THE 'E' IN RAVE

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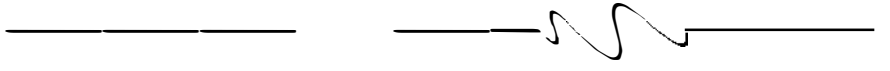
A PROFILE OF YOUNG ECSTASY USERS AND ITS IMPLICATIONS FOR EDUCATORS



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First edition, first impression

ISBN 1-86888-235-7

Published by Unisa Press
University of South Africa
PO Box 392, Unisa, 0003

Cover and layout design: Thea Venter, Unisa Press
Typesetting: Compleat Typesetters
Printed by ABC Press, Epping

In memory of my late father,
John Zervogiannis
ΙΟΑΝΝΙΣ ΖΕΡΒΟΓΙΑΝΝΙΣ,
1939–2000

This one is for you, Dad.

This is for you, for the father I love.
For the one who has helped me through all my childhood fears and failures.
For the man who is a wonderful example of what more men should be.
For the person whose devotion to his family is marked by gentle strength and guidance.
If you never knew how much I respect and admire you,
I want you to know it now, Dad . . .
I think you are the best father that any child ever had.
– A Rogers

Rest in peace.

ΑΙΩΝΙΑ ΣΟΥ Η ΜΝΗΜΗ ΑΓΑΠΗΜΕΝΕ ΜΟΥ ΠΑΤΕΡΑ

CONTENTS

PREFACE

The use of methylenedioxymethamphetamine (MDMA) or 'Ecstasy', as it is commonly known, is a phenomenon that has established itself in the widespread Rave culture. Ecstasy use causes not only physical and psychological problems in the development of the adolescent, but may also influence his or her concept of self, academic performance, concentration and learning abilities. The use of the drug can also give rise to a number of social problems that include relations with family, school or work, the law and possible personality changes. To prevent these problems, educators should be well informed regarding current drug-use trends and should also be capable of assisting adolescents. The term *educator* includes parents, teachers, guidance counsellors and psychologists. Teachers as secondary educators possibly only surpass parents in their close involvement in the development of the adolescent.

Research on the precise nature of Ecstasy use and the characteristics of its users is lacking in South Africa. The increase in Ecstasy use amongst school-going adolescents and young adults, and the fact that there are side-effects and unknown long-term effects have made it imperative that educators learn as much as possible about this drug. The purpose of this book is therefore to furnish the educator – as well as the friends of Ecstasy users, the users and potential users themselves – with accurate information that will enable him or her to obtain a reference point from which assistance can be offered to the young Ecstasy user.

ACKNOWLEDGEMENTS

I should like to express my sincere thanks and appreciation to the following people, without whose support this book would not have been possible:

Professor E Wiechers, my supervisor, for her invaluable assistance, enthusiasm, patience, guidance and the hours she devoted to me. Professor J R Snyman for his expert advice regarding MDMA. My parents, John and Sophia Zervogiannis, my brother, Evan, and my partner, Shaun Stapleton, for their endless support and encouragement not only during this research but over the many years of my studies. The owners of a Durban nightclub for approval granted to undertake the empirical research at their club and the ravers of Durban clubs for making it possible for me to conduct my research. DJ Sam for his musical input, Andre Mostert for his delightful graphics, cartoons and comic strip, and Jeff Kayton for his ingenious photography.

Finally, the greatest praise should go to God, whose all-encompassing grace enabled me to complete this research during a trying and emotional time in my life.

ΔΟΞΑΣΜΕΝΟ ΤΟ ΟΝΟΜΑ ΣΟΥ ΚΥΡΙΕ

ABBREVIATIONS

11-C carbon-11
[11C]McN-5652 radioligand
5-HIAA 5-hydroxyindoleacetic acid; breakdown product of serotonin in spinal fluid
5-HT hydroxytryptamine; serotonin
ARF acute renal failure
AVP arginine vasopressin (formerly an antidiuretic hormone)
BP blood pressure
BPM beats per minute
CD compact disc
CNS central nervous stimulant
CSF cerebro-spinal fluid
DEA Drug Enforcement Agency (USA)
dec decreased
DIC disseminated intravascular coagulation (a blood clotting disorder)
DJ disc jockey
DSM-IV *Diagnostic and Statistical Manual of Mental Disorders* (fourth edition)
E Ecstasy
EEG electroencephalogram
FDA Food and Drug Administration (USA)
GHB gammahydroxybutyrate
ICD-10 Tenth International Classification of Mental and Behavioural Disorders
LD lethal dose
LSD lysergic acid diethylamide
M male
MAPS Multidisciplinary Association for Psychedelic Studies
MDA methylenedioxy-amphetamine
MBDB methylbenzodioxy-lbutanamine
MDE methylenedioxy-ethamphetamine
MDEA methylenedioxy-ethylamphetamine
MDMA methylenedioxy-methamphetamine (Ecstasy)
ml millilitre
mg milligram
MMDA methoxymethyldioxy-amphetamine
ng nanogram (one millionth of a gram)
NIDA National Institute of Drug Abuse
PET positron emission tomography scans
PLUR peace, love, unity and mutual respect (Rave ideals)
POST Parliamentary Office of Science and Technology
R rhabdomyolysis
REM rapid eye movement
SANAB South African Narcotics Bureau
SANCA South African National Council on Alcoholism and Drug Abuse
SSRI selective serotonin reuptake inhibitor
SWS slow wave sleep
T temperature
UK United Kingdom
US United States of America

CHAPTER 1

INTRODUCTORY ORIENTATION, PROBLEM ANALYSIS, OBJECTIVES AND DEFINITION OF CONCEPTS

1.1 INTRODUCTORY ORIENTATION

Adolescents of both sexes and from a wide range of social backgrounds are trying and using drugs far more frequently than their predecessors (Parker 1995:01). With the onset of the Rave scene in the late eighties, Ecstasy ranked as one of the favourite substances of abuse. The Rave scene promoted a whole new sub-culture of Ecstasy brand names (distinguished by their colouring or tiny pictograms stamped into the tablet), along with the term *dance drugs* which appropriately described a range of drugs associated with that part of the club scene devoted to music described as *house*, *techno*, *garage* and *trance*. Surveys suggest that somewhere between 1 and 5 million people have tried Ecstasy (methylenedioxymethamphetamine (MDMA) in the United Kingdom (UK), with an estimated 500 000 people taking it weekly (*New Statesman and Society* 1995:14). The use of the drug Ecstasy is extremely common in many other parts of the world including the United States of America (US), western European countries and Australia (Solowij, Hall & Lee 1992:1 161). In South Africa an estimated 10 000 to 12 000 people ingest the drug weekly (South African Police Ecstasy Drug Conference 1996).

The *Pocket Oxford Dictionary* (1978:270) defines *ecstasy* as 'an exalted state of feeling of rapture, joy or delight' and 'an emotional or religious frenzy or trance-like state'. In the mid-eighties, *Ecstasy* acquired another meaning when it was banned in the US – that of the illegal drug MDMA, whose range of effects encompasses all of the above definitions. In South Africa, however, MDMA was legal until 1993. On 7 May 1993 MDMA was taken up in Schedule 8 of the Medicines and Medicines Control Act, 1965 (Act 101 of 1965) (South African Police Ecstasy Drug Conference 1996). Despite the scheduling of MDMA, people still continue to use this drug throughout the world.

Reynolds (1998:xxii) states that 'MDMA is a remarkable chemical, combining the sensory intensification and auditory enhancement of marijuana and low-dose [lysergic acid diethylamide] LSD, the sleep-defying, energy-boosting effects of speed and the uninhibited conviviality of alcohol. If that was not enough, MDMA offers unique effects of empathy and insight.' Depending on expectations and context, the Ecstasy experience ranges from open-hearted, emotional conversation through collective feelings of wellbeing and happiness to full-blown spiritual elevation. Used in therapy (Beck & Morgan 1986:291; Cohen 1995:1 138; Elk 1996:350; Henderson 1997:xx), Ecstasy can facilitate a deep-felt experience of interpersonal communication and self-discovery. In the Rave environment, Ecstasy acts as both 'party-igniting fun fuel' and the stimulus for acceptance and togetherness (Reynolds 1998:xxii).

What all these different uses of MDMA have in common is *ekstasis*: the Greek etymological root of *Ecstasy*. Its literal meaning is 'standing outside oneself' (Reynolds 1998:xxii). 'MDMA takes you out of yourself and into a blissful merger with something larger than the isolate "I", whether that trans-individual is the couple in love or the dancing crowd or the cosmos. MDMA is the "we" drug.' It is about an almost instantaneous way of overcoming alienation (Reynolds 1998:xxii). It is the friendly, happy drug.

Although the Ecstasy phenomenon has been the subject of physiological, sociological, psychotherapeutic and psychiatric investigation, very little research has been done nationally in South Africa. Despite the widespread use of Ecstasy, Solowij, Hall and Lee (1992:1 162) note that there is a paucity of research regarding the ways in which Ecstasy is used and the nature of its effects. Because there are side-effects and unknown long-term effects, it is important to educate users and potential users. The increase in Ecstasy use among school-going adolescents and young adults has made it imperative that educators learn as much as possible about the drug and present that information honestly. Besides parents, teachers are the most intensively involved with the child in his or her daily comings and goings. Through this involvement, they become intimately acquainted with the child and are often the first to notice behavioural changes or when that child is not coping.

Adolescence is a period in which security is sought in conformity with the peer group, in uniformity and in gaining acceptance. It is a period during which social rejection, difference from, and exclusion by, peers are feared. Independence and self-sufficiency are pursued and the establishment of a personal value system leads to internal conflict as well as to conflict with figures of authority (Kruger 1992:03). To target the right audience, educators not only need to know who is taking the drug but also where they are taking it. The information going out to the targeted audience must be seen as accurate and credible. Young people will 'switch off' if the information does not correspond with their own experiences.

Experienced drug counsellor Cruickshank (in Williamson 1997:58) put it in a nutshell when he said: 'Teenagers have antennae like nobody's business. So there is a real danger in portraying something that is exceedingly rare – if it exists at all – as normal. You must give kids the plain facts. If they find out you're talking crap, they'll reject your whole message.'

Although this investigation focuses mainly on the Rave movement and Ecstasy use in late adolescence and early adulthood, namely 17- to 26-year-olds, it should be noted that there are some as young as 13 who are taking it.

1.2 PROBLEM ANALYSIS

1.2.1 Awareness of the problem

This research was initiated while working in Rave clubs on weekends, where it was observed that Rave is a culture devoted to hedonism; a culture synonymous with togetherness and empathy, and free of aggression and violence. One witnesses acceptance and social equality or, as Henderson (1997:xxvi) observes, 'the greater democratisation of youth culture ... male, female, black, white, whatever social class, gay, straight, able bodied, disabled – it all seemed not to matter'. A utopian existence? Not so. MDMA was the 'secret' element. With a name like *Ecstasy*, no other drug goes by a name which expresses a feeling of any kind, let alone such a positive one. Drug-taking in clubs does not appear to be about addiction, but rather about recreation – a leisure activity. Young people appear to choose to take Ecstasy freely for social reasons. It is fun and they enjoy it. It should be noted, however, that not everyone who participates in Raves takes Ecstasy. However, for everyone, Ecstasy is marketed within youth culture as safe, attractive and good value for money (Parker, Measham & Aldridge 1995:05).

The first impressions that a potential user gets of Ecstasy are the following: MDMA seemingly makes you feel happy, confident, loving towards others, exhilarated and even sexy. It does not seem to have a comedown or any of the fear or anxiety associated with LSD (Henderson 1997:47). You cannot get addicted (at least not physically). One of your friends tries it first and describes positive feelings to you. You finally try one and end up going into a sensual pleasure setting much greater and so much longer lasting than any dance club you have ever set foot in before. Total strangers, often from a completely different social group than your own, become your immediate friends. Anxiety and self-consciousness disappear. Ecstasy is something which allows you to

share the most wonderful experiences and make you feel as though you belong with hundreds or thousands of other people more than you ever did before (Henderson 1997:48). (See Appendix 1.)

1.2.2 Exploration of the problem

South Africa is experiencing a period of recession and change in all areas, but more particularly in social and political contexts. These changes lead to uncertainty about the future, which can be especially unsettling to the adolescent who is standing on the threshold of adulthood. Escalating crime, unemployment, violence and poverty – all these problems make the youth more prone to seeking an escape from the harsh realities of this modern world. One of the most pleasant escapes they feel, is participating in Raves or all-night dance parties. Doyle (1996:02) recognises the Rave movement as the strongest cultural influence among young people. He believes that many adolescents today find themselves cut off from their parents due to a communication gap, and a lack of care, love, guidance and understanding. They see a Rave as an attempt to create a new and better culture, incorporating the ideals of peace, love, unity and mutual respect (PLUR).

Rave culture as a whole is barely conceivable without drugs. For some, this makes the idea of Rave culture a contradiction in terms. Reynolds (1998:xix) states that one might define *culture* as something that 'tells you where you came from and where you are going, something that nourishes the spirit, imparts life wisdom and generally makes life habitable'. Rave therefore provokes the question: is it possible to base a culture on sensations rather than truths, and fascination rather than meaning?

Collin (1997:280) notes the difficulty in overstating the impact that Ecstasy has on young people's view of drug-taking. It is, many believe, not only an alternative to alcohol and tobacco, but a less-harmful alternative. Ecstasy appears to be socially acceptable to many who frown on the use of other illegal drugs. To the thousands of young people who have never taken illegal substances, Ecstasy's harmless appearance is the opposite of everything they have ever been told about drugs. Ecstasy does not have to be smoked, injected or even sniffed. 'It was literally an easy pill to swallow and it came packaged, not as a drug cult but as the ultimate entertainment concept with its own music, clubs and dress codes – and to many it was the euphoric peak of a lifetime' (Collin 1997:280).

McDermott (1991:109) reports that 'individuals develop a strange relationship with Ecstasy, a different relationship than with other drugs. Because they have such a good time on Ecstasy and it makes them feel so benevolent, there is a sense of "Well, this isn't a drug, or if it is, it is a very

benign substance''.' The special relationship with Ecstasy as a harmless, weekend, party drug opened up a whole new range of people to 'chemical romance' who may previously never have entered the illegal drug world (Henderson 1997:52).

Society's stereotypical portrayal of all drug users as sad, incorrigible victims is not reflective of ravers. Young people who take Ecstasy at Raves are not necessarily drop-outs or deviants. Almost all of them are perfectly ordinary, healthy young people from all social classes who maintain a high degree of functionality in daily life (Parker 1995:04) be it at school, university or in their professions. Educated, middle-class people – doctors, lawyers, psychologists, teachers, journalists and information technology specialists – enjoy Ecstasy. It is important to recognise their diversity and the variations of their life experiences.

'One of the central dynamics of Ecstasy culture is the attempt to recreate the initial euphoria, to relive the exhilarating high, to chase the thrill of the rush. This has produced a recreational drug culture on a scale bigger than any... this century' (Collin 1997:280). According to the South African Narcotics Bureau (SANAB) (1998), Ecstasy is taking over the drug market in South Africa. The lack of information regarding Ecstasy amongst its users can be portrayed as a danger in itself. Reynolds (1998:190) points out that the craving for heaven on earth almost always leads on to a dark side phase of drug excess and paranoia. Because the original euphoria of the early Ecstasy experience never really returns, users are tempted to increase the dose, which only increases the speediness and the unpleasant side-effects.

By 1996 in South Africa (1991 in the UK), things began changing both culturally and chemically, as the initial 'innocence' of the Rave scene began to fade. Recession and increased economic uncertainty made it the perfect time for drug excess and escape. However, taken too often, Ecstasy loses its special appeal and many users may get drawn into compensatory polydrug use, taking other substances to mimic the effects originally achieved by MDMA. A large number of ravers began to explore a wide range of legal and illegal psychoactive stimulants, taking them in any and every combination and knowing very little about their effects both in the short and long term. These ranged from alcohol to amphetamines (speed, whizz), cocaine (coke, charlie, schnarf), LSD (acid, candy), ketamine (kit kat, special K), gammahydroxybutyrate ((GHB), liquid E), amyl nitrate (poppers, rush), marijuana (grass, spliff), antidepressants such as fluoxetine (Prozac) and sertraline (Zoloft), tranquillisers such as valium (V), 'natural highs' such as cloud 9 (herbal Ecstasy) and guarana, midnite flite (ephedrine based), rohypnol (roche, roofies), diet pills (Thinz, Dietene) and *regmakers* (caffeine pills) and reactivan – anything to heighten the intoxication; to get further 'out there'. People no longer talked about 'getting on one' (getting 'high' on one pill) but rather, 'getting off my face' (ingesting

more than one pill combined with other drugs) (Collin 1997:282). Rave culture no longer appeared to be driven by MDMA alone. It had become a polydrug scene. Young people were becoming drug connoisseurs before they were legally adults at the age of 21.

Some began to realise that Ecstasy was not the wonder drug they had once believed it to be. People were ending up in hospital after long nights on the dance floor. The very drug which promised pleasure can and did actually kill (Collin 1997:282). The numbers were extremely small but the perception of Ecstasy as a safe recreational drug was being examined seriously. Henry (in Henry, Jeffreys & Dawling 1992) noted that Ecstasy was widely misrepresented as being safe. He went on to warn that the deaths, however small in number, might be an indication of a far worse catastrophe in the future. 'These few people who have died are tragic, but the critical factor is the possibility of long-term damage. What we have going on at the moment is a massive experiment, and we will only know the full answers in years to come' (Henry, Jeffreys & Dawling 1992:385).

Irrespective of certain Ecstasy-related fatalities, namely Britain's 18-year-old Leah Betts (1995) and Durban's 20-year-old Deeanne Groenewald (1998), death was not even enough to stem the tide. Some clubbers interviewed in the popular British dance magazine *Mixmag* (1996:23) confirmed this. Yes it was tragic, people responded, but some kind of 'freak accident' would not put most of them off swallowing another pill that weekend. 'There've been plenty of deaths,' said one respondent, 'you just go out and do it the next weekend. I know the risks and I am willing to keep on taking them.' Many Durban clubbers shared the same sentiments.

Because Ecstasy is illegal, there is no control over what the pills contain. Young people are ingesting pills despite not knowing what the quality of the pill is. There is no guarantee that any of them is Ecstasy. They choose to take the risk anyway. Henry (in Collin 1997:286) aptly delivered the catch phrase: 'Taking Ecstasy is like playing Russian roulette.' What is being sold as Ecstasy is seldom MDMA. Consequently, the finger is pointed at the dealers and manufacturers who are accused of cutting pills with everything from heroin to rat poison.

According to Brian Boucher (1998), senior superintendent of Point Road police station in Durban, 'there is a shortage of MDMA, so drug dealers are mixing E with other drugs, which is making it more dangerous'. Jan van der Merwe (1998), assistant director of the South African National Council on Alcoholism and Drug Dependence (SANCA), cites that 'as well as strychnine, backstreet drug manufacturers are known to mix arsenic, heroin, cocaine, LSD and animal tranquillisers with the basic ingredients'. This reinforces Ecstasy users' commonly held belief that contaminated pills, and not MDMA itself, are dangerous (Collin 1997:288).

Malcolm Brown (1996), the UK drugs liaison officer to the South African Police Service, affirms that the adulteration of Ecstasy has always occurred in the UK. Adulteration is often with innocuous substances, but it is not uncommon for Ecstasy to be mixed with cocaine, amphetamine, ephedrine and even caffeine. Sometimes methylenedioxyamphetamine (MDA), methylbenzodioxylbutanamine (MBDB), methoxymethyldioxyamphetamine (MMDA) and methylenedioxyethamphetamine (MDE) are used instead of MDMA (Eisner 1989:150--156) and are sold as Ecstasy to the unsuspecting user. (See Figure 1.1 on page 8.)

Although the purity of Ecstasy fluctuates, the general rule today, according to Reynolds (1998:xxx), appears to be that one has about a 10 per cent chance of buying a total dud (usually containing decongestants, antihistamines or harmless inert substances) and about 66 per cent likelihood of getting a variable dose of pure MDMA. The rest is taken up by pills that contain MDMA-related substances. Instead of making ravers more careful, the uncertainty of supply seems to have the reverse effect. Ravers keenly assume that they have been sold a low-grade product and take more pills to make up for it – resulting in the collective moan, 'E's are shit these days, you have to take a few of them to get on a buzz.'

Reynolds (1998:xxx–xxxi) maintains that excessive routine use coupled with Ecstasy's dwindling returns forms a vicious circle – a negative synergy. The individual's experience of Ecstasy is downgraded. On the collective level, Ecstasy or Rave scenes lose their happy, peaceful 'vibe' and become a 'soul-destroying' rut. This utopian/dystopian debate inherent in Rave culture led Reynolds (1998) to coin some new quasi-pharmacological terms: 'vitalyst' (from the words *vitalise* and *catalyst*) and 'obliviate' (from the words *oblivion* and *opiate*). These terms describe the drug experiences rather than the properties of MDMA itself; the same drug if abused, can cross the line between positive and negative (Reynolds 1998:xxxi). Ecstasy is not conducive to regular and frequent use. Tolerance develops to the desired positive effects of the drug while negative effects increase (Solowij, Hall & Lee 1992:1162).

Ecstasy starts out as a 'vitalyst': one feels more energetic, alive, confident and closer to others. On the macro level, Rave scenes in their early days are filled with vibrance, PLUR and a 'we're gonna change the world' idealism. However, with regular, uncontrolled use or abuse, Ecstasy can become just another 'obliviate' like alcohol and narcotics: something that 'numbs the soul' and transforms Rave scenes into escapes from reality (Reynolds 1998:xxxi). This utopian/dystopian shift is a recurring theme experienced by successive Ecstasy generations all over the world (Reynolds 1998:xxxi).

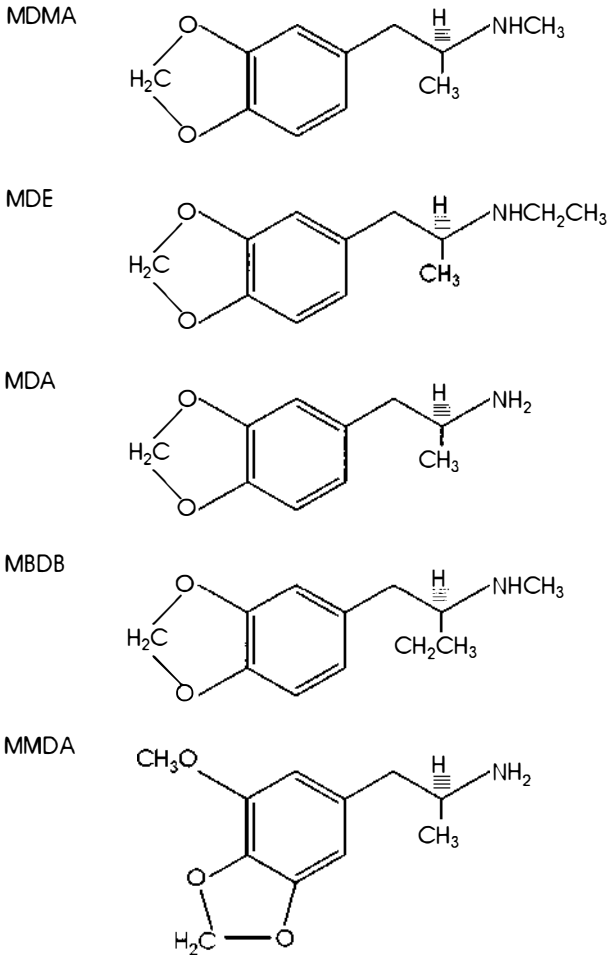


Figure 1.1 Chemical structure of MDMA and related substances

1.3 STATEMENT OF THE PROBLEM

As mentioned previously, the central problem pertinent to this investigation is adolescent Ecstasy use at Raves. Adolescence is a phase of life during which dramatic physical, cognitive and social development and change come about. Adolescents are therefore exposed to a wide range of stress-inducing factors. Apart from the irritability and inattentiveness that excessive stress may cause, increased smoking, drinking or drug use are some of the self-destructive behaviours in which adolescents may engage. Ecstasy use causes not only physical and psychological problems in the becoming and development of adolescents, but may also influence their self-concept, academic performance, concentration and learning abilities. The use of the drug can also give rise to a number of social problems that include relations with family, school or work, the law and possible personality changes. However, the extent to which these problems should be considered as drug problems rather than normal adolescent rites of passage is arguable and, as Saunders (1997:39) points out, often depends on highly subjective criteria.

Teachers as secondary educators are only surpassed by parents in the extent of their close involvement in the adolescent's development. They are therefore ideally positioned to identify the aforementioned influence of Ecstasy and to lend assistance. However, in order to offer assistance to the child who is taking Ecstasy, both parents and teachers must be sufficiently knowledgeable about Ecstasy use and be able to identify it in adolescents.

1.3.1 Subsidiary problems

- Young adolescents use the drug recreationally.
- Many young people appear dependent on Ecstasy to have fun.
- Young users believe that Ecstasy is a 'safe' drug.
- There has been an escalation in the number of Ecstasy pills consumed per occasion.
- There are risks involved in taking Ecstasy.
- The Ecstasy pills themselves may not contain MDMA.
- The long-term effects of Ecstasy (MDMA) are still unknown.
- Ecstasy is easily available at Raves.
- Raves expose young people to drugs.
- Rave participants perceive Ecstasy use as an accepted part of the night out.
- Ecstasy users may develop into polydrug users.

1.4 OBJECTIVE

The primary objective of this study is therefore:

- to develop an awareness of adolescent Ecstasy use at Raves, and provide educators with accurate, factual information regarding Ecstasy use and Rave participation so that users may be helped.

1.5 DELIMITING THE AREA OF INVESTIGATION

To identify young Ecstasy users, however, acceptable definitions of the terms *adolescent*, *youth*, *Ecstasy* (MDMA) and *Rave* must be formulated. The reasons for Ecstasy use will also be examined, as will the manifestation or effects and personal accounts or experiences of actual Ecstasy use in the adolescent.

A clear definition of concepts is necessary in order to preclude confusion and vagueness in the following chapters.

1.6 DEFINITION OF CONCEPTS

1.6.1 Methylenedioxymethamphetamine (MDMA)

This illegal substance is a semi-synthetic chemical compound scientifically known as *methylenedioxymethamphetamine* and commonly known as *Ecstasy*. MDMA is a member of the phenylethylamine family of drugs, related both to mescaline and amphetamine. It is often described as a stimulant and/or a hallucinogenic (Eisner 1989:04). The primary effects are a 'positive mood state' and feelings of intimacy and closeness. The secondary effects are the stimulant effects of energy and activation, and psychedelic effects of insight and perceptual sensual enhancement (Solowij, Hall & Lee 1992:1161). The structural activity of this drug is so different from others that, it has been argued, the drug deserves a new category. Terms that have been suggested to describe this category include *empathogen*, from the drug's capacity to evoke a sense of empathy, and *entactogen* from the Latin word meaning 'to touch within' (Eisner 1989:34).

1.6.2 Ecstasy

Ecstasy comes in tablets, capsules and occasionally white powder. The form of the tablets and capsules – their colour, shape, size and pictograms stamped on them – change all the time as the manufacturers try to evade the law (McFadyean 1997:60). The tablets often known as 'E' have a range of other names: love doves, killers, apples, VW, tulips, disco biscuits, Mitsubishis, white diamonds, Mercedes, one two five, clovers, sunshines, e-mails, dolphins, playboys, stars, pink champagnes, euros, 007, supermen – to cite a few.

1.6.3 Rave

A *Rave* usually refers to an all-night dance party which is open to the general public, where loud 'techno' music is played and many people partake of different recreational drugs, although the last-mentioned is far from necessary. A large part of the concept of Raves is built upon sensory overload – a bombardment of audio and very often visual stimuli are brought together to make people feel as though they are elevated into an altered state of consciousness (Brown & Behlendorf 1995:03).

1.6.4 Adolescence

Adolescence is the developmental phase between childhood and adulthood. The onset of adolescence is a physiological phenomenon (puberty) while its end is culturally determined (adulthood). Although it is difficult to delimit the adolescent phase in terms of chronological age, it is generally accepted that it starts between the ages of 11 and 13 years, and usually ends between 17 and 22 years (Gouws & Kruger 1996:03). This period can be subdivided into early (age 10–14), middle (age 15–17) and late adolescence (age 18–22) (Seifert, Hoffnung & Hoffnung 1997:333).

1.6.5 Adolescent

For the purpose of this study adolescents will therefore be viewed as youths on their path to adulthood. They are total, complete individuals, whose own feelings and perspectives influence their own personal goals within their own environments, as each lives as a member of society (Manaster 1989:14).

1.6.6 Youth

Many post-adolescents enter youth as a stage of life before proceeding to early adulthood. Youth is a distinctive period of growth devoted to developing a self-identity, namely figuring out who you are and who you want to be (Seifert, Hoffnung & Hoffnung 1997:409).

1.6.7 Early adulthood

Early adulthood is a period of assuming adult roles, earning a living and taking on the responsibilities of a household. These changes usually occur some time in the twenties but there is considerable variability (Seifert, Hoffnung & Hoffnung 1997:409).

CHAPTER 2

METHYLENEDIOXYMETHAMPHETAMINE (MDMA OR ECSTASY)

2.1 A BRIEF HISTORY

MDMA was first synthesised and patented in 1914, shortly before World War I, by the German pharmaceutical company Merck (Cohen 1995:1138). One version of the history of MDMA maintains that the drug was briefly prescribed as a slimming aid and another that it was initially produced as an appetite suppressant for German troops. If the latter is accurate, MDMA's aggression-reducing, empathy-inducing effects would quickly have disqualified its use in combat situations (Reynolds 1998:xxii). Although MDMA is widely believed originally to have been synthesised as an anorectic, the actual patent does not make mention for such use (Cohen 1995:1138).

The modern history of MDMA begins with its rediscovery in the early 1960s by Alexander Shulgin, widely regarded as 'the stepfather of Ecstasy' (Saunders 1997:07). Shulgin was then a biochemist working for Dow chemicals and following an interest in psychedelics on the sly. He later opened his own government-approved laboratory in San Francisco, dedicated to the synthesis of new psychoactive substances (Reynolds 1998:xxiii). Shulgin synthesised myristicin into MDMA in 1962 by extracting it from the oils of nutmeg and mace (Redhead 1993:08).

Not until the 1970s did MDMA become popular for its therapeutic and recreational qualities. Among those who noted the potential of MDMA the fear existed that it might become a 'street drug' as LSD had and that it might quickly be banned (Eisner 1989:02). Those who experimented with MDMA, many of whom were psychotherapists, attempted to control the spread of information about the drug as well as the substance itself. They hoped that enough informal research could be done before it became public to prevent it from becoming illegal. MDMA advocates hoped to restrict the use of the drug to clinically supervised sessions, while gradually campaigning for MDMA's medical legitimacy (Eisner 1989:02).

In the late seventies and early eighties, MDMA gained popularity as being an adjunct in counselling sessions. Therapists would administer the drug to their patients in an effort to facilitate the entire therapeutic process (Cohen 1995:1138). MDMA was reported to increase self-esteem, elevate mood, increase self-insight and enhance empathy (Elk 1996:350). Used in marriage therapy and psychoanalysis, the drug proved highly beneficial. Therapists claimed that a five-hour MDMA 'trip' could help the patient work through emotional blockages that would otherwise have taken five months of weekly sessions (Reynolds 1998:xxiii). However, its euphoria-inducing effects could not be hidden for long. Some of the same psychoactive qualities that made MDMA popular as a potential therapeutic aid in psychotherapy also made it appealing as a social recreational drug. Ecstasy had already crept out of the 'charge' of psychotherapy. Some reports of early underground batches start as early as 1970 (Eisner 1989:02).

Instead of being used in bonding sessions between couples or as a tool of personal discovery, Ecstasy proved to have other more appealing uses. When large numbers of people took Ecstasy together, the drug 'catalysed a strange and wondrous sense of collective intimacy, an electric sense of connection between complete strangers' (Reynolds 1998:xxiv). By the early eighties, an Ecstasy club scene had developed in Texas and MDMA was becoming an increasingly popular 'legal high' throughout the USA, replacing cocaine as the drug of choice (Saunders 1997:09).

Still in the early 1980s, several animal studies suggested that MDMA may cause neurotoxicity. With these findings, the American Drug Enforcement Administration (DEA) ordered a crisis hearing concerning the potential risks associated with MDMA ingestion. In 1985 MDMA was placed into the most restrictive of all drug categories in the USA, namely Schedule 1. (In South Africa Schedule 8 is the most restrictive drug category.) Also because of its structural similarity to MDA, which had earlier been linked to damaging serotonin-producing neurons in laboratory animals, the DEA believed that similar destruction could occur in humans, therefore possibly eliciting long-term side-effects (Cohen 1995:1138).

A great amount of uncertainty continues to exist regarding the quick scheduling of MDMA. It is widely believed that the decision to ban the drug was founded purely on animal studies and speculation regarding potential dangers with human use (Cohen 1995:1138). The fact that MDMA was declared illegal has had wide-ranging consequences, such as preventing the drug from being used legally by therapists, thereby making responsible research almost impossible. A further consequence was the reduction of the quality of the drug, which could then only be sold on the street, since demand was now met by clandestine laboratories and the drug was distributed through the criminal

network. Criminalisation, however, did not prevent the popularity of the drug from spreading worldwide (Saunders 1997:11).

