

## CS03-02

### DEFINING REPLICATION IN GENE X ENVIRONMENT INTERACTION RESEARCH: THE RISK OF SPURIOUS ASSOCIATIONS

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There has been considerable interest in recent years in the investigation of the role of gene x environment (G x E) interactions in aetiology of psychiatric disorders. While the fact that genetic effects may moderate the effects of environmental exposure is widely accepted, and supported by family and twin studies, there is controversy regarding the degree of evidence for specific G x E interactions reported in the literature. Here it is argued that examples of environmental interactions with genes identified at the molecular level are not as well established as widely believed.

A number of relevant factors influencing the weight of evidence for specific G x E interactions will be discussed, including the degree of stringency employed in the definition of "replication", the impact of different statistical models used to test for interactions, and the statistical power of individual studies. It is concluded that in only a minority of studies is a replication reported that is qualitatively comparable to that in the original report. Given reasonable assumptions regarding likely genetic and environmental effects, simulations indicate that published studies are most likely underpowered, suggesting that positive results for widely reported G x E interactions may be compatible with chance findings.