

# Psychiatric Aspects Of MDMA (3,4-Methylenedioxymethamphetamine): The 'Diathesis-Stress' Explanatory Model

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**Keywords:** MDMA, ecstasy, diathesis, psychiatry, depression, stress, anxiety, schizophrenia.

## INTRODUCTION

The empirical literature on psychiatric functioning in recreational Ecstasy/MDMA use will be reviewed, and the main explanatory models compared.

## METHODS

3,4-methylenedioxymethamphetamine (MDMA) or 'Ecstasy', is a powerful sympathomimetic and metabolic stressor [1, 2]. As with every other recreational stimulant, this methamphetamine derivative is associated with increased levels of psychiatric distress. The empirical literature of case studies, larger cohort studies, and prospective surveys [3-10], will be reviewed (Table 1).

memory/cognition, eating, sleep and sex, show similar dose-related associations with MDMA, suggesting that these psychiatric problems may be part of a wider dimension of neuropsychobiological distress [2, 4].

## DISCUSSION

Lieb *et al.* [7] proposed that: 'two basic causal pathways can be assumed: 1. mental disorders lead to substance use... or 2: mental disorders are consequence of substance use'. These alternative choice models have been suggested by other MDMA researchers, although both models are incomplete as theoretical explanations. The first is restricted to internal factors - the second to external agents. Piaget's theory of Genetic Epistemology, notes that models of knowledge need *both*

**Table 1. Three Explanatory Models for the Association Between Recreational Ecstasy/MDMA, and Psychiatric Distress**

<b>Premorbid vulnerability.</b> [7]	Psychiatric problems present prior to MDMA usage. The association reflects a greater use of illicit drugs amongst disadvantaged groups
<b>Drug causation</b> [2, 4]	MDMA is a neuropsychobiological stressor. It has damaging effects on serotonergic and dopaminergic neurotransmission. It also disrupts the HPA-axis, and can adversely affects neuroendocrine functioning
<b>Diathesis-Stress interactions.</b> [2, 5, 8-10]	This model combines both above factors. Neuropsychobiological integrity is disrupted by CNS stimulant drugs. However the form of any emergent problems will reflect a range of prior vulnerability factors, and other modulatory influences, such as gender, genetics, and environmental co-stimulation.

## RESULTS

The first individual case studies were published around 1990-1994, soon after MDMA was used for recreational purposes. In a comprehensive review of this case study literature, around one third of individuals had premorbid problems, while most cases did not have prior vulnerability factors [3]. Larger population surveys have found that recreational Ecstasy use is associated with significantly raised levels of depression, anxiety, phobic anxiety, agoraphobia, and paranoid psychosis [4-10]. The occurrence of these problems is associated with lifetime Ecstasy/MDMA usage [4, 5]. Furthermore, around 70% of recreational users report improved psychiatric well-being, after quitting ecstasy [6]. Other functional problems in

internal and external factors, which interact together in complex and dynamic ways (*viz*: assimilation and accommodation). The diathesis-stress model provides a far more complete explanation, hence its widespread use in clinical psychiatry. Both causal factors are seen as natural and complementary, rather than contradictory. They are also seen in dimensional terms. Predisposition factors will vary from low to high, with individuals differing in susceptibility to stress [8]. Other modulatory factors may include differences in genetic loading [9], personality, and gender [10]. Drug stressors are also on a continuum, with acute bingeing, lifetime dosage, and combined drug-dancing bioenergetic overstimulation, each associated with more psychiatric distress [2, 4, 5]. In summary, the interactive diathesis-stress model can explain the wide range of potential reactions to recreational stimulant drugs, such as Ecstasy/MDMA.

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## CONCLUSIONS

Psychiatric distress levels are significantly raised in recreational Ecstasy/MDMA users. Prior disposition factors and drug stressors can both be important, and they are dynamically combined in the diathesis-stress model. Here causation is seen as complex, interactive, and multifactorial.

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Received: November 4, 2010

Revised: November 13, 2010

Accepted: November 13, 2010

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