By 1988, Ecstasy reached the Spanish holiday island of Ibiza. Here, the combination of Ecstasy with dancing to loud, upbeat electronic music in a night-life atmosphere was 'invented'. Ecstasy had become the preferred party drug. This combination spread from Ibiza to England and the Netherlands in particular, where a new youth culture, the Rave culture, emerged (Saunders 1997:11). In South Africa, MDMA was legal until 7 May 1993 after which it was taken up in Schedule 8 of the Medicines and Medicines Control Act, 1965 (Act 101 of 1965) (South African Police Ecstasy Drug Conference 1996). Since the use of MDMA has not been proven safe under medical supervision, there is currently no accepted medical use for MDMA and it remains a controlled substance (Elk 1996:350). In 1994 MDMA was approved for formal human research by the American Food and Drug Administration (FDA) so that the possible dangers of recreational use of this illegal drug could be addressed (Elk 1996:354).

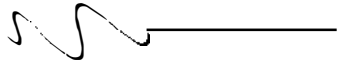
2.2 CLASSIFICATION OF THE MDMA DRUG

The primary effect of Ecstasy is to induce a 'positive mood state' which includes feelings of intimacy and closeness to other people. These effects characterise and distinguish Ecstasy from other classes of drugs, especially those with which it has most often been compared, namely the amphetamines and hallucinogens. It seems that Ecstasy shares the properties of both classes of drugs concerning its secondary effects, and in terms of the frequency and severity of its side-effects (Solowij, Hall & Lee 1992:1169). The amphetamine-like effects of Ecstasy are its secondary stimulant effects of energy and activation. The hallucinogen-like effects of Ecstasy are its secondary psychedelic effects of insight and enlightenment, heightened sensitivity, and mild perceptual and sensual alterations (Solowij, Hall & Lee 1992:1169).

Ecstasy is an appealing drug to recreational drug users in that it provides an 'added bonus'. Solowij, Hall & Lee (1992:1170) maintain that for those looking for predominantly stimulant effects, it also induces the positive mood, euphoric and intimacy effects. For those looking for an enlightened experience or possibly emotional therapy and insight, Ecstasy offers feelings of intimacy and closeness to others plus the stimulant-like alertness, talkativeness and energy. Additionally, it provides 'noetic' feelings, that is, the experience of seeing the world in a fresh way as if for the first time – as a child sees it (Eisner

1989:03). Furthermore, it is a drug experience in which one feels that one can stay in control of one's thoughts and behaviour rather than the drug being in control (Solowij, Hall & Lee 1992:1170). According to Shulgin and Nichols (in Eisner 1989:02), 'the drug appears to evoke an easily controlled altered state of consciousness, with emotional and sensual overtones'. More recently, similar reports were given as grounds for choosing Ecstasy over the more 'mind-bending' drugs such as LSD and ketamine.

2.3 DOSAGE AND MODE OF USE



MDMA is a white powder which is most commonly administered orally as a pill or capsule. The oral method is generally preferred because it produces the longest, smoothest high with the least amount of stimulant side-effects (Solowij, Hall & Lee 1992:1165). People do, however, experiment with different ways of taking Ecstasy. Injecting (although rare) was reported as having the quickest onset and producing a more intense but shorter-lasting experience. Snorting was reported as being quicker to take effect but shorter lasting, while a suppository had a slow onset but produced a more intense and prolonged experience (Solowij, Hall & Lee 1992:1165).

The effectiveness threshold is around 30 mg and toxic effects begin to increase sharply over the 200 mg dose level (Erowid 2000:01). The usual dose ranges from 75 mg to 150 mg (Randall 1992:1506), with 125 mg being about average, depending upon the person's weight (Beck & Morgan 1986:293). The more he or she weighs, the more must be taken to have the same effect. A complicating factor is that each individual responds idiosyncratically to a given dose of MDMA. Some are very sensitive, while others might be resistant to its effect on even high doses. (See Table 2.1.) This may be due to variations in metabolism or to psychological factors (Eisner 1989:113). Great variations in potency have been reported by laboratory analysis of street samples ranging from 16 mg to 150 mg, which indicates quality and dose control issues. The result of this inconsistency in dosage may be acute intoxication or fatal overdose (Elk 1996:351).

MDMA is an unusual drug in that there is a small ratio between its threshold dose and a dose that is too large. A dose larger than 200 mg will produce an MDMA experience, but one more like that of amphetamine – 'a jittery, anxiety-provoking stimulant high' (Eisner 1989:113–114). The 'loved-up' effect of the drug is lost at these high dosages. A very high dose might be physically harmful or even lethal. Under no circumstances should anyone take a dose over 250 mg (Eisner 1989:114).

Table 2.1 Dosages for pure MDMA in humans

Dosage	**Quantity**
Threshold	30 mg
Light – optimal for small or sensitive people	50–75 mg
Common - optimal for most people	75–125 mg
Strong optimal for large or insensitive people	125–175 mg
Heavy – required by few (side-effects increase)	200 + mg
Lethal dose (LD) 50	106 mg/kg or ~6,000 mg

Note: The estimated oral LD 50 for MDMA in tested animals as noted in Table 2.3 is 106 mg/kg, that is, 106 mg of MDMA per kilogram of weight of the tested animal. The effective oral human dose is about 2 mg/kg of weight. Thus there appears to be a comparatively large margin of safety in the use of MDMA in humans – the LD50 is 53 times the effective dose in humans.

Key: *LD50 = dose that will kill 50 per cent of the tested animals
(*Source:* Erowid 2000:01 http://erowid.org chemicals mdma mdma_dose.html)

At times a small quantity of MDMA will be ingested as a 'booster' after the initial oral dose begins to wear off. This is done to prolong the drug experience. However, the continuous use of boosters generally leads to great fatigue the next day (Beck & Morgan 1986:293). The booster dose can range in size from 40 mg up to the size of the initial dose. A dose between 75 mg and 100 mg has been used. The booster is usually taken about one hour after the onset of the effects of the first dose. Sometimes a second booster dose is taken in another hour. However, a second booster usually does not have the desired effect of enhancing the experience. Instead, the taker is often made to feel uneasy, 'jumpy' and sometimes confused by this third dose with little of the pleasant effects of the first two. This characteristic is one of the reasons why MDMA is not prone to abuse (Eisner 1989:114). However, this certainly does not mean that Ecstasy is not abused by young people.

The cost of MDMA in South Africa has ranged from R50 to R120 a pill, depending upon availability and whether the source is known or not.

2.4 EFFECTS

Effects generally appear within twenty to sixty minutes when the user experiences a 'rush' usually described as mild but euphoric. This 'rush' may last from a few minutes to half an hour or not occur at all, depending on the user's mental set and the environment, the dose ingested, and the quality of the MDMA. After the rush, the high levels off to a plateau usually lasting from two to three hours and followed by a gradual 'coming down' sensation, ending with a feeling of fatigue. Insomnia, however, may persist long after the fatigue stage, depending on the dosage and the user (Beck & Morgan 1986:293). The effects of one tablet or dose last anywhere between one and twelve hours (median five hours) with residual effects lasting up to thirty-two hours (Solowij, Hall & Lee 1992:1165).

The effects of ingesting the average dose of MDMA (75–150 mg) can be divided into positive and negative psychological and physical categories.

Table 2.2 Reported effects of average doses of MDMA

Negative psychological/ behavioural traits	**Positive psychological/ behavioural traits**
Poor concentration Anxiety/restlessness Visual hallucinations Fear of loss of control Paranoia Panic attacks	Euphoria Elevated self-esteem Closeness to others/empathy Talkativeness Overall sense of well-being Acceptance Greater self-insight Heightened sensuality
Negative physiological traits	**Positive physiological traits**
Elevated systolic/diastolic blood pressure Muscle hypertonicity Elevated heart rate Jaw clenching Transient nausea Insomnia Dehydration Hot/cold flushes Nystagmus (flickering of the eyes)	Increased energy level Heightened sensory perception Desire to be in constant motion Appetite suppression High level of stimulation

(*Source:* Elk 1996:351)

2.4.1 Positive psychological effects

The most universal and consistent psychological effect reported by MDMA users is a 'positive mood state'. The second most commonly reported effect is 'activation' or energy (Solowij, Hall & Lee 1992:1166). Users describe a dramatic drop in defence mechanisms and increased empathy for others. Integrated with the stimulant effect, this generally produces an increase in intimate communication (Beck & Morgan 1986:293). Other perceived positive psychological effects included a sense of euphoria, elevated self-esteem, feelings of spirituality, closeness to others and open-mindedness. These qualities are reflected in the slang terms used for MDMA such as *Ecstasy* and the *hug drug* (Elk1996:352).

2.4.2 Negative psychological effects

The 1990s saw the growing popularity and widespread use of Ecstasy as a recreational drug, resulting in escalating reports of an apparent association between Ecstasy use and a diverse range of psychological symptoms and psychiatric disorders (McGuire & Fahy 1991:391). Ecstasy has also been associated with lasting adverse neuropsychiatric sequelae in humans who have taken repeated doses (Schifano & Magni 1994:763). According to McCann and Ricaurte (1991:302), while under the influence of Ecstasy, users may sometimes experience confusion, disorientation, anxiety, panic attacks, depression, insomnia, depersonalisation (the feeling that one is not 'real' and that one is an outside observer of one's mental processes, one's body, or parts of one's body, (DSM-IV 1994:488)), derealisation (where the environment appears to be unreal and devoid of the usual emotional component), perceptual disorders and hallucinations, paranoia, and psychotic characteristics. It is possible that some of these effects may continue for a period after the drug has worn off.

Several researchers have found that MDMA causes alterations and sometimes permanent damage to serotonin-regulated systems in the brains of experimental animals (Cohen 1995:1143). Battaglia, Yeh and de Sousa (1988:270) reported that large doses of MDMA repeatedly injected into laboratory animals decreased the levels of the neurotransmitter (chemical messenger) in the brain called *serotonin*, and to a lesser degree dopamine, and damaged the nerve terminals from which serotonin was released (see Section 2.6 'Neurotoxicity' for more detail). These effects were dose-related and recovery was incomplete. Cohen (1995:1143) believes that Ecstasy may have altering effects on serotonergic mechanisms in the human brain as well. Jansen

(1997:113) notes that there is some limited evidence of serotonin deficits in human Ecstasy users.

According to Jansen (1997), the relevance of animal studies to humans taking one or two Ecstasy tablets occasionally has been questioned. However, the animal studies do suggest that persons taking large amounts of Ecstasy for several days may be at some risk of persistently low serotonin (Jansen 1997:113). Many of the adverse effects reported have been well documented in the literature as having originated from abnormal neurotransmission of serotonin in the brain. According to Cohen (1995:1143), alterations in neurotransmitter systems, including brain serotonin, have been commonly associated with depression, anxiety, headaches, sleep disorders and sexual functioning. It has been suggested that heavy users of Ecstasy may be at increased risk of developing psychological problems of this nature (Jansen 1997:113).

Several subjects disclosed being in psychotherapy and to be taking prescribed medications such as sertraline (Zoloft) and fluoxetine (Prozac) to help alleviate symptoms induced by Ecstasy. These medications were reported to be effective in managing side-effects following MDMA use. The efficacy of these particular medications further suggests that MDMA has an altering effect on the mechanism responsible for both the release and repackaging of serotonin, especially since these medications, amongst others, are known to enhance the neurotransmission of serotonin (Cohen 1995:1143).

In attempting to explain adverse reactions to Ecstasy, the focus has, to a great extent, been upon possible brain chemical changes. Jansen (1997:114) points out that there has been an inclination to ignore the fact that Ecstasy releases emotions and can therefore have a definite influence upon the psychodynamic balance of the mind. One of the main concepts in psychodynamics is that anxiety-provoking material 'unacceptable' to waking consciousness is repressed into the unconscious, from where it may make itself known through dreams and other ways. Defences are put up against this material. Some psychotherapies may entail bringing such material to the fore so that it can be worked through and released (Jansen 1997:114). Jansen (1997:114) maintains that if these defences against disturbing material in the psyche are removed in a non-psychotherapeutic context, there may be little possibility of working through the material or containing it.

Beck and Morgan (1986:298) observed a delayed anxiety disorder in a few initiate users of MDMA. In most cases, MDMA was taken in a non-professional setting for quasi-therapeutic reasons. The indications ranged from 'a mild anxiety or concentration difficulties, to a full-blown disorder such as a panic attack with hyperventilation and tachycardia, phobic disorders, parathesias or other anxiety states' (Seymour in Beck & Morgan 1986:289). Seymour (in Beck & Morgan 1986:289) explains

> that through taking MDMA, much of their repressed anxiety, hostility, guilt or other so-called negative feelings were released into their conscious minds. Prior to the time that this suppressed material was released into conscious consideration, they were probably protected by their normal defence mechanisms. After the release of this material, they are undefended and conscious of what emotional and psychological work needs to be done ...

These initial findings stress a growing danger of unsuccessful attempts at 'self-therapy' by people who take the chance of intensifying their emotional problems with unsupervised sessions. Possible consequences thereof may be the range of symptoms linked with the neuroses – such as anxiety, depression and insomnia – the very symptoms that are also associated with Ecstasy use (Jansen 1997:114).

Since much of the information available about adverse reactions to MDMA is in the form of single case studies and short, uncontrolled studies, Jansen (1997:115–120) underlines several key issues to bear in mind when considering such publications:

2.4.2.1 Pill composition – Was the drug taken actually MDMA?

Jansen (1997:115) maintains that authors who say that a person took MDMA should try to produce toxicological proof (tests of the pills taken or at least a urine test) to back up this allegation, as many pills sold as 'Ecstasy' have been shown to contain other drugs instead, sometimes in dangerous combinations. Other substances normally found in place of MDMA are methylenedioxethylyamphetamine (MDEA), MDA (predecessor to MDMA), MBDB, MDE, amphetamine, ketamine, LSD, caffeine and other chemical agents. Some pills contain no psychoactive substances at all. (Refer to Figure 2.1 for the pill contents.) Regarding effects, MDEA (MDE) has a shorter duration of action (two hours) and is more amphetamine-like, having less emotional effects than MDMA. MDEA may show a profile more similar to amphetamine in terms of adverse effects such as paranoia, agitation and anxiety. MBDB is quite like MDMA but is depicted by some as less intense with a greater 'cognitive' element. MDA is far more psychedelic (LSD-like) and is regarded to be more toxic. Concerning amphetamine additives, the connection between amphetamine use and paranoid psychosis is well established (Jansen 1997:115). Ketamine is known to produce an out-of-body experience and can be very hallucinogenic.

It is thus apparent that some of the adverse effects which have been ascribed to Ecstasy may occur as a result of adulterated or 'dodgy E' rather than pure MDMA.

Figure 2.1 Pill composition

2.4.2.2 The role of polydrug use

Jansen (1997:115) points out that the pure Ecstasy user is a very rare being. Most people who take Ecstasy also use other drugs, some of which are clearly associated with the risk of mental health consequences. This detail is hardly ever stressed in the case reports ascribing a psychiatric disorder to Ecstasy use, and other drug use is often dispelled in a few lines. The significance of polydrug use has been confirmed by a study of drugs taken at Raves where polydrug use was the norm amongst people who favoured Ecstasy. The preferred other drugs were cannabis, hallucinogens (LSD, magic mushrooms, ketamine), amphetamines (speed) and hypnotics (sleep-inducing drugs) (Brown, Jarvie & Simpson 1995:170). (See Figures 3.5–3.9).

2.4.2.3 The issue of causality

Jansen (1997:119) asserts that many of the published reports draw cause-and-effect conclusions which are not backed by the facts presented, that is, they conclude that Ecstasy consumption *caused* the symptoms rather than being *associated* with the symptoms. He affirms that it is helpful to consider whether the criteria suggested by Strassman (1984) and by Brabbins and Poole (1996) are met for research of this nature before concluding that Ecstasy-did in fact *cause* the mental disorders described. The criteria proposed by Strassman (in Jansen 1997:119) are as follows:

> There is a tendency for people with poorer pre morbid adjustment, a history of psychiatric illness and/or treatment, a greater number of exposures to psychedelic drugs, drug-taking in an unsupervised setting, a history of polydrug use, and self-therapeutic and/or peer pressure submission motive for drug use, to suffer these complications.

According to Jansen (1997:119), one need also weigh up the probability of a chance association. Brabbins and Poole (in Jansen 1997:120) point out the importance of recognising 'that among the large group of drug users within the general population, a proportion will become mentally ill regardless of any supposed psychotomimetic properties of drugs'. Since depression and anxiety are common states in the general population, it is a statistical certainty that a percentage of persons who take Ecstasy will develop depression irrespective of whether or not they took the substance. Anxiety, panic attacks and all of the other symptoms associated with Ecstasy use also occur in the non-Ecstasy-using population (Jansen 1997:119).

2.4.3 Adverse psychological effects of Ecstasy use

2.4.3.1 Psychotic phenomena

Not very often Ecstasy may produce a state of intoxication which mirrors a psychosis, such as paranoia. However, this does not usually last for more than a few days and seems to be quite rare (Williams, Meager & Galligan 1993:44). Granted that Ecstasy is not a hallucinogen in most people, it can sometimes cause hallucinations, particularly in higher doses (Beck & Morgan 1986:291). As regards serious mental illness, such as prolonged psychosis, Jansen (1997:120) maintains that there is currently a lack of accurate statistics. According to Nichols (in Jansen 1997:121), Ecstasy releases dopamine in a similar way to amphetamine and cocaine, and thus might be expected to increase the risk of psychotic illness in a comparable way to other psychostimulants, but perhaps not to the same extent.

McGuire and Fahy (1991:697) report that they have noted apparent connections between the onset of psychotic symptoms and Ecstasy use. However, Jansen (1997:121) points out that this study is based only on two cases that also involved other substances and there was no toxicological confirmation of pill content. Nevertheless, there are several other reports (Schifano & Magni 1994:763–765) and, combined, the evidence is representative of a risk. At present the size of that risk is unknown. However, Jansen (1997:121) believes it likely to be relatively small.

2.4.3.2 Anxiety disorders and panic attacks

Rare episodes of hyperventilation have been noted. These almost always occur during the onset of the experience as part of a generalised panic reaction. Reassurance that the phase is transitory generally eases this problem (Beck & Morgan 1986:297). Many reports from people who have experienced negative effects in connection with taking Ecstasy suggest that the recurring theme may be anxiety disorders rather than depression. This idea is supported by the published clinical reports in which types of anxiety disorder seem to be more common than depression (Jansen 1997:121).

2.4.3.3 Depression

A short spell of low mood associated with the 'comedown' is to be expected, although experienced users are inclined to bypass this by taking other drugs (Jansen 1997:122), such as smoking marijuana. Severe Ecstasy use is also at times followed by a longer-lasting depression (Benazzi & Mazzoli 1991:1 520). However, it is uncertain whether the chronic use of Ecstasy might not have

been a type of self-therapy or self-treatment of a pre-existing depression rather than actually causing the depression (Jansen 1997:122). Because of the association between mood and serotonin, depression may be anticipated on theoretical grounds.

2.4.3.4 Cognitive deficits

Research into drug-induced cognitive deficits (impaired memory, attention and concentration) is not easily done well, since the number of probable confounding variables is high. Jansen (1997:122) stresses the necessity to control for the use of other drugs, especially regular marijuana smoking and for the effects of any mood disorder upon cognition. If subjects have been told to abstain from all drugs for several weeks, a withdrawal syndrome may result which could confound tests carried out during this time. Jansen (1997:122) asserts that all statements of cognitive deficits should be followed by proof that the urine tests of the subjects were free of drugs and their metabolites (in particular marijuana metabolites which can take at least four weeks to disappear from urine).

A report of memory deficits in connection with Ecstasy use has been made by Bolla, McCann and Ricaurte (1998). (See Section 2.6.2.5 on memory impairment for more detail.)

2.4.3.5 Sleep disturbance

Insomnia for a few days after taking Ecstasy is quite common, but in some instances this has continued for months (Elk 1996:353) with excessive dreaming and sometimes nightmares (Jansen 1997:124). A persistent reduction in stage 2 sleep has been confirmed by Allen, McCann and Ricaurte (1994:562), although the subjects in this study were not deemed to be suffering from sleep disorders. (See Section 2.6.2.3.a on sleep electroencephalogram data for more detail.)

2.4.3.6 The 'busy head' syndrome

People who have ingested large amounts of drugs such as LSD, Ecstasy and ketamine for a prolonged period may develop a mental state which involves a high level of internal, 'mental' imagery but no perceptual disorder (Jansen 1997:123). Attention and concentration are, however, impaired, which may result in a poor memory due to failure to attend to new information. The person may be described as 'lacking focus'. Mostly, anxiety-generating situations appear to intensify the imagery (Jansen 1997:123).

2.4.3.7 Flashbacks

Flashbacks have been reported by some Ecstasy users (Creighton, Black & Hyde 1991:713). Flashbacks may be distinguished from psychotic disorders by their episodic nature, frequently of very short duration (seconds or minutes) and by their duplication (sometimes exact) of previous drug-related experiences (ICD-10 1992:83). Flashbacks have the likelihood of occurring following very traumatic drug experiences. This adds importance to the suggestion that some flashbacks are anxiety-related. One of the cases cited by Creighton, Black and Hyde (1991:713) includes a woman who had been raped while under the influence of MDMA. According to Jansen (1997:124), the possibility that flashbacks are, in fact, due to persisting changes in the brain as a result of Ecstasy use is significantly decreased by noting that a wide range of drugs, with very different action in the brain (such as LSD and ketamine), have also been linked to flashbacks. This, once again, shows the importance of polydrug use in these reports.

All the same, negative psychological effects are described by users to be less severe than those of hallucinogens and are reported less frequently. These effects are seen more commonly with higher dosages of MDMA and are thought to be more frequent in subjects with predisposed sensitivity to the drug (Elk 1996:352). Symptoms for both acute high-dose and chronic low-dose problems seem to ease with stopping use and resuming healthy living patterns (Beck & Morgan 1986:298).

2.4.4 Tolerance versus dependency versus abuse patterns

An important issue to examine is the potential for dependency and/or abusive use patterns. The most frequent use of MDMA normally happens during the first months following the initial experience. After first exposure, some people will continually try to re-experience the positive aspects of the drug. However, this abusive cycle is inclined to be short lived as the frequent use of MDMA almost always produces a strong dysphoric reaction, which is only made worse with continued use (Beck & Morgan 1986:297). The positive or pleasurable effects of Ecstasy diminish with frequent use. While the pleasurable effects decrease, side-effects tend to increase, both with frequent use and with high doses of the drug (Solowij, Hall & Lee 1992:1170). High doses of MDMA occasionally produce a variety of symptoms ranging from a 'caffeine-like' state of nervous restlessness accompanied by a 'jumbling' of thought, mood and behaviour (Seymour in Beck & Morgan 1986:298). With smaller amounts of

MDMA, psychopathology is hardly ever displayed, although some restlessness, anxiety and insomnia may occur (Beck & Morgan 1986:298).

The increasing number of unpleasant side-effects combined with an almost total loss of desired effects occurs with greater rapidity and intensity than they do with other more commonly abused substances (Beck & Morgan 1986:298). Hayner and McKinney (1986:345) too report that the unpleasant side-effects are experienced more readily following repeated doses, especially within a few days of one another. There appears to be a point at which the unpleasant side-effects increase to the extent where they outweigh the pleasurable effects originally sought by users of the drug. Because of this, recreational users report that they usually use MDMA once every several weeks (Elk 1996:353). Most likely, this unusual and sporadic pattern of use is one of the reasons that MDMA is believed not to be physically addictive. There have been no cases of physical addiction reported to date (Elk 1996:353).

Ecstasy appears to be subject to the development of tolerance and tachyphylaxis (the rapidly decreasing response to a drug after administration of a few doses) and this clearly has some relevance to its openness for dependence (Solowij, Hall & Lee 1992:1170). As expressed from a pharmacist's perspective, Riedlinger (1985:169) stated that 'there is no evidence at any rate, that MDMA is physically addictive ... the drug's possible side-effects ... are more likely to discourage frequent use or high dosage abuse'. However, whilst intensity of use increases the more severe side-effects, more intense users tend to keep using, as do dysfunctional users of any drug (Solowij, Hall & Lee 1992:1170).

2.4.4.1 *Problematic Ecstasy use*

There are certainly those who have taken Ecstasy on a daily basis irrespective of tolerance effects, for prolonged periods (McGuire & Fahy 1991:697). It is far more common, however, for 'problematic' Ecstasy use to involve consumption of the drug in 48-hour weekend binges with four to five days in between (Jansen 1997:125). The day after taking Ecstasy – if individuals have had a reasonable amount of sleep – a large number of users feel quite 'uplifted' in mood. However, this cheery mood generally starts dissolving by the second day and by the third day low mood, which can be quite severe, and irritability are common. This persists into the fourth day, with relative recovery of mood occurring on the fifth day. The cycle often repeats itself with Ecstasy use on the sixth and seventh days (Jansen 1997:125). Thus some people may seem to be constantly affected by the drug, even if they take it only on weekends.

With frequent use, the patterns of use may begin to have the appearance of a dependency problem, especially in persons who are taking 25 pills Thursday to Monday, month after month (Jansen 1997:125). *The Tenth*

Classification of Mental and Behavioural Disorders (ICD-10) (1992:75) states that it is not necessary to take a drug every day before a dependency syndrome can be identified, nor is physical withdrawal essential to the diagnosis. The reality that Ecstasy may be linked to tolerance, dependence and withdrawal syndromes will surprise those users who only take the drug occasionally in a relaxed setting (Jansen 1997:125).

2.4.5 Physical effects

The physical effects of MDMA are more closely related to those of amphetamines than those of hallucinogens. The amphetamine-like effects include dilated pupils, dry mouth and throat, tension in the lower jaw (trismus), involuntary grinding of the teeth (bruxism) and overall stimulation (Beck & Morgan 1986:293). The side-effects are less 'annoying' when a small or moderate dose of MDMA is taken by a healthy individual. According to Beck and Morgan (1986:293), MDMA exerts a strong paradoxical effect of relaxation, drawing less attention to the side-effects.

The universal physical effect of MDMA that is reported as positive by users is that of a high level of stimulation, described as feeling energetic or the desire to be in constant motion. Following these reported stimulant effects were heightened sensory perception and appetite suppression (Elk 1996:352). Combined with its stimulant properties, MDMA is seen as perfect for the now well-established Rave scene, which involves people dancing for hours on end in clubs and warehouses.

2.4.5.1 Negative physical effects

Consistent negative physical effects reported by MDMA users include nausea and occasional dizziness, often during the initial onset of the high (Beck & Morgan 1986:296). This feeling of nausea results in actual vomiting in some users. Many also complain of having an intense lower back pain at the onset of ingestion (Cohen 1995:1140). Other negative effects commonly reported are flickering of the eyes, muscle hypertonicity (stiffness), and an elevated pulse rate and blood pressure. Less frequently reported are tremors, dry mouth, insomnia, hot and cold flushes (Elk 1996:352), headaches, and blurred vision (van Aerts 1997:94). One of the most common annoying effects is a tension of the jaw muscles (trismus), often progressing to involuntary grinding of the teeth (bruxism). A way of relieving jaw tension is to chew gum (Eisner 1989:120) or to suck on lollipops. This has become a common sight in the Rave setting where young and old alike sport lollipops. There is also a connection between taking Ecstasy and a desire to smoke excessively, which may be associated with the effect of the drug upon dopamine pleasure systems in the brain. Respiratory

complaints are common when the smoker is moving from a hot dance environment to the cold night outside (Jansen 1997:124).

Most of these side-effects subside within twenty-four hours. However, complaints of muscle tension in the jaw may continue for two days to six weeks, blurred vision up to three days and psychological effects such as insomnia, depression and anxiety up to eight days (van Aerts 1997:94).

Individuals on Ecstasy become dehydrated and should be drinking water or juice throughout the experience. Unfortunately, some choose to drink alcohol, which increases the dehydration. As with other stimulants, persons under the influence of MDMA are often capable of consuming large amounts of alcohol with few noticeable effects until a little while later. Thus, alcohol excess probably plays a role in the next day's 'hangover' (Beck & Morgan 1986:296). The potentially toxic interaction between MDMA and alcohol warrants further investigation.

MDMA may exert an adverse action on the immunological response of some individuals. This effect is most often associated with repeated high doses, especially in people who have used the drug over a long period of time (Beck & Morgan 1986:296). Long-term users often recount increasingly uncomfortable and prolonged 'burn-out' periods, sometimes lasting two or more days. Many individuals have also reported a greater susceptibility to various ailments, particularly sore throats, colds, influenza and herpes outbreaks. Latent infections in the female genito-urinary tract can become activated. These reactions appear to be rare in initiate users and persons in good physical and mental health (Beck & Morgan 1986:296).

Researchers, using the limited information available, have identified the following medical conditions as possible contra-indications to MDMA use: diabetes, diminished liver function, epilepsy, glaucoma, heart disease, hypertension (high blood pressure), hypoglycaemia (low blood sugar), hyperthyroidism (overactive thyroid) and pregnancy (Beck & Morgan 1986:297). Since MDMA increases the blood pressure and raises the pulse rate, it may be harmful for people with cardiac problems and hypertension. In such cases the likelihood of cardiac arrythmias, cardiac arrest and having a stroke is increased (Saunders 1997:85). MDMA also taxes the liver and may increase the probability of hepatitis and jaundice in those who have diminished liver function (Saunders 1997:83). Although there is no known effect on blood sugar, MDMA does increase energy levels and this may be harmful in diabetics since diabetics need to adjust their sugar intake or insulin dose to allow for physical activity (Saunders 1997:86). The neurochemical or electrochemical changes in the brain induced by taking MDMA can trigger epileptic fits (Saunders 1997:86). The use of any stimulant when pregnant is not advisable. It appears that the use of Ecstasy when pregnant may increase the risk of congenital abnormalities, especially heart defects, in the babies born. Further

research into a larger number of pregnancies is nevertheless essential in order to establish firmly whether MDMA itself causes these defects (*The Natal Witness* 1999:09).

2.4.6 Acute physical reactions

Acute or toxic physical and psychological effects seem to be more frequent or exacerbated with higher doses of MDMA, and also with combinations of MDMA and other drugs (Elk 1996:352). According to Henry, Jeffreys and Dawling (1992:386), the predominant toxicity patterns that emerge from the medical literature are hyperthermia (overheating or heat-stroke), convulsions, disseminated intravascular coagulation (DIC) (blood clotting in the blood vessels, rhabdomyolisis (dissolution of skeletal muscle) and acute renal (kidney) failure (ARF). DIC and rhabdomyolisis may be brought about by the hyperthermic condition while rhabdomyolisis can also be caused by ARF. Acute liver failure is another serious complication reported in association with the use of MDMA and can also precipitate from a hyperthermic condition (van Aerts 1997:92). Other acute effects reported by Hayner and McKinney (in Elk 1996:353) include vomiting, visual hallucinations, tachycardia (increased heart rate), hypertonicity of the body, hypotension or hypertension (low/high blood pressure) and palpitations. Fatal reactions to MDMA are usually cardiac in nature as acute intoxication usually results in adrenalin-like overactivity and overstimulation of the heart (Elk 1996:353). (See Table 2.3.)

Again, these reactions have been seen with high doses, combinations with other drugs or in users with predisposing conditions. Although associated with relatively few overdoses or deaths, MDMA's neurotoxic potential is cause for concern. The most controversial issue surrounding the safety of MDMA is its effects on the brain chemicals serotonin and dopamine and its possible neurotoxicity (Elk 1996:352–353). (See Section 2.9 for more detail.)

2.4.6.1 MDMA deaths

It is important to recognise that the number of deaths related to MDMA is relatively small compared with the likely frequency of its use. In the UK, the Ecstasy-related death rate per ten thousand (10 000) 15- to 24-year-old users is between 0,2 per cent and 5,3 per cent (Gore 1999:01). Nevertheless, MDMA deaths are especially puzzling as they are unpredictable. In some cases, other people appear to have taken similar quantities of Ecstasy from the same source as the overdose victim, with only minor toxic effects. One theory is that variations in metabolism of the drug caused by genetic differences or concurrent use of other drugs may result in differential susceptibility to MDMA overdose (White, Bochner & Irvine 1997:117).

The causes of death after MDMA ingestion are not well documented. Certainly, hyperthermia and its consequences seem to be of major importance, and results of animal studies suggest that environmental temperature may be a critical determinant of susceptibility (Gordon in White, Bochner and Irvine 1997:117). This is the basis for recommendations about access to cool environments or 'chill rooms' in nightclubs and Raves. Henry (in Saunders 1993:02) believes that the cause of death is due to overheating, dehydration and exhaustion from dancing in hot clubs without drinking enough fluids. He maintains that ravers dance on, feeling fine in conditions that would otherwise send them gasping for air and water, meanwhile increased body temperature can lead to strokes and internal bleeding. According to McFadyean (1997:75), the risk is reduced for people who look after themselves by drinking plenty of water and cooling off before they overheat. However, the risk is greater for those who use high and frequent doses.

Be that as it may, excessive consumption of fluids has also been cited as the cause of death. The reason for such excessive fluid consumption is not understood, although MDMA is known to induce thirst. In addition, high doses of amphetamine and amphetamine derivatives induce repetitive behaviours in animals and humans. It is possible that the combination of thirst and repetitive behaviour patterns leads to excessive fluid intake. If urine output is also low, because of dehydration, impending renal failure and (possibly) other unidentified causes, then there is considerable potential for fluid overload and its consequences (White, Bochner & Irvine 1997:117).

