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**Tatarsky, Andrew**

**COCAINE ABUSE AND PSYCHOLOGICAL FUNCTIONING: AN  
EXPLORATORY COMPARISON OF RECREATIONAL AND COMPULSIVE  
COCAINE USERS**

*City University of New York*

**PH.D. 1986**

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COCAINE ABUSE AND PSYCHOLOGICAL FUNCTIONING:  
AN EXPLORATORY COMPARISON OF  
RECREATIONAL AND COMPULSIVE COCAINE USERS

by

ANDREW TATARSKY

A dissertation submitted to the Graduate Faculty  
in Psychology in partial fulfillment of the  
requirements for the degree of Doctor of Philosophy,  
The City University of New York.

1986

c 1986

ANDREW TATARSKY

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This manuscript has been read and accepted for the Graduate Faculty in Psychology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

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4/25/86

Chair of Examining Committee

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## **Abstract**

### **COCAINE ABUSE AND PSYCHOLOGICAL FUNCTIONING: AN EXPLORATORY COMPARISON OF RECREATIONAL AND COMPULSIVE COCAINE USERS**

**by**

**Andrew Tatarsky**

**Adviser: Professor Herb Nechin**

This study investigated the relationship between cocaine use and psychological functioning. Descriptive group profiles of controlled-recreational, compulsive and quasi-compulsive cocaine users were generated and compared on demographic variables, quantitative and qualitative cocaine use variables, other drug use, psychosocial consequences of cocaine use, object relations and reality testing and psychiatric symptomatology. Object relations and reality testing impairment was assessed by the Bell Object Relations and Reality Testing Self-Report Inventory and psychiatric symptomatology was measured by the Symptom Checklist-90. Object relations subscale means from the recreational and compulsive cocaine user groups were also compared to three psychopathological and two normal criterion groups studied by Bell, Billington and Becker (1985a). Comparisons between the recreational and compulsive cocaine user groups yielded two distinct cocaine

use profiles which corresponded to previous descriptions of these use patterns. The psychological profile of the recreational user group was not significantly different from normal comparison groups while the compulsive user group profile was most similar to major affective disorder and neurotic character disorder groups. The quasi-compulsive user group appeared most similar to the compulsive user group in cocaine use and psychological impairment but had less intensity in both areas. These findings are most consistent with formulations by Spotts and Schontz (1975) regarding the personality of compulsive cocaine users. This study provides support for the theory that object relations impairment may constitute a psychological vulnerability to developing the compulsive cocaine use pattern.

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## Chapter I

### INTRODUCTION

Cocaine is a powerful central nervous system stimulant reputed by users to generate subjective feelings of euphoria, increased self confidence, physical stimulation and enhanced creative and intellectual abilities. Virtually since it was first isolated from the coca leaf in the 1850's, it has been the subject of almost heated controversy concerning its medical and, particularly, non-medical uses. Early on in its history, prominent figures in the medical community described cocaine as both a "wonder drug" (Freud, 1974a) and as the "third scourge of humanity" (following alcohol and morphine) (Byck, 1974). Today the issues concerning the medical uses of cocaine have been largely resolved. However, there are still significant gaps in our understanding of cocaine's abuse potential and the factors which contribute to compulsive-addictive patterns of cocaine use.

For most of the period since cocaine was criminalized in the United States in 1914, illicit nonmedical cocaine use was restricted to a small number of people. In the 1960's cocaine was "re-discovered" as a recreational drug by larger numbers of recreational drug users. Recreational use here refers to use motivated by a desire for relaxation and enjoyment or pleasure. But, in part due to cocaine's high price and limited availability, the use of

cocaine was largely restricted to the wealthy and "jet set" (Ashley, 1975).

Recent reports indicate that this is no longer the case and that there has been a dramatic increase in non-medical use of cocaine by Americans over the past 15 years (Adams & Durell, 1984). National surveys estimate that over 21 million Americans have tried cocaine (National Institute on Drug Abuse, 1983) and that the number of regular users of cocaine is over four million (Blanken, Adams, & Durell, in press). Cocaine use is also no longer confined to the wealthy but is currently being used by all segments of society. Cocaine users are just as likely to be found among the lower and middle classes as among the higher socio-economic groups (Gold & Washton, 1984; Washton & Tatarsky, 1983).

