

The Potential Dangers of Using MDMA for Psychotherapy

Andrew C. Parrott, Ph.D.^a

Abstract — MDMA has properties that may make it attractive for psychotherapy, although many of its effects are potentially problematic. These contrasting effects will be critically reviewed in order to assess whether MDMA could be safe for clinical usage. Early studies from the 1980s noted that MDMA was an entactogen, engendering feelings of love and warmth. However, negative experiences can also occur with MDMA since it is not selective in the thoughts or emotions it releases. This unpredictability in the psychological material released is similar to another serotonergic drug, LSD. Acute MDMA has powerful neurohormonal effects, increasing cortisol, oxytocin, testosterone, and other hormone levels. The release of oxytocin may facilitate psychotherapy, whereas cortisol may increase stress and be counterproductive. MDMA administration is followed by a period of neurochemical recovery, when low serotonin levels are often accompanied by lethargy and depression. Regular usage can also lead to serotonergic neurotoxicity, memory problems, and other psychobiological problems. Proponents of MDMA-assisted therapy state that it should only be used for reactive disorders (such as PTSD) since it can exacerbate distress in those with a prior psychiatric history. Overall, many issues need to be considered when debating the relative benefits and dangers of using MDMA for psychotherapy.

Keywords — empathy, MDMA, mood, neurohormone, psychotherapy, serotonin, stress

HISTORICAL INTRODUCTION AND BRIEF REVIEW OF RECREATIONAL ECSTASY/MDMA

Alexander Shulgin was a crucial figure in early MDMA research. He described its subjective effects as positive and life-affirming (Shulgin 1986), and suggested to therapist colleagues that it might be useful as a drug adjunct for psychotherapy. This led to informal studies into this novel “entactogenic” drug, which helped the individual get in touch with their true feelings (Metzner & Adamson 2001). These therapeutic experiences were described by Greer and Tolbert (1986), and this report remains a key paper in this field. Crucially, they described both the

positive and negative experiences of their 29 clients, who were mainly colleagues, personal friends, or informal referrals from other psychotherapists. For each session, the informed volunteer was administered an oral dose of 75–150 mg MDMA, followed by a smaller successive dose to prolong the experiential session. Some of the findings from these and subsequent therapeutic studies are noted below.

In 1986, MDMA was categorized as an illegal drug, and therapeutic trials were stopped for a period of time. Around this time, MDMA was being increasingly used as a recreational drug. Peroutka et al. (1988) described the experiences of American MDMA users, who could be seen going around their college campus in joyful groups, holding hands and smiling (note: this was the “pre-rave” period). In their interviews with these early MDMA users, they reported that whereas many first-year students liked the drug, second- and third-year students tended not to, since with repeated use the beneficial effects lessened and the adverse effects increased. Solowij et al.

^aProfessor of Psychology, Department of Psychology, Swansea University, Swansea, Wales, UK; Adjunct Professor of Psychopharmacology, Centre for Human Psychopharmacology, Swinburne University, Melbourne, Australia.

Please address correspondence to Andrew C. Parrott, Department of Psychology, Swansea University, Swansea, SA2 8PP, Wales, UK; email: a.c.parrott@swansea.ac.uk

(1992) described a similar investigation of 100 Australian MDMA users from this early period. In the U.K., we used standardized mood assessment measures to empirically compare the subjective effects of MDMA with other recreational drugs. We found: “Polydrug users report that its mood effects to be generally intermediate between those of amphetamine and LSD, although certain of its mood consequences are more unique” (Parrott & Yeomans 1995). Hence, in Davison and Parrott (1997), we stated that 100% of a small sample of recreational users reported feeling happy and exhilarated, warm and friendly. The predominant impression was of a very positive drug profile although, even in those early studies, some negative consequences were apparent. Hence, five of the 20 participants in Davison and Parrott (1997) reported having had an unpleasant drug reaction, with some of these adverse reactions being quite pronounced.