It is now well recognised that hyperthermia plays a central role in these events and body temperature control is therefore an important means in preventing the serious conditions already mentioned. Providing the body with enough fluid is one way of achieving this. However, it should be stressed that excessive drinking of water may lower the ionic strength (salt concentration) of the body fluids and cause tissues to swell (cerebral oedoema), and can eventually lead to death (van Aerts 1997:93). Matthai *et al.* (in van Aerts 1997:93) described two cases that were shown to have developed mild cerebral oedema (abnormal accumulation of fluid in brain tissue) due to unrestricted water intake after ingesting Ecstasy. When very thirsty while on Ecstasy, it is therefore wiser to drink isotonic fluids instead of solely water.

Although raving for hours in a hot environment may aggravate the onset of a hyperthermic condition, it should be noted that MDMA by its pharmacologic action may lead to a rise in body temperature by itself. Severe reactions such as hyperthermia and DIC were rare at the time it was used in more relaxed settings in the USA in the 1980s (van Aerts 1997:93). Nevertheless, observations of this type amongst ravers have recently become all too familiar in British medical journals (Randall 1992:1505). Cardiac arrhythmia (irregularities in the heart rhythm) are often also noted in emergencies cases that are brought

in and are probably another way by which death may result, particularly in those that are predisposed by having cardiac abnormalities. The increase in the blood pressure and rise in heart rate caused by MDMA may be harmful in people with heart problems (van Aerts 1997:93). (See Table 2.3.)

Table 2.3 MDMA toxicity in humans

Case	Identity	Dose and environment	Presentation	Blood MDMA	Outcome	References in Podraza (1999:10–12)
1	–	15 tablets of E in 36 hours	urinary tract retention	–	returned to normal	Bryden *et al.* 1995
2	18 yrs M	3 tablets of E at a concert	T 40 C, DIC, R	1,26 mg l	deceased	Campkin and Davies 1992
3	19 yrs F	MDMA capsule at a Rave	hyperthermia	detected	returned to normal	Nimmo *et al.* 1993
4	17 yrs M	2 tablets of Ecstasy at a party	T 41 °C, DIC	detected	deceased	Henry *et al.* 1992
5	18 yrs M	3 tablets of E at a club	T 41,8 C, dec. BP	0,36 mg/l	deceased	Henry *et al.* 1992
6	20 yrs M	3 tablets of E at a club	T 40 C, DIC, R, ARF	0,24 mg l MDA, MDEA and amphetamine	returned to normal	Henry *et al.* 1992
7	21 yrs F	several tablets of E at a party	T 41 °C, DIC, R, ARF	0,11 mg/l	died after liver transplant	Henry *et al.* 1992
8	30 yrs M	10 days after taking E at a party	BP 190/100, ARF, fluid overload	..	haemodialysis, died of cardiac arrest	Bingham *et al.* 1998
9	20 yrs M	MDMA capsule	T 40 C, dec. BP, DIC, R, ARF	1,16 mg l, MDA and amphetamine	deceased	Henry *et al.* 1992
10	18 yrs F	Ecstasy, amphetamine and alcohol at a Rave	T 42 C, R, DIC	MDA and amphetamine	liver damage	Jones *et al.* 1994
11	25 yrs F	3 tablets of E	T 41,9 C, R, DIC, hypoglycaemic	–	returned to normal	Montgomery and Myerson,1997
12	18 yrs M	5 tablets of E at a party	T 42,1 C	detected	deceased	Henry *et al*, 1992

Table 2.3 Continued

Case	Identity	Dose and environment	Presentation	Blood MDMA	Outcome	References in Podraza (1999:10–12)
13	20 yrs M	18 tablets of E at a Rave	Hyperthermia	4,05 mg/l	returned to normal	Roberts *et al.* 1993
14	24 yrs M	200 mg of E	T 40,2 C, R	-	returned to normal	Sinarajah and Lavies 1992
15	25 yrs F	1 tablet of E and alcohol at a party	T 41,9 °C, DIC, hypoglycaemic	-	returned to normal	Williams and Unwin 1997
16	19 yrs M	MDMA at a club	T 43,3 °C, DIC, R	MDMA and amphetamine	deceased	Screaton *et al.* 1992
17	20 yrs F	2 tablets of E at a Rave	T 42 C, dec. BP	2,3 mg/l	deceased	Mueller and Korey 1998
18	16 yrs F	1 tablet of E	T 42 °C, dec. BP, DIC, acidosis	0,424 mg/l, stomach 28,0 mg/l	deceased	Chadwick et al. 1991
19	32 yrs F	100–150 mg of E	T 41,6 °C, DIC, dec. BP, R	0,65 mg/l	returned to normal	Brown and Osterloh 1987
20	17 yrs M	10 tablets of F and alcohol at a club	T 42 °C, dec. BP, DIC	0,23 mg/l	deceased	Dar and McBrien 1996

Key: ARF = acute renal failure; BP = blood pressure; C = celsius; dec. = decrease; DIC = disseminated intravascular coagulation; E = Ecstasy; F = female; M = male; MDA = methylenedioxyamphetamine; MDEA = methylenedioxyethylamphetamine; R = rhabdomyolysis; T = temperature.

*Fahal *et al.* (1992:29) suggest that a blood MDMA level >0,2 mg/l is definitive of serious toxicity. Bost (in Podraza 1999:12) supports this conclusion stating a fatal range of 0,95 mg to 2,0 mg/l.

(*Source*: Adapted from Podraza (1999:10–12) (http://www.maps.org/research/mdma/podraza.html))

2.4.6.2 *The serotonin syndrome*

A number of articles reporting on the adverse reactions associated with the use of Ecstasy in a recreational setting have implicated the serotonin syndrome. Sternbach (1991) and Bodner, Lynch and Lewis (in Podraza 1999:09) state that the syndrome is diagnosed when a known central serotonergic agent is administered resulting in at least three of the following complications:

1 Mental status or behavioural change which may include confusion, agitation, hypomania or coma.
2 Alteration in muscle tone or neuromuscular activity which may include uncoordination, shivering, tremor, hyperreflexia (exaggeration of reflexes),

myoclonus (twitching or spasm of a muscle or group of muscles) and rigidity.
3 Autonomic instability which may include diaphoresis (profuse perspiration), tachycardia, hypertension or hypotension.
4 Hyperpyrexia (exceptionally high fever as in heat-stroke).
5 Diarrhoea.

Sternbach (1991) and Bodner, Lynch and Lewis (in Podraza 1999:09) further state that when the serotonin syndrome can be diagnosed in the presence of elevated temperature, possible complications include DIC, rhabdomyolisis, cardiac arhythmias, renal failure, seizures, coma and death. The syndrome has been specifically diagnosed in several cases of Ecstasy-related toxicity and deaths, and appears to be an accurate deduction considering that MDMA is a known central serotonergic agent.

2.4.7 Adverse psychological and physical effects

Contrary to the media's many reports of extreme adverse reactions to Ecstasy, Solowij, Hall and Lee (1992:1170) maintain that in reality they are quite rare. According to these authors (1992:1170), the cases being reported in the clinical literature present extreme exaggeration of the physiological side-effects of Ecstasy, such as hyperthermia and ataxia (impairment of motor control), or with symptoms of toxic psychosis. Often, these symptoms are triggered by some precipitating factor such as a pre-existing medical condition (Dowling, McDonough and Bost 1987:1616) or arise due to extremely high doses being consumed, sometimes with other concurrent drug use (McGuire & Fahy 1991:697).

An animal study conducted by Battaglia, Yoh and de Sousa (1988:270) suggested that the dosage and the number of exposures to MDMA greatly contribute to the neurotoxicity and degeneration of neural serotonin uptake sites. However, Cohen (1995:1143) did not find any relation between an individual's number of exposures to MDMA and recurring symptomatology. This would suggest that side-effects attributed to MDMA may be independent of the number of times one has ingested the drug and that even minimum exposure may elicit adverse symptomatology.

According to Jansen (1997:114), the observation that the duration of Ecstasy use and dosage are not currently related to the probability of developing such symptoms tends to support an examination of psychological causes, and suggests that the current focus on neurotransmitter changes may be misguided – particularly when considering the noticeable lack of change in the behaviour of animals following chronic high-dose injections of Ecstasy. Many reports from persons who have had adverse psychiatric reactions in

association with Ecstasy describe only having taken a few doses. All the same, it is still possible that rigorous scientific studies will eventually establish a link between at least some adverse effects and dose or duration of Ecstasy use (Jansen 1997:114).

It is possible that some users will experience idiosyncratic or allergic reactions to MDMA (Solowij, Hall & Lee 1992:1170). It has been implied that a combination of individual sensitivity or susceptibility and dose may explain the cases of adverse reactions that are serious enough to be documented (Hayner & McKinney 1986:345). Since Ecstasy is a sympathomimetic substance, it is to be expected that some adverse physical side-effects occur. (A sympathomimetic substance is a central nervous stimulant (CNS) that mimics adrenaline responses, http://2000:01.) Nevertheless, the majority of people describe these negative effects as mild, if they were experienced at all. Ecstasy produced no more severe side-effects than other widely used drugs such as amphetamine and hallucinogens (Solowij, Hall & Lee 1992:1170).

Even if most users do not experience distressing side-effects from using Ecstasy, there may still be grounds for caution in that the long-term consequences of even problem-free use are as yet unknown.

2.5 MDMA AND THE BRAIN – HOW ECSTASY AFFECTS THE BRAIN

Ecstasy largely affects serotonin-producing nerve cells in the brain. These nerve cells communicate with their neighbours by releasing the chemical messenger serotonin, which transmits electrical signals from one nerve cell to the next. Serotonin neurons originate in the raphe nucleus near the base of the brain or brain stem. By means of long, strand-like extensions known as *axons* these neurons project to practically every area of the central nervous system, including the fore brain and spinal chord (Ricaurte 1997:01–02.) When Ecstasy is ingested, the release of serotonin by these nerve cells may be responsible for the overall sense of well-being and feelings of empathy, happiness and perceived insight that are experienced.

The axon is a long shaft of the cell across which the electrical signal is transmitted. (Axons can extend to as much as 30 cm long.) The dendritic tree composed of dendrites is that part of the neuron which receives input from other nerve cells. The cell body is the part of the cell containing the nucleus and is responsible for the production of the chemical substances (neurotransmitters) that neurons use to communicate with one another (Banich 1997:04). Usually, serotonin is released when an electrical signal travels from

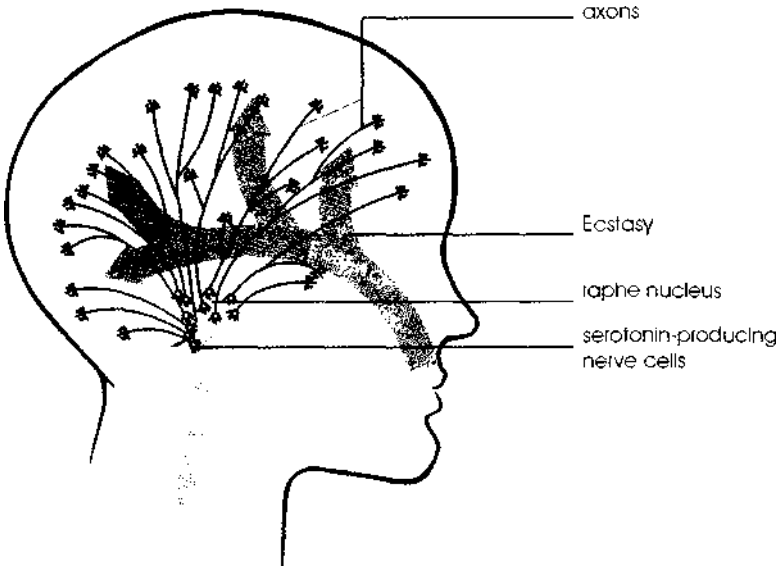


Figure 2.2 Diagrammatic representation of how Ecstasy affects the brain

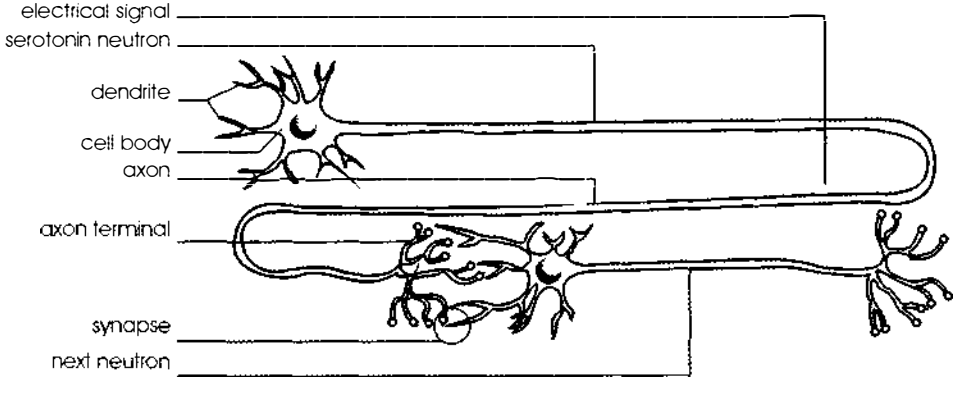


Figure 2.3 The basic parts of a neuron

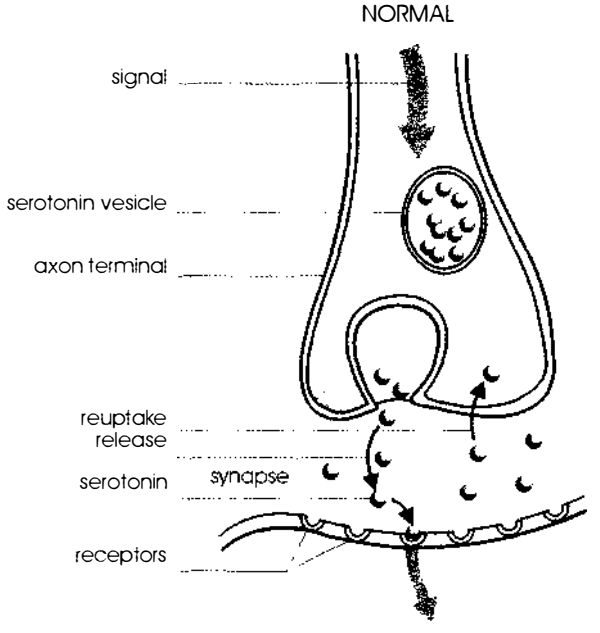


Figure 2.4 A normal serotonin vesicle

the cell body down the axon. Serotonin is stored in tiny vesicles clustered at the ends of these axons and is deposited into a small gap called the *synapse* (Cloud & Ratnesar 2000:65).

The electrical signal causes the filled synaptic vesicles to burst open releasing the chemical serotonin into the area between the neurons called the *synaptic cleft* (Banich 1997:04). Some of the serotonin is absorbed by receptors on the neighbouring neuron. At this point the chemical signal is transformed back into an electrical signal to be passed down the stimulated neuron to other dendrites. These, in turn, trigger other neurons. This process continues to form long networks of activated brain cells (Eisner 1989:158). The rest of the serotonin is metabolised (broken down) by enzymes or reabsorbed by the releasing neuron (Cloud & Ratnesar 2001:65).

When individuals take Ecstasy, MDMA causes the nerve cells to release all the stored serotonin at once, even without an electrical signal. The chemical floods the synapse, overwhelming the serotonin receptors. MDMA blocks the reuptake of serotonin, thereby preventing the reabsorption of serotonin back

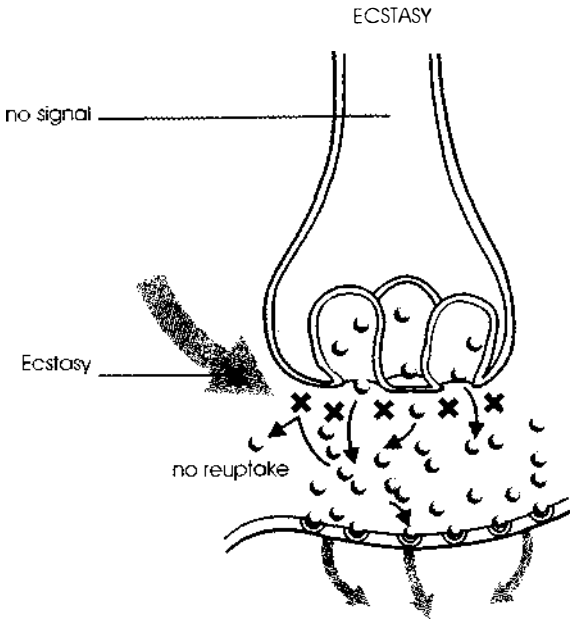


Figure 2.5 An Ecstasy-affected vesicle

into the neuron and further increasing the concentration in the synapse (Granquist 1992:01). The acute 'rush' of serotonin may cause damage to the axonal endings. Most studies suggest that nerve endings die off, but some indicate that they may grow back abnormally. These axons may return in denser formation and may no longer reach the areas of the brain in which they are needed (Cloud & Ratnesar 2000:65) thereby making it impossible for the serotonin nerve cells to communicate with neighbouring cells the way they normally would (Ricaurte 1997:02). (Refer to Figure 2.6 for representation of axonal damage.)

2.6 NEUROTOXICITY

A growing body of literature suggests a neurotoxic effect of MDMA on serotonergic nerve terminals. According to Elk (1996:352), the most controversial

effect of MDMA at this time is its possible irreversible neurotoxicity. A suggestion, based on laboratory experiments with animals, has been made that even moderate or therapeutic doses of MDMA have adverse effects on the amount of the neurotransmitter serotonin in the brain. It must be noted, however, that the results of animal research may not apply to human beings because of the difference in the amount of MDMA that is neurotoxic to rats and humans. In addition to the effects on serotonin, MDMA has also been suspected to act on another neurotransmitter, dopamine. Like the hallucinogen LSD, MDMA is thought to stimulate dopamine release thus contributing to behavioural toxicity (Elk 1996:352).

There is currently a great deal of interest in Ecstasy as a result of its increasing popularity as the recreational drug of choice. According to research supported by the National Institute of Drug Abuse (NIDA) in the USA, heavy users of Ecstasy may be risking brain injury that remains long after the high has worn off. Neuroscientist Ricaurte and his colleagues carried out a series of pre-clinical and clinical studies designed to evaluate the neurotoxic potential of MDMA toward brain serotonin. Fischer *et al.* (1995) investigated the regrowth of rat and primate brain neurons previously exposed to extremely large doses of MDMA. The study was designed to determine whether there was long-term restoration of normal levels of serotonin in those brain regions in which serotonin levels were previously reduced as a result of exposure to very large amounts of MDMA. Also examined was whether the regrowth of serotonin nerve terminals (reinnervation) restores the original brain structures.

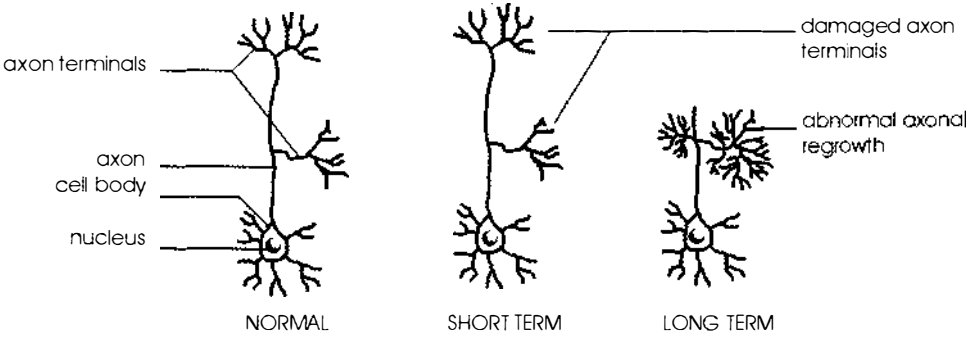


Figure 2.6 Abnormal regrowth of damaged axon terminals

Note: The illustration on the left shows a normal neuron. The shaded area in the middle illustration shows the axon terminals of the neuron that are damaged by MDMA. The illustration on the right shows how 12 to 18 months after being damaged by MDMA, serotonin-producing nerve fibres have regrown excessively in some areas and not at all in others (Mathias 1996:01).

Fischer *et al.* (1995:5476) determined that a single dose of MDMA only slightly higher than the size of doses normally taken by humans significantly damaged brain cells that produce serotonin. Ricaurte (in Mathias 1996:01) reported that 12 to 18 months after the brains of squirrel monkeys had been damaged by MDMA, serotonin-producing nerve fibres had regrown abnormally in some brain regions and failed to regrow at all in others.

According to Ricaurte (in Mathias 1996:02), the doses of MDMA that some people take recreationally closely approach the doses known to produce neurotoxic effects in animals. The major question is whether the neuronal changes seen in animals from MDMA exposure occur in human beings who use the drug. To help answer that question, Ricaurte conducted separate clinical studies using brain imaging techniques to evaluate the possibility of long-term brain damage in humans who have previously used MDMA. (See Section 2.6.2.4 for positron emission tomography scans.) These studies also assessed the potential functional consequences of such neuronal damage on aspects of mood, movement, memory, impulse control, aggression and sleep cycles (Mathias 1996:02).

Ricaurte (in Mathias 1996:02) maintains that determining the functional consequences of MDMA exposure 'may be more complex than previously thought'. The long-term study with squirrel monkeys showed that in some brain areas, such as those containing structures involved in memory and learning, damaged neurons failed to recover. However, in other brain areas, particularly those involved in controlling functions such as sleep and appetite, damaged neurons regrew excessive nerve fibre, resulting in an overabundance of serotonin being released (Ricaurte in Mathias 1996:02). MDMA caused an abnormal regeneration or 'rewiring' of the nerve cells that released serotonin. This means that when humans previously exposed to high doses of MDMA are evaluated, neuroscientists should be looking for loss of serotonin function in some brain regions, but perhaps normal or increased serotonin function in other regions (Ricaurte in Mathias 1996:02).

Fischer *et al.* (1995:5483) noted that the 'aberrant serotonergic brain reinnervation' had no known functional consequences and speculated that there may be sufficient neural reserve to forestall problems under normal circumstances, however 'if 5-HT [hydroxytryptamine (serotonin)] function declines with age, MDMA-exposed individuals could be at increased risk for developing age-related cognitive impairment'. The results are further evidence that people using high doses of MDMA may be putting themselves at significant risk of brain injury.

Researchers are now trying to determine why the nerve cells grow back normally, abnormally or not at all and whether the damaged nerve tissue disrupts mood, memory and other functions associated with serotonin (Cramer 1995:01).

2.6.1 Implications of animal studies for human use

Doblin (1995:03) maintains that in order to evaluate what implications the Fischer *et al.* (1995) study has for humans using MDMA for recreational or therapeutic purposes, the following questions must be addressed:

1 How does the amount of MDMA administered to the animals relate to human use patterns?
2 What are the consequences of MDMA-caused serotonin reductions in animals?
3 What evidence is there that MDMA causes serotonin reductions in humans?
4 If there are MDMA-caused serotonin reductions in humans, what are the consequences?

2.6.1.1 Animal versus human doses

Doblin (1995:03) explains that the Fischer *et al.* (1995) study was designed to determine whether there was long-term restoration of normal levels of serotonin in those brain regions in which serotonin levels were previously reduced as a result of exposure to very large amounts of MDMA, and to investigate whether the regrowth of serotonin nerve terminals (reinnervation) restored the original brain structures in the rats and primates. It was therefore necessary to cause large initial reductions in serotonin levels in multiple brain regions so that regrowth would have an opportunity to occur.

In the Autumn 1995 Newsletter of the Multidisciplinary Association for Psychedelic Studies (MAPS) Doblin (1995:03) maintains that the Fischer *et al.* study was not designed to evaluate the effect of the typical human dose of MDMA, which is about 1,7 mg of MDMA for each kilogram of body mass (mg/kg) taken orally. Typical human doses do not cause neurotoxicity in primates. According to Doblin (1995:03), Ricaurte (1988:166) had previously indicated in primates that 2,5 mg/kg of MDMA given orally every two weeks for four months caused no significant reductions in serotonin levels. Ricaurte did find that significant reductions in serotonin levels in primates first occurred with a single oral dose of 5 mg/kg, an amount of MDMA that some recreational users do take. This dose produced no reductions in most primate brain regions tested two weeks after administration, however, there was a 21 per cent reduction in serotonin in the thalamus and a 16 per cent reduction in the hypothalamus. Thus, the 'no effect' level in primates for serotonin reductions is somewhere between an oral dose of 2,5 mg/kg and 5,0 mg/kg. Whether there is a direct connection between these initial reductions in serotonin levels and

structural damage (neurotoxicity) has been questioned. In addition, no associated functional or behavioural consequences have been noted either from these minor and localised reductions or from the larger reductions caused by the higher doses administered to the primates in this experiment (Doblin 1995:03).

In order to cause substantial serotonin reductions in multiple primate brain regions, it was necessary to administer a subcutaneous injection of 5 mg/kg twice daily, four days in a row, for a total of eight injections. According to Doblin (1995:04), the relevance of the data from this study to the human therapeutic or recreational use of MDMA is not clear, since most people ingest MDMA orally and not by injection. Furthermore, it is practically unheard of for someone to use MDMA for four days in a row because tolerance to the desired positive effects develops that cannot be overcome by increasing the amount ingested, thereby distinguishing MDMA from drugs such as cocaine or heroin.

The 5 mg/kg dose of MDMA injected in the primates is almost three times larger than the typical human dose of 1,7 mg/kg. In an earlier study, Ricaurte (1988:166) indicated that subcutaneous injection of MDMA is roughly twice as toxic as oral administration. Doblin (1995:04) therefore argues that each injection given to the primate is equivalent to slightly less than six times the typical oral human dose. Since there were eight injections, each primate received the rough equivalent of forty-five times the amount of MDMA that a person would ingest in a typical MDMA session. This estimate is very tentative, since it multiplies dose, frequency and route of administration effects, even though there may not be a linear relationship between these factors and serotonin reductions. Furthermore, the typical human dose varies from person to person depending on the person's height and weight. O'Callaghan (1993 in Doblin 1995:04) uses the smaller figure of twenty-five times the typical dose to estimate the relationship between the doses given to the primates in this study and the typical human dose.

Data from the Fischer *et al*. (1995) study can be used to develop hypotheses about the effects of MDMA in humans but no clear conclusions can be drawn because there are marked species-dependent differences in response to the administration of drugs. For example, rats respond differently to MDMA from mice in some studies. In this study, the rats responded differently from the primates in that most rats – but only some primates – re-established normal serotonin levels. Primate data is most useful in estimating the effect of a drug in humans, but even primate data needs to be confirmed by human studies (Doblin 1995:04). Neither the relative safety nor risk of MDMA can be determined conclusively without human studies.

2.6.1.2 Consequences of serotonin reductions in animals

The long-term functional or behavioural consequences in animals who have been administered large amounts of MDMA are still unknown. No obvious impairments have been noted (Doblin 1995:05).

2.6.2 Human studies

In human beings it is very difficult to assess the state of brain serotonin nerve cells. At present, this can only be done by studies of 5-hydroxyindoleacetic acid (5-HIAA) in the cerebro-spinal fluid (CSF) and positron emission tomography (PET) studies of serotonin transporters (Ricaurte 1997:03).

2.6.2.1 Studies of 5-hydroxyindoleacetic acid in cerebro-spinal fluid

CSF studies involve measuring 5-HIAA, the breakdown product of serotonin, in spinal fluid. CSF is simply the fluid that bathes the brain and the spinal cord. Once serotonin produced by nerve cells has been released, it is metabolised (or broken down) into 5-HIAA, which accumulates in the spinal fluid. Spinal fluid is easily obtained in living humans by doing a lumbar puncture. In order to determine if 5-HIAA in the CSF could serve as a marker of MDMA neurotoxicity, Ricaurte and McCann (1997:03) first carried out a series of studies in monkeys. When 5-HIAA in the spinal fluid of the monkeys given MDMA was measured, it was found that if that monkey had a 70 to 90 per cent reduction of serotonin and 5-HIAA in the brain, that same animal had about a 50 to 60 per cent loss of 5-HIAA in the spinal fluid. According to Ricaurte, two important points arise from these studies. One is that 5-HIAA can be used as an indirect marker for MDMA-induced serotonin neurotoxicity in primates and the other is that the degree of loss or depletion of 5-HIAA in the spinal fluid tends to underestimate the degree of loss of 5-HIAA in the brain (Ricaurte *et al.* 1997:03).

Ricaurte and his colleagues then conducted a similar study in a group of people who had used MDMA extensively in the past. On average, these individuals reported using MDMA about ninety-five times over a period of five years. The group of people that were investigated had used MDMA four times a month roughly every week. Normally, they reported taking a dose of 170 mg (an estimated dose), which translates to one or two tablets every time they used Ecstasy. Individuals were also asked when the last time they had taken the drug was. On average, the group investigated had stopped using MDMA about four months before. The MDMA group was compared with a control group

that was reasonably well matched for size (there were 28 subjects in the control group and 30 in the MDMA group), age, height, weight and level of education. The number of men and women in the two groups was also comparable (Ricaurte 1997:04).

What was found in the spinal fluid of these people was reminiscent of what was found in the spinal fluid of the MDMA-tested monkeys. There was a reduction in the amount of 5-HIAA in the CSF of the MDMA group. In the control group, the CSF 5-HIAA concentration was about 15 ng/ml, whereas in the MDMA group it was reduced to almost 10 ng/ml (Ricaurte 1997:04), that is, the MDMA users had roughly 32 per cent less serotonin metabolite in their spinal fluid on average than the group of controls (Doblin 1995:03). This was a statistically significant change. Markers for dopamine and norepinephrine or noradrenaline were not affected.

It should be stressed that this data does not establish definite evidence of serotonin neurotoxicity in MDMA-exposed individuals. CSF 5-HIAA is only an indirect chemical measure of the serotonin nerve cells in the brain. Additional studies are needed to assess the neurotoxic potential of MDMA in humans further (Ricaurte 1997:04). Nevertheless, CSF data does suggest that MDMA may produce neurotoxic effects in humans.

2.6.2.2 *Evidence for serotonin reductions in humans*

There is no conclusive evidence demonstrating that MDMA causes serotonin reductions in humans. Studies using spinal taps and brain scans to evaluate people before and after administration of MDMA will be needed to determine definitively whether MDMA causes serotonin reductions in humans. Doblin (1995:04) maintains that in order to put McCann and Ricaurte's CSF findings into context, it is important to note that the normal range of serotonin metabolites in spinal fluid is quite large. Some people naturally have twice as much or more than others, thus a difference of 32 per cent between groups, although statistically significant, is a relatively small shift within the normal range of serotonin metabolite levels.

According to Doblin (1995:04), whether the 32 per cent difference can be ascribed to MDMA use is questionable, largely because the serotonin metabolite levels of the MDMA users were not measured before they began to use the drug. Doblin (1995:04) points out that this study used a matched control group design instead of pre- and post-measures on the same subjects, therefore the difference in serotonin levels could be due to uncontrolled factors resulting from an imprecise matching process. For example, some personality factors such as risk-taking behaviour (eg illegal drug use) have been linked to lower serotonin metabolite levels. He also notes that the volunteers in this study had exposure to other drugs as well as Ecstasy (MDMA), while the

control group was relatively drug naïve. Furthermore, MDMA sold illegally is often impure. Serotonin reductions, if they occurred as a result of drug use, could be due to impurities and not to MDMA itself (Doblin 1995:04).

2.6.2.3 Consequences of serotonin reductions in humans

While McCann *et al.* (1994) found lower serotonin metabolite levels in MDMA users compared with controls, no harmful functional or behavioural differences between the subjects in the MDMA and control groups were found. In fact, the MDMA users exhibited less hostile and impulsive personality traits and increased harm avoidance, constraint and control than the members of the control group (Doblin 1995:05). This finding is particularly surprising, since it runs contrary to previous research which has associated low levels of serotonin with increased violent and impulsive behaviour. Possibly, this finding is due to MDMA's psychological effect of empathy rather than any long-term change in serotonin (Doblin 1995:05).

a Sleep electroencephalogram (EEG) data

A study by Allen, McCann and Ricaurte (1994:560) examined the EEGs of human users because of the function of serotonin in sleep. MDMA was found not to cause gross abnormalities in the quality of sleep in human users, suggesting that the systems responsible for sleep were intact. MDMA also did not change rapid eye movement (REM) or stages 3 and 4 slow wave sleep (SWS) periods. According to Granquist (1995:03), this is not what would be expected from experience with chemical or anatomical lesioning of the serotonergic systems in animals.

Sleep EEG data from this study indicated that the MDMA group averaged 19 minutes less total sleep a night than members of the control group. MDMA users had about 37 minutes less of stage 2 non-REM sleep, generally considered to be of lesser importance than other stages of sleep in terms of restorative function. MDMA users actually spent about 18 minutes more than controls in the stages of sleep considered essential for physical and biological restoration, stages 3 and 4 non-REM sleep and REM sleep (Doblin 1995:05).

The fact that MDMA does not reduce REM and SWS, while reducing the lighter stage 2 sleep, may indicate that MDMA users experience better-quality sleep. REM and SWS are considered important states in sleep (being linked to memory and psychiatric health), while stages 1 and 2 sleep are not generally regarded as being important (Granquist 1995:03). The sleep patterns of the MDMA users could perhaps be considered more efficient and more restorative than those of the control group, because they went more quickly into deep sleep (Doblin 1995:05).

At present there is no evidence of harmful neurotoxic effects in the current population of MDMA-exposed people.

