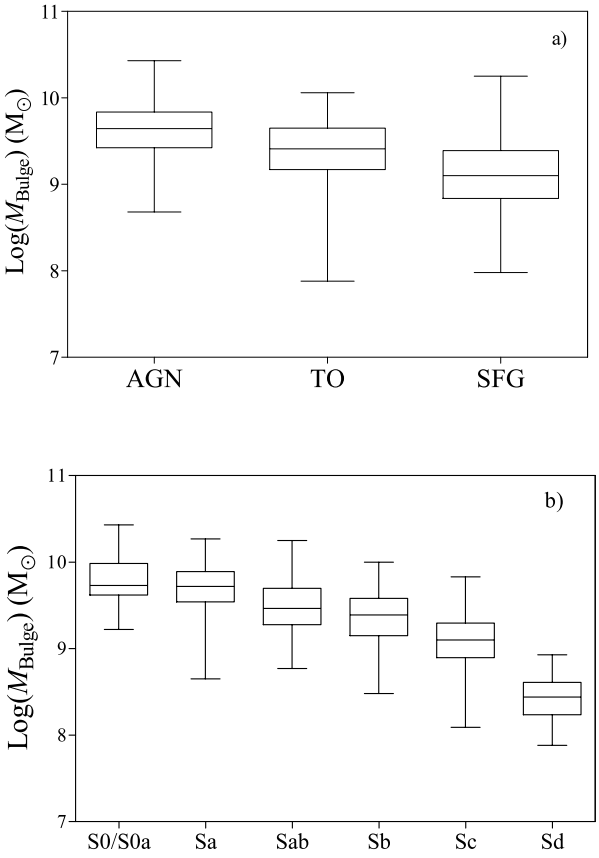

Fig. 6. Box-whisker plots for the bulge masses of galaxies as function of (a) activity type, (b) morphology. The middle line is the median, the box is limited by the percentiles and the whiskers indicate the full range of values.

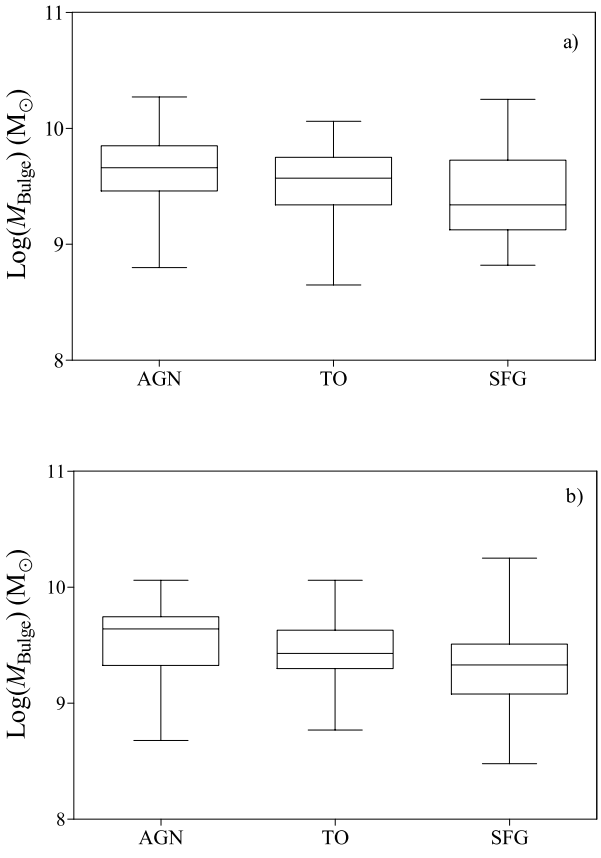

Fig. 7. Box-whisker plots for the bulge masses as found (a) in group 1 (Sa and Sab galaxies), and (b) in group 2 (Sab and Sb galaxies). Box-whiskers are defined as in Figure 6.

the bulge mass, and the higher the probability to see an AGN. This is also consistent with the diagnostic diagrams, which show a larger frequency of AGNs in earlier morphological types. In Group 1, the numbers of AGNs, SFGs and TOs are 67, 21 and 35, respectively, while in Group 2 these numbers change to 47, 53 and 51 respectively. For an increase by a factor of 2 in bulge mass, from Sa to Sb (the bulge mass increases by factor of 3.5 from AGN to SFG in Table 5), the number of AGNs slightly falls and the number of TOs and SFGs doubles.

The bulge mass being an important morphological parameter, the strong correlation found with AGN activity suggests this phenomenon is intimately connected with the formation process of the galaxies.

3.2. *Activity type vs. galaxy mass*

We have estimated the masses of our galaxies using two different methods. The first method is based on 2MASS K band luminosities (as compiled in Table 2), while the second is based on the absolute B magnitudes, which were obtained using the Johnson-B band magnitude synthesized from the SDSS magnitudes (Fukugita et al. 1996). The absolute magnitudes in B are compiled in Tables 6, 8 and 9, for the SFGs, AGNs, and TOs, respectively. The uncertainty is of the order of 0.05 mag. Being insensitive to dust extinction and to the morphological type of the galaxies the near-infrared emission is a better tracer of the stellar mass than the B magnitudes, for which we need to apply a correction depending on the morphology.

The K luminosities were transformed into masses using the mass-to-light ratio $M/L_K = 0.95$, as estimated by Bell et al. (2003). To transform the B absolute magnitudes into masses, we first corrected for galactic extinction and k-correction using the code developed by Blanton & Roweis (2007). Then we applied the different mass-to-light ratios for galaxies