Subsequent research has found that MDMA is associated with various deficits in memory and higher cognition (Curran & Travill 1997; Degenhardt & Hall 2009; Fox et al. 2001; 2002; Halpern et al. 2004; McCann et al. 2000; Parrott 2001; Parrott & Lasky 1998; Parrott et al. 2001; Parrott et al. 2004; Rodgers et al. 2003; 2006; Verkes et al. 2001; Wareing et al. 2000). Other drug-related problems have included changes in sleep (McCann et al. 2007; Jones et al. 2008), reduced immunocompetence (Connor 2004), altered pain thresholds (O’Regan & Clow 2004), depression and other forms of psychiatric distress (Schifano 2000; MacInnes et al. 2001; Soar et al. 2001), occupational problems (Topp et al. 1999), neurohormonal changes (Parrott 2009; Parrott et al. in press), reduced happiness and greater everyday stress (Scholey et al. 2011). In a recent review of this literature (Parrott 2013a), I debated the relationship between these functional deficits and the structural changes to the serotonergic neurotransmitter system found with MDMA. Several neuroimaging studies have found evidence for “serotonin neurotoxicity” in abstinent MDMA users, with a reduction in SERT markers for this important modulatory neurotransmitter (Kish et al. 2010; Cowan 2007). For many years, there has been an active debate around the meaning of these changes. In one recent review, Benningfield and Cowan (2013) concluded that MDMA was a persistent serotonergic neurotoxin for humans. In another review, Biezonki and Meyer (2011) similarly concluded: “Given the plethora of evidence showing the 5-HT and SERT-depleting effects of MDMA, this substance can certainly be considered ‘neurotoxic’ in terms of causing serotonergic dysfunction.”

In summary, in the past 30 years there has been a gradual accumulation of scientific evidence, showing that recreational ecstasy/MDMA can be damaging for humans. Furthermore the deficits are not an artifact of other co-factors. In a comprehensive review (Parrott 2006), I examined many potential co-factors, including the use of cannabis and other recreational drugs, and

concluded that the deficits mainly reflected cumulative ecstasy/MDMA use, with other psychoactive drugs contributing to the adverse profiles. In the most comprehensive of the neuroimaging studies, Kish et al. (2010) similarly concluded that serotonergic deficits of recreational MDMA users remained present, after controlling for “every potential confound we could address.” It is, however, important to note that the psychobiological effects of MDMA are often modulated by the environmental conditions (Parrott 2004; 2006). This may be especially pertinent here, since the key paper on MDMA and psychotherapy similarly noted that the main factor for successful therapy was a supportive environment (Greer & Tolbert 1986). In the next section, I will review the immediate effects of MDMA on mood states. This will be followed by a section outlining the post-MDMA recovery period; then a discussion about the types of clinical disorder which might be suitable for drug-assisted psychotherapy; and finally, a general overview.

IMMEDIATE EFFECTS OF MDMA

MDMA administration induces neurotransmitter activation across the main neural pathways, including serotonin, dopamine, noradrenaline, and others (Green et al. 2003). This general neurochemical activation means that MDMA can induce a wide range of mood changes (Baylen & Rosenberg 2006; Dumont & Verkes 2006; Parrott et al. 2011; Liechti et al. 2001). In a medical setting, Liechti et al. (2001) found significant mood increases in every positive mood state being assessed, including emotional excitation and sensitivity. However, negative moods were also boosted by MDMA, including apprehensiveness anxiety, and fear-of-loss of thought control. This mixture of positive and negative mood changes also occurs with recreational ecstasy/MDMA users. Again, positive moods typically predominate, as in: “I felt very much in love with everyone around” (Cohen 1998); “Imagine the best feeling you have ever had and times it by ten.” . . . “Nerve endings are alive and just tingling all over the body” (Parrott 2010). However, the acute ecstasy/MDMA experience can sometimes be negative: “Out of control. Too much energy” (Cohen 1998); “Feel very hot or very cold” . . . “twitching or shaking of the leg” (Parrott 2010). Some recreational users also feel skeptical about their drug-induced experiences: “Is the feeling of happiness real or is it just from a pill” (Cohen 1998).