2.6.2.4 Positron emission tomography (PET) scans

Advancement in neuro-imaging techniques, such as PET scans, and the development of carbon-11 [11C] called *McN-5652* – a radioligand that selectively labels the serotonin transporter (a structural element of brain serotonin neurons) – has made it possible to see and assess the status of brain serotonin neurons in living human beings (McCann *et al.* 1998:02). The brain scans of drug users have yielded the first direct evidence that recreational Ecstasy use can trigger long-lasting changes in the human brain. PET was used to scan the brains of 15 MDMA users. For comparison, the brains of 15 people who had used other drugs such as cocaine, heroin and marijuana but had never taken MDMA, were also scanned (Concar 1997:01).

A key difference came to light when the researchers injected participants with the radioligand [11C]McN-5652, a radioactive substance designed to 'light up' in the presence of healthy serotonin (5-HT) synapses. Radioligand [11C]McN-5652 binds to a protein that transports serotonin across cell membranes (Concar 1997:01). The control subjects had normal levels of the transported protein but the MDMA users had deficiencies in all areas of the brain thereby indicating that recreational MDMA use can lead to large, dose-related decreases in the brain serotonin transporter (McCann *et al.* 1998:03). Taken in combination with results of previous studies showing selective decreases in concentrations of CSF 5-HIAA in MDMA users, and similar findings in MDMA-treated animals with documented neurotoxic lesions, these data suggest that human MDMA users are susceptible to MDMA-induced brain serotonin neural injury (McCann *et al.* 1998:07). (See Figure 2.7.)

All participants in the MDMA group reported that they had refrained from using MDMA or other psychoactive drugs for at least three weeks before the study, which suggests that the decreases seen in brain [11C]McN-5652-labelled serotonin transporter sites were not due to pharmacological effects of MDMA or other drugs (McCann *et al.* 1998:07). The results do not, however, rule out the possibility that decreased serotonin transporter binding sites are secondary to pre-existing differences in serotonin function in MDMA users compared with controls, but since none of the MDMA users had a neuropsychiatric disorder in which serotonin has been implicated, McCann *et al.* (1998:07) maintain that this possibility is unlikely. Finally, although most of the MDMA users had experimented with other recreational drugs, none was a known serotonin neurotoxin in human beings and was not likely to account for changes in serotonin binding (McCann *et al.* 1998:07).

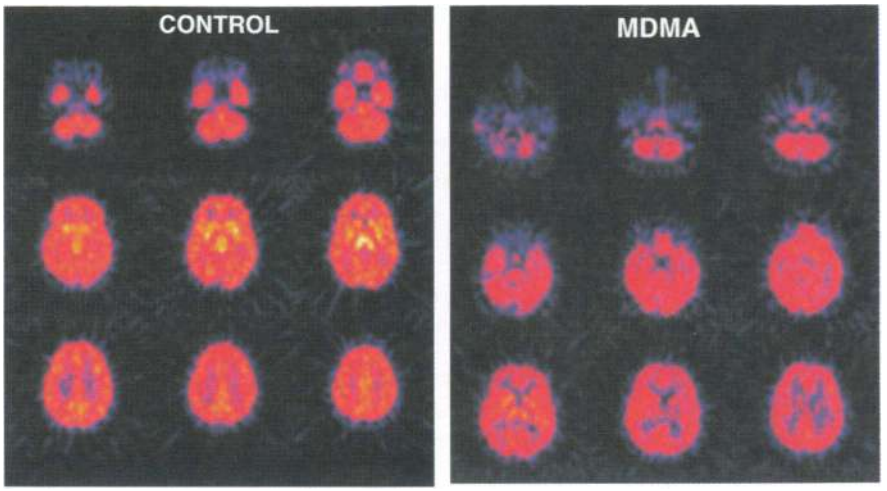


Figure 2.7 Axial PET images of participants in the control group and MDMA group showing distribution of specific [11C]McN-5652 binding

Note: PET images were acquired 55 to 95 minutes after tracer injection (McCann *et al.* 1998:06).

McCann *et al.*'s (1998:07) findings do not draw conclusions about reversibility or permanence of MDMA-induced changes in brain serotonin transporters. Although no correlation between the length of abstinence and the extent of decrease in [11C]McN-5652 binding was found, McCann *et al.* believe MDMA-induced changes may be reversible. Sample sizes and various other factors could have contributed to the apparent absence of recovery. More MDMA users with varied durations of abstinence and drug exposure histories must be studied to show whether serotonin terminal structure and function return to normal over time. Studies in non-human primates show that MDMA-induced changes in serotonin terminal markers persist for longer than one year after doses of MDMA similar to those used by some human recreational MDMA users (McCann *et al.* 1998:07).

In short, the data suggests that people who use MDMA as a recreational drug are 'unwittingly putting themselves at risk of developing brain serotonin neural injury' (McCann *et al.* 1998:08). In addition, systematic studies of MDMA-exposed individuals with highly selective brain serotonin transporter deficits may give important insights into the functional role of brain serotonin in human behaviour. According to McCann *et al.* (1998:08), the potential functional consequences of MDMA-induced brain serotonin neurotoxic lesions are not yet clear, but may include depression, anxiety, memory disturbance

and other neuropsychiatric disorders in which brain serotonin has been implicated.

The following questions regarding recreational Ecstasy use therefore arise:

1 What does all of this mean to ravers who love their Ecstasy?
2 How do these findings apply to the average recreational users, most of whom are quite moderate in their usage, that is, they do not use it every weekend?

There are a number of different opinions as to the relevance of the serotonin neural damage. Doblin (in RaveSafe 1998:01), mentions that

> an important point to note is that the subjects were tested for psychiatric disorders, such as anxiety and depression, and all were found to be normal. In other words, these reductions in transporter binding relative to the control group existed without any anxiety and depression, as established by the experimenters themselves. This is in line with animal experiments which show that considerable persistent changes do not result in persistent behavioural changes in these animals. They cannot be distinguished from controls. While Ecstasy may cause some brain changes, the evidence for depression and anxiety as a long-term time bomb is entirely lacking especially if the control group are other drug users. So far, these changes in the serotonin transporter are without proven effect.

Parry (in RaveSafe 1998:02) of the Medical Research Council in South Africa commented that the same could be said for alcohol. Alcohol causes major neurological damage as a result of causing a thiamine (vitamin B12) deficiency, but only in very large doses over a long period of time. While no precise information on the quantity and frequency of Ecstasy use among the participants is available, Parry (in RaveSafe 1998:02) attests it can be assumed that participants used at least one pill a week. According to McCann *et al.* (1998:05), participants in the PET study had generally used MDMA on more than 200 occasions and over a four- to five-year period.

Parry (in RaveSafe 1998:02) further points out that the seriousness of the effect of long-term (eg one year) or permanent loss of functioning of serotonin neurons is not very clear. What McCann *et al.* (1998) say is that it *might* have broad implications for many neuropsychiatric illnesses in which brain serotonin neurons have been implicated, for example, depression, anxiety and cognitive dysfunction. McCann (in Concar 1997:02), nevertheless, maintains that the brain scans provide clear evidence that MDMA can damage serotonin synapses in humans and her message to ravers is 'if you're going to use MDMA, use it in moderation'. According to Parry (in RaveSafe 1998:02), the bottom line is that Ecstasy use 'does affect your brain (structurally) in ways which could be

permanent (or at least long lasting) and this may affect you psychologically and in other ways'.

2.6.2.5 *Memory impairment*

Memory function in MDMA-exposed individuals merits special examination for various reasons (Bolla, McCann & Ricaurte 1998:02):

1 Brain serotonin (5-HT) appears to play a role in mnemonic or memory function.
2 In animals, MDMA severely damages 5-HT axons in the hippocampus and other brain regions implicated in learning and memory (eg the thalamus).
3 Case reports of memory impairment in some MDMA users and in several studies suggest that MDMA users have impaired verbal memory function.

Since previous studies have included subjects who may recently have used MDMA or other centrally acting nervous system drugs, it is not completely clear whether deficits in MDMA users depict neurotoxic effects of MDMA, pharmacologic effects of drugs or drug withdrawal (Bolla, McCann & Ricaunte 1998:02).

The purpose of the study conducted by Bolla, McCann and Ricaurte was to determine whether memory deficits existed in MDMA users who were drug-free for at least two weeks and if they do, whether memory deficits are dose-related. Furthermore, this study examined whether memory deficits in MDMA users correlate with decrements in CSF 5-HIAA which serves as a reliable indicator of MDMA-induced brain 5-HT neurotoxicity in non-human primates (Bolla, McCann & Ricaurte 1998:02). Twenty-four abstinent MDMA users and twenty-four control subjects were compared on several standardised tests of memory, after matching subjects for age, gender, educational level and vocabulary score (verbal intelligence).

Bolla, McCann and Ricaurte (1998:07) found that abstinent MDMA users have a deficit in visual and verbal memory, and that higher average monthly doses of MDMA are associated with greater decrements in memory function. Furthermore, the results indicate that lower levels of CSF 5-HIAA (an indirect measure of central 5-HT function), are associated with poorer memory performance, suggesting that MDMA-induced brain serotonin neurotoxicity may account for memory impairment in MDMA users. Lastly, the results indicate that both baseline intelligence and gender influence the effects of MDMA on memory function. Women were less susceptible than men to MDMA dose-related decreases in memory (Bolla, McCann & Ricaurte 1998:08).

These findings are generally consistent with reports of memory problems in previous studies, although some important differences are evident. Counter to findings in a previous report issued by Parrott *et al.* (1998) in which persons

with low MDMA exposure (ten or fewer doses) showed memory deficits, only subjects with high total monthly MDMA dosages were found to have memory deficits in this study. Bolla, McCann and Ricaurte (1998:07) feel the differences between the two studies may be attributed in part to the fact that subjects in their study abstained from psychoactive drugs (including MDMA) for at least two weeks. Thus acute or partial residual drug effects, or drug withdrawal, may have caused the memory disturbances noted in previous studies. Another possibility is the subjects in the study by Parrott et al. (1998) may have used extremely high doses of MDMA, causing brain 5-HT neurotoxicity despite the small number of separate drug exposures. Since some people attending Raves report using doses of MDMA that are clearly neurotoxic in non-human primates, the latter possibility cannot be excluded (Bolla, McCann & Ricaurte 1998:07).

The observation that higher exposures to MDMA are associated with memory impairment is consistent with findings in animals, indicating that higher dosages of MDMA produce greater neurotoxic lesions. Significantly, only individuals with more profound decrements in CSF 5-HIAA (presumably reflecting a greater extent of 5-HT injury) displayed obvious difficulties with memory function. These results correspond with a growing body of literature that denotes that large lesions (> 80 per cent) of neural systems are often necessary for functional deficits to be apparent (Bolla, McCann & Ricaurte 1998:08).

Results from this study also indicate that individuals with lower intellectual abilities (ie vocabulary scores) display greater decrements in memory performance with higher doses of MDMA. Similar interactions are seen in individuals exposed to other neurotoxins such as solvents and aluminium. Bolla, McCann and Ricaurte (1998:08) explain this effect by the concept of *cognitive reserve*, which assumes that individuals with higher intellect have a higher threshold for developing neurocognitive effects after brain insult. As regards the gender discrepancy pertaining to the MDMA dose-related decrease in memory function (where women were less susceptible than men), studies in adults 19 to 50 years old have found that women tend to have better memory abilities whereas men tend to have better reasoning abilities (Bolla, McCann and Ricaurte 1998:08). The Bolla, McCann & Ricaurte results are consistent with these reports because gender differences were also seen in control subjects, with women performing better than men.

A few possible limitations of this study should be pointed out. As with all retrospective studies, the possibility exists that pre-existing differences between MDMA users and non-users underlie differences in memory function and 5-HIAA. Thus, people with low CSF 5-HIAA may be predisposed to use MDMA and to have memory problems. However, Bolla, McCann & Ricaurte (1998:08) assert that the dose-related decreases in both CSF 5-HIAA (similar to those that

have been found in non-human primates) and memory function make this unlikely. Since several subjects in the control group also used recreational drugs (although not MDMA), a tendency to use drugs cannot completely explain the biological and behavioural differences found in MDMA users in this study (Bolla, McCann & Ricaurte 1998:08).

The observation that higher exposures to MDMA are associated with cognitive deficits is clearly worrying given the widespread use of Ecstasy amongst the youth, as these effects could cause problems for students in both secondary and tertiary education who are studying and preparing for examination. Nevertheless, no single line of evidence can be taken as conclusive proof that MDMA is neurotoxic in humans. More studies are needed to depict better the neurotoxic potential of MDMA in humans and its functional consequences.

2.7 ETHICAL DILEMMA

An important issue raised at the 1998 Novartis Foundation Press Conference is the difficulty of reaching conclusions from data produced from retrospective research on humans, rather than prospective research. This is the difference between studying the brains of humans who say they have taken Ecstasy in the past (whether recently or not), and studying the brains of humans before and after actually giving them MDMA. In the former case there are obvious methodological difficulties – differences in the brains of MDMA users compared to a non-using control group could be pre-existing. Another problem is pill composition – a lack of certainty about what the users have actually taken (Novartis Foundation Press Conference 1998:02).

Nevertheless, despite the clear shortcomings of retrospective research, prospective research is not being carried out because of perceived ethical difficulties. Ricaurte (Novartis Foundation Press Conference 1998:02) mentioned two problems he saw with this kind of research on humans. Firstly, he believed it would be unethical to ask subjects to take part in a study the purpose of which would be to 'see whether or not we can destroy serotonin nerve terminals in your brain'. Be that as it may, Ravers are taking Ecstasy on dance floors all over the world every weekend and there is unlikely to be a shortage of people willing to volunteer for MDMA research. In all honesty, not to do this kind of research might even be seen as being unethical.

Ricaurte's second problem concentrated on what he saw as the lack of medical necessity to test MDMA in this way, as there is still no documented evidence that MDMA has any medical use. Grob, an American psychiatrist,

who is considering the possible uses of MDMA within therapy, specifically for treating post-traumatic stress disorder, pointed out the catch-22 nature of this argument. He maintains that 'there is no documented evidence because putative medical application has not been put to rigorous testing. There have been no authorised, sound, methodological investigations, in large part because of the concerns Ricaurte is raising about neurotoxic potential' (Novartis Foundation Press Conference 1998:03). Hence, there is no evidence because the studies have not been done, but the studies cannot be done until there is some evidence to support them.

Nonetheless, it is crucial that research continues on the exact mechanism of MDMA-induced toxicity and also research into the possible beneficial therapeutic uses of MDMA, so that the risks and benefits of MDMA can be accurately balanced.

2.8 CONCLUSION

While the popularity of MDMA is escalating, especially amongst students and young people in the Rave party and club scene, research studies reinforce concerns that Ecstasy use can affect the brain some time after the immediate effects of the drug have worn off. The real fear is that Ecstasy may cause long-term permanent effects on the human brain in much the same way as observed in animal experiments. This remains unproven but many experts see such long-term effects as a bigger potential threat to public health than the much-more-publicised short-term risks (British Parliamentary Office of Science and Technology (POST) report in McFadyean 1997:72).

MDMA is no exception to the rule that every drug has potentially serious side-effects. As with any substance, some people tend to be very sensitive to small quantities of MDMA. Others may take unusually large amounts, especially in recreational contexts. Concern is expressed that the doses taken by some young people at Raves considerably exceed the normal 'advisable' human dose of 1,7 mg/kg. It would therefore not be surprising if some people took enough MDMA to cause long-term reductions in their levels of serotonin in some brain regions (Doblin 1995:05), to place them at a higher risk for developing the wide array of neuropsychiatric disturbances in which serotonin neurons have been implicated, such as depression, mood swings, impulse control problems, aggressive tendencies, sleep disturbances, cognitive dysfunction and anxiety disorders.

Although research studies do not prove beyond doubt that these are likely outcomes, they are a warning to Ecstasy users. (See Figure 2.8.) The challenge

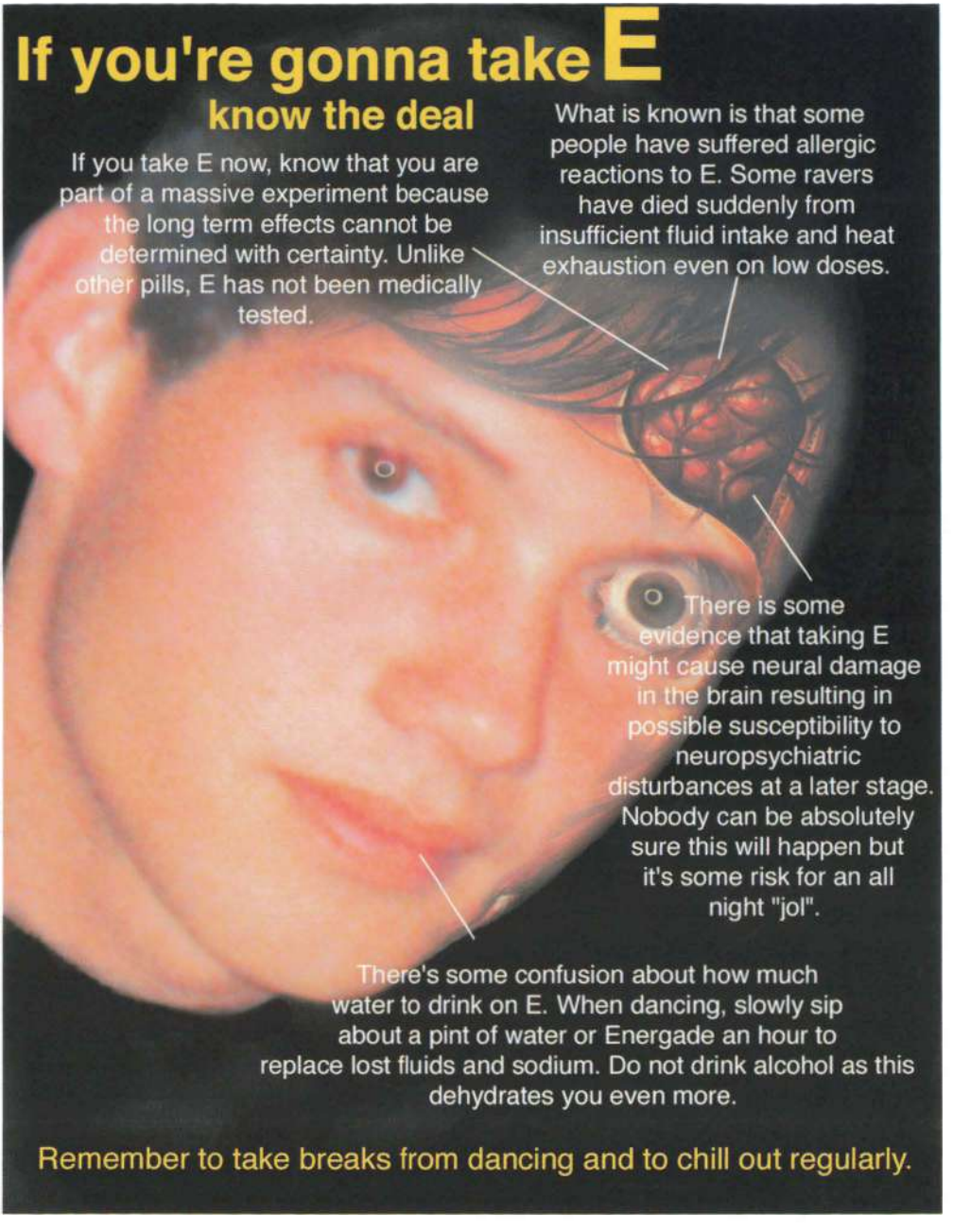


Figure 2.8 A warning to Ecstasy users

for educators, drug counsellors and others dealing with young people using Ecstasy is to convey the message that in later years they may be susceptible to neuropsychiatric disturbances as a result of their Ecstasy use. How effective this message will be depends on how one gets through to an individual. Caution is nonetheless imperative with recreational Ecstasy use until further studies can ascertain the extent to which the drug is indeed dangerous in humans.

CHAPTER 3

RAVES AND THEIR CULTURE

INTRODUCTION

In South Africa's youth culture a phenomenon known as *Rave* – a combination of energetic 'techno' music, lasers, visual effects, clothes and an assortment of drugs – exists. Driven by the idealism of PLUR, ravers portray themselves as friendly individuals, looking out for one another to ensure a good time and create a positive ambience. Sometimes recreational drugs are used to enhance the experience. In tune with the music, ravers 'groove' to the beats, thriving on the energy of the tracks played by the disc jockey (DJ). Dancing hard into the night, ravers tire into the early morning, exhausted from their energetic rituals (http://1998:01). This chapter will consider what Raves are, as well as the underlying philosophy of a raver. What is causing thousands of young people to gather in empty warehouses or nightclubs and listen to music from 22:00 until 8:00? Who are the ravers? Is the Rave movement new or is it some form of 'archaic revival'?

WHAT IS A RAVE?

3.2.1 Contemporary definition of Rave

A Rave is a social event, primarily an all-night dance party open to the general public, where loud techno music is played and many participants indulge in a number of different chemicals. According to Brown and Behlendorf (1995:03), the participants experience a sense of community and elevated consciousness through the hearing of music and responding to it through dance, a positive

change of mood and both spoken and unspoken interaction with other participants.

Brown and Behlendorf (1995:03) maintain that Raves tend to comprise the following key elements:

- venue which may be a warehouse, open field, dance club or other exotic location
- at least one large, amplified stereo sound system
- skilled DJs who provide a continuous mix of dance-orientated electronic music, usually techno, house, or jungle music
- colourful moving lights, lasers and strobes
- night-time hours, usually from 22:00 or 23:00 until sunrise
- attendance of at least 50 people (varies widely from region to region around the world; some Raves routinely attract over 10 000)
- use of recreational drugs among a percentage of the participants (varies widely from Rave to Rave; some Raves are substance-free)
- non-use of alcohol (varies from Rave to Rave)
- selling of non-alcoholic 'smart drinks', T-shirts and DJ mix tapes
- retro and 'little kid' fashions
- 'chill out' areas or rooms featuring ambient music.

Raves are advertised via flyers, posters, word of mouth, Internet mailing lists and Web pages. Places where flyers can be found include independent compact disc (CD) or record stores, alternative clothing shops, Internet cafés, nightclubs and other student 'hangouts' near universities or technikons. The name of the Rave appears on the flyers, however, the word *Rave* is not usually displayed due to negative connotations applied by people unfamiliar with the scene (Brown & Behlendorf 1995:08). Many Rave flyers use pagan and religious symbolism. Enlightenment is a common theme as well as love and kindness (Stiens 1997:12). (See Figure 3.1.) Raves do not only take place in urban areas. They often take place in small towns, rural areas, out in the desert, on rooftops, in parking garages, on the beach, or anywhere where people want to dance all night long (Brown & Behlendorf 1995:08).

While raving may be collective in nature, it is nevertheless a highly subjective experience (Stiens 1997:01). One person's best Rave may be another's worst. It is important to bear this in mind when considering the following series of quotes:

> Raves are a place where people can go to be themselves, where everyone is accepted for who they are, where people will give you a smile and a hug even if you don't know them well, where you can escape reality and live together in harmony with others for a while, where you can dance your ass off all night until you see the sun rise, where you leave having more friends

than when you came in, where the music hits you hard and won't stop, where everyone is equal, where you can sit if you want to, dance if you want to, talk if you want to, hug if you want, clap or whistle or just space out or anything ... (LaGassa 1994:01).

A Rave ... superficial people all around ... just a pathetic excuse to take loads of drugs and act like you belong in pre-school ... pretentious regression (A respondent).

People that don't know what Raves are think that they are about drugs, but that is not what it is about. Undeniably there are people who do drugs here, but people do drugs everywhere ... This is about being able to do your own thing without judgement – total freedom. It is an emotional release, totally refreshing ... (A raver).

Cyberlights ... frolicking all night long ... becoming one with the music, one with the cosmos ... all-knowing unity (A raver).

Figure 3.1 Rave flyer

> At the Rave, I spent an entire twelve hours being cold, lonely and misunderstood by the drug-addled, happy-faced space kids who were content to boogie down all night long to the monotonous thumping that shook my skull but not my ass ... The only way to have fun at a Rave is to do massive amounts of drugs which make you happy and able to enjoy the constant mental assault that is techno music and spend the whole night dancing (Hoffman 1997:01).
>
> ... collective soul destruction ... drugged up ... more drugs ... the more the better ... loneliness ... reputation ruin ... (A respondent).
>
> There are no bad vibes ... just one common goal – to have as much fun as possible. Fun is to be taken very seriously, life is too short to worry unnecessarily, so we just dance. Take a night off from life and just have fun ... (A raver).
>
> A myriad of amazing, high individuals buzzing on the same drug ... pure bliss ... intimacy ... ecstasy ... beautiful! (A raver).
>
> A modern-day rainbow gathering, straight, gay, transsexual, tolerance, smiles, understanding, PLUR – the new faith, selfless, universal oneness, evolution (A raver).
>
> Rave is more than music plus drugs ... To the participant it feels like a religion; from the standpoint of a mainstream observer, it looks more like a sinister cult (Reynolds 1998:xviii).
>
> At the end of the day it is just one big, stupid party!! (A raver).

3.2.2 The concept of Rave

The actual concept of Rave is nothing new. Some people claim Raves are a more sophisticated form of a primal culture (Hoy 1998:02). According to Behlendorf (Brown & Behlendorf 1995:11), 'at the base level, raves are very comparable to American Indian religious ceremonies (pow-wows) and also to the concept of Shamanism (navigating consciousness) in Eskimo and Siberian society, where music is the key towards pulling oneself into a unique, emotional and psychological state ... in which one experiences washes of sensations and visions ...'. Similarly, a large part of the concept of modern Rave parties is employing a combination of audio (music) and visual stimuli (lights and lasers) to 'elevate people into an altered state of physical or psychological existence' (Behlendorf 1995:09). (See Section 3.9.1.) Others allege that Raves are simply the re-emergence of the hippies, an 'Age of Aquarius-style utopian togetherness with a technological feel' (Beckerling in Hoy 1998:03).

For many people, a Rave is not simply an all-night party but rather a form of lifestyle, ritualised behaviour and beliefs (Reynolds 1998:xviii). Dance culture has long been home to two highly contrasting versions of what Rave is all about. On the one hand, there is the transcendentalist or New Age hippy with psychedelic talk of higher planes of consciousness and a 'oneness' with humanity and the cosmos. On the other hand, Ecstasy and Rave music fit into a happening 'rush culture' of adolescent excitement and cheap thrills: playstation video games, skateboarding, bungee jumping, other extreme sports and blockbuster movies whose story lines are simply weak frameworks for the display of spectacular special effects (Reynolds 1998:xix–xx).

3.3 WHY RAVE?

Although the flowing of emotions and group hugs at a Rave are a large part of the Ecstasy experience, this 'closeness' is spread into an overall atmosphere of friendliness: you connect with the group you came with but also with people you have never met (Reynolds 1998:xxv). Behlendorf (1995:10) affirms that 'what distinguishes raves is the concept of the shared experience; a feeling of unity often arises and people are open and friendly to one another. There is a loss of that "pretentious" attitude that is omnipresent in other kinds of clubs and even in life in general. People are celebrated for who they are, not what they aren't.'

In a world of post-modernism where young people are constantly vying for acceptance, belonging and love, Raves are offering what they are looking for. The need for purpose and meaning is important to most adolescents. Raves provide young people with a step towards individualism but without losing the security of society and their peer groups (Hoy 1998:03). Furthermore, Raves are perceived as a loose arena of free ideas where people come out and are allowed to express themselves: 'you are allowed to be a freak'.

There are three essential aspects common to every Rave. The following section deals with the physical aspect, namely the music, visual effects, drugs and people. The spiritual and the psychological aspects will be discussed later.

3.4 RAVE MUSIC

Rave music is generally characterised as all music that is dominated by a bass beat of approximately 115 to 160 beats per minute (BPM), with the most

common being about 120 to 140 BPM. Trance, goa trance, house, acid house, techno, ambient, progressive, deep house, hardcore techno, garage, speed garage and jungle are all styles of music associated with the Rave culture. 'Chill out' areas at Raves (where ravers rest from dancing) often feature a combination of the above, along with ambient or even classical music. According to Reynolds (1998:xxvi), all music sounds better on Ecstasy. It is clearer and more distinct, but also instantly overwhelming. 'You feel like you are dancing inside the music; sound becomes a fluid medium in which you are immersed' (Reynolds 1998:xxvi).

Regardless of Ecstasy's musical applications, it is the driving electronic dance music that sets the tone and builds the anticipation at Raves (Morgan 1998:04). Skilled DJs are an integral part of Raves, occupying centre stage and drawing the attention of the ravers as they spin one track into another. Generally, the purpose of the music played at Raves is to make people dance. However, Brown and Behlendorf (1995:09) believe it is more than that. The music has to 'take people to another place'. It has to 'calm the conscious mind while at the same time stimulating the subconscious, as well as the body'.

DJs must be sensitive to the 'spirit of the Rave' to know how to 'build up' and when to 'break down' the emotional tension of the crowd (Fourie 1999:31). The DJ strives to create an environment in which people in the crowd lose their inhibitions, let go and forget about the people around them. 'They hoot, holler and put their arms in the air ... kind of like in churches ... when the vibe

Figure 3.2 The 'deck'

reaches that point and people are just so into it' (DJ Sense in Morgan 1998:04). (See Figure 3.2.)

Dancing is, to an extent, yet another reiteration of the music. Stiens (1997:08–09) compares the music that the DJ spontaneously creates to a text which the dancer interprets through body movements. The beat is the driving force. Whether people are doing highly choreographed dance moves, or whether they are simply thrusting their bodies back and forth, ceases to matter. It is losing oneself to the beat and becoming one with the music by letting the music control one's movements.

3.5 VISUAL EFFECTS

A Rave is just not complete without its visual effects – the skilful use of lights, lasers and video projections. (See Figure 3.4.) Lasers focused onto moving mirrors controlled by a computer, enable an assortment of shapes, designs and logos to be drawn. The video imagery projected on the walls, linking everything from animated cartoons and 'trippy' computer graphics to film clips, is speeded up to match the beat of the music closely (Hoy 1998:05). Light fixtures, called *cyberlights*, move the lights in patterns and project them through different

Figure 3.3 'Arms in the air'

Figure 3.4 The laser effect

coloured metal filters. With the correct filters, cyberlights can create the illusion of textures (Berko 1997:03). The atmosphere at a Rave is charged not only by the music but also by the 'back to the sixties' and 'dawning of the Age of Aquarius' imagery (Hoy 1998:04). Extraterrestrial (alien), psychedelic, as well as Eastern religious iconography are a familiar sight.

The music and lights at a Rave tilt the MDMA experience towards the drug's sensory effects. With its mildly pre-hallucinogenic feel, Ecstasy makes colours, sounds, smells, tastes and tactile sensations more vivid. The experience combines clarity and brightness (Reynolds 1998:xxv). The combination of Rave music and visual effects creates a synergy that can take a raver into an altered state of awareness. Behlendorf (1995:10) asserts that the hypnotic effect of techno music, combined with the progressions of Rave DJs, can become quite intoxicating, resulting in what could closely be compared to a religious or mystical experience. (See Section 3.9.1.) The altered state may simply help one forget about who one is, but ultimately it helps one escape the world and all its problems (Hoy 1998:05).

3.6 DRUGS

To decontextualise Ecstasy use in South Africa from its predominant setting within the Rave culture is both unproductive and misleading. It is clear that Ecstasy and Rave culture go hand in hand. The subject of drugs at Raves is very controversial. Some wonder whether the Rave scene would have been more easily accepted by the public had the presence of drugs not been so high, while others wonder how Raves could ever come about without them (Behlendorf 1995:11). Anyone who has been to a Rave knows the 'thrill of catching a stranger's eye, making contact through the shared glee of knowing that you're both buzzing off the same drug–music synergy' (Reynolds 1998:xxv).

There is an indisputable connection between recreational drugs and Raves. There are many reasons for this situation. Brown and Behlendorf (1995:11) maintain that some of these reasons may include, but are not limited to, the

- presence of drugs throughout youth culture
- sensory and empathetic enhancements drugs add to the experiences of raving
- expectations of some ravers about what they are 'supposed' to be doing at Raves
- energy provided by drugs to help people stay up all night dancing
- desires of some ravers to escape or to return for a night to a carefree, childlike existence
- relatively safe, comfortable and stimulating environment provided by Raves
- inexperience and immaturity of young adults, out on their own for the first time, who want to indulge in the 'forbidden fruit', so to speak.

These factors together sometimes create an overwhelming pressure on ravers to indulge in recreational drugs. There are, however, significant risks that are often ignored by the general raving community. As discussed in Chapter 2, a small percentage of the population is prone to allergic reactions to Ecstasy (MDMA) and some ravers have died suddenly after taking low dosages of MDMA.

Although drugs have been part of the Rave scene since the beginning, it is possible to go to a Rave and not do drugs. For every raver who chooses to enhance his or her experience with drugs, there is a raver who chooses not to (Brown & Behlendorf 1995:12). Regardless, one cannot separate the Rave scene from drug use. Ecstasy became the raver drug of choice. Ecstasy broke down barriers of communication, enhanced pleasure and sensation, and made music

physically pleasurable. Strangers became people to be loved. Ecstasy broke down egos. It was a perfect fit with the happy family that the Rave scene was trying to create (Stiens 1997:10). For many young ravers, the pleasures of Ecstasy considerably surpassed any potential dangers that the drug may possess; thus amongst many Rave-goers Ecstasy became known as the 'friendly drug'.

