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I will discuss some interrelated topics in the cohomology and Ext groups for finite groups of Lie type, algebraic groups, and quantum groups. Of interest are 1) the negative solution to an old (1961) conjecture on maximal subgroups of finite groups, via counterexamples due to Frank Luebeck and a student of mine, Tim Sprowl, using Kazhdan-Lusztig polynomials and algebraic groups cohomology. 2) three conjectures by myself and Brian Parshall, on the interrelationship of Kazhdan-Lusztig polynomials and cohomology/Ext groups for modules in the algebraic groups case which come from irreducible modules for quantum groups. 3) the solution of the third of the above conjectures by a student, Hankyung Ko, of Parshall. One consequence is the calculation of all Ext^n groups between irreducible modules for quantum groups in type A at a root of unity, even with singular highest weights.