This mixture of positive and negative mood changes is also evident in the psychotherapeutic situation. Greer and Tolbert (1986) reported that in their overall group of 29 volunteers, 18 reported positive mood such as euphoria, while 16 reported less-desirable negative moods such as anxiety. Many psychotherapists have suggested that one of the key effects of MDMA is to stimulate the emergence

of deep-seated thoughts and feelings which are normally troubling for the individual. Their emergence is stimulated by MDMA, and this negative material can then be resolved via the professional guidance of the psychotherapist (Bouso 2001; Greer & Tolbert 1986). Thus, MDMA may help the client to get in touch with previously painful emotions or memories, and so facilitate their re-evaluation. However, if this is the main mode of operation for MDMA-assisted psychotherapy, then it does have potential dangers. The emergent material may be distressing and difficult to cope with. If the therapists are inexperienced, the dangers of a drug-induced abreaction are obvious. Even with experienced psychotherapists, they may still occur. Greer and Tolbert (1986) described two such cases. One of their participants experienced the re-emergence of previously distressing and disabling anxiety, which had first developed some years earlier. During their MDMA session, this material re-emerged, and they started feeling being overwhelmed by unwanted emotions. Furthermore, this anxiety continued for a period afterwards. Indeed, they needed an extended period of (non-drug) therapy afterwards to resolve the emergent problems. Another client developed some problems around appetite and eating following their MDMA-assisted therapy (Greer & Tolbert 1986). Appetite problems and food cravings have also been noted in recreational ecstasy/MDMA users (Schifano 2000; note: serotonin is involved in appetite control and feeding behavior).

POST-MDMA RECOVERY AND LONG-TERM CONSEQUENCES

The period of mood activation induced by acute MDMA is comparatively brief, typically around 5-6 hours. Afterwards, there is a period of neurochemical depletion, when feelings of anhedonia, lethargy, anger, and depression can develop (Curran & Travill 1997; Curran et al. 2004; Green et al. 2003; Greer & Tolbert 1986; Liechti et al. 2001; Parrott & Lasky 1998; Parrott et al. 2008). These adverse recovery phenomena have also been noted in controlled laboratory studies. Liechti et al. (2001) found some reports of feelings such as lack of energy, irritability, brooding, and bad dreams. They also noted a gender effect, with more adverse moods reported by women than men. In the psychotherapeutic situation, Greer and Tolbert (1986) similarly noted that "All subjects reported some undesirable experiences during or after their sessions." The short-term recovery phenomena included depression, anxiety, insomnia, and appetite reductions. Recreational ecstasy/MDMA users often refer to this period as the "midweek blues," with the levels of depression even reaching clinical levels in a minority of users (Curran & Travill 1997; Parrott & Lasky 1998). Other adverse recovery effects following MDMA can include disrupted

sleep (Jones et al. 2008), increased aggression (Curran et al. 2004), greater susceptibility to pain (O'Regan & Clow 2004), reduced appetite and food intake (Turner et al. 1998). Hence, there are numerous aspects of psychobiological well-being which would need to be monitored if MDMA were used in the therapeutic situation. Hopefully, these problems would not be too great in the therapeutic situation, since the dosage levels would be lower.

PSYCHIATRIC VULNERABILITY AND STIMULANT DRUGS

Greer and Tolbert (1986) warned against using MDMA with psychiatrically vulnerable individuals. They found clinical abreacons to MDMA in two of their nine clients with prior psychiatric episodes, and noted that: "There is an indication that MDMA may predispose people to a recurrence of previous psychological disabilities." This important limitation to the potential utility of MDMA has also been noted by one of the main proponents for MDMA-assisted psychotherapy, Rick Doblin. He has written: "MDMA assisted psychotherapy should initially be explored not in patients whose psychiatric symptoms originated with biological imbalances with possible genetic components. . . but rather in patients who need some assistance in process difficult emotions that have a deep seated component of fear and/or anxiety. Two of the main categories of patient who fit this description are people suffering from Post Traumatic Stress Disorder (PTSD), and people facing terminal illness" (Doblin 2002).