Dance music and club life play an increasingly prominent part in the life-styles and choices of many of today's youth. MDMA, far from being an expensive and short-lived fad, quickly established itself as a major part of certain drug-using circles in South Africa. No one is quite sure just how many people are using Ecstasy regularly in this country, though some put the number who have tried Ecstasy at 500 000 (Jonker 1996, South African Police Drug Conference). This should come as no surprise for there is little worthwhile information available regarding Ecstasy, despite a plethora of recent studies of MDMA in the USA. Estimates on usage vary widely. However, researchers now believe that a 'significant' number of young people are familiar with what has been generically termed 'dance drugs' (Redhead 1993:11).

Newcombe (in Redhead 1993:11) argues that 'Every weekend ... an estimated 20 to 30 thousand people go to house music clubs and parties, known as "Raves". Several thousand take drugs such as cannabis, Ecstasy, amphetamine and, or LSD.' Research carried out in Brighton (UK), indicated

Figure 3.5 Ecstasy ('E', ecky)

Figure 3.6 Cocaine (charlie, schnarf, coke)

Figure 3.7 LSD (acid, candy)

Figure 3.8 Speed (amphetamine, whizz)

that 62 per cent of those who regularly go to nightclubs had stated that they had used drugs recently. The Brighton study concludes that 'use of drugs is considered by many young pleasuredomers as a valid component of their leisure, along with their dress, style, choice of friends, music and clubs.' Other drug researchers argue that Ecstasy (MDMA) or to the ravers, just 'E', is the raver's cultural choice (Redhead 1993:11).

Ecstasy has also dominated contemporary pop music. References to 'E' permeate much of today's music: for example ED 209's *Acid to Ecstasy* (Redhead 1993:11–12) and Happy Monday's album *Pills'N'Thrills and Bellyaches*

Figure 3.9 Cannabis (marijuana, spliff, ganja, doob)

(Reynolds 1998:93). Ecstasy is also proving important for some young people. It is increasingly replacing more traditional drugs, such as marijuana and LSD, in becoming their introduction to illegal drug use (Redhead 1993:12). Not surprisingly therefore, many fears have been expressed about Ecstasy – fears concerning its chemical make-up and its after-effects both in the short and the long term.

Drugs are a frequent topic of debate amongst ravers. Some think that drugs should be done away with entirely, others think that only drugs that increase the vibe, such as Ecstasy, marijuana and acid (LSD), should be allowed. Still others think that the Rave scene is about personal choice and if society decides which drugs are good and which drugs are bad, it is imposing personal morals on others (Stiens 1997:10). Drugs on the Rave scene include MDMA (Ecstasy), LSD, marijuana, cocaine, speed, ketamine, alcohol, amylnitrate (poppers) and even 'natural' alternatives such as herbal Ecstasy (Cloud 9) and Midnite Flite. (See Figures 3.5 to 3.9.)

Raves created a mass recreational drug culture and fed a craving for all-night dancing. The energy released by Ecstasy felt 'radical' but it was not targeted against the social status quo (Reynolds 1998:48). According to Reynolds (1998:48), Rave was more like a withdrawal from normality, a subculture based on what Melechi (in Reynolds 1998:48) characterises as a kind of 'collective disappearance'. There existed this whole society of people who lived at night and slept during the day. Gray (in Reynolds 1998:48) refers to this idea as 'turning the ordinary world completely on its head ... almost like slipping into a parallel universe'.

3.7 THE PEOPLE WHO ATTEND RAVES

Since Rave culture adopts individualism – a 'come as you are' – mentality, practically anybody can be a raver. A typical raver can be male or female who may or may not be heterosexual. Many are university or technikon students or scholars. Others have jobs. Some are professional people. Some ravers may be as young as 13 or as old as 50 (Brown & Behlendorf 1995:04) but most are between 17 and 25 years of age (Stiens 1997:09). They probably come from middle-class families and are reasonably well educated (Stiens 1997:09). Yet, none of those participants fall under one stereotype. Certainly, there are many confused teenagers and apathetic 'twenty-somethings', but there are also professional people. Ravers are some of the most diverse people one will ever meet. Unlike other drug scenes, Rave scenes do not result in participants dropping out of life (Brown 1998:10).

Raves also tend to reflect the racial diversity of the general population. Asian, black, coloured and white – it all seems not to matter. Ravers insist that 'inclusion' is central to the scene. Raves became a cross-roads where unlikely subcultures would meet (Melechi in Redhead 1993:36). Ecstasy was undoubtedly the catalyst of this coming together. A new atmosphere of sociability began to emerge, a sense of community that expressed itself in new

revivals of contact (hugging, kissing and massaging) and exchange (drinks, cigarettes, joints and poppers). As Melechi (in Redhead 1993:36) so aptly commented: 'If club culture had before celebrated an ecstasy of selflessness and oblivion, the new ecstasy was one of belonging and togetherness, of brothers and sisters in a "Promised Land".'

Many people use Raves as escapes, as 'weekend excursions' from their otherwise stressful or mundane school and home life (Brown & Behlendorf 1995:04). Infantilism is generally very predominant among ravers. Lollipops, baby's dummies, glow sticks, cuddly toys, backpacks and shirts adorned with cartoon characters are common. In a sense, this embodies the culture. It is the regaining of innocence and forgetting about problems for a while. It is a recreation of that time in their life when play was the most important thing and problems did not seem to matter (Stiens 1997:09). Raves and Ecstasy represent 'a fantasy of liberation, an escape from identity. A place where nobody is but everybody belongs' (Melechi in Redhead 1993:37).

The Rave has always been portrayed as a place where the rampant use of 'E' takes place. No one can deny drug use at Raves. The use of Ecstasy is becoming more frequent and is one of the real issues that educators need to be concerned about. Another issue would be the underlying philosophy of Raves. Perhaps the question to ask is why more and more young people are being drawn to the Rave culture and its practices.

Figure 3.10 Ravers

3.8 PHILOSOPHY OF RAVES

People would hardly take drugs because they want to subject their bodies and family to the pain that drugs cause. Many people take drugs in order to escape life or to find more meaning in their present existence. Young people are searching for love, belonging and acceptance. Pivotal to understanding the experimenting with, and use of, both alcohol and drugs is the human need for excitement and adventure, and of warmth and friendship (Hoy 1998:05). Hoy (1998:05) believes that modern society offers few real possibilities for risks, excitement and for challenge which can develop own limitations. There are also too few opportunities to get to know one's own body, and to release aggression and satisfy the need to explore.

An important ideal for all humans is that of warmth and friendship. It is possible that a Rave environment – which seems negative to the adult society due to the use of drugs – can be experienced as including, accepting and warm by adolescents. It might be that 'decent' youth environments can seem dismissing and excluding. One could think that a 'yes' to try Ecstasy is experienced as a 'yes' to warmth and friendship (Hoy 1998:06). At a Rave, a

Figure 3.11 'Brothers and sisters'

raver will include all and exclude none. In fact, it is an environment where one can be who one is, without having to change one's views.

When a raver was asked to tell why he had chosen Raves (a negative youth environment) over church (a decent youth environment), he replied as follows:

> Why should I go to church when I'm not accepted there? I want to go where I am accepted, not where I'm told what I look like and what I'm doing is wrong. I have finally found a place where I fit in. I am not judged because I may not be wearing suitable clothing or what I think of a particular subject, or don't agree with those around me. Every Rave I have attended, I have been surrounded by love. I am not afraid to go up and talk to people because they make me feel welcomed. We are one big happy family where we all understand, or try to understand each other. It is a huge release.

3.8.1 Peace, love, unity and respect (PLUR)

A fundamental Rave ideology expressed by the acronym PLUR was coined as the Rave 'anthem' and became an organising principle for the scene in 1992 and 1993 (http://1996:01). It was an ideological statement that included people's feelings about Rave. To some participants Rave feels like a religion (Reynolds 1998:xviii). PLUR is a general ethic found in most religions and is thus an important part of Rave culture, since it provides hope and love in a world that is often characterised by despair. PLUR forms a foundation for the constantly emerging relationships in the Rave community and is the basis for much, but not all, of the vibe that many people refer to when discussing Raves (http://1996:01). RaveSafe (1997:36) explains PLUR as follows:

Peace (P): 'Is the core of energy found within ourselves when we let go of all our fears. We have a loss of interest in judging ourselves and others around us. We think and act spontaneously, enjoying each moment, as we appreciate everything and smile through the eyes from the heart.'

Love (L): 'We all long for love, understanding and acceptance. We can only truly give and receive love once we have gained acceptance and peace within ourselves. Our actions of love towards others all stem from the love we have for ourselves.'

Unity (U): 'Is what happens when a whole lot of people who have peace, experience their love for themselves and each other, creating a oneness of self with the group.'

Respect (R): 'The attitude you reach because of peace, love and unity, which allows an environment of freedom and choice. You allow yourself the

freedom to be yourself, as you allow others the freedom and space to be themselves.'

New ravers tend to get caught up in the unity aspect as they are overwhelmed by the sense of solidarity among the many different people with whom they find themselves dancing (Brown & Behlendorf 1995:11). While PLUR is important ideologically to Rave culture, it has become, for many people within the Rave community, something to cling to as the dynamics of the earlier scene has begun to dissipate. PLUR is also an important part of the Rave scene because it provides a loose guideline for people who are new to the scene as well as a lifeline for those who see that the scene is changing (http:// 1996:01). (See Section 3.10 for a detailed explanation.) PLUR is the rigid format to which Raves subscribe. Aggression, judgementalism, racism, sexism, homophobia and any other form of negative energy are not tolerated.

PLUR also functions as a mechanism by which people can come together without the pretence and hostility that are experienced in everyday life. PLUR provides a way for people to live out their values and openly encourage a certain type of behaviour in an increasingly contentious, competitive and egocentric society. It is a means by which people may reach out to one another without fear of a hostile response (http://1996:02). Some ravers are so committed to PLUR and the Rave scene that they believe Raves are instruments of social change. They believe the positive effects of raving are spreading into the lives of all involved and, in turn, the people who come into contact with ravers are also affected in a positive manner (Brown & Behlendorf 1995:11). Consider the following quotes from some ravers, for example:

> Teach people (who are new to the scene) about PLUR by being a living example of it. They are not going to give peace, love, unity and respect to us if we do not give it to them (http://1996:02).

> Treat others the way you want to be treated. That is the only route towards the positivity that will unite us all. The next time someone gives you a hard look, do not resort to a negative response because that will only create more negativity. Smile, let the goodwill flow and they will follow the new direction (Tito in Lowe 1996:01).

> No matter what happens in popular culture, you keep the vibe alive. This isn't specific to our little scene. PLUR in all aspects of life, no matter where you are. When you are walking down the street, do the same thing for strangers that you would at a Rave. When you are at work or school do the same thing there. And then instead of the mainstream changing our culture, our culture is changing the mainstream ... isn't that the point of a movement, to affect the world? (Demmon in Stiens 1997:13).

3.8.2 New Age philosophy

One can say that the New Age philosophy is present in Rave culture. Penell (1990:136) maintains that the New Age is a holistic philosophy, which presents the planet or world as an interlinked structure. This means that anything one does has a profound effect on the rest of the planet. In the light of this, consider the following Rave flyer (in Reynolds 1998:293) entitled 'House Music & Planetary Healing':

> When used with positive intention, Group energy has the potential to help restore the plan of Love on Earth ... When you open your heart, and trust the whole group you dance with; when you feel love with everyone, and they return it, a higher vibration can be reached. This happens when a crowd is deep into the vibe of House music ... In the true sense of rhythmic movement, the effect is to align the physical, mental and emotional bodies with the Oneness of All that Is ... Help push the consciousness another level into Enlightenment ... Don't put out negative energy and feelings. Leave the old ways behind. Throw yourself into the winds of transformation and sow the seeds for a new world – one where the human family is together again. Where people respect and care for each other as a community-organism. It's up to us to spread the vibe. Spread the Peace!

The New Age movement is generally a collection of Eastern-influenced metaphysical theologies, hopes and expectations held together with an eclectic teaching of salvation, 'correct thinking' and 'correct knowledge'. It is a theology of 'feel-goodism', 'universal tolerance' (permitting other people to do and say as they like) and 'moral relativism' (there are no specific requirements as to morality, belief and behaviour) (Slick 1998:01). 'Sin' and 'evil' are simply part of the cosmic law of cause-and-effect, which both Hinduism and the New Age typically label as *karma*. Good and bad are cosmically balanced, with good actions resulting in positive energy and bad actions in negative energy (Barker 1998:03).

The New Age revolves around the central belief that humans are capable of shaping reality and establishing truth (Barker 1998:01). Man is central and is viewed as the hope for future peace and harmony. The term *New Age* refers to the *Aquarian Age* which, according to New Age followers, is dawning. It is supposed to bring in peace and enlightenment, and reunite humans with God (Slick 1998:01). The New Age deals with issues of planetarisation and 'universal consciousness', the emergence of an awareness that we are all one people living in one world sharing a common destiny. The basic goals of the New Age movement are peace, unity, economic fairness, global society, religious harmony, one world government and environmental consciousness (Hoy

1998:08). All this will eventually lead to advancing everyone into an 'Aquarian Age of togetherness'.

The New Age is nothing new, but has entered people's lives at a time when they are seeking answers and meaning to life. Lottering (in Hoy 1998:09) asserts that despite technological progress and 'the idealism and activism of their parents, young people face a world that seems to be getting worse ... rather than ... better. Disillusionment is increasing. Young people are looking for answers but all the traditional places are not providing those answers.' While the church is no longer reaching the youth and fewer young people are responding to the traditional religion of their parents, the Rave environment is attracting more participants.

Rave positivity, drawing on diverse sources, led the way to the nineties *Zeitgeist* that focused on caring and sharing, a return to quality of life over standard of living and environmental awareness. The 'anti-social' self-importance of the eighties was transcended by a shift from 'I' to 'we' and from materialism to idealism (Reynolds 1998:83). Needless to say, the 'loved-up' Rave scene was a fertile environment for the spreading of New Agey ideas. Raves were likened to an 'Age of Aquarius-style utopian togetherness' (Hoy 1998:08). Ecstasy turned young people who normally behaved in a loud and violent manner into gentle, friendly individuals. For Reynolds (1998:46) this was proof that Ecstasy was indeed a 'wonder drug' and the instrument of a spiritual and social revolution. Overwhelmed with idealism and a will to belief, many ravers embraced ideas about spirituality and the New Age, and felt truly 'converted'. However, for most ravers the 'back to the sixties' and 'dawning of the Age of Aquarius imagery' was tongue in cheek, a cover for pure hedonism (Reynolds 1998:47).

3.9 SPIRITUALITY

Dance cultures have always been driven by a kind of extreme hedonism, but Raves introduced the greatest amount of spiritual, pagan and extraterrestrial or alien 'desires' into popular music culture since the psychedelia of the 1960s (Davis 1998:01). Music styles began using religious imagery to cloud the distinction between cult and culture. Rather than looking for individual sexual encounters, most ravers sought trance-like states and a sense of communion (Davis 1998:01). DJs were treated as 'digital shamans', 'priests' or 'channellers of energy' (Behlendorf 1995:09) while Hindu gods, aliens, unidentified flying objects and computer-generated 'trippy' graphics appeared on CD covers, posters, T-shirts, and the walls of Rave clubs. According to Davis (1998:04), the

alien phenomena suggested the collapse of 'traditional' religion while simultaneously feeding a keen desire for spiritual experience on a cosmic sense of scale.

Davis (1998:02) maintains that 'today's younger spiritual seekers pride themselves on a more anarchic and diffuse world view, one that refuses distinctions between spirit and body and between the sacred and the pop profane'. One popular Rave T-shirt is an ideal example, featuring a Buddha with a circuit board and the slogan 'Spirituality Through Technology' (Reynolds 1998:290). Compared to the hippie generation's serious embrace of the I Ching (Chinese wisdom), the Upanishads (Hinduism) and mantra (transcendental meditation), today's young people seem less interested in teachings or traditional practices than in raw experience: altered states, ritual and Ecstasy (Davis 1998:02).

The 1990s spurred the 'huge' return of psychedelics to alternative culture. While Raves grew in popularity, ravers and others explored entheogens (from the Greek, meaning 'god-inducer') such as Ecstasy and LSD (Davis 1998:03). With the rise of marijuana and acid (LSD) being 'fashionable' amongst young people, drug culture took on ritual and utopian connotations.

3.9.1 Rave as a spiritual event

The Rave culture, seen as purely hedonistic by the establishment, is frequently regarded as a spiritual event by those involved. Raves are likened to trance-like tribal rituals where ravers celebrate their unity and shared uplifted state, giving and receiving freely from one another (Saunders 1997:183). Unlike the traditional religions where there is a distinct leader, Rave as a 'religion' has no such claim. Raves are nevertheless comparable to the New Age, Eastern and tribal religions that embrace altered states of consciousness and mysticism. Pertinent to these religions are self-discovery and enlightenment. According to Morrison (1998:01), to be enlightened is simply to be 'absolutely, unconditionally intimate with the present moment. No more. No less.' Enlightenment focuses on the 'here and now', and encompasses the conception of one's body and soul as energy. Eastern and tribal religions also emphasise the oneness and connectedness of us all, which is of significance when considering the PLUR 'mantra', dancing and the group collective energy that flows at the Rave.

Raves have been termed *technoshamanism* by some – a term that denotes that it is the music and culture itself that will introduce or lead one into a deeper awareness of the spiritual dimension of life (Hoy 1998:07). The combination of electronic dance music, computers, designer drugs and cultural idealism rekindled interest in what used to be called *'techniques of ecstasy* by hippie anthropologists' (Davis 1998:01). Repetitious sound in the form of techno

and ambient music accompanied by dance, light (lasers and strobes) and psychotropic drugs produces trance states arguably similar to those induced by shamanistic chants, drums and dances that still exist amongst primitive people such as the American Indians (Davis 1998:01).

Griffin (1995:57) maintains that Rave takes people back to one of the original meanings of music; to the root experience of 'trance and dance': transcendence. One could say that Rave rediscovered the ritual significance of dance. The Rave of today still resonates with this ancient ritual power.

3.9.1.1 The 'archaic revival'

The exploration of music and drug-induced trance states at Raves was only one element of what McKenna (1998:01) called the 'archaic revival' which 'sought to remove social constructs and packaged identities in order to discover a primal realm of ecstatic intensity and tribal identification' (Davis 1998:03). The 'archaic revival' also crossed over with scenes devoted to piercings (an ancient practice in Eastern countries), tattoo and sadomasochism. Pierced faces, tongues, nipples and navels as well as tattooed bodies are prominent amongst ravers. Though these subcultures are not overtly religious, Davis (1998:03) maintains that they nonetheless 'speak to a desire for intense rites of passage, secret practices and primitivist allegiance'.

The 'archaic revival' paradoxically shared the stage with modern technology. Rave culture is a very spiritually aware culture which centres on an altered state of consciousness or awareness caused by music, dance, lights and in many cases the ingestion of drugs (Saunders 1995:02). To stretch the 'religious' metaphor, DJs are the high priests of the Rave ceremony, responding to the mood of the crowd, with their mixing decks symbolising the altar, the only direction in which the ravers consistently face. Dancing at Raves may be construed as the method by which Ravers 'worship' the god of altered consciousness (Newcombe in Saunders 1995:01). As Griffin (1995:59–60) explains:

> When the music, the setting and the people gel, when a critical mass of collective energy and euphoria is reached, then the raver enters a state called 'enthusiasm' or 'revealing the god within' ... what can happen in a Rave is that you temporarily get a sense of oneness with your mind, body and the people dancing around you. It's like a mainline to a state that is theorised about but difficult to achieve. With dance and music, temporary neuroses get suspended – it is like a sustained glimpse of a higher state of being.

Many ravers allude to the 'higher state of being' as a mystical or religious experience.

Figure 3.12 The collective 'we'

3.9.1.2 Mysticism

Categorised as an 'ism', *mysticism* is usually defined by dictionaries as being a spiritual discipline developed to make contact with the divine. While this definition is frequently correct, there have been many people who have never followed a special discipline who have had mystical experiences. Also, there have been many people who have followed a set of spiritual practices carefully and for a prolonged period who have never contacted the divine (Goodwin 1999:01). Goodwin (1999:01) describes the mystical event as a personal experience during which one feels as though one has touched or has been touched by some higher or greater truth or power.

This may occur inside or outside of a religious setting, within or outside a religious tradition and may occur spontaneously or as the result of deliberate activity – for example during the practice of rituals, meditation or at a Rave. A Zen Buddhist monk, Bertrand (in Saunders 1997:188), likened raving to walking meditation: 'These people are meditating, only they do not realise it. They are in the same state. They are completely in the "here and now", moving spontaneously without thinking about it. Everyone is totally aware yet absorbed in their dance, without self-consciousness or internal dialogue.' According to Bertrand (in Saunders 1997:188), this is the very essence of meditation.

Pahnke (1971:01) derived nine universal psychological characteristics from a study of the literature of spontaneous mystical experience reported from almost all cultures and religions. When subjected to a scientific experiment, these characteristics proved to be identical for spontaneous and psychedelic mystical experiences. Pahnke studied psychedelics extensively in clinical settings and concluded that when a psychedelic drug was used in an appropriate setting and with appropriate intent, experiences that closely resembled classical mystical experiences would occur.

He formulated a nine-point description of these psychedelic-induced experiences (Pahnke 1971:02):

1 Unity – a sense of cosmic oneness.
2 Transcendence of time and space (timelessness).
3 Deeply felt positive mood.
4 Sense of sacredness.
5 Noetic quality – a feeling of insight or illumination.
6 Paradoxicality – a person may realise that he or she is experiencing, for example, 'an identity of opposites', yet it seems to make sense at the time.
7 Alleged ineffability – a sense that one cannot adequately describe the richness of this experience.
8 Transiency – the experience passes.
9 Persisting positive changes in attitudes and behaviour.

Many characteristics of the mystical experience are reminiscent of the Ecstasy and Rave experience. In the Rave context, the overall feeling of positivity created by Ecstasy can spread into a collective mysticism. Rave theorists talk of 'an empathy that shades into the telepathic' and a sharing of similar emotions (Reynolds 1998:xxvii). (*Telepathic* refers to the direct communication of thoughts and feelings between minds at a distance.) Ravers feel a sense of understanding and oneness with one another. Ecstasy elicits feelings of emotional warmth, well-being and satisfaction. There is a sense of closeness and perceived insight – seeing the world in a fresh way, as if for the first time. Language is unable to capture the intensity of the event. Many participants of Rave are not able to describe their experience as anything other than 'absolutely unbelievable, there was nothing like it', 'great' or 'this is not dancing, this is a religion' (Rietveld in Redhead 1993:63). Although transient, the experience is 'relivable'. Many ravers claim that the positive energy or insights gained from Raves have been integrated into their ordinary lives to make worthwhile changes in their attitudes and interactions with others.

Nevertheless, Reynolds (1998:289) asserts many people had these life-changing experiences, but they did not necessarily dress them up in cosmic significance by saying they had been touched by some higher power. Most

people enjoyed them as simple 'shifts' in their modes of self-expression and the way they related to friends and strangers.

3.9.1.3 The vibe

There is a tangible energy that goes along with dancing to extremely loud beats with hundreds of other people. Race, gender, age, sexual preference and everything else on which society places so much emphasis simply disappear into the background (Stiens 1997:12), creating an atmosphere of love, acceptance and belonging. This is the essence of the 'vibe' so commonly talked about in groups of ravers.

People are normally inhibited from expressing love, moving freely and enjoying themselves because of fear (Saunders 1997:48). One of the fundamental effects of Ecstasy is to remove fear, hence the breaking of social boundaries uniting professionals and hooligans alike on the same 'loved-up' vibe. A culture emerged which was not about taking control but about letting go, and allowing the music and movement to take control (Henderson 1997:49). This is an experience that many young people are looking for; one that appears to be very alive in South Africa.

3.9.1.4 The experience

According to Thermos (in Glyptis 2000:170), religiosity is continually becoming alienated from the authority of the traditional churches and is becoming an improvised search for spirituality. The gap between traditional 'truth' on the one hand and personal experience on the other has never been wider. 'Spirituality' nowadays signifies spiritual experience. Hoy (1998:06), in agreement with Thermos, maintains that spirituality in a post-modern society is reduced to what one can feel. It is no longer important to know what one believes or why one believes it but rather that 'I' *experience* what 'I' believe. It is this experiencing that makes one feel alive. As a purely psychological event, the search for spirituality is not so different from the experience of drugs or sexuality, where the individual believes that s/he is alive though the stimulation of emotions and desires (Thermos in Glyptis 2000:170).

Stiens (1997:12–13) perceives Rave culture as a 'religion' based on shared experience where individual religious beliefs are integrated into the larger, unified experience. At a Rave, there is a certain kind of 'ecstasy' one can find only by losing oneself in a mass of ravers. In many senses PLUR is the dogma in which ravers believe. It is the belief that for one night a community can be created that does not function for the same reasons that larger society does. It is the belief that peace and love are worth trying to bring back into a society that nowadays seems so devoid of them.

Table 3.1 – adapted from Bennett (1992:10–13) – indicates the significance of Raves to young people:

Table 3.1 The significance of Raves to young people

Criteria	**Rave culture**
1 Significance to the individual (a) Intimacy (b) Security	1 Will learn something about herself/himself from taking part. (a) The physical, mental and spiritual experience; an all-round sensual experience shared with others. (b) A chance to lose oneself in the experience with those around one and a feeling of sharing the same experience; a feeling of not being alone and understanding where other people are through experiencing the same phenomenon.
2 The group	2 A chance to meet up with fellow ravers; no barriers – 'this is the real church' (a quote from a Ravegoer); all in it together.
3 The challenge	3 New heights of experience; to dance all night; get higher than ever before.
4 Attitude of the outsiders towards ravers	4 The ravers are weird, they are dangerous, they are stupid, they are mindless, they are frightening and antisocial.
5 Attitude of ravers towards outsiders	5 PLUR. Keep the peace, be friendly, be keen to share, be interested and open.
6 The future of Rave	6 ? Uncertain.

3.9.1.5 The separate space

Rave is certainly a culture of escape from the reality of mainstream society into a utopian world for a few hours. It is the creation of a 'separate space' where there are no rules or laws, only positive emotions and idealism. Beyond this culture of escape is a culture based on hope. The core of this separate space is the knowledge that it is a temporary separate space (Stiens 1997:13). After the Rave you have to come home. There is knowledge that 'tomorrow I will work on homework or study and Monday I will go to work or school, but right now, I am going to *play*'. There is an emphasis on the focusing of energy and PLUR,

and the belief that what happens during this Rave is positively affecting all of the energy on the planet.

However, not all people who go to Raves are on a spiritual quest. Some have expressed reservations about the New Age and Eastern philosophies. Most people at Raves are not worrying about Mother Earth, the ozone layer or touching crystals to feel positive energy. They are just out for a good time and climbing on the Rave bandwagon. As far as the sterner pop culture critics are concerned, Rave culture is escapism pure and simple (Reynolds 1998:47). 'Kids are having a good time ... Just like kids have always done ... All this bollocks about the E culture, it is just people projecting their ideas on to something that's always been there: mindless hedonism' (London in Reynolds 1998:47).

3.10 THE COMEDOWN

The preceding sections have dealt with the most favourable, philosophical and idealistic views of Raves and have in a sense 'defended' what the Rave scene wants to be. The closing section is a comedown to reality. There is no idealism, no PLUR, no archaic revival, no ecstatic dancing – except in small amounts and optimistic outlooks. What follows is commercialisation, a feeling of loss of the sacred and the ruination of the 'vibe'. This part of the chapter deals with overdoses, hedonism and aspects that society fears from the Rave scene.

In the early years the Rave scene existed as an underground movement which was labelled *deviant* by those in the mainstream. The very reason why people could escape to it and set up their own value system, morality and own rules or lack thereof was because Rave existed as separate from mainstream society (Stiens 1997:19). However, its growth in popularity inevitably attracted commercial and police attention. Nowadays, one hears techno music in everything from drink commercials to sport reports, and tickets to Raves or dance festivals are sold at Computicket or fashion outlets. Rave fashion has invaded store shelves. The Rave scene has gradually been appropriated into mainstream culture.

Stiens (1997:19) believes this is the best defence that society could ever have used against the Rave scene, but most ravers agree that attempts by the music industry to commercialise the Rave, have begun to dilute the social ideals of PLUR connected with the parties (Morgan 1998:01). The Rave ideals of PLUR are being replaced with the ideals of consumerism. Raves have increased in price from R30 a ticket to R180. Lights have gone from being a couple of lasers and strobes to spectacular set-ups that cost thousands of rands. DJs are demanding very high fees. The use of high-technology computerised

equipment has become the norm. Each Rave strives to be bigger and better than the previous one.

On the one hand, there are the young people who participate in Raves merely to 'do drugs', to be trendy or just to see what the latest rage is. On the other hand, there are those people who have bought into the Rave philosophy, who will insist that there is a meaning to Rave and that it is a social movement in which they are participating, not just a party. Many ravers feel there has been a loss of the 'sacredness' that goes along with the Rave scene. Ravers' warm, friendly smiles are being replaced with sour, cheated expressions – their Ecstasy pills no longer achieve the desired effect, probably because they had over-indulged so heavily the past few years that the old 'buzz' simply cannot be recovered.

The growth in Rave popularity has seen fewer people creating a temporary loving space and more people getting 'wasted'. There seems to be a moment inherent in any drug culture when the scene crosses over into the 'dark side'. 'Getting high' degenerates into 'getting out of it'. Suddenly the clubs are full of 'dead souls, zombie eyed and prematurely haggard'. Instead of outstretched arms and all-accepting extroversion, there is unsmiling emptiness, robot-like body movements and complete self-absorption (Reynolds 1998:191). What started off as 'life-affirming' fun begins to suggest desperation. Ravers' drug stories become repulsive and more shocking: someone threw up and then picked the half-digested Ecstasy pills out of the vomit and swallowed them again; teenage girls hold onto their friend as she retches over a toilet seat having taken too many pills on an empty stomach (Reynolds 1998:191).

The buzzwords of ravers are telling. On a good night, ravers would get 'fucked' (damaged), 'shitfaced', 'comatosed' (go into a coma), 'cabbaged' (into a vegetative state), 'smashed', 'annihilated' or 'wasted'. Good tunes were referred to as 'mental', 'wicked' or 'kick-ass'. Dedicated to getting severely 'cabbaged' many headstrong youth resort to 'stacking' – taking from three to six pills per session (as opposed to one or two pills which are usually taken), and sometimes between ten and twenty Ecstasy pills over the course of a three-day weekend (Newcombe in Reynolds 1998:113).

These ravers quickly become lodged in a cycle of overdoing it, then paying for it with a severe mid-week comedown. This depression can only be overcome by the thought that Friday would soon come around, presenting the opportunity to do it all again. Unwilling to face the Saturday morning 'crash', these young people would pop more pills in order to stay awake right through until Sunday. Lacking the patience to wait the hour it takes to 'come up' on Ecstasy, they eagerly assume that they have bought a 'dud' pill and hastily take another one (Reynolds 1998:113). This is certainly an unbeatable recipe for disaster. Some will crush up two or three Ecstasy pills and snort them because nasal ingestion is a faster-acting method of administration (Reynolds 1998:113).

Young people sitting against the walls of clubs sniffing poppers, passing a joint around the 'chill room', going into the toilets in pairs or groups to snort cocaine or speed (anything to heighten the intoxication) is a regular occurrence. Polydrug use is gradually establishing itself as the norm amongst ravers. In the 'chill room' one may find some RaveSafe drug education leaflets written in such a way as to engage young people on their own level. In the paramedic support area, young people suffering the effects of impure or adulterated 'E's' or overindulgence, huddle wrapped in blankets with plastic 'puke' pots on their laps (Reynolds 1998:264). Outside, the ambulances wait for possible overdoses or adverse drug reactions.

Rave culture is, after all, a drug culture and the key drug it is based on elicits emotions – it does not enhance cognition. For the few hours that Ecstasy lasts, the user is the happiest person on earth. For a generation of stressed-out young people, Ecstasy is a very seductive form of escapism. However, the effects wear off over time and one's body becomes tolerant to the drug. No high ever matches those initial highs, and eventually one has to take more and more just to feel anything at all – which in part explains the fall of the Rave and the ruination of the 'together vibe'.

3.10.1 The fall of the Rave

With continuous use, Ecstasy stopped working. Ravers turned to speed, marijuana, LSD, cocaine, ketamine, even heroin: vicious cocktails that are not conducive to the 'together vibe' that has made Rave meaningful to so many people (Brown 1998:04). Originally, Ecstasy was the catalyst for people reaching out to one another. Strangers would actually come up to one, smile and say 'hallo'. However, amphetamine (speed) closed down the open-hearted extroversion replacing eye contact with empty stares (Reynolds 1998:304). Speed was lethal to the Rave scene's good vibe. Polydrug culture has destroyed the synergy effect that occurs in Rave scenes during the 'honeymoon phase' of Ecstasy use where ravers, all relatively new to the drug, 'buzz' on the same pure Ecstasy. Now many ravers are on different trips. According to Heart (in Reynolds 1998:308), the Rave scene was ruined when the pills were replaced with powders (referring to cocaine and speed). The Raves simply splintered into different vibes. Adding to the dissipation of that vibe was a diligent police force, who made it their duty to raid many Raves.

The truth is that there has always been a dark side to Rave culture. Almost from the beginning, the blissful experience of dance and drugs was clouded by anxiety. 'Losing it' is a pleasant release from the confinement of identity, but there comes a point at which the relief of abandoning self-consciousness and self-control develops into a fear of being controlled by the drug–technology

interaction (Reynolds 1998:201). Amidst all positivity and idealism, the 'nihilism latent in Rave's drug-driven utopianism is always lurking, waiting to be hatched' (Reynolds 1998:190).

