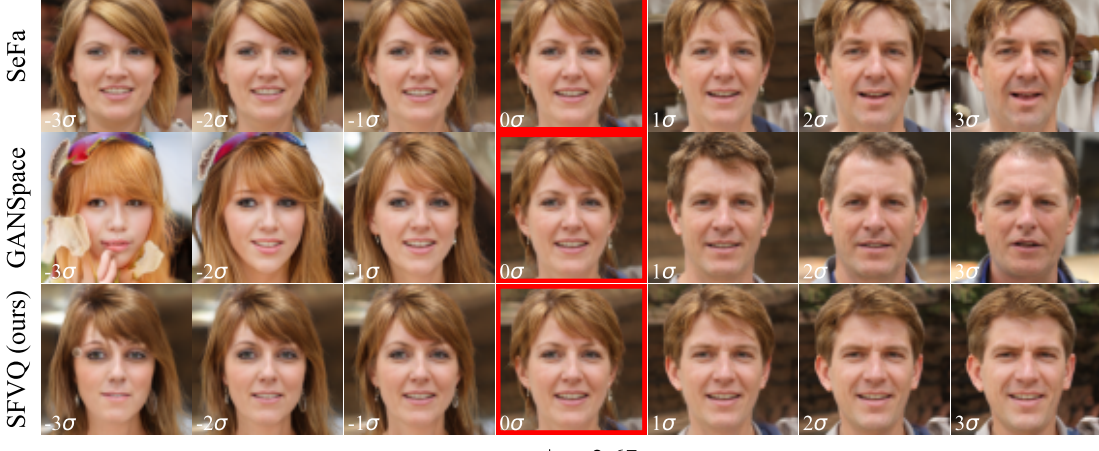
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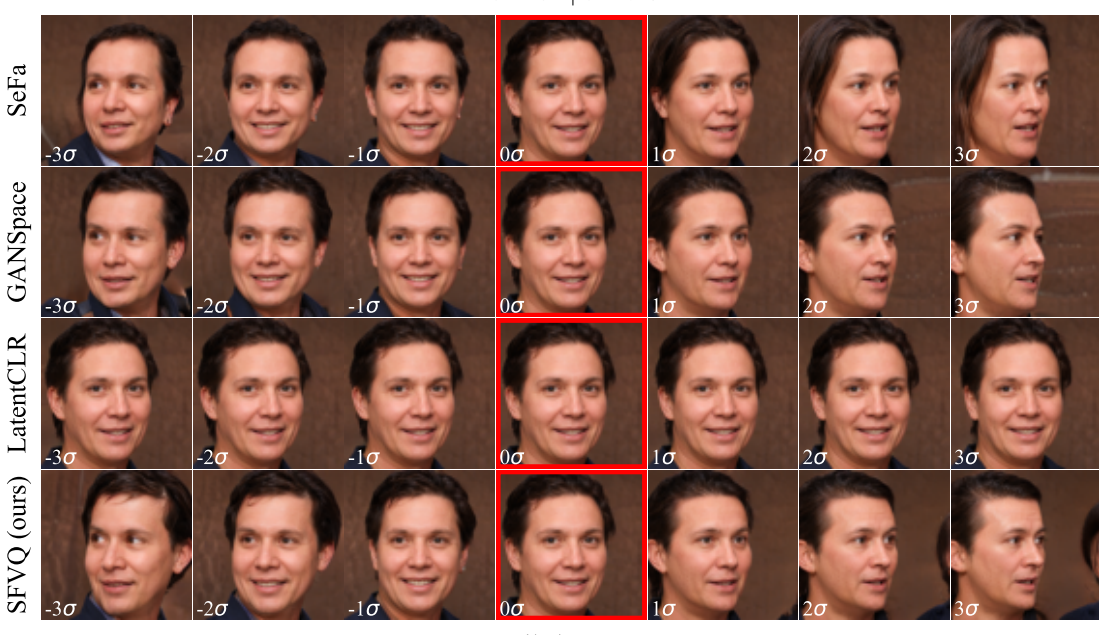
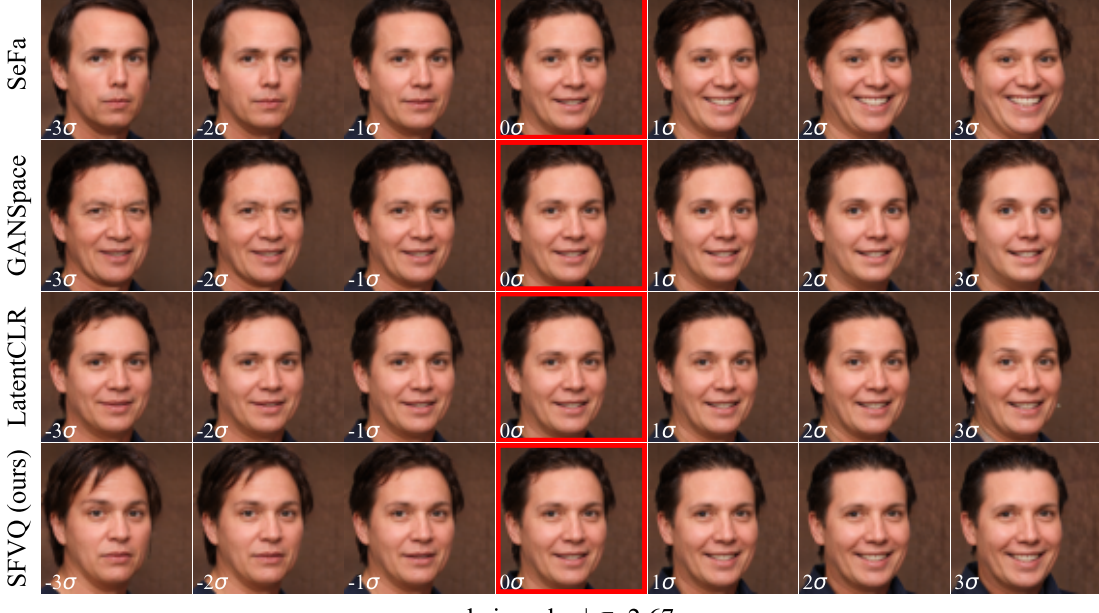
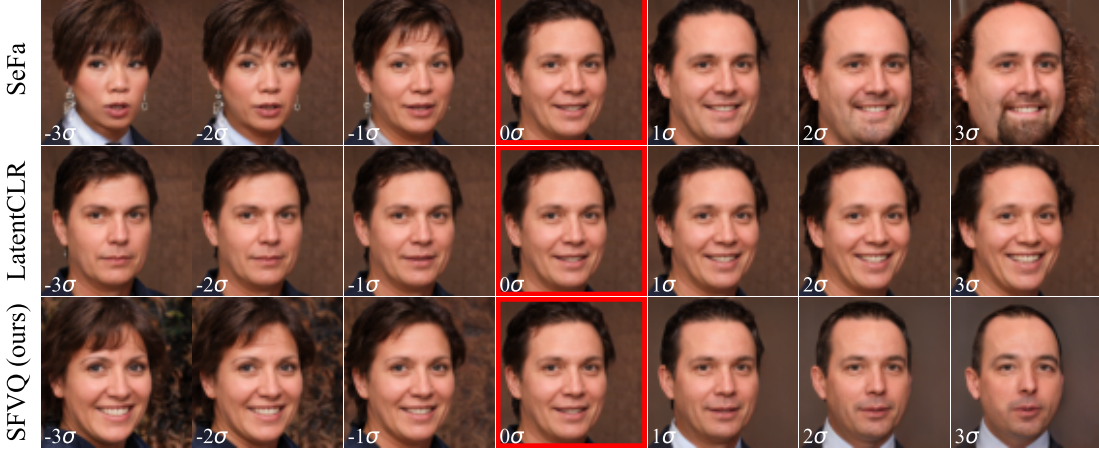
rotation | $\sigma=2.67$ smile | $\sigma=2.67$ hair_color | $\sigma=2.67$ gender | $\sigma=2.67$ age | $\sigma=2.67$ bald | $\sigma=2.67$ race | $\sigma=2.67$ 

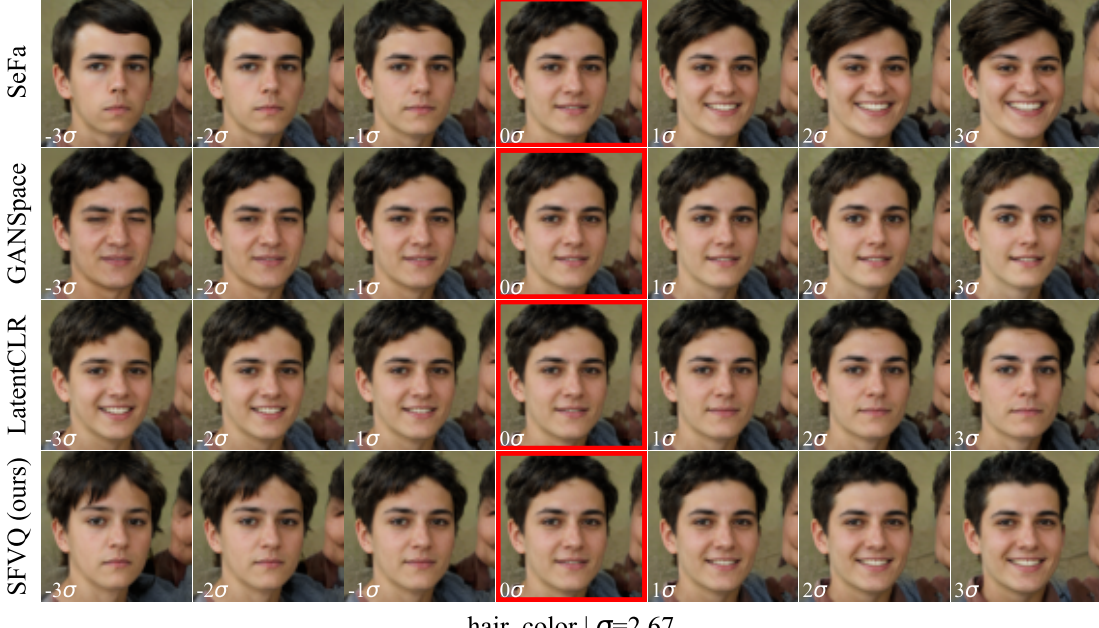
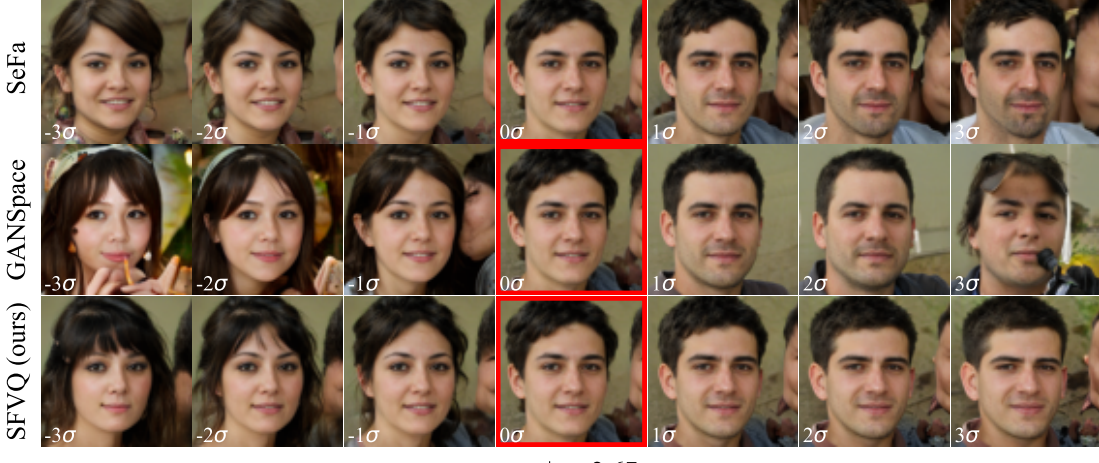
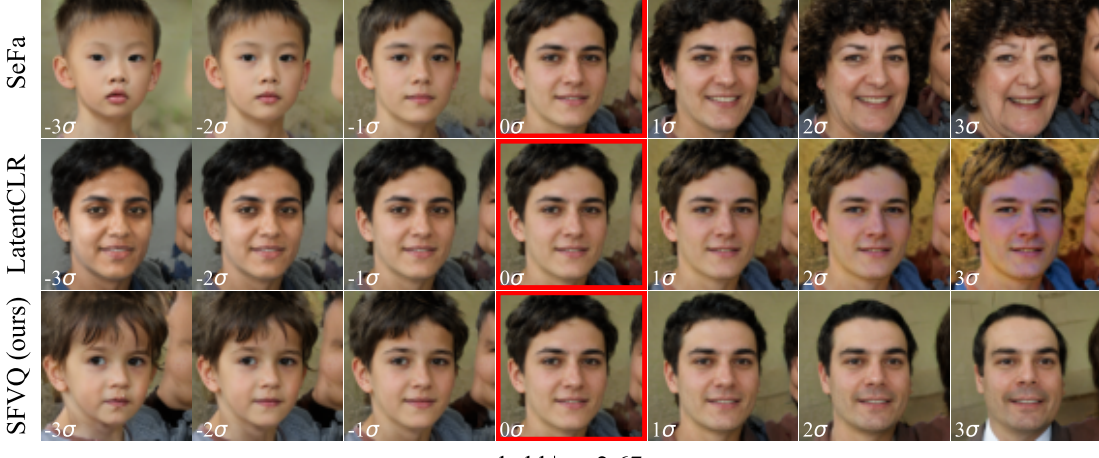
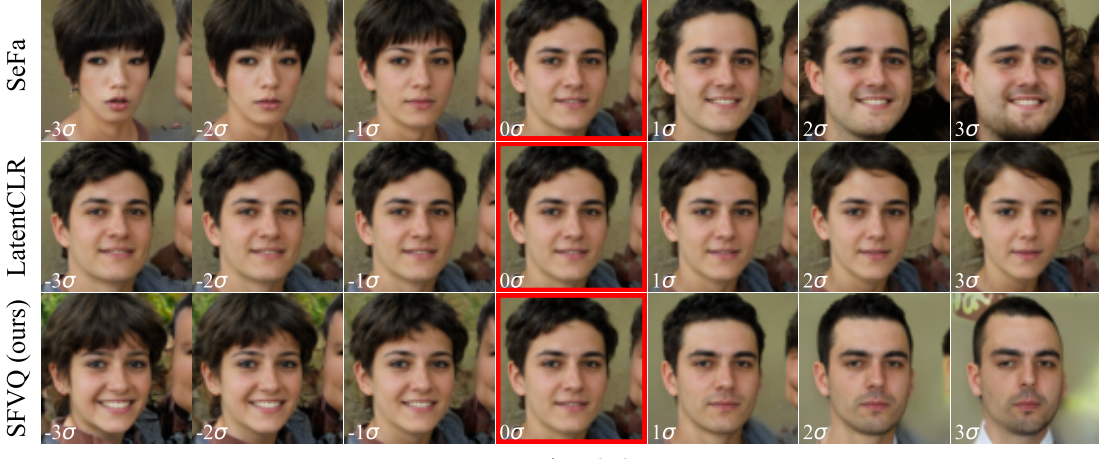
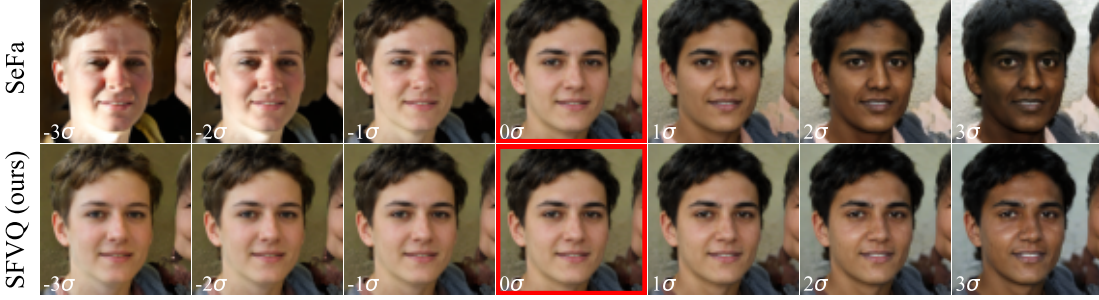
rotation | $\sigma=2.67$ smile | $\sigma=2.67$ hair_color | $\sigma=2.67$ gender | $\sigma=2.67$ age | $\sigma=2.67$ bald | $\sigma=2.67$ race | $\sigma=2.67$ 

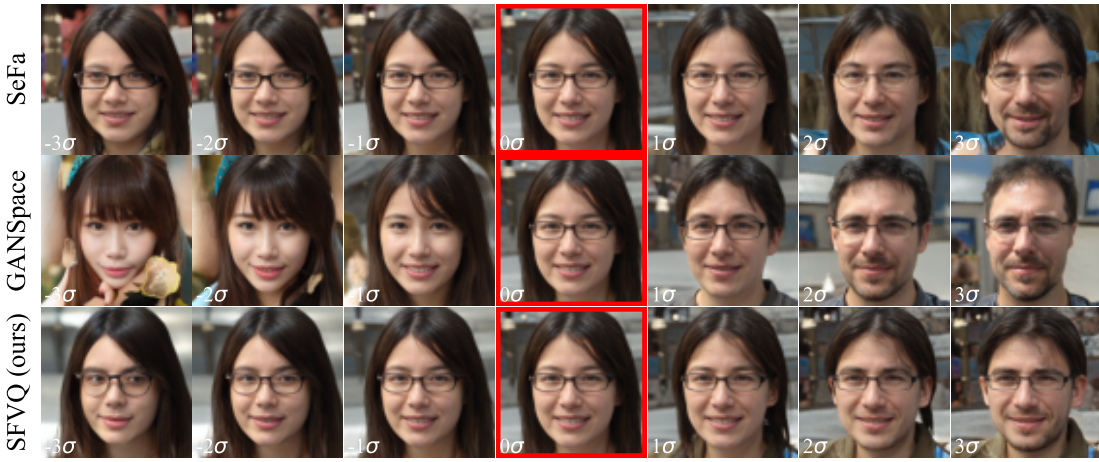
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rotation | $\sigma=2.67$ smile | $\sigma=2.67$ hair_color | $\sigma=2.67$ gender | $\sigma=2.67$ age | $\sigma=2.67$ bald | $\sigma=2.67$ race | $\sigma=2.67$ 

rotation | $\sigma=2.67$ smile | $\sigma=2.67$ hair_color | $\sigma=2.67$ gender | $\sigma=2.67$ age | $\sigma=2.67$ bald | $\sigma=2.67$ race | $\sigma=2.67$ 

rotation | $\sigma=2.67$ smile | $\sigma=2.67$ hair_color | $\sigma=2.67$ gender | $\sigma=2.67$ age | $\sigma=2.67$ bald | $\sigma=2.67$ race | $\sigma=2.67$ 

rotation | $\sigma=2.67$ smile | $\sigma=2.67$ hair_color | $\sigma=2.67$ gender | $\sigma=2.67$ age | $\sigma=2.67$ bald | $\sigma=2.67$ race | $\sigma=2.67$ 

rotation | $\sigma=2.67$ smile | $\sigma=2.67$ hair_color | $\sigma=2.67$ gender | $\sigma=2.67$ age | $\sigma=2.67$ bald | $\sigma=2.67$ race | $\sigma=2.67$ 