GRIN1 is a gene that encodes the N-methyl-D aspartate (NMDA) receptor subunit1 (NR1). Variations of *GRIN1* have been identified as a risk factor for schizophrenia and drug dependence, supporting hypotheses of glutamatergic dysfunction in these disorders. Methamphetamine (METH) is a psychostimulant drug which can induce psychotic symptoms reminiscent of those found in schizophrenia; thus *GRIN1* is a candidate gene for vulnerability to METH dependence or METH-dependent psychosis. The present study examined two polymorphisms of *GRIN1*, rs11146020 (G1001C) and rs1126442 (G2108A) in 100 male Thai METH dependence patients and 75 healthy controls using PCR-RFLP techniques. Neither polymorphism was significantly associated with METH dependence, although rs1126442 was highly significantly associated with METH-dependent psychosis, in which the A allele showed reduced frequency ($P < 0.00001$). Haplotype analyses of the two polymorphisms, not in linkage disequilibrium, again did not identify association with METH dependence. The present findings indicate that the rs1126442 of *GRIN1* contributes to the genetic vulnerability to psychosis in METH–dependent subjects in the Thai population.