Like most utopian movements, the first wave is the freshest and the collective 'bubble' in which the original ravers were was destined to pop (Brown 1998:05). Rave still exists, of course, and the attraction of young people to the scene will continue as long as there are anxious, despondent adolescents. However, Rave in its 'unadulterated' form is gone. The following leaflet, which was circulated at a Rave, was a heartfelt plea for a return to the lost innocence of Raves (in Reynolds 1998:300):

> Why are you at this event? The Rave scene is not just about techno. This scene is not just about drugs. This scene is not just about fashion. It is something special about unity and happiness. It is about being yourself and being loved for it. It should be a harbor from our society. But our scene right now is disintegrating! Old style ravers – remember when everybody hugged all the time – not just to say hello and goodbye? Remember when people just said hi for no reason except to be your friend? Remember how good it felt? Why don't we do it anymore? Newcomers – you are wanted and you should know that this scene is about openness. We all share a bond – the desire to groove to a good beat all night long. And no man is an island, everyone needs friends and the outside world is tough enough. We don't need fronts and attitudes in our scene. Open your hearts and let the good feelings flow ... Ravers unite and keep our scene alive!

Rave's growing popularity indicates that it will not die out any time soon. In fact, it is becoming a driving force behind new fashion, new music and a post-modern way of living. This post-modern age is a time of social upheaval. In the midst of unprecedented affluence and technological progress, many people struggle with low self-esteem, occupational stress, familial disintegration and increasing types of physical complaints (Barker 1998:01). These problems, together with a growing distrust of organised religion, are creating a spiritual vacuum which Raves seem to be filling. Concerned educators should respond to, rather than react against, any future growth in the Rave constituency. While Raves undoubtedly expose adolescents to drugs, they also provide them with an environment of social acceptance and belonging.

Young people today are searching for meaning and purpose in life. 'Who is God? Why am I here? Who am I? How can I give my life meaning? How do I get faith?' (Nouwen in Hoy 1998:11). These are questions being asked by many young people in one form or another. It is hardly surprising then that organised religion has noticed the way Rave culture provides 'the youth of today' with an experience of collective communion and transcendence. Just as the early Church co-opted heathen rituals, there have been attempts by evangelists

literally to 'rejuvenate' Christianity by integrating elements of the Rave experience: dancing, lights, mass fervour, and demonstrative and emotional behaviour (Reynolds 1998:409). Rave-style worship has become prevalent amongst young people. While Rave behaviour is a little 'offensive' to the orthodox Churches, it fits in nicely with the more ecstatic and gesturally demonstrative strains of Christianity such as Pentecostalism, Gospel and Born-again Christians.

Raves are symptomatic of the growing hunger among young people for relational connections and spiritual direction (Hoy 1998:11). It is imperative that educators understand young people's need for identity, purpose, belonging, relationships and meaning in life.

Figure 3.13 Dancing

3.11 CONCLUSION

It is risky to theorise about Rave culture. It takes many forms and has sides that are 'pseudo', commercial, boring, cynical, self-destructive and tragic. It can be

no more than a pretext to take drugs or a refuge from an unbearable reality; a world that young people find tedious and worryingly unstable. Yet it is also a place of confinement where children 'rave' harmlessly, where they release all their anger and get it out of *their* systems instead of directing it against *the* system (Reynolds 1998:273). Not everybody has a good time at Raves, but perhaps as Griffin (1995:58) rationalises: 'that is all part of Rave's alchemy. It takes the private energies, negative and positive, sorted and unsorted, co-ordinated and unco-ordinated, and transforms them into a whole, infinitely greater than the sum of its parts.' You give up the 'self' to become part of the collective 'we' in a place where 'nobody is, but everybody belongs'. (See Figure 3.12.)

CHAPTER 4

FINDINGS OF QUESTIONNAIRES ON RECREATIONAL ECSTASY USE

4.1 INTRODUCTION

The research for this book was primarily aimed at investigating the nature of Ecstasy (MDMA) use in Durban Rave clubs with a view to determining the mode and context of the drug's use. The subjective effects of Ecstasy, namely the primary psychological and physical effects, side-effects and after-effects were also investigated and recorded. The issues of tolerance and dependence versus problematic recreational use are also explored.

4.2 RESEARCH DESIGN

The type of study adopted was an idiographic study as opposed to a nomothetic approach. A qualitative research design was considered most suitable for this study, since it allowed insight into the perceptions of adolescent recreational drug-takers. Field research was undertaken within the context of nightclubs and Raves.

4.2.1 The sample

The main aim in obtaining a sample for this study was to try and ensure, as far as possible, that the sample was an accurate reflection of the Ecstasy-using population, so that inferences made about the sample could be validly generalised to the said population. To obtain a sample, convenience sampling was used and various Rave clubs were approached with the intention of obtaining subjects. The criterion for inclusion in this study was 'anyone who had ever tried Ecstasy'. As in the Solowij, Hall and Lee (1992:1163) study of MDMA users in Sydney, Australia, it was decided against setting a criterion

such as use of more than three times for fear of neglecting to reveal possible extreme reactions to first-time use of Ecstasy. In order to ensure that the sample was reasonably representative, both male and female subjects were selected at random. Despite there being an age restriction of 18 for entry into these clubs, it is important to note that not all club or Rave-goers are over the age of 18. This allowed for the availability of younger subjects. The sample consisted of 50 subjects mainly from the inner city: 29 males and 21 females, ranging in age from 15 to 26 with a mean age of 21,22 (SD = 3,03).

Eighty-two per cent of the sample had used Ecstasy more than three times and will be termed *multiple-time users*, consisting of 26 males and 15 females, aged 16 to 26 with a mean age of 21,8 (SD = 2,35). Eighteen per cent of the sample had used Ecstasy three times or less and will be termed *one- to three-times users*, consisting of 3 males and 6 females, aged 15 to 22, with a mean age of 18,55 (SD = 2,36). The average reported age at which Ecstasy was tried for the first time was 18,86 (SD = 1,97, range 11). The longest duration of use was 7 years. At the time of data collection, 38 per cent of the sample were employed full time, 4 per cent were unemployed, 44 per cent were students and 14 per cent were scholars. The white ethnic group predominated.

Table 4.1 Sample constituents

	Percentage of sample	**Number of males**	**Number of females**	**Age range**	**Mean age**
All respondents	100	29	21	15–26	21,2
Multiple-time users	82	26	15	16–26	21,8
One to three-times users	18	3	6	15–22	18,5

4.3 MEASURING INSTRUMENT

The focus on the individual and the aim of including experience as well as behaviour within the scope of the inquiry led naturally to the decision to use the structured interview as the main method of gathering data. In this way, views from the respondents could be explored and motives and feelings investigated. A questionnaire regarding recreational Ecstasy use was constructed based on the literature review and using Solowij, Hall and Lee's (1992) Sydney, Australia, study as a guideline. Like Solowij, Hall and Lee (1992:1163), it

was believed that worthwhile information could be obtained not only from subjects who enjoy Ecstasy and have consequently used it repeatedly, but also from those who possibly do not enjoy Ecstasy or have made a conscious decision not to use it again after the first few uses. It also made sense that some questions such as those concerning long-term effects were dependent upon substantial use of the drug. For this reason, the constructed questionnaire was divided into three sections: one to be answered by all respondents, one for one to three-times Ecstasy users and another for multiple-time Ecstasy users. (A full copy of the questionnaire is available from the author on request.)

5.4 PROCEDURE

Informed consent was obtained from each subject. The meetings with the subjects regarding their prior or present Ecstasy use were held at one of the Rave clubs – a neutral place where they would feel at ease. Permission was obtained from the club owners to use an office (where one could be free of possible distractions) for interviewing. Subjects were told how useful and valuable their information would be. Time was taken to explain the aims and background of the research. In order to ensure that all topics were covered, the author completed the questionnaire by marking the subjects' responses and jotting down any interesting comments provided by that subject. An explanation was given as to what would happen to the information once it was in the author's care and it was emphasised that all information was protected by a confidentiality rule.

DATA ANALYSIS

The subjects' responses were marked and grouped into various categories. Data obtained from the different groups namely all respondents, multiple-time Ecstasy users or one to three-times Ecstasy users, were coded using various symbols (shapes). Significant comments were also grouped into the categories. A number of sub-categories within each main category were then identified. Relationships between the main and sub-categories were recognised, and reflected as themes. The scores were ranged from highest to lowest to produce a raw score distribution. It was decided to convert the questionnaire raw scores to percentages, as percentages are easily calculated and understood. In this

instance, the percentage is therefore an indication of the group's responses pertaining to a particular question. It is important to bear in mind that since the subjects were permitted to select more than one response applicable to the given questions in the questionnaire, the calculated percentages do not always add up to one hundred.

4.6 RESULTS OF THE INVESTIGATION

4.6.1 A subjective evaluation of Ecstasy based on the subjects' personal experience

4.6.1.1 The evaluation of one- to three-times users

The one- to three-times users in this study were mostly experimental drug users who tried Ecstasy and found that either it did not match their expectations or they have not had a chance to take the drug again. The most recent use of Ecstasy in this group ranged from 1 week to 3 years ago, with a mean of 23,2 weeks. Seventy-eight per cent said that they would use Ecstasy again as they had found their experience to be 'fun' and pleasurable. Twenty-two per cent reported the experience as overrated, 'a waste of time' and 'definitely not worth the money', while 11 per cent described it as unpleasant. One subject felt as though his 'head was going to explode' and that his 'brain had been fried'. He described adverse reactions such as a severe headache, vomiting, mild hallucinations, panic attacks and paranoia together with a number of side-effects such as bruxism, dehydration, and hot and cold flushes. These episodes were not reported as prolonged, but only for the duration of the active effects of the ingredients of the tablet.

4.6.1.2 The evaluation of multiple-time users

Eighty per cent of the multiple-time users (those who had used Ecstacy more than three times) continue to use or intend to use Ecstasy. Last use within this group ranged from 1 day ago to 3 months ago, with a mean of 2,5 weeks. The most frequently reported reasons for not continuing to use by the remaining twenty per cent were that they had become aware of the dangers involved in using Ecstasy, had grown out of it, and that Ecstasy had lost its allure and had become 'boring'. Having 'used it too much', financial reasons and becoming a parent were also given as reasons for no longer taking it. Last use within this group ranged from 2 weeks to 12 months ago, with a mean of 23,72 weeks.

4.6.2 Ecstasy initiation

The most common method of introduction to the drug included being offered it by a friend (74%), by a drug dealer (14%) and by a family member, that is, a sibling or a cousin (12%). Others went out and found it themselves commenting on the easy availability of the drug at nightclubs, Raves, bars, restaurants and even in schools. Ecstasy appeared to be obtainable almost anywhere. Favoured times for taking Ecstasy were on weekends (96%), usually in the late evening (90%), normally if one did not have to study or go to work the next day. Twenty four per cent had used Ecstasy in the day while 10 per cent had used Ecstasy during school hours.

4.6.3 Reasons for trying Ecstasy

The most frequently reported reasons for trying Ecstasy were curiosity (to see what it was all about) (70%), peer pressure (all my friends do) (36%), and for 'fun' and enjoyment (26%). Fourteen per cent of the sample tried Ecstasy as an escape from problems and others as a result of not feeling good about themselves or feeling spiritually empty. Additional reasons included sociability and risk, 'because it is illegal'. Two subjects tried Ecstasy as an alternative to drunken driving in response to the zero-tolerance campaign.

4.6.4 Ability to have fun without Ecstasy

Although 78 per cent of the respondents believed they were able to go out to a nightclub or a Rave and have fun without taking Ecstasy, the remaining 22 per cent believed the dance scene to be drug-orientated. For them, Ecstasy provided the energy to keep going, and gave the music and visual effects 'clarity'. Subjects referred to a Rave as a false reality; an escape from everyday stress for a few hours. In a similar manner, respondents alluded to drugs as an escape, hence the Rave and Ecstasy synergy. One subject commented that a large part of the 'peaceful vibe' at the Rave is created by Ecstasy, and if people were not on the drug it simply would not be the same.

4.6.5 Reasons for Rave participation and significance of Raves

Reasons for Rave participation included dancing (74%); the music and visual effects (50%), drug-taking (46%), a stress release (44%), an escape from problems or reality (42%), meeting people (30%) or simply being in with the crowd (16%). Having a good time and the fact that their friends attended were

cited by small proportions of the sample. One respondent specified dealing drugs as his motivation for Rave attendance. For many subjects Raves signified a shared collective experience (54%), a big party (50%) and a sense of belonging or fitting in (42%). PLUR (28%), acceptance (26%) and spirituality (22%) were also nominated.

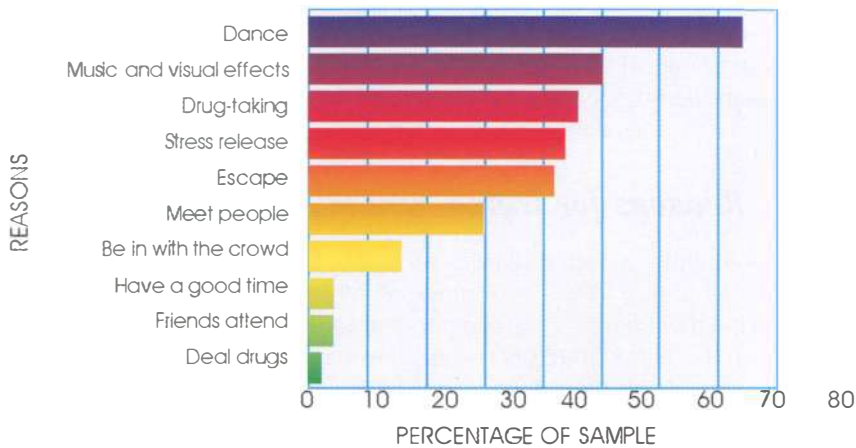


Figure 4.1 Reported reasons for Rave participation

4.6.6 Word associations linked to Ecstasy

When asked directly what sort of words they associated with Ecstasy, responses grouped largely into the following two types: (1) peace, closeness, happiness and love, and (2) fun, party, energy and freedom.

The following is a poem composed of respondents' associations with the word *Ecstasy*.

ECSTASY

Calm, peaceful, pure bliss. Worry free. Fun, smiles, freedom of expression. Confidence. Love, togetherness, touching, sensual, warmth, friendship. Euphoria, relaxation, positivity. Sharing. Peace, love and unity. Closeness. Understanding. No violence. No aggression. Equality, harmony. Happiness. Feel good. Enlightenment. Spirituality. Illumination. Chemical heaven. A hug from God. Oneness with the universe. Insight. Inner peace.

Good time. Clubbing, partying and enjoyment. Rave, energy. Annihilated, totally free. Wired, lovely, happy. Dance. Feel the rhythm. Pill. Eighty rand. Sorted, on one and off my face!!!

When asked to rate how 'hard' a drug Ecstasy was perceived to be on a scale of 0 to 10 where marijuana was placed at 1 and heroin at 10, the mean response was 4,86 (SD = 2,27).

4.6.7 Dosage and mode of use

The most frequently reported forms of Ecstasy available were pills followed by capsules. Methods of taking Ecstasy included swallowing (100%), 'snorting' (14%), as a suppository (10%) and smoking it with marijuana in a 'joint' (4%). The effects of one dose or tablet were reported to last anywhere between 2 and 12, with a mean duration of 5,3 hours. The usual doses per occasion were reported as follows: less than one pill (6%), one pill (38%), two pills (28%), three pills (14%) and more than three pills (12%). One subject reported one-and-a-half pills as being her usual dose. The smallest quantity tried by respondents was half a tablet. The maximum number of tablets reported as the *usual* dose per occasion was ten.

4.6.8 Patterns of use

Many respondents (48,7%) claim that their pattern of use since their initial Ecstasy experience has decreased (following an initial increase) over time. Twenty-two per cent claim that it has increased, 19½ per cent report no change over time and nearly 10 per cent claim that it varies depending on their cash flow, frequency of Raves and their personal choices to do so. Twelve per cent commented on experiencing the strongest effects the first time they ever tried Ecstasy.

4.6.9 'Staggering'

Fifty-four per cent of the respondents reported 'staggering' the multiple doses they take by waiting until the effects of the first dose have worn off before taking the second in order to prolong the experience. Successive doses were described as being shorter lasting (73%) and less intense (31,7%) than the first dose taken on each occasion, with reduced pleasurable effects (31,7%) and increased side-effects (31,7%). This may reflect the development of tachyphylaxis, that is, the rapidly decreasing response to a drug after the administration of a few doses. Other subjects, however, seemed to experience successive doses as being more

intense (26,8%), longer lasting (12,9%) with increased pleasure (7,31%). This may reflect the differences in pill quality and strength.

4.6.10 Frequency of use

The present rate of Ecstasy consumption of multiple-time users is as follows: once a month (34%), once a week (19,5%), every three months (17%), fortnightly (10%), on special occasions (9,75%) and every few days (4%). Seven per cent stated their frequency of use varied depending on the occurrence of organised Raves and their cash flow. Most subjects (51%) reported their highest rate of consumption to have been once a week followed by every few days (26,8%). One subject reported initially using Ecstasy every day because it was freely available.

Table 4.2 Comparison between highest and present rate of consumption

	Highest rate of consumption (% of multiple-time users)	**Present rate of consumption (% of multiple-time users)**
Every day	2,43	0
Every few days	26,8	4
Once a week	51	19,5
Fortnightly	4,87	10
Once a month	14,6	34
Every three months	0	17
On special occasions	0	9,75
Varied use	0	7,3

4.6.11 Maximum reported doses

Twenty-two per cent of the multiple-time users had experimented with relatively large doses, that is, 10 or more tablets on one or more occasions. Several respondents had tried between 10 and 20 tablets at a time. The maximum dose reported by any respondent was 24 tablets on one occasion, that is, Saturday night at a Rave inclusive of Sunday at the after-party.

4.6.12 The effects experienced by Ecstasy users

4.6.12.1 Positive psychological and physiological effects

Positive mood state or an overall sense of well-being, perhaps the most consistent effect of Ecstasy, was reported as being experienced by 94 per cent of the sample. Other positive psychological and physiological effects that were reported comprised the following: a feeling of intimacy (84%), enhanced auditory and sensory perception (84%), loss of appetite (80%), activation or increased energy level (74%), talkativeness or increased communication (68%), euphoria or 'rush' (64%), heightened sensuality (44%), greater emotional self-insight (42%) and spiritual awareness (26%).

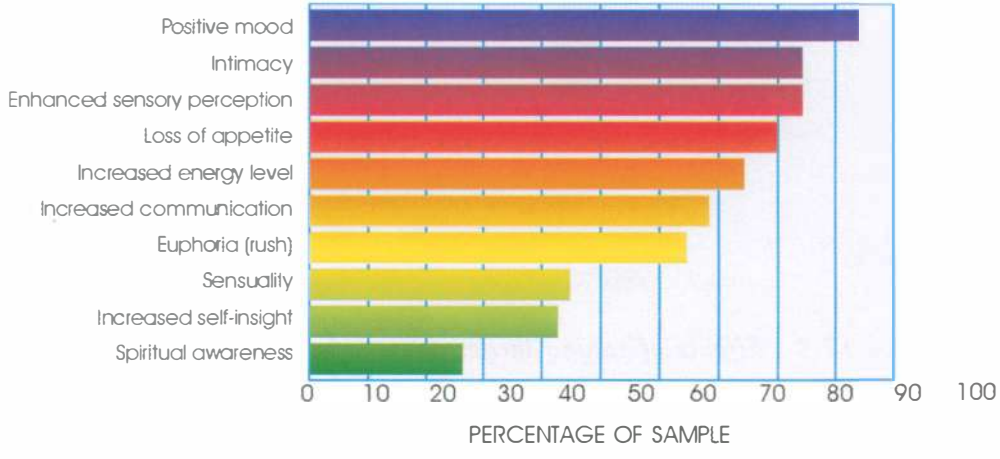


Figure 4.2 Positive psychological and physiological effects

4.6.12.2 Negative psychological and physiological effects

Negative psychological and physiological effects experienced by the sample include the following: an elevated heart rate (70%), jaw clenching and grinding of teeth (64%), hot and cold flushes (60%), nausea (58%), rolling or flickering of the eyes (nystagmus) (56%), sleeplessness (56%), dehydration (32%), feeling of heavy legs or 'no legs' (as though some muscles resist the drug's demand to let go) (30%), desire to urinate but being unable to do so (24%), vomiting (18%), visual hallucinations (14%), anxiety (panic attacks) (8%), paranoia (increased self-consciousness) (8%) and muscle hypertonicity (stiffness) (8%). One subject reported blindness for 30 seconds.

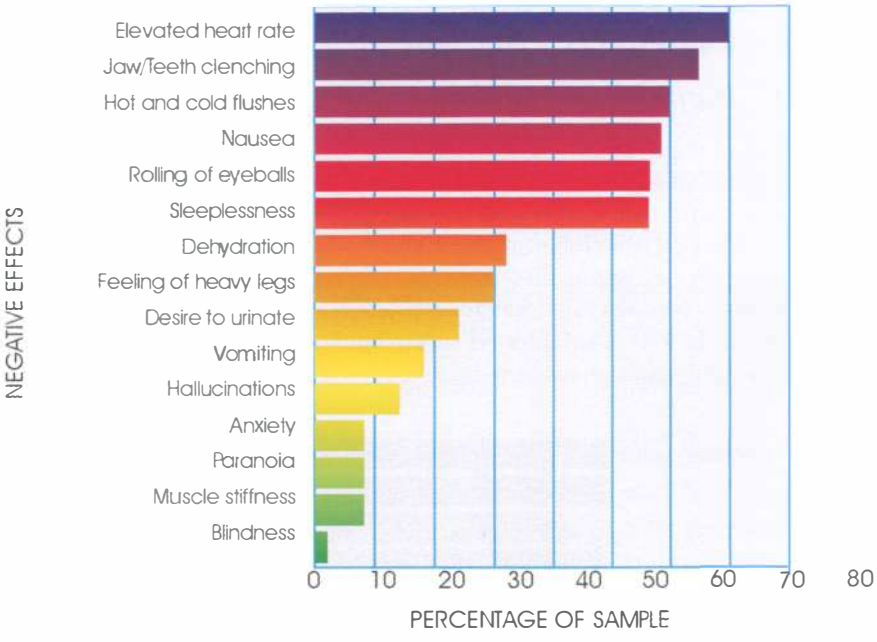


Figure 4.3 Negative psychological and physiological effects

4.6.12.3 Effects of taking larger doses

Eighty per cent of multiple-time users noticed a difference in the effects of Ecstasy when taking larger doses than usual. The effect of taking larger doses was reported as generally more hallucinatory (41%) with increased side-effects. It was longer lasting and more intense (76%), with a stronger rush (54%). Subjects reported nystagmus (71%), jaw clenching (66%), nausea (59%), muddled thought (56%), feeling jittery (39%), paranoia (34%), loss of control (27%), panic attacks (27%), vomiting (24%), unpredictable mood (17%) and erratic behaviour (10%). Memory loss was described by 10 per cent of the respondents who maintain that they 'can't remember parts of the evening'.

4.6.13 Dependency

Ninety per cent of multiple-time users did not think their Ecstasy use was problematic, while the remaining 10 per cent admitted to problematic use. Out of the 10 per cent, only one subject had sought professional help. Reasons given by respondents for not seeking help included the fact that Ecstasy is an illegal substance, they did not know where to go and that their parents would

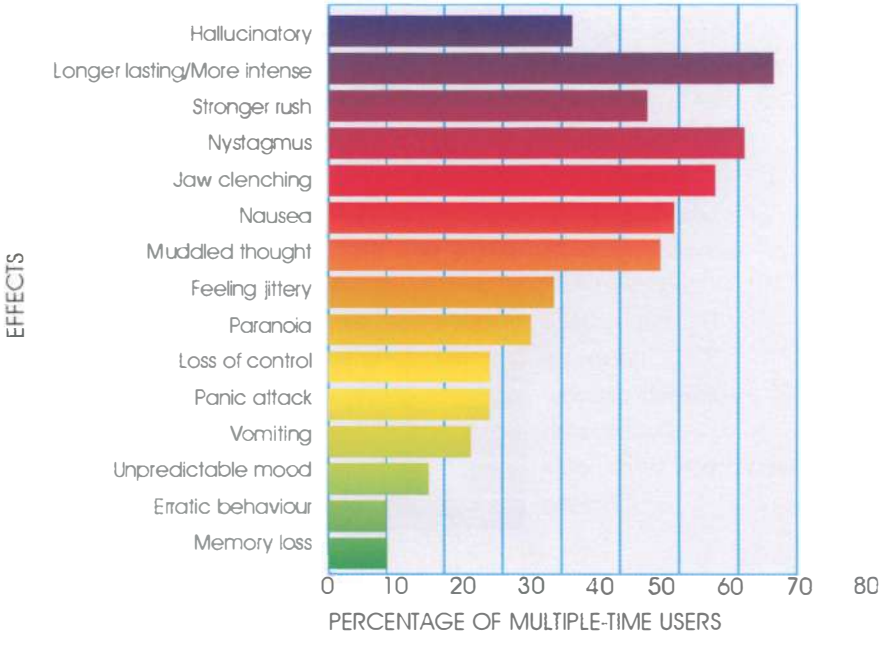


Figure 4.5 Effects of taking larger doses

'freak out' if they knew about their drug problem. Seventy-eight per cent of the respondents felt that one could become dependent on Ecstasy. Most subjects (54%) associated a psychological dependence rather than a physical dependence (5%) with Ecstasy. Dependence on Ecstasy was described as a need to take it in order to enjoy oneself (85%) (the idea that one cannot go out and have fun without it) and the need to take it in order to cope every day (24%). There was also mention of taking increasingly large doses, an indication that some subjects had developed tolerance.

4.6.14 Tolerance

Sixty-three per cent of the subjects reported the need to take more Ecstasy to produce the same effects. This was equally attributed to either tolerance or the gradual decrease in the quality of pills over time. Seventy-eight per cent reported having noticed variations in the effects of Ecstasy over time, especially reduced pleasurable effects (68%). Many respondents alluded to the reduction of the 'loved-up' feeling (feelings of being loved and being loving), 'less rushing' and that 'pills these days aren't as good as they used to be'. Once again, mention was made that subsequent experiences were not quite as good as the

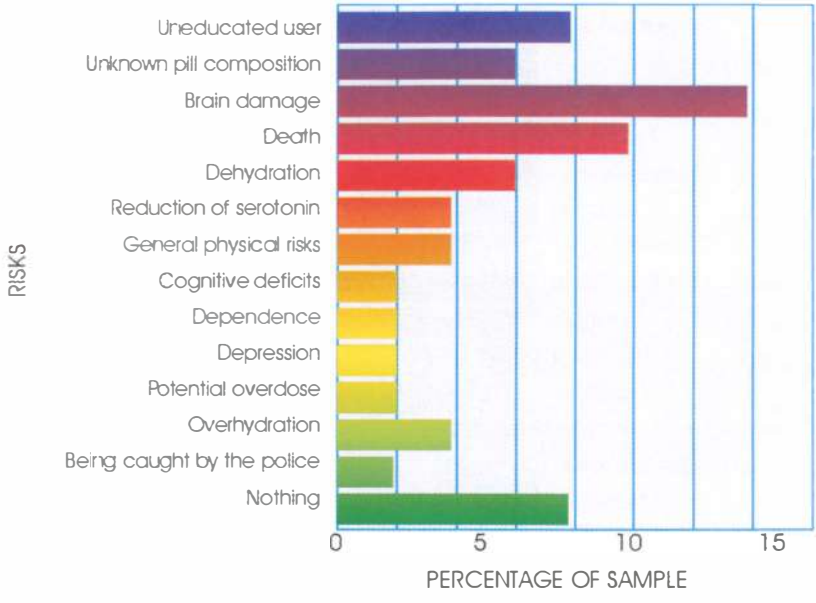


Figure 4.5 Most dangerous reported risks

first one. Subjects ascribed this to fluctuations in the purity and quality of what was purchased as Ecstasy.

4.6.15 Perceived risks

Only 78 per cent of the respondents had heard of, or read about, risks involved in using Ecstasy. The remaining 22 per cent had not. Fourteen per cent believed that death was not a very realistic danger and stated that the 'chances of dying were minimal' purporting Ecstasy to be 'largely a safe drug'. Respondents reported the following as the most dangerous perceived risks: neurotoxicity (17%), death (12%), unknown composition of pills claiming to be Ecstasy (7%), dehydration (7%), reduction of serotonin in the brain (5%), risks to general physical health (5%), overhydration (5%), overdosing (2%), cognitive deficits (2%) and dependence (2%). Despite these concerns, users continue to take Ecstasy believing in the myth of their own invulnerability. Ten per cent saw none of the above-mentioned risks as dangerous, maintaining that nothing had been proved as yet and therefore Ecstasy remained 'pretty safe'. A further 10 per cent believed an uneducated user to be the most dangerous risk pointing out that one needs to know what to expect from the drug and what to do should one experience a negative reaction. One subject referred to being

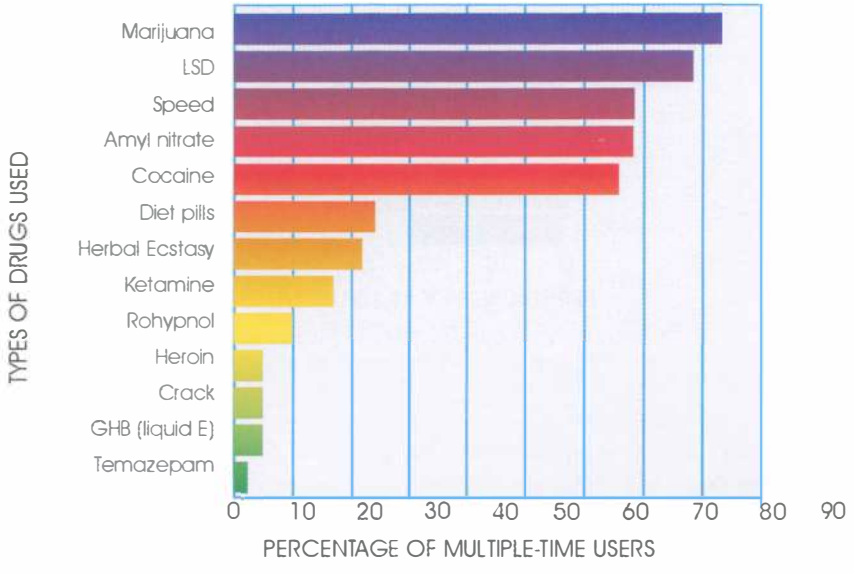


Figure 4.6 Other drugs multiple-users have tried

caught by the police with her night's supply of pills on her as being the most dangerous risk.

4.6.16 Other drugs used by multiple-time users

Eighty-three per cent of the sample disclosed use of marijuana, 78 per cent reported occasional use of LSD, and 68 per cent claimed to be social users of amphetamine (speed) and amylnitrate (poppers) respectively. Sixty-six per cent of the respondents had used cocaine socially. Twenty-four per cent had experimented with diet pills, 22 per cent with herbal Ecstasy, 17 per cent with ketamine (an animal anaesthetic) and 10 per cent with rohypnol. A small proportion of multiple-time users had tried heroin, crack and GHB (liquid Ecstasy). Only one subject had experimented with temazepam, a hypnotic. Current use was mainly defined as social or occasional use rather than regular or frequent use.

4.6.16.1 Concurrent drug use

In order to determine to what extent any reported effects were specific to Ecstasy itself, subjects were asked about their use of other substances in

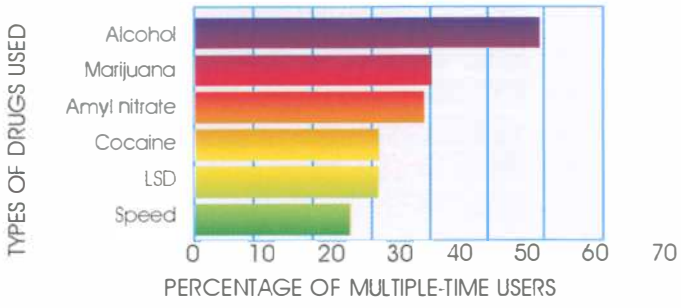


Figure 4.7 Concurrent drug use

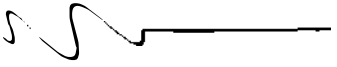
combination with Ecstasy. Seventy-one per cent of multiple-time users had used other drugs in combination with Ecstasy, while the remaining 29 per cent had not. Fifty-nine per cent drink alcohol while on Ecstasy. Alcohol was described as dulling the effects of Ecstasy, inducing nausea and vomiting, and making one feel more dehydrated or 'thirsty'. Forty-one per cent used Ecstasy with marijuana and reported it as both a 'pick me up' and 'bring me down'. Many smoke marijuana on the 'coming down' stage of the experience, seeking to prolong the 'high' or to try and cancel the stimulant properties and overcome sleeplessness. Thirty-nine per cent used amyl nitrate (poppers) for an increased or stronger 'head rush'. Thirty-two per cent used cocaine, which was reported to neutralise the effects of Ecstasy, and LSD (acid) which respondents claim gave Ecstasy more of a 'spiritual' or 'trancey' feel, and increased energy and hallucinogenic properties. The combination of Ecstasy and LSD is known as a 'candy flip'. Twenty-seven per cent used Ecstasy together with amphetamines (speed), which increased the stimulant properties of the drug, provided extra energy for dancing and prolonged the experience. However, it reduced the warmth of MDMA.

