William B Johnson, Bernard Maurey and Gideon Schechtman*
(gideon@weizmann.ac.il), Department of Mathematics, Weizmann Institute of Science, 76100 Rehovot, Israel. The class of $L_1$ spaces is closed under uniform equivalences. Preliminary report.

We show, in particular, that a linear operator between finite dimensional normed spaces which factors through a third separable Banach space $Z$ via Lipschitz maps factors linearly through the identity from $L_\infty(Z)$ to $L_1(Z)$ (and thus in particular through each of $L_p(Z)$) with the same factorization constant. It follows that, for each $1 \leq p \leq \infty$, the class of $L_p$ spaces is closed under uniform (and even coarse) equivalences. The case $p = 1$ is new and solves a problem raised by Heinrich and Mankiewicz in 1982. (Received September 20, 2005)