This important limitation to the utility of MDMA needs to be more widely acknowledged. Many of the popular articles about MDMA-assisted therapy, on television or in the press, fail to acknowledge these potential dangers. Many readers of these articles may believe that if a drug is made legally available by the government for psychotherapy, then it must be safe for personal or recreational use. This is not so, as discussed above. They may also see themselves as "self-medicating" their personal problems, in ways that many tobacco or cannabis users state that they are "self-medicating" their everyday problems. Unfortunately, this belief is also mistaken. Although many of these drugs do provide temporary relief, in the longer term, their repeated use tends to *increase* rather than reduce everyday stress (Parrott 1999; 2008). Hence, taking up tobacco smoking leads to more daily stress, while quitting smoking leads to reduced daily stress (Cohen & Lichtenstein 1990; Parrott & Murphy 2012). In a similar way, regular ecstasy/MDMA users report more psychiatric symptoms (MacInnes et al. 2000), while quitting-ecstasy/MDMA leads to improved psychiatric functioning in the majority of recreational users (Verheyden et al. 2003). Brière et al. (2012) found that teenage schoolchildren who started using MDMA reported

significantly more depression one year later. In another prospective study, Turner et al. (2013) found that quitting ecstasy/MDMA led to significantly reduced feelings of depression 15 months later. The psychobiological reasons underlying why stimulant drug use can increase everyday distress and heighten psychiatric problems are covered more fully elsewhere (Parrott 2007; 2008; Stone 1973). It may also be noted that these drug-induced problems can be most pronounced in those with prior psychiatric susceptibilities (Caton et al. 2000; MacInnes et al. 2000; Parrott 2006; see also Dittrich 1994, cited in Vollenweider et al. 1998).

OTHER ISSUES FOR CONSIDERATION

There are other issues which need to be examined and debated. Greer and Tolbert (1986; 1990) suggested that one session with MDMA would be sufficient to engender enduring gains. This seems very optimistic. My own belief is that any drug-related gains may last for a few weeks or months, but any enduring changes can only occur through the psychotherapeutic element. In this respect, Greer and Tolbert (1986) noted that while the drug was seen as an aid for therapy, they explicitly suggested that the therapeutic element was the core element. Furthermore, any therapeutic gains will typically take a number of sessions over an extended time frame. Mithoefer et al. (2011) empirically investigated the effects of MDMA-assisted psychotherapy, but crucially they embedded the MDMA-assisted sessions, into a longer series of drug-free sessions; hence, the majority of sessions experienced by their PTSD clients were drug-free. This is probably important, since the effects of any single session are likely to be comparatively transitory. Mithoefer et al. (2011) noted that 19 of the 20 clients correctly guessed their drug condition, while the therapists were correct in all cases. The clinicians assessed each client using the post-traumatic stress disorder scale, and these therapist ratings indicated significantly better gains after MDMA than placebo. Each client also completed the Symptom Check List (SCL-90R) for psychiatric symptoms, although these findings were not described in the journal report. However, they have been provided by Rick Doblin (personal communication 2011). The ANOVA showed that there were no significant changes over time with the anxiety subscale, although both groups showed non-significant trends for reduced anxiety (the MDMA group reduced from 51.0 at baseline to 39.7 at 2 months; the placebo group reduced from 51.4 at baseline to 45.1 at 2 months). With the depression scale, there was a significant ANOVA time effect, while the ANOVA group effect was not significant. Hence, self-rated depression reduced over time in both groups, with these gains being slightly stronger in the MDMA-treated group (the MDMA group reduced from 52.4 to 38.5; the placebo group reduced from

49.5 to 42.1). Although these preliminary findings are useful, we await the full publication of the SCL-90R findings.

There are other issues which need to be mentioned, although they have been debated more fully in two earlier articles (Parrott 2007; 2013). For instance, one key question is the neurochemical model thought to underlie therapeutic improvement. Another is the need for a more detailed description of the type of interactive therapy needed to embed any drug-induced experiences into enduring neurocognitive cognitive models. For instance, it is unclear how a transitory acute-MDMA experience (lasting only a few hours) can produce any long-lasting changes in internal cognitions and beliefs. Again, the interpersonal therapy aspect is crucial for any long lasting gains, rather than a transitory drug effect. Another safety issue is the effects of MDMA on the HPA axis, and the many somatic changes it causes (Dumont & Verkes 2006; Parrott 2009; 2013a). There is also the issue of drug-dependent learning, where information learned during a particular drug state is best recalled under that same drug state.