4.6.17 Influences on life in general

Sixty-three per cent of users believe Ecstasy has influenced their life in some way. Many respondents (46%) regarded the influence as positive rather than negative. Positive influences included improved relationships or social interactions (36,5%), gaining of self-insight (24%) and enriched personal growth (17%). Three subjects claimed they had become less aggressive and more 'relaxed'. Negative influences comprised depression (12%), being generally 'run down' (9,75%), more susceptible to colds (9,75%), more fatigued (7,3%) and a lowered immune response to infection (7,3%). Two subjects

mentioned a general decline in their attitude involving a lack of motivation, laziness and moodiness.

4.7 DISCUSSION OF RESULTS



This study provides a thorough investigation of the ways in which Ecstasy is used, with its primary findings regarding the nature of the effects of Ecstasy as experienced by its users. As most subjects were recruited from Rave clubs, concerns arise about the possibility of the respondents supplying descriptions about MDMA's effects which are biased through myths held in the Rave subculture about the effects of the drug. These are clearly points that necessitate caution when interpreting the data. Nevertheless, this author does not believe these factors to nullify the findings. The present data replicates much of the existing literature regarding the effects that Ecstasy elicits. In this section, findings from the present research are discussed and references to sources that agree with these findings are given in brackets.

'Nightclubbers' whose main reason for using Ecstasy is to have 'fun' were found to be the most prevalent users of Ecstasy. Ecstasy is only one of the popular dance drugs and although Rave promoters and club owners deny it, the supply of drugs and Ecstasy in particular is essential in providing an atmosphere conducive to raving. The ingestion of MDMA at a Rave, resulting in that wonderful 'high' followed by a 'low' (as previously indicated in Chapter 2) seems to predispose an adolescent or young adult to participate in Raves repeatedly. It may be an emotional or psychological dependence following this simulated 'bipolar' condition. This pronounced 'mood swing' was indicated by Solowij, Hall and Lee (1992:1 169) a decade ago and was supported by the more recent findings of Jansen (1997:125).

Psychological dependence (mentioned as a possibility by 54% of the subjects) is a condition that is characterised by an emotional and mental preoccupation with the effects of Ecstasy and an unremitting craving for these effects (Gillis 1994:108). It develops when drug use becomes far more important than other things in a person's life. Some ravers or clubbers 'crave' Ecstasy and feel compelled to keep on using it. They feel that they cannot have fun or enjoy themselves without it. Drug users should not underestimate the 'power' of psychological dependence. Psychological dependence is usually much stronger and more difficult to overcome than physical dependence. The body can eliminate a drug and return to normal within days or weeks, however, the mind and the emotions can take a lot longer (Australian Drug Foundation 1998:01). The fact that the majority of the respondents (78%) maintain that

they would take Ecstasy repeatedly in the future seems to be a precursor to emotional dependence.

Ecstasy (MDMA) produces a state of heightened positive mood, well-being and increased emotional sensitiveness (Greer & Tolbert 1986:323; Solowij, Hall & Lee 1992:1169; Vollenweider *et al.* 1998:241). It enhances intimacy, self-insight and allows for direct, loving and honest verbal communication (Eisner 1989:35; Greer & Tolbert 1986:321; Beck & Morgan 1986:293; Elk 1996:352, 354). Although MDMA has been labelled an *aphrodisiac*, Ecstasy is generally described as sensual (feeling sexy or attractive) rather than sexual (Beck & Morgan 1986:293). Buffum and Moser (1986:359) too concluded that due to the increased feelings of emotional closeness, Ecstasy serves to enhance the sensual aspects of sex. Other perceived positive psychological effects included a sense of euphoria, elevated self-esteem and feelings of spirituality (Elk 1996:352; Greer & Tolbert 1986:320).

The most frequently reported, positive physical effect is that of increased energy or stimulation; wanting to be in constant motion (Greer & Tolbert 1986:321; Elk 1996:352). Following the stimulant effects were enhanced visual and auditory perception (Elk 1996:352; Vollenweider *et al.* 1998:241). On the whole, Ecstasy is seen as 'perfect' for the Rave scene. Zealous dancers sometimes bypass the emotional effects of MDMA by taking small 'boosters' (half-a-tablet) at regular intervals throughout the night to obtain the stamina to dance for hours on end. However, expectations do play an important part in all drug effects. There are many who wish to dance because they have been conditioned to associate this with Ecstasy, irrespective of the actual content of the pill they have swallowed, just as many will declare their love to others present for the same reason (Jansen 1997:117).

Tension of the jaw muscles (trismus) (Eisner 1989:120; Greer & Tolbert 1986:322; Vollenweider *et al.* 1998:249) which usually progressed to involuntary grinding of the teeth (Eisner 1989:120; Cohen 1995:1140) was described as one of the most irritating side-effects. Other commonly described negative physiological effects included flickering of the eyes (nystagmus), muscle hypertonicity (stiffness), elevated pulse rate (tachycardia) (Elk 1996:352, 353) and dehydration (Beck & Morgan 1986:296). Some users experienced hot and cold flushes (Elk 1996:352) and nausea (Beck & Morgan 1986:296), which resulted in actual vomiting (Cohen 1995:1140; Hayner & McKinney in Elk 1996:353). Insomnia (Elk 1996:352; Vollenweider 1998:249) and blurred vision (van Aerts 1997:94; Hayner & McKinney (1986) in Cohen 1995:1139) were also reported. Visual hallucinations (Elk 1996:351), anxiety, panic attacks and paranoia (McCann *et al.* 1991:302) were some of the negative psychological effects experienced.

The desire to urinate but having difficulty in doing so mentioned by 24 per cent of the South African sample was the only area in which reported effects differed. This may reflect lowered salt (sodium) concentration of body fluids as

a result of excessive drinking of water. Sodium has the remarkable quality of holding water in the body's tissues. It is possible that the sodium is sweated out or urinated out in higher than normal quantities (Jones 1997:203). The primary stimulus for water ingestion is thirst and MDMA is known to induce thirst. White, Bocher and Irvine (1997:117) maintain that high doses of amphetamine derivatives induce repetitious behaviours in animals and humans. It is possible that the combination of thirst and repetitive behaviour patterns, such as dancing at a Rave or club, leads to excessive fluid intake.

To maintain a steady body fluid balance, water intake must equal water excretion. The increased water ingestion and impaired renal excretion may result in hyponatraemia (Singer & Brenner 1998:01). Hyponatraemia comprises lowering the ionic strength (sodium/salt concentration) of the body fluids which results in less-effective circulating arterial volume, leading to increased thirst and increased arginine vasopressin (AVP) (formerly antidiuretic hormone) secretion. This results in impaired water excretion due to AVP's action in the kidney (Singer & Brenner 1998:05), hence the desire to urinate but not being able to do so. The clinical manifestations of hyponatraemia are related to osmotic water shift leading to an increased intracellular fluid volume, specifically brain cell swelling or cerebral oedema. Accordingly, the symptoms are primarily neurological and their severity is dependent on the rapidity of onset and total decrease in plasma sodium concentration (Singer & Brenner 1998:06).

Simply put, when the sodium concentration is lowered due to unrestricted water intake, water is lost into the fabric of the body's tissues causing swelling. This does not present so much of a problem for most tissues, but it presents the brain with real difficulties. The brain, encased as it is by the skull, cannot swell excessively. It becomes compressed as a result of an abnormal accumulation of fluid in the brain tissue and puts pressure on the brain stem, which controls heart and breathing functions (Jones 1997:203). This results in cerebral oedema and can eventually lead to death (van Aerts 1997:93). When thirsty while on Ecstasy, it is therefore more sensible to drink isotonic fluids instead of only pure water, which will help replace some minerals such as sodium and preserve the balance of fluids in circulation.

Although side-effects can be uncomfortable, only a few users find that side-effects spoil the Ecstasy experience. Adverse sequelae during the following 24 hours include lack of energy and appetite, feelings of restlessness, occasional difficulty concentrating, and moodiness (Vollenweider *et al.* 1998:249). Given the congruity of reported effects in this study with those of previous research, it would appear a reasonable assumption to make that the Ecstasy being sold in the clubs in Durban was primarily MDMA. According to Doblin (1998:04) in the *High Times*, the tested Ecstasy samples sent from South Africa contained only one psychoactive ingredient – a very substantial dose of

MDMA. Although it appears that Ecstasy pills sold in the clubs are largely MDMA, the safety of MDMA pills and capsules cannot be determined with certainty.

In a 1985 study of MDMA users, Siegal (in Beck & Morgan 1986:297) maintains that the most common patterns of use are 'experimental' (ten times or less in a lifetime) or 'social recreational' (one to four times a month). He also said that 'compulsive patterns marked by escalating dose and frequency of use have *not* been reported with MDMA users'. However, it certainly appears that this is no longer the case. The present study indicates a distinct change in the pattern of Ecstasy use. Escalating doses appear to have become quite common as individuals try and 'get more out of it' – some taking ten pills as their usual dose per night while others have tried between ten and twenty tablets on some occasions. According to McGuire and Fahy (1991:697), the use of almost any substance may become compulsive and excessive in some individuals.

In rapport with other studies, the findings of this study suggest that the negative effects of Ecstasy are dose-related in that their severity correlated with both the total number of doses consumed and with frequency of use (Solowij, Hall & Lee 1992:1170). Users from this sample report that the quality of the MDMA experience eventually begins to drop as the number of MDMA experiences increases. While this may be due to a long-term neurochemical process, it could also be due to the loss of novelty of the experience or some kind of learning-based tolerance. According to Doblin (1995:04), this frequent loss of quality of the experience over time serves as a kind of built-in antidote to long-term compulsive use, as does the increase in the ratio of unwanted side-effects to desired effects that accompanies the attempt to take increasingly larger doses.

Since the 'loved-up effect' from Ecstasy wanes with repeated use, some users will fruitlessly be attempting to re-experience the original 'positive' mental state. However, with multiple exposure to the substance this becomes impossible due to neurochemical changes in the brain and concomitant psychological changes resulting from repeated use (Jansen 1997:125). This may partially explain escalating doses in recent years. Other reasons for increasing dosage may be the considerable drop in price that has occurred because of the increased demand for Ecstasy. It was once believed that Ecstasy would be free of any dependency risk because of the loss of the empathogenic 'loved-up' effect with repeated use. However, while loss of this effect may lead to dwindling use in an older group who take Ecstasy for its empathogenic qualities, younger users in the Rave culture may come to appreciate the more amphetamine-like qualities and have different expectations (Jansen 1997:126).

Many people (63%) reported long-term psychological benefits resulting from their use of Ecstasy. Such influences included belief changes that continued long after MDMA sessions and resulted in a more positive frame of

mind about themselves, individually or socially. In agreement with a 1986 study by Greer and Tolbert and a 1994 study by McCann and Ricaurte (in Doblin 1995:04) – where MDMA users exhibited less hostile and impulsive personality traits – three subjects in this study claimed to have become less aggressive and more easygoing. Although most respondents regarded the influence of the drug as positive, some negative long-term physical and psychological influences were reported.

It was evident that most people (71%) who take Ecstasy also use other drugs, some of which are clearly associated with a risk of mental health consequences. Polydrug use and experimentation with different drug concoctions appear to be commonplace amongst ravers. This is an important factor to bear in mind when conducting research in this area. Despite the fact that most Ecstasy users sometimes ingested other drugs together with MDMA, these experiences were distinct enough from the original MDMA experience to ascribe the effects reported in this study to Ecstasy itself. Additional research is certainly required to investigate the various drug interactions, both legal and illegal, before the consequences of these can be fully understood (Solowij, Hall & Lee 1992:1168).

Amongst ravers, the view that MDMA is a relatively safe drug prevails. Accurate knowledge of the toxicity of Ecstasy and the risks involved with the use of Ecstasy is lacking amongst its users. Misinformation concerning the drug is the greatest danger. According to Rosenbaum (1999:08), a general belief amongst many educators, policy makers and parents is that if adolescents merely understood the *dangers* of drug experimentation, they would abstain. However, in striving to foster abstinence, risk and danger messages are sometimes 'inflated' and at times even completely untrue. Consider the following comment by a 16-year-old boy in the tenth grade at a Durban high school:

> My parents told me that Ecstasy causes brain damage and that I would probably end up in a coma and be a 'vegetable' if I tried it. At school, my guidance teacher told me that Ecstasy makes you major depressed and that you would become suicidal after the first time you took it and it's really not like that. You hear all that negative stuff . . . then you go to a Rave and try it anyway and you realise, 'Man, they bullshitted me! I seriously had a wicked time on E.'

When such information is given, students discredit both the message and the messenger, because these false messages clash with their actual observations and experience. They see their friends and themselves as people who have used Ecstasy without any of those damaging effects. Consequently, adolescents lose faith in what we, as parents and teachers tell them and are thus less likely to turn to us as credible sources of information (Rosenbaum 1999:8–9).

Rosenbaum (1999:9) asserts that the problem with delivering false messages is that students will not take drug education seriously. When students repudiate warnings, it is not to be taken lightly. An alarming outcome of misinformation is that they will ignore warnings altogether and put themselves in real danger. Take, for example, a scholar who did not believe the negative claims about Ecstasy. He downgraded the school's message and 'free-based' crack. Nowadays, increased availability, inconsistency in pill 'strength' and adulteration of pills (indicating quality and dose control issues), combined with the adolescents' rejections of warnings they do not trust, have resulted in increased risk of acute intoxication or fatal overdose (Elk 1996:351).

4.8 CONCLUSION

Young people are more than capable of seeing through incongruities and are far less worried about the legality of activities than are adults who understand the implications of breaking the law. It is not enough to tell students they must refrain from certain drugs because they are illegal. Young people often do not care and are sometimes attracted to drugs because they are illegal. Furthermore, they will use or reject a given substance for reasons having to do with its effects or reputation (Rosenbaum 1996:11). Ecstasy (MDMA) produces a positive mood state, a generalised feeling that all is right and good with the world. People on MDMA often describe feeling 'at peace' or primarily experiencing a 'happy' feeling and emotional closeness to others. Personal communication barriers are also broken down. The feeling of unity and shared joy at a Rave can be overwhelmingly wonderful. These effects are appealing to adolescents, particularly those with a poor self-esteem who are not at ease talking to others and who long to be accepted. If using Ecstasy at a Rave is perceived as 'cool' by their peer group or as the 'in thing' to do, adolescents will try it. Honest and therefore accurate drug education is imperative. It can save lives and reduce the harm that drugs can cause.

Existing drug education programmes have been based on the idea that drug use can be prevented or at least reduced through tougher law enforcement measures and educating young people into saying no to drugs. The only flaw in this seemingly obvious strategy is that contemporary drug policies have been unsuccessful. Williamson (1997:65) points out that there has been a continual rise in the number of people taking illegal drugs, drug-related offences and drug-related deaths. While the abstinence-only approach is well intended, it is nevertheless misdirected. The idea that adolescents, at a time in their lives when they are most receptive to risk taking, will be deterred from

experimentation with mind-altering substances and altered states of consciousness is unrealistic at best (Rosenbaum 1999:09). The latest figures, according to the South African Narcotics Bureau (May 1999), indicate that one in three, and in the higher grades, one in two school going youngsters, are experimenting with drugs. This suggests that drug use is definitely on the increase, especially with the younger age group.

Drugs have always been, and are likely to remain, part of youth culture. Adolescent experimentation with drugs continues despite drug-prevention efforts. The recent escalation in adolescent drug use is proof that the 'just say no to drugs' programmes have failed. Rosenbaum (1999:09) points out that after the warnings to abstain from drugs, the lessons end. There is no additional information on how to minimise risks, avoid problems or prevent abuse. Abstinence is seen as the only test of success and the only acceptable teaching option. The 'abstinence-only' approach leaves teachers and parents with nothing to say to the 50 per cent of students who say 'maybe' or 'sometimes' or 'yes' to drug use, the very adolescents educators need to reach most (Rosenbaum 1999:10).

Goode (1993:334) asserts that 'almost all drug education programmes strive for prevention as their ultimate goal. It is possible that this goal is unrealistic with current experimenters and users. Perhaps *moderate* or wise use is a more realistic goal.' Drug researchers Botvin and Reniscow (in Rosenbaum 1999:10) maintain that 'although controversial, programs that include messages of responsible use may be more credible, and ultimately, more effective . . . The primary goal of substance abuse prevention programs should, it could be argued, be the reduction of heavy use and abuse rather than limiting experimentation among individuals unlikely to become frequent users.'

Since total abstinence is not a realistic goal, educators need to embrace a practical rather than moralistic view toward drug use. Like adolescent sexual activity, drug use will occur and that is what educators need to recognise. Instead of becoming morally 'enraged' and disciplinary, educators should assume the existence of drug use and strive to minimise its negative effects and dangers (Rosenbaum 1996:12). Rosenbaum (1999:10) proposes a 'safety first' or harm-reduction strategy for drug education which demands reality-based assumptions about drug use and drug education. Whether one likes it or not, many adolescents will experiment with drugs. Others will use drugs more regularly. At the same time that abstinence is stressed, a fallback strategy for risk reduction should also be provided. This would provide students with information and resources so that they do the least possible harm to themselves and those around them.

All drug use in adolescents should not be labelled as abuse. Adolescents who use Ecstasy despite their parents' and teachers' warnings to abstain need to understand that there is a huge difference between use and abuse, and

between occasional and daily use or addiction. If they continue using Ecstasy, adolescents need to know that they can and *must* control their use by using in moderation and limiting their use (Rosenbaum 1999:12). Amongst educators, a knowledge of which drugs are available in the illicit market and the toxicity of each is imperative. Differences in individual susceptibility to MDMA-induced acute toxicity must also be investigated as it is currently impossible to predict which users will be most likely to experience such effects (White *et al.* 1997:117).

Guidelines for Ecstasy use should be considered. These should include recommendations on the provision of suitable environments at venues where the drug is likely to be taken. Raves and clubs should offer free, unrestricted access to drinking tap water, adequate ventilation and entry to 'chill' areas to cool down and relax after dancing. They should also have someone on site trained in the effects of taking drugs or perhaps a paramedic in attendance (RaveSafe 1997:33). Other guidelines need to address educating users about appropriate fluid intake, advisable dosage, the dangers of combining Ecstasy with other drugs, both illegal and prescribed, and the warning signs of toxicity (White, Bochner & Irvine 1997:117). White, Bochner and Irvine (1997:117) assert that the last-mentioned is particularly important, as obvious signs of acute toxicity have been ignored in several cases possibly through ignorance or concern about risk of arrest for possession of an illegal substance.

Since it is not a realistic expectation that ravers will stop using Ecstasy *en masse*, the best educators can hope for in place of total abstinence is responsible use based on informed decisions – a result of the following underlying message to adolescents: 'Say NO ... and if you can't say NO ... say KNOW.' It is our duty as educators to take on students and furnish them with credible information so that they can make responsible decisions, avoid drug abuse and remain safe. (See Chapter 5 for more detail on harm-reduction drug education.)

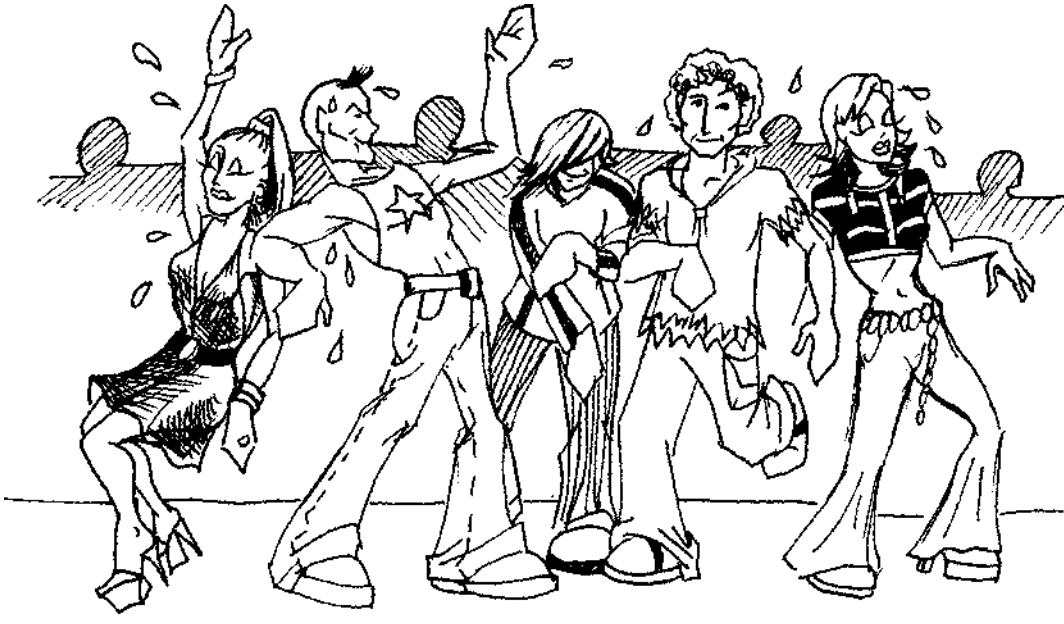


Figure 4.8 If you cannot say NO, say KNOW

CHAPTER 5

CONCLUSIONS, RECOMMENDATIONS AND IMPLICATIONS

5.1 INTRODUCTION

South Africa is witnessing an escalation in drug use amongst its high school pupils and students of tertiary educational institutions. Adolescents are experimenting more than their predecessors. There are a number of reasons that appear to be contributing factors to the increasing level of drug use in this country. Some reasons have a psychological basis, such as the high stress and anxiety levels of South Africans in general. At present, South Africa is in a transitional phase and adolescents as well as adults are feeling very insecure about the future. Insecurity is going to predispose people towards finding a means of escapism and, unfortunately, drugs provide a very inexpensive and effortless way of doing that. Other reasons are as simple as availability. With the opening of the economic barriers, illegal drugs have flooded the South African market resulting in them being more freely available than they were in the past. Consequently, adolescents are going to be more frequently exposed to drugs.

The attitudes and behaviour of others regarding Ecstasy (MDMA) use are a strong influence on the adolescent's initial use of the substance. Initiation and continuation of use are supported by peer group involvement. Peers also provide role models of MDMA users who maintain they have not experienced negative consequences from their drug use. An important factor in initiating drug use is the degree of access to the substance. The availability of Ecstasy, the prevailing attitudes of significant others and the acceptability of drug use perceived within the adolescent's social network (such as at a Rave) make it easier for him or her to use it (Huggins 1996:539).

Attitudes about drug use have changed among young people and their perception of the risks has diminished, at least in part, as a result of popular media and entertainment portrayals of drugs in an acceptable or even in a positive light. (See Figure 5.1.)

Figure 5.1 Portrayal of drug-use patterns

For many adolescents, smoking, drinking and 'drugging' represent rebellion and maturity. The media contributes to this illusion by linking sophistication with self-destructive, impulsive behaviour and not reasonable, thoughtful behaviour (Pipher 1994:202). The characters with self-control are often portrayed as boring nerds. One need only consider the films *Go*, *Loved up*, *Human Traffic*, *Kids*, *Trainspotting* and *54* (to mention but a few). The 'normalisation' of illegal drugs amongst adolescents appears to be becoming quite the norm, particularly in the Rave, Goth and New Age hippy subcultures.

It is necessary that educators come to terms with the fact that illegal drug use is 'here to stay' for the foreseeable future (irrespective of whether they like the idea or not). The author is not advocating or condoning the experimental use of drugs. However, the reality of the situation is that adolescents are going to do it and that is what educators need to recognise. At this point, there is no effective way of stopping adolescents' exposure to drugs. Currently, there does not seem to be a way of preventing drugs from getting on to the streets, into the clubs, into the shopping malls and into the schools. Hopefully through government policy, drug enforcement and educational strategies, ways of minimising that will eventually be found. However, the urgent question that arises is, what can be done in the meantime?

In this chapter conclusions from the said findings are drawn, recommendations are made and issues requiring further research are considered. The implications of this study for the adolescent, the parent, the teacher, the school and the future are briefly addressed.

5.2 CONCLUSIONS

The following conclusions can be drawn from the findings that emerged from the literature study and the empirical investigation. Not all drug use is pathological and some experimentation is normal. Curiosity and exploration are to be expected during adolescence. Some healthy, reasonably well-adjusted adolescents use drugs. In a Rave environment where young people are continually exposed to drug-related ways of behaviour, for example taking Ecstasy to dance all night or to have a good time, the use of drugs becomes the accepted norm. Using Ecstasy at Raves is widespread and not necessarily a sign of anything except a desire to fit in and do what others do.

It is important to try to understand the context in which drug use occurs. Drug use occurs in young people as a result of complex and interrelated factors. These include peer group pressure, older sibling imitation or 'copycat' behaviour, advertising, boredom, the need to experiment, the expectation that

using will be a beneficial experience which enhances socialisation, positive experiences associated with an altered state of consciousness and the excitement of risk taking (McKeown 1998:01). However, some times drug use is a symptom of other problems. Adolescents go through many developmental changes. Often heavy drug use is a red flag that points to other issues such as despair, social anxiety, problems with friends or family, a lack of support and guidance, pressure to achieve, a low self-image, negative sexual experiences or difficulty finding a positive identity (Pipher 1994:191). Except in extreme cases, it is better to deal with the problems that inspire drug use and the problems that drug use causes.

In any matter concerning drugs it is essential that those helping be properly informed about drugs and their effects on users. Many adolescents who take drugs are far more enlightened about aspects of drug-taking than their parents or teachers, and it simply is not possible to appear credible or even discuss the problem effectively, if your basic facts are inaccurate. Of equal importance is the need for the public as a whole to develop a greater understanding why young people turn to drugs in the first place (Gillis 1994:107). The importance of drug education for educators, adolescents and Ecstasy users cannot be overemphasised. Accordingly, the author sees the function of educators taking on a whole new perspective.

5.2.1 Identification of Ecstasy or drug use in adolescents is imperative

The following are among the reasons why it is necessary to recognise drug use in adolescents:

- Underachievement and deterioration in scholastic performance can be prevented.
- Memory and concentration problems can be avoided.
- Learning problems can be averted.
- Further emotional, social or behavioural difficulties can be prevented.
- Drug-related neuropsychiatric disorders or physiological ailments can be prevented.
- The forming of positive and constructive interpersonal relationships can be fostered.
- General mental health can be promoted.

5.2.2 Teachers can exert a greater influence on adolescents' mental health

Because adolescents spend most of their day with their teachers, teachers have a tremendous responsibility with regard to adolescents' future career and life success. The primary duty of teachers is to impart knowledge about certain subjects to their pupils. Their secondary task, which is imposed on them from a psycho-educational perspective, is to accompany adolescents to responsible adulthood and to nurture their mental welfare. This task is often neglected because it is not realised that it is just as important as the first and, consequently, the adolescents concerned contribute in their later life to the low productivity, high absenteeism from work, poor economic conditions and the like that afflict South Africa (Kruger 1992:239).

It seems therefore that it is not only desirable that teachers exert a greater influence on the mental health of adolescents, but that the need to perform this task is likely to assume increasing urgency in the future.

5.2.3 A disharmonious educational climate must be prevented

A disharmonious educational climate between parents and adolescents, as well as between teachers and adolescents, is often the cause of stress in both adolescents and their educators. This may result in adolescents making themselves noticeable by engaging in unacceptable activities and behaviour that ultimately undermine their self-concept and self-actualisation. Both groups, but more particularly the educators, since they are responsible for education, should strive to keep relations as amicable as possible. Unrealistic expectations, lovelessness, overprotection, mistrust, lack of self-control, rejection, inconsistency, authoritarianism, permissiveness and a morbidly excessive desire for achievement must therefore be avoided wherever possible (Kruger 1992:239).

5.2.4 Further research is essential

The identification of drug use in adolescents is essential, as is further research with a view to providing improved assistance to recognising the symptoms of drug use. Various aspects of the Ecstasy (MDMA) phenomenon should be subjected to thorough scientific investigation. Since recreational drug users are likely to experiment with various 'cocktails' of substances, further research is required to explore the various drug interactions. Follow-up studies of Ecstasy

users should also be carried out in an attempt to assess the long-term implications of Ecstasy.

5.3 RECOMMENDATIONS

5.3.1 Educators should be informed about current drug trends

Since the need for drug education is gaining importance for the general mental health of the public, it is recommended that educators be equipped with at least a basic knowledge of the current drug trends. Educators do not seem to have an understanding of the current drugs of abuse or the necessary skills to teach those in their care about the dangers of these drugs. By providing drug education and prevention training to teachers, and by exposing them to accurate and current circulars and articles in periodicals published for educators, they can develop an awareness of Rave participation and the escalating drug use and drug trends amongst high school children.

5.3.2 Documentation

Adolescents' problems and behaviour, as well as their academic performance, should be documented in a personal pupil file. This information enables the guidance counsellor to compile an accurate personal image of a particular pupil (that is, an accurate description of the adolescent as a person) with the intention of helping her or him. The recorded information can be of great value when adolescents are referred for therapy to a professional person in the school-related services. For example, it would be helpful for a therapist to know from the outset if an adolescent has been experimenting with drugs for some time, or if s/he has been arrested for possession or dealing on school property or at a Rave. Since the guidance counsellor was trusted with the personal troubles of the pupil, it is essential that the information in the files be treated with strict confidentiality. Should it be considered beneficial during counselling to consult with others regarding confidential aspects discussed, permission to do so should first be obtained from the adolescent.

5.3.3 Better rapport between parents and teachers

There has been a growing need for teachers and parents to communicate with each other more often about the welfare of pupils. Parents should have the opportunity to conduct regular interviews with teachers within which specific issues are discussed, namely the adolescent's cognitive, emotional, social, conative and normative development.

5.3.4 Better contact between school-bound and school-related services

Since teachers, besides parents, are the first to notice that adolescents are experiencing emotional and social problems, they should be equipped with knowledge concerning the functions of related occupations, such as those of educational psychologists, clinical psychologists and psychiatrists. Teachers should be furnished with guidelines on how and when a pupil should be referred to one of the said related occupations.

5.3.5 Parent support groups

The organised forming of adult support groups for parents of adolescents is strongly recommended. Other parents can be valuable allies in their efforts to keep their adolescent children drug-free. Parents must get to know the parents of their children's friends and share expectations about behaviour, thereby developing a set of mutually agreed-upon rules about curfews, unsupervised parties and places that are off limits. Helping adolescents stay out of trouble is easier when rules of conduct are clearly known and widely shared (http:// 1998:2).

Sharing experiences can provide insights that help parents deal with their children's behaviour. It also helps them to know that other parents have faced similar situations. Support groups should therefore pursue such goals as:

- providing information about the development of the adolescent by means of discussions, lectures and bibliotherapy
- providing information about the main problems and stressors accompanying adolescence
- offering support to groups of parents whose adolescent children suffer from the same problem, for example, substance abuse, eating disorders and depression.

5.3.6 Parental drug education

As educators, parents need to know about drugs so that they can provide their children with current and correct information. If parents have a working knowledge of common drugs, and know their effects on the mind and body and the symptoms of their use, they can discuss these subjects intelligently with their children. Furthermore, well-informed parents are better able to recognise if a child has symptoms of drug-related problems (http://1998:03).

Objectives such as these should be followed through:

- Making parents aware of the dangers of drug use to their children.
- Heightening parents' awareness of current and emerging drug-use trends.
- Equipping parents to teach life skills and drug resistance to their children. More than simply emphasising the 'say no' message, parents should teach their children how to say no by involving them in discussions about drugs, role-playing, practising resistance and refusal skills, developing assertiveness, strengthening decision-making and problem-solving skills and analysing peer and media influence – with a view to promoting abstinence from substance abuse through the practice of responsible behaviour and informed decisions.

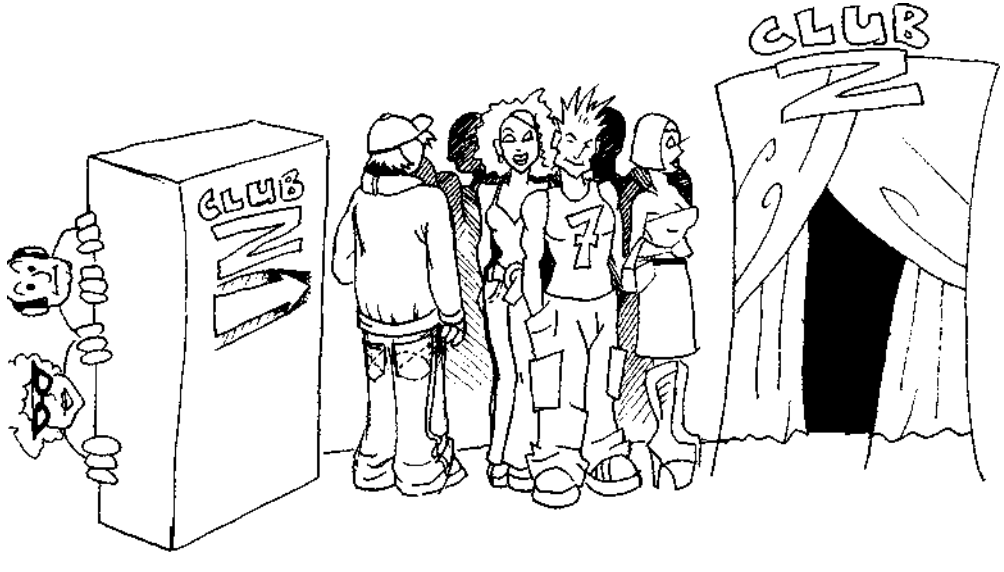


Figure 5.2 Well-informed parents are more credible educators

- Educating and motivating parents to take a proactive role. When parents allow alarm to motivate their behaviour, they tend to react instead of being proactive and they do things that invite their children to have bigger problems. For example, many adolescents whose drug use is problematic choose not to tell their parents for fear of their parents' reaction and resultant rejection. Learning to be proactive instead of reactive is the better approach to the problem of drug abuse.

