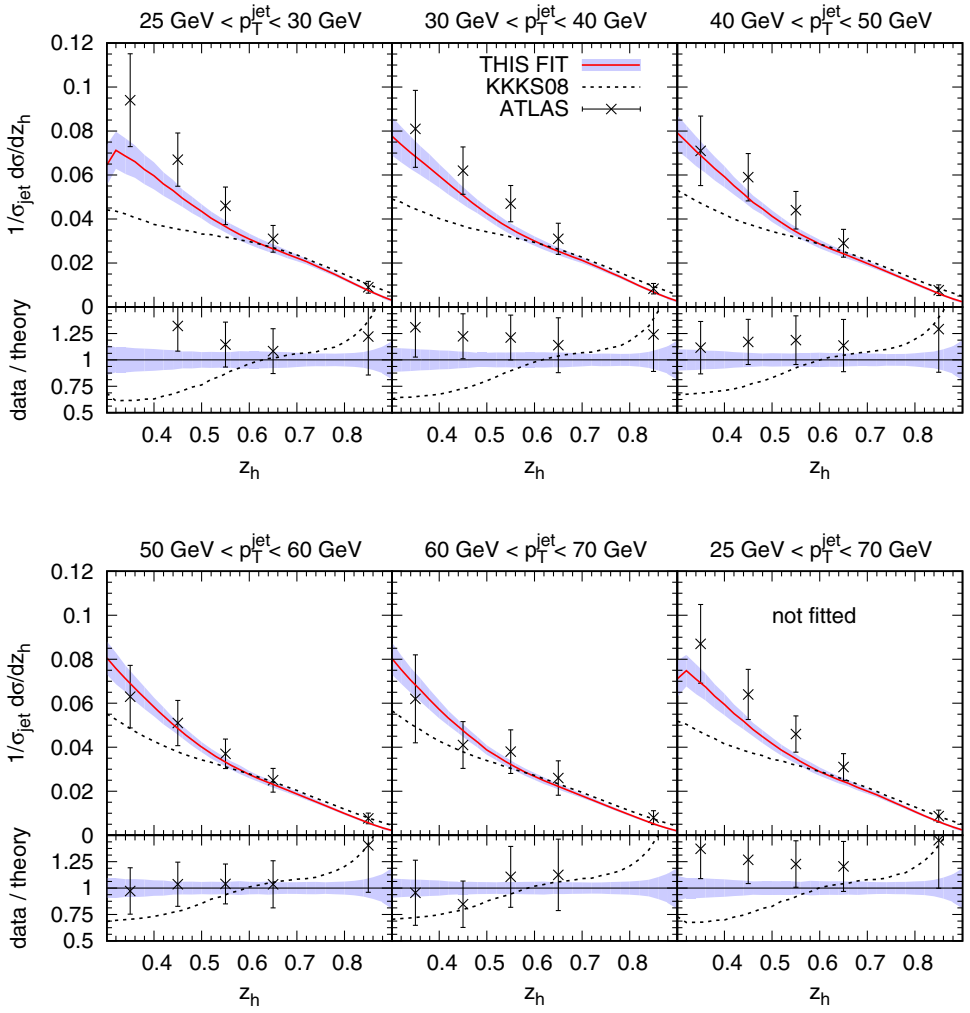

FIG. 8. Data on in-jet-fragmentation into $D^{*\pm}$-mesons measured at $\sqrt{S} = 7$ TeV as a function of the momentum fraction z_h in five bins of p_T^{jet} integrated over rapidity $|\eta^{\text{jet}}| < 2.5$ as provided by ATLAS [26]. The combination of all p_T^{jet} bins (lower right) is only shown for comparison and is not included in our fit to avoid double counting. In each panel, NLO results obtained with our best fit (solid lines) and the KKKS08 (dashed lines) FFs are shown. The shaded bands refer to uncertainty estimates based on our Hessian uncertainty sets. In the lower panels of each plot, the ratio of the data and the KKKS08 prediction with respect to our NLO result are given.

The KKKS08 FFs follow the trend of the data even further down to the lowest p_T values shown in Figs. 6 and 7; for the sake of applicability of pQCD, we refrain from showing comparisons to the LHCb data below $p_T = 2$ GeV. This feature of the KKKS08 fit, which is unexpected in a ZMVFNS approach, might be due to the inclusion of finite hadron mass corrections in their fit of SIA data, that are, however, beyond the factorized framework outlined in Sec. II and adopted by us. It is also interesting to notice that there are some indications for a mild tension between the ATLAS and the LHCb data in our global fit. The ATLAS data alone would prefer a somewhat larger gluon-to-D^{*+}-meson FF as can be inferred from the middle panel of Fig. 5. This would yield a significantly better fit of the ATLAS data in terms of χ^2 even when the in-jet fragmentation data, which we shall discuss next, are included in the fit. The latest, revised version of the LHCb data [36] does not tolerate, however, such an increased gluon FF in our global analysis.

We refrain from showing comparisons of our theoretical results with the ALICE and CDF data on single-inclusive, high-p_T D^{*+}-meson production. As can be seen from Table II, the few data points which pass our cut on p_T are very well reproduced by our fit. Again, adopting the KKKS08 set of FFs leads to a similar description of these data, assuming $D_i^{D^{*+}} = D_i^{D^{*\pm}}/2$.

Finally, we turn to data on in-jet production, which, in this paper, are considered for the first time in a global QCD analysis of FFs and, hence, represent the centerpiece of our phenomenological studies. The relevant QCD formalism to compute in-jet production in the standard factorized framework at NLO accuracy was sketched in Sec. II C. The main and novel asset of this process, as compared to single-inclusive hadron production in pp collisions, is the fact that