There may also be potential legal issues if a powerful and unpredictable CNS stimulant such as MDMA were to be used for medical purposes. Two hypothetical scenarios were outlined in Parrott (2013b). The first was:

A Special Air Forces soldier is discharged from the army with Post-Traumatic Stress Disorder. His therapist attempts MDMA-assisted therapy, but the drug stimulates the re-emergence of unpleasant war experiences. It induces feelings of aggression, which the soldier manages to control while still in the clinic. However, later that evening he violently attacks a stranger in the street. Following his arrest, the lawyer argues that this aggressive act had been triggered by the MDMA-assisted therapy session (Parrott 2013b).

For some empirical descriptions of aggression induced by MDMA, see the ecstasy/MDMA review article entitled "Hug Drug or Thug Drug" by Reid et al. (2007). Other similar articles are listed in Parrott (2013b), including a psychiatric study by Rugani et al. (2012), who reported: "Psychosis with a high level of aggressiveness and violence constitutes an important 'side-effect' that surely runs counter to the expected entactogenic actions of ecstasy." The second hypothetical case from Parrott (2013b) is based around a female rape victim; this scenario is also based around the empirical evidence:

After the first MDMA-assisted therapy session, the client feels much better, but the gains do not endure over time. Following a second MDMA-assisted therapy session some time later, again there is a brief period of symptomatic relief. A third session is requested, but the therapist explains that this cannot be clinically recommended, since the gains were not enduring. The client now seeks out their own illicit supplies of ecstasy/MDMA. The only time she feels good is on MDMA, and she becomes a habitual user. However, with reducing efficacy and increasing mid-week blues, her chronic anxiety,

depression, and low self-esteem steadily worsen. She is hospitalized after an unsuccessful suicide attempt. The family discovers her diary, which is given to the lawyer. In both cases the therapist is sued, along with the pharmaceutical company which provided the MDMA (Parrott 2013b; see also Parrott in press).

When this paper was being reviewed, one of the external reviewers made an interesting comment. The reviewer was a drug abuse counselor in San Francisco, and the following comment is included with permission: "I have seen patients with previously diagnosed depression become worse after an MDMA 'session' for another reason—it worked TOO well, acutely, made them feel great or at least 'normal,' and then the crash make them feel all the worse than before. Could it be posited that this is a risk for both exacerbated depression and drug abuse—I want more of that."

FINAL OVERVIEW

MDMA is a unique type of drug with positive acute effects which led Alexander Shulgin to suggest that it might be useful for psychotherapy (Shulgin 1986). However, several issues need to be addressed before MDMA can be accepted as a safe co-drug for therapy. First, acute MDMA can stimulate the release of difficult feelings and memories,

which may be distressing. Second, the emergent material can be susceptible to environmental influences and this also makes the MDMA-induced experiences difficult to control. Hence, there may be clinical reactions to this powerful and unpredictable drug (Greer & Tolbert 1986; Parrott 2007). There is also the issue of neurochemical recovery afterwards, when negative moods tend to predominate. This period of negative cognitions may be counter-productive, especially in psychiatrically vulnerable clients, for instance those with predispositions to anxiety, depression, or psychosis. For example, it could increase the likelihood of suicide in those individuals with strong post-recovery feelings of depression. This is linked to the particular inadvisability of psychiatrically vulnerable individuals taking stimulant or psychedelic drugs (Dittrich et al. 1994). Finally, the main advocates for MDMA-assisted therapy are psychotherapists, who suggest that the most important aspect is always the *psychotherapy* element, and that MDMA may simply facilitate this process (Doblin 2002; Greer & Tolbert 1986). My own position is that it will always be far safer to undertake psychotherapy *without* using co-drugs. In selected cases MDMA might provide an initial boost, but it also has far too many potentially damaging effects for safe general usage. For enduring gains, cognitive restructuring via high-quality psychotherapy should always be the main element (Parrott 2008; in press).

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