5.3.7 Adolescent discussion groups

In these groups, any topic regarding the various aspects of adolescence is raised and discussed informally and in depth, within a group context by teenagers under the guidance of a specialist.

5.3.8 Identifying drug use

There are many adolescents who have an initial experience with Ecstasy (MDMA) who do not become repetitive users and many who do become repetitive users do not become dependent. The cause for each stage is different. Different people may be influenced by various situations, producing diverse behavioural effects. The same behaviour may have dissimilar causes in other people. What stimulates or motivates one person to engage in substance use, may not stimulate another. Every person is unique and must be assessed individually (Huggins 1996:539).

Some recommendations towards achieving this end are expressed:

- The unique nature of the individual adolescent and of his attribution of meaning to, experience of, and involvement in drugs must be investigated.
- Identification of drug use must lead to assistance.

Parents should obtain the facts about their adolescent's suspected drug-taking and if they have reason to believe that drugs are being used, they must make their feelings known. The reasons or evidence for their suspicions must be clarified, emphasising that they are broaching the matter, not because they are angry, but because they are concerned and because they care. The underlying message should be that they feel if a problem exists they would like to be brought into the picture, to understand more about it and to help (Gillis 1994:120).

Educators should encourage discussion and be ready to listen but firmly dismiss any attempt to downgrade or confuse the drug issue itself. Most times the initial reaction is one of denial, in which case, if suspicions still continue, it

must be made clear that the matter is certainly far from closed and will be re-examined regularly. If excuses are given, the precise details must be insisted upon and checked. Where friends are involved or blamed, request to meet with them so that the matter can be discussed openly. Furthermore, if an underlying personal problem such as a low self-image is brought up in mitigation, educators should arrange to deal with it separately at a later stage so that the issue of drugs remains central to the present discussion (Gillis 1994:120).

Where it is agreed that a problem does exist, unhelpful reaction in the form of anger or criticism should be avoided. Focus should rather remain on the facts of the present situation and the proposed action to be taken. Gillis (1994:120) asserts that the approach should be supportive but 'tough'. Firstly, in the sense that as a parent your attitude towards drugs is inflexible and, secondly, that *something has to be done*. As a parent you do not want your child to take drugs. However, if you find out that s/he is, you want to have some effect. Clear guidelines and requirements should be set out by parents. If necessary, parents should explain that they have both the responsibility and the authority to enforce them and that they intend to do so (Gillis 1994:120). Guidelines may be incorporated in the form of a written contract, which also stipulates the action (such as loss of certain privileges) to be taken in the event of a breach of contract.

If the drug-taking problem appears to be more serious or is not limited to isolated incidents, assistance should be obtained without delay from a person or organisation with specialised knowledge on the subject. This may be the family doctor, a psychologist, a school counsellor or an organisation concerned specifically with the aspects of drug abuse. (See list of contact numbers.) Should this approach be opposed, parents should consider asking the adolescent to suggest someone of her or his own choice. They should emphasise that treatment would involve being helped to understand and deal with the reason why s/he turned to drugs in the first place and to cope with the associated problems that drug use creates (Gillis 1994:121). Goals of treatment are likely to be the reduction or termination of drug use.

5.3.9 Individual counselling and cognitive/ behavioural therapy

Since some adolescents have difficulties with authority figures, a non-judgemental attitude may be helpful in the first counselling session to create a trusting relationship. However, one should bear in mind that Rogerian-style, unconditional positive regard and empathy are typical effects of Ecstasy and it

is reasonable to suppose that some users may sometimes respond better to firm limit setting and reality orientation (Jansen 1997:127).

Denial is an important defence mechanism. The following statement is echoed by many Ecstasy users: 'Everyone knows that E's are not addictive, I can stop anytime I want.' Denial can be dealt with using facts from the person's life rather than from research findings (Jansen 1997:127). Consider this as an example: 'Let us examine the effect that taking eight 'E's' every weekend is having on your studies ... on your finances ... on the way you feel by midweek ... on your life in general now that you have been arrested for possession at a Rave club and charged with intent to supply because you bought a big bag of pills to save money ... on your relationship with a drug runner ... on your increasing tendency to smoke marijuana for the comedown ... on your health ... on your family ...' (adapted from Jansen 1997:127).

This approach may be more effective than discussions about serotonergic terminals in the human brain.

5.3.10 Group counselling and adolescent support groups

The organised forming of support groups for adolescents is strongly recommended, in order to offer support to groups of adolescents suffering from the same problem such as substance abuse. In the give and take of group therapy, adolescents may be able to face the consequences of their psychological dependence on Ecstasy (drugs) and to see new possibilities for coping with it.

5.3.11 Drug education and prevention programmes

Drug education is important. It can save lives and reduce the harm that drugs can cause. However, who actually gives the advice can be crucial on whether it is heard or not. Young people want advice on drugs from people who know what they are talking about. They are more likely to accept advice if it comes from people who have used drugs themselves, people who know what pitfalls to avoid and who will not exaggerate the dangers (Williamson 1997:71). These are the people who should be going around to the schools and youth clubs. Adolescents will listen attentively and talk openly about their experiences when they are confident that they will not get reported for what they have done. There is no point in using figures of authority such as the police and some teachers, as most adolescents will feel inhibited from discussing their drug experiences. Furthermore, those who are most likely to use drugs will

ignore them simply because they are authority figures and because their information is mostly second hand.

5.3.12 Harm-reduction approach

As seen in this study, young people still continue to use Ecstasy (MDMA) despite having some knowledge of the dangers involved. For this reason, a non-judgemental harm-reduction approach appears to be one of the ways forward. According to Cohen, Clements and Kay (in Rosenbaum 1996:15), harm-reduction drug education is secondary rather than primary prevention. It is education about, rather than against, drugs. Such an approach does not preach abstinence, it does not criticise drug users nor does it condone drug use. It nevertheless accepts that drug use does and will continue to occur, and simply presents the facts and advice in a way that young people can relate to. As regards the harm-reduction approach, one is not saying that drugs can be taken safely. There is no 'safe' way to take drugs. All drugs carry some sort of risk, no matter how small it may be. Harm reduction is potentially life-saving information going out to young people. As such, it is 'user education'. (See Appendix 1.)

In the light of this, consider the following example adapted from Williamson (1997:70):

> If you are not dancing or you are taking Ecstasy at home, you won't need to drink as much water. There have been a few rare cases of people dying from drinking too much water when they are not dancing. This results in the body retaining excess fluid and the blood becoming diluted, so only drink enough water to quench your thirst and listen to your body.

As mentioned earlier, in Chapter 1, Leah Betts was one of the rare cases in the UK who died from cerebral oedoema as a result of drinking too much water because she thought it was the right thing to do when taking Ecstasy. The tragedy of it all is that if she and her friends had been aware of such non-judgemental, factual information, she may have been alive today. Harm reduction is not the same as 'some' harm reduction. One cannot pick and choose which drug users are going to be helped. Harm reduction means reducing as much of the harm associated with all drug use (both legal and illegal) as is humanly possible. This does not just mean advice or education on 'safer' drug practices but also means providing the facilities and support necessary to help all drug users (Williamson 1997:70–73).

A practical approach to drug education includes the teachings of a 'harm-reduction' perspective. Rosenbaum (1996:17) maintains that for various social, cultural and personal reasons, drug use (legal or illegal) will never be eliminated.

Thus educators must assume the existence and use of psychoactive substances, and concentrate on minimising the harmful effects. As Duncan (in Rosenbaum 1996:17) states, this approach may run contrary to that of traditional drug educators:

> Many health educators will be uncomfortable with this direction. They may see it as a surrender in the war on drugs. Others will see it as a refocusing of our efforts on what really matters for health education – the prevention of health problems. It is the proper role of health educators to help people live healthier lives and not to act as moral police.

Drug education should be based on realistic premises about drug use. Specific objectives and programmes should consider the fact that people are complicated, human behaviour is constantly changing. and adolescents are intelligent and critical. Programmes must address the needs of individuals within their social context and be as adaptable and open as the young people they need to educate (Rosenbaum 1996:17).

5.4 IMPLICATIONS OF THIS INVESTIGATION

5.4.1 Implications for the adolescent

The lack of formal scientific research regarding the nature and effects of Ecstasy (MDMA) has given rise to the impression amongst adolescents that Ecstasy is a generally safe or harmless drug. The absence of apparent immediate negative or debilitating effects of Ecstasy combined with the lack of information being taught to students in drug education programmes where other frequently encountered drugs are discussed, may encourage students not to question initial or subsequent use of MDMA (Elk 1996:355). According to Elk (1996:355), by excluding 'full' discussions of MDMA within such programmes, awareness of its potential dangers may be minimised if students view this drug not worthy of discussion or that it is of minimal risk or danger compared with other drugs that are included in the programme.

If anything, the lack of information about the use of MDMA should be portrayed to students as an even greater danger in itself. Although conclusive data remains insufficient, there are some general qualities and possible dangers inherent in using this drug that are suggested by the information gathered in some scientific as well as informal studies and surveys to date. Therefore. including discussion of some of the consistent data gathered thus far can only

help students to become more aware of the dangers of taking Ecstasy and possibly deter their initial or future use of it (Elk 1996:355).

This book lends prominence to the Ecstasy phenomenon and to a realisation of the harmful effects of Ecstasy in all domains of the adolescent's development which may include impaired ability to concentrate, learn and remember with resulting social, economic and personality deterioration as well as possible neurotoxicity such as the degeneration of neurons and the development of age-related cognitive impairment or senility. Awareness amongst parents, teachers and adolescents alike of the dangers of Ecstasy is imperative.

Adolescents must also understand the legal consequences of Ecstasy use in South Africa. With increasing methods of detection such as school drug testing and escalating 'zero tolerance' efforts, drug education must recognise illegality as a risk factor extending well beyond the physical effects of drug use (Rosenbaum 1999:13). There are real, lasting consequences of using drugs and being caught at school, at a Rave or at a club. These include expulsion from school, police arrest, a criminal record for possession of an illegal substance and a long-standing stigma.

Figure 5.3 Understand the legal consequences of Ecstasy use and methods of detection

5.4.2 Implications for the parents

Every family has expectations of behaviour that are determined by values. Adolescents who decide not to use drugs often make this decision because they have strong beliefs against the use of these substances. These beliefs are based on a value system. Social, family and religious values give young people reasons to say no and help them stick to their decisions (http://1998:1). Parents as the primary educators must realise their duty to serve as models representing good values and habits for the benefit of their children. Children learn by example as well as by teaching, thus parents should ensure that their actions reflect the standards of honesty, integrity, responsibility and fairness that are expected of their children.

Parents will have to become increasingly sensitive to the mental welfare and emotional stability of their adolescent children. They will have to ensure that from an early age their children acquire habits that are conducive to a healthy life style where work, rest and recreation are concerned. Parents will also have to ensure that their discipline is appropriate to the developmental level of the adolescent, that the home and the family offer the adolescent a haven of security, and that the child is not unnecessarily burdened with stress owing to the unrealistic expectations, status consciousness or ambitions of his parents (Kruger 1992:244).

Many parents hesitate to discuss drug use with their children. Some believe that their children could not become involved in illegal substances. Others delay because they do not know what to say or how to say it, or are afraid of putting ideas into their children's heads. Parents should not wait until they think that their child has a problem (http://1998:5). Many adolescents say that they had used Ecstasy (MDMA) for at least two years before their parents knew about it. Parents must begin early to talk about drugs and keep the lines of communication open. They should not be afraid to admit that they do not have all the answers. Parents should let their children know that they are concerned and that they can work together to find the answers.

Nelson, Intner and Lott (1993:119) offer the following advice to parents on talking to their children about drugs:

> You cannot stop your kids from trying drugs, or even from abusing them, if that is what they decide to do. What you can do is practice honesty, equip your kids with accurate information about drugs, keep the doors of communication open by letting your kids know your love for them is unconditional, and remain non-judgemental by creating a relationship where your kids feel safe to talk to you and get your input about their choices. When you abstain from judgements, your children know that if they get into

an abusive situation with their own experimentation, you will be there with honesty, love and support that is empowering instead of disabling.

5.4.3 Implications for the teacher

The teacher will have to assume the responsibility of accompanying the adolescent to a mentally healthy maturity. Teachers will have to familiarise themselves with the signs as well as the consequences and methods of

Figure 5.4 Sound adolescent–parent relations are vital

handling drug use and abuse and attempt to incorporate drug education into their subject area. In particular, the teacher as the mentor of the adolescent will have to improve the educational guidance s/he offers the pupils in her/his classes. In addition s/he will have to demonstrate an active interest in the various aspects of her/his pupils' total make-up, including their personality, self-concept, values, interests and abilities.

5.4.4 Implications for the schools

Schools will have to assume the responsibility of being involved in addressing the escalating drug problem and implementing drug education and prevention programmes in their schools, despite the risk of loss of prospective pupils as a result of certain parents thinking that there is a drug problem in that school and sending their children elsewhere. Parents need to send their children to a school that admits that there is a possibility of them being exposed to drugs in their high school years and explains that this is what the school intends to do about it, rather than to a school that repudiates the problem. Schools need to support youth and peer counsellors and well-designed, up-to-date youth programmes such as Teenagers Against Drug Abuse (TADA) which provide the children with the tools they need to resist drugs and offer positive alternatives to drug use. Drug education needs to become a regular part of the curriculum and be available to children in every grade.

5.4.5 Implications for the future

Some disturbing trends (*Partnership Attitude Tracking Study* 1999) among children aged nine to twelve are the following:

- They are less likely to see drug use as harmful.
- They are less likely to receive anti-drug information.
- They are more likely to regard drug use as acceptable.
- They are more likely to report having friends who use drugs.

The normalisation of illegal drugs among adolescents appears to be trickling down to younger children. Society places an enormous emphasis on the gratification of every need. Advertising teaches that pain, both physical and mental, can be handled by consuming certain products (Pipher 1994:202). Drugs are commonly used. For a headache there is Panado. For depression there is Prozac. For temporary insomnia there is Nytol. For anxiety there is Biral. A wife hears of her husband's death and she is given Valium to calm her down. A man who is 'stressed out' from work pours himself an alcoholic drink to relax. A parent smokes to unwind. One student goes to a Rave and takes Ecstasy as a

stress release while another takes it as a sociability enhancer. Modern-day culture has developed a 'feel good' mentality. Even in the context of schools, today's children have witnessed the 'Ritalinisation' of difficult-to-manage pupils (Rosenbaum 1999:07). In this context, some psychologists argue that experimentation with mind-altering substances, legal or illegal, might instead be defined as normal, given the nature of the present culture (Rosenbaum 1999:7).

With children less resistant to drugs as they enter adolescence, the implications for the future are not encouraging.

5.5 MATTERS REQUIRING FURTHER RESEARCH

It may be worthwhile to carry out further investigations regarding MDMA use on a much larger scale. The following should be emphasised:

- The importance of controlled studies. Although it is possible to use Ecstasy (MDMA) in a controlled and responsible way, concern is expressed that the number of Ecstasy pills consumed by young people in some cases greatly exceeds the 'advisable' normal human dosage.
- Rendering assistance in the school context to adolescents who are exposed to, or who have used Ecstasy or other drugs.
- The effects of continued Ecstasy use on the process whereby the adolescent's identity and self-concept are formed.
- The effects of continued or prolonged Ecstasy use on academic achievement.
- The influence of religious affiliations as a buffer against potential Ecstasy use.
- The connection between prolonged Ecstasy use and self-actualisation .

CONCLUSION

Despite intensified prohibition efforts by the police and government, illegal drugs are so easily available in most communities that one wonders if their easy availability is not advertisement enough. Logical reasoning may suggest that the more readily available a drug is to a person, the more likely it is that that person will consume the drug. Similarly, if the drug is not available, then

this is a barrier to consumption (Parker 1995:10). Unfortunately, the increase in different types and use of drugs has not been accompanied by an adequate increase in people's knowledge of these substances. Most people have very little understanding of the potent substances they use for recreational purposes. The media, as well as professionals in the field, often do not adequately contribute to the public's information and have sometimes added to the public's confusion (Beck & Morgan 1986:299).

The occasional media portrayal of Ecstasy as a short-term trend that will soon die out only to be to be replaced with another is most likely inaccurate. The simple way in which Ecstasy is generally taken and its dual stimulant and emotional effects will continue 'luring' new users. A danger in this regard is there are potentially severe health risks associated with MDMA and probable contra-indications. This is especially true with repeated use of high doses amongst many ravers which may lead to acute chronic medical and psychological problems. Unfortunately, present knowledge about MDMA is quite limited. Most of the available information to date has been acquired though uncontrolled clinical trials and descriptive reports, therefore research is greatly needed to determine the potential benefits and risks of a substance which has established itself in the Rave culture. It is imperative that drug counsellors and educators learn about the different recreational drugs and the unique effects of each drug.

In this book, an effort was made to lend prominence to recreational Ecstasy (MDMA) use in the period of late adolescence including school-going adolescents and university and technikon students. The author is hopeful that this book will make a contribution to the benefit of its area of inquiry, and will create an awareness amongst educators, namely parents, teachers, guidance counsellors and psychologists, of the 'E' in Rave. Nevertheless, mere awareness and identification of Ecstasy use will be meaningless activities unless they lead to prevention and assistance. (See list of relevant contact numbers.)

It is fitting therefore, to conclude this work with the words of Roger Waters (in Granquist 1992:02):

> And then the alien anthropologists – Admitted they were still perplexed – But on eliminating every other reason – For our sad demise – They logged the only explanation left – This species has amused itself to death.

5.6.1 List of relevant contact numbers

KWAZULU-NATAL

Prevention, training and community development services
(SANCA) (Durban)

Tel: (031) 303-2202 Fax: (031) 303-1938
e-mail: antidrug@dbn.lia.net

Penthouse Out-patient Clinic (Morningside)
Tel: (031) 303-2202 Fax: (031) 303-1938

Lulama Treatment Centre (Berea)
Tel: (031) 202-2241 Fax: (031) 201-4643
e-mail: lulama@mweb.co.za

Warman House
Tel: (031) 202-2274 Fax: (031) 201-4643

South African Narcotics Bureau (SANAB)
Tel: (031) 368-4082

Lifeline 24-hour Emergency Counselling
Tel: (031) 312-2323

SANCA: Alcohol and Drug Centre (Pietermaritzburg)
Tel: (033) 345-4173 Fax: (033) 342-4819

SANCA: Zululand Alcohol and Drug Help Centre (Empangeni)
Tel: (035) 772-3201 Fax: (035) 772-3290

SANCA: Newcastle Alcohol and Drug Centre (Newcastle)
Tel: (03431) 23-641 Cell tel: 082 7411-729

MPUMALANGA

SANCA: Witbank Alcohol and Drug Help Centre (Witbank)
Tel: (013) 656-2370/1 Fax: (013) 656-4609
e-mail: sancawit@mweb.co.za

Lowveld Alcohol and Drug Help Centre (Nelspruit)
Tel: (013) 752-4376, (013) 755-2710 Fax: (013) 752-5099

GAUTENG

SANCA: Alcohol and Drug Centres
Tel: (011) 726-4210

Houghton House Recovery Centre
Tel: (011) 728-0850

Lifeline 24-hour Emergency Counselling
Tel: (011) 728-1347

Horizon Alcohol and Drug Centre (Boksburg)
Tel: (011) 917-5015/6/7/8 Fax: (011) 917-1106

Phoenix House (Boksburg)
Tel: (011) 892-0875/6/7/8 Fax: (011) 892-0874

SANCA: Alcohol and Drug Centre (Central Rand) (Johannesburg)
Tel: (011) 836-2460 Fax: (011) – 836 2461

Tough Love (Randburg)
Tel: (011) 886-3344 Fax: (011) 886-5775

SANCA: Alcohol and Drug Centre (West Rand)
Tel: (011) 472-7707 Fax: (011) 472-7744

SANCA: Alcohol and Drug Centre (Pretoria)
Tel: (012) 542-1121/2/3/4 Fax: (012) 542-3030
Web page: www.sanca-pta.co.za e-mail: info@sanca-pta.co.za

SANCA: Alcohol and Drug Centre (Eersterust)
Tel: (012) 806-7535; 806-9991 Fax: (012) 806-6002

Sitara Alcohol and Drug Clinic (Laudium)
Tel: (012) 374-2100; 374-3002 Fax: (012) 374-3942

Vaal Triangle Alcohol and Drug Help Centre (Vanderbijlpark)
Tel: (016) 933 2055 Fax: (016) 981-3559

NORTH WEST

SANCA: (Klerksdorp)
Tel: (018) 464-2008 Fax: (018) 464-4742

Sanpark Community Support Centre (Klerksdorp)
Tel: (018) 462-4568 Fax: (018) 464-4742
Cellular tel: 082 933 1105 e-mail: psycure@lantic.co.za

Aurora Alcohol and Drug Centre (Bloemfontein)
Tel: (051) 447-7271/5; 447-4111 Fax: (051) 447-4225
e-mail: aurorasentrum@xsinet.co.za

FREE STATE

Goldfields Alcohol and Drug Centre (Welkom) (SANCA)
Tel: (057) 352-5444 Fax: (057) 352-3186

Sasolburg Alcohol and Drug Centre (Sasolburg)
Tel: (016) 976-2051 Fax: (016) 976-2051

WESTERN CAPE

Bridges
Tel: (021) 852-6065 Fax: (021) 852-6066
e-mail: sfisher@mweb.co.za

SANCA: Western Cape (Bellville)
Tel: (021) 945-4080/1 Fax: (021) 945-4082
e-mail: sancawc@mweb.co.za

Cape Town Drug Counselling Centre (Observatory)
Tel: (021) 447-8026 Fax: (021) 447-8818
e-mail: ctdcc@iafrica.com

Paarl Alcohol and Drug Centre (Paarl)
Tel: (021) 872-5050 Fax: (021) 872-5050

Helderberg Against Dependence (Somerset West)
Tel: (021) 852-4820

Tygerberg Alcohol and Drug Centre (Stikland)
Tel: (021) 919-9557/8 Fax: (021) 997-383

Mitchells Plain Alcohol and Drug Centre (Mitchells Plain)
Tel: (021) 397-4617 Fax: (021) 397-4617

George Alcohol and Drug Centre (George)
Tel: (044) 884- 0674

Knysna Alcohol and Drug Centre (Knysna)
Tel: (044) 382-5260

Mossel Bay Alcohol and Drug Centre (Hartenbos)
Tel: (0446) 911-463

EASTERN CAPE

SANCA: Central Eastern Cape (East London)
Tel: (043) 722-1210 Fax: (043) 743-6846
Cell tel: 082 2020 191 e-mail: sancaec@iafrica.com

Eureka After Care Home (East London)
Tel: (043) 722-1287

Prevention and Treatment (East London)
Tel: (043) 743-4350/1

Prevention and Treatment (Grahamstown)
Tel: (046) 622-9909 Fax: (046) 622-2580

Prevention and Treatment (Fort Beaufort)
Tel: (046) 645-3187

SANCA: Alcohol and Drug Help Centre (Port Elizabeth)
Tel: (041) 453-6021 Fax: (041) 451-1704

NORTHERN CAPE

SANCA: Northern Cape Alcohol and Drug Centre (Kimberley)
Tel: (053) 831-1699 Fax: (053) 832-5216

APPENDIX 1

THE ECSTASY EXPERIENCE

ECSTASY, SORTED AND ON ONE

I held the white small tablet in my hand. I don't know what I had really expected, something bigger perhaps.

'Are you sure, I mean to say, it looks like a Panadol to me?'

'Nah, its about right,' Tony confidently replied.

'Hope so,' I said with adventurous expectation ...

'Come on,' said Tony, 'let's do this proper, I'll get some water to down them with, it takes about half an hour, you know.'...

Armed with our bottles of still, designer mineral water we made our way to a balcony overlooking the main dance floor. There seemed to be as many people there as down below, most of them already drenched in sweat and dancing. I didn't want to sit down or just stand around, I needed to be part of what was going on ...

'Look, I know you don't need any encouragement,' Tony shouted, 'it happens quicker if you dance it in.'

'You what?' I shouted hardly having heard what Tony had said. He repeated himself ... stressing that an invigorated circulation assisted the flow of the chemical in the blood stream.

Maybe, but I had not even swallowed it yet. No point in hanging around though, here goes, I thought, five minutes past midnight, welcome to a glamorous new experience. I put the whole tablet in my mouth, bit it in half and immediately caught an incredibly bitter explosion on my tongue, I instinctively took a mouthful of water and swalllowed down. Tony saw me grimace and laughed, 'Don't worry, they're meant to be like that ... you've got to experience everything it's got to offer including the taste!'

Tony downed his pill and we both started dancing furiously. The adrenaline buzz was amazing, every minute I tried to dance faster desperately trying to detect the first noticeable sign that something was working. Everyone

around us was caught up in the music but at the same time there was a great feeling that everyone knew everyone, what I mean is that everyone was smiling and welcoming. I smiled back at everyone, we all cheered together, danced as one, lifted our arms together, we were all friends together. Outside of the club we might have had nothing in common but in there it was pretty obvious straight away that we had a common purpose, to enjoy ourselves and celebrate the incredible music. After about fifteen minutes I told Tony that I thought it was kicking in. 'No,' he said, 'not yet, you'll really know when it does...'

I reluctantly followed him and we tried to make our way through the frenzied main dance floor, there were people just everywhere dancing fierce and furiously, smiling radiantly and having the time of their lives. I carelessly bumped into a lad ... he turned around, smiled at me and mouthed in a friendly manner words to the effect, 'All right mate?' I smiled back, he shook my hand and said, 'have a nice one' as I went passed him. It was becoming obvious that everyone was here to enjoy themselves and there was nothing that was going to spoil that ...

We decided to go to the toilets to fill up our already depleted water bottles, agreeing that neither of us was going to pay ... for half a litre of water ... We waited for what seemed an age in the crowded but well ordered toilets. Everyone seemed to have the same idea, they were all filling up their water bottles, washing their faces and some of them were pouring bottles of water over their heads. The urinals were all but deserted but there was a huge queue for the cubicles. When eventually one of these opened, two lads came out and another two disappeared in. I just looked at Tony with a bemused look. Tony grinned and explained.

'No, it's not like that, not that there is anything wrong with that, it's not really that type of place, they're just going in to get sorted or to do billy or charlie.'

'What?' I quietly enquired trying not to be overheard or to sound too uncool. Tony explained they were either dealing or sniffing amphetamines or cocaine ...

I wanted to talk to Tony but a wave of nausea swept across me. I didn't feel in control any more, I wanted to get off and felt the room spin just like when I'd had too much to drink. What had I let myself in for? I didn't like it and there was nothing I could do about it. 'Keep in control, keep in control,' I kept repeating to myself as I stood trying not to draw attention to my agony. I'd thought there was nothing that could possibly go wrong and there I was on my first pill and completely out of my depth, I wish that I had not been so stupid, what the hell was I doing playing around with drugs. Somehow I managed to ride the cerebral ferris wheel and stay on. Tony put his hand on my shoulder

and said, 'It'll be all right, it happens to some people but these are really strong though, perhaps we should have just started off with a half.'

Before he had finished talking the ride was over and I felt a huge wave of euphoria coming over me. It was all right. I felt all right, well a lot more than all right, I couldn't express just how all right I felt, I just put my arm around Tony and told him how wonderful I thought he was. He reassuringly patted me back and said, 'Welcome to planet E!'

Planet E, planet E, planet E, if this is what planet E is like, well I think I'll stay here, I thought! It seemed so right, so much fun. I couldn't remember feeling so relaxed and so happy about everything, everything seemed right and okay.

Tony had a huge grin on his face, he leant across and said, 'It's brilliant, just brilliant isn't it! Before we go back dancing though, I know that at the moment you feel that there don't have to be any rules about anyhing because everything is all right but these are the rules. I should have told you earlier but I think you know most of them anyway. The first is to enjoy yourself. The second is to drink lots of water and the third is to take regular breaks when I tell you to . . .'

I heard everything he said, I heard it all so clearly whereas before I'd come up on this stuff it was a struggle to hear anything above the beautiful music. Now everything looked and sounded clearer. I took it all in and agreed if he said there had to be rules, well rules there were. Everything was starting to go faster and and get better, 'I've got to go and dance,' I shouted . . .

There were people dancing everywhere. In the corridors, by the toilets, by the bars and literally on the tables and chairs. Everyone was weaving to the beat that pounded at 130 to 140 beats per minute. Occasionally the music would stop or slow for five or ten seconds and we were all bathed in a sweeping white light which everyone saluted religiously with their hands in the air, palms outstretched . . .

There was no doubt whatsoever, I was having a brilliant time. An absolutely brilliant time. I hadn't felt like this before . . . it was hard to describe . . . better than scoring that important goal, going out with that special girl. The throbbing beats mesmerised and entranced me. Everyone was my friend and my ego was something which I had happily left at home. There was a young lad dancing furiously in front of me, probably sixteen . . . he's got huge, big, black pupils which seem to have outgrown his corneas . . . he smiles at me, I smile back and it's as if we've been friends for life, as we both acknowledge through our dancing exactly how wonderful the feeling is.

Tony dragged me off the dance floor after about two minutes, well, it seemed about two minutes but I checked my watch and it was one forty already. We must have been dancing for well over an hour. I was soaking wet and my teeth would not stop grinding .

'Have one of these,' Tony passed me a chewing gum, 'it'll help your jaws.'

We sat down on a slightly raised wall with our feet off the floor. Within a few seconds we were swaying our feet in rhythm with the music. All of my senses of perception were dramatically increased. Everything that caught my attention was the source of an overly inquisitive fascination. I found myself talking about literally everything that came flooding into my head. I probably sounded like a racing commentator but I recognised a child like innocence come flooding back as my barriers dropped and I had an overriding urge to tell the truth about absolutely everything. It was truly amazing and I felt a cleansing tide, as wave after wave of euphoria swept over me. 'Thanks mate,' I said, trying hard to elaborate on my understatement, 'this is the best fun I have had in ages ...'

We filled our water bottles again. I looked at myself in the mirrors and I thought that I looked about ten years younger. Not only did I feel seventeen again, I was convinced that I looked it, my skin was radiant and healthy, my eyes were huge ... We danced for another two or three hours. Gradually I noticed that the effect was wearing off and that the once heaving dance floor was now more sparsely populated ... the music was getting distinctively mellower. Warm and orange is how I think I described it ...

We decided to leave just after five o'clock ... Outside, I'd never seen anywhere so busy at five o'clock. There were people, cars and taxis all over the place. Everybody looked jaded and drained. Girls ... shivered in the crisp morning sun. There was a general air of calm presiding over the sea of sodden shirts and drowned haircuts as groups sat around against the walls chatting, smoking and taking in the early morning breeze which intermittently smelt of cannabis ...

APPENDIX II

DANCESAFE – HARM-REDUCTION INFORMATION

(http://www.dancesafe.org) – Harm-reduction information.
Promoting health and safety within the Rave and nightclub community

Watch out for heat-stroke

Over 100 people have died after taking Ecstasy at Rave parties. Why? When you take Ecstasy (or any stimulant drug) your body temperature rises. When you take Ecstasy in a hot place (like a Rave) your body temperature rises even more. When you take Ecstasy in a hot place and start dancing energetically, your temperature rises still more. With body temperatures raised to these very high levels there is a risk of developing heat-stroke.

When your body overheats you lose fluid. Some ravers lose pints and pints of fluid when dancing on 'E' in hot places. At a crowded indoor Rave you could lose up to 6 pints in 6 hours. These fluids must be replaced.

What can you do to prevent heat-stroke?

1 As a rough guide, you should be looking to drink about a pint of water every hour (2–4 cups). Sip water slowly rather than drinking a lot all at once, as this can be dangerous.
2 Try and eat something salty or drink juice or isotonic sport drinks like Energade. This will replenish your body's electrolytes and prevent hyponatraemia (water toxicity).
3 Take breaks from dancing and allow your body to cool down. Chill out areas are perfect for this.
4 Wear loose fitting clothes and do not wear a hat. Wearing a hat keeps the heat in.

Warning signs of dehydration and possible heat-stroke

1 Failure to sweat.
2 Cramps in the legs, arms and back.
3 Giddiness, dizziness, headache, fatigue.
4 Vomiting.
5 Fainting or loss of consciousness.
6 Suddenly feeling really tired, irritable and confused.

If any of these things happen, stop dancing, drink some water and chill out immediately.

BUT DO NOT DRINK TOO MUCH WATER.

There have been a few deaths reported from people drinking too much water while at a Rave. This is extremely rare. However, drinking 2 to 4 cups an hour when dancing is about the right amount. You should also try to eat something salty (not always easy if you have taken a stimulant drug) or drink fruit juice or a sports drink. Remember water is an antidote to dehydration NOT Ecstasy.

What if someone collapses while dancing?

1 Call an ambulance.
2 Get the person to as cool a place as possible. This might mean taking him or her outside.
3 Drench him or her with water (as cold as possible) using any means you can. Increase the cooling-down process by fanning the person with anything that is handy. You are looking to get the body temperature down to 38,9 °C or 102 °F. Once the temperature is down to this level the person should be wrapped in a warm dry blanket. The temperature should not be allowed to fall much below 38,9 °C or other serious consequences might develop.
4 When the ambulance comes, tell them what the person has taken (if you know) and that you think it is heat-stroke.
5 If the person regains consciousness make her or him drink water with some salt in it. Energade or other sports drink are ideal. At this point the person might start sweating again. This is a good sign.
6 The person should be taken to the hospital for observation and proper treatment.

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