Until recently, a popular view of cocaine has generally been that it is a benign recreational drug with few, if any, adverse consequences and limited abuse potential, somewhat analagous to marijuana. This view has received support in the mass media as well as from prominent researchers in the field of drug abuse. If this view were true, the increased use of cocaine would not necessarily be a great cause for alarm. However, there have been a growing number of indicators which suggest that cocaine has a much greater abuse potential and is more generally debilitating to psychological, psychosocial and physical functioning than has been generally believed.

For example, between 1976 and 1982 there was more than a threefold increase in the rates of cocaine-related medical emergencies and cocaine-related deaths in the U.S. (Kozel, Crider, & Adams, 1982). More recent reports suggest that these upward trends are continuing (Adams & Durell, 1984). There has also been a large increase in the proportion of drug treatment program admissions with cocaine as their primary problem during this period and it has been suggested that these reports underestimate the problem because of sampling limitations (NIDA, 1983).

In spite of the growing evidence that cocaine can give rise to severe compulsive-addictive patterns of use, there is still little consensus in the field about the factors which contribute to their development. Recent reports from animal studies of the behavioral effects of cocaine have suggested that cocaine may have the greatest reinforcement potential and, thus, the greatest abuse potential of all psychoactive substances (Johanson, 1984). Contrary to the popular view, animal studies of the effects of cocaine on brain chemistry have begun to suggest that there is some physiological basis for addictive patterns of cocaine use (Verebey & Gold, Unpublished). In general, this is the direction that most of the current research in the field is going. It seems to me that the physiological consequences of chronic cocaine use are probably an important factor in the development of compulsive patterns of cocaine use. How-

ever, the physiological hypothesis does not have sufficient explanatory power to completely account for the development of addictive patterns of cocaine use and would need to be integrated with an understanding of the psychological factors which contribute to an individual's "vulnerability" to the addictive pull of cocaine. The need for a model which integrates the psychological and physiological aspects of cocaine addiction is primarily suggested by reports that some individuals are able to use cocaine in a controlled recreational fashion over long periods of time without experiencing significant negative consequences of their use or progressing to more debilitating addictive patterns of use (Siegel, 1984).

The literature on cocaine use patterns and effects, unfortunately does not provide a clear basis for an understanding of the role that psychological factors play in the development of cocaine addiction. This work has mainly focused on the "recreational" users or looked at acute effects of cocaine administration in the laboratory. Of the empirical studies of compulsive cocaine users that I am aware of, only two of them attempted to describe its subjects in terms of underlying psychopathology or personality characteristics which may have been involved with their cocaine abuse (Kleber & Gawin, 1984; Weiss, Marin, & Michael, 1983). The other studies made important contributions to the description of the cocaine abuse syndrome and the consequences of their

subjects' cocaine use but did not explore these other areas (Gold & Washton, 1984; Helfrich, Crowley, Atkinson & Post, 1983; Washton & Tatarsky, 1983).

Reports based upon case studies of individual cocaine abusers or anecdotal descriptions of cocaine abusers have been somewhat in agreement about the psychological factors which contribute to the individual's vulnerability to cocaine addiction. In general, they have suggested that compulsive cocaine abuse is related to deficits in ego-functioning (Resnick & Resnick, 1984; Spotts & Schontz, 1975). These reports have not been systematically controlled and have relied upon small numbers of subjects and, thus, have limited generalizability. However, they do suggest a theoretical direction which may be explored further.

This body of work largely provides clinical support for an ego-psychological theory of drug addiction which was first presented by Glover (14) in 1932 and has been expanded upon by many others since then. The theory suggests that compulsive drug use is related to ego-deficits in various areas which leave individuals vulnerable to using drugs for defensive and ego-supportive reasons.

The study is primarily an effort to provide empirical support for this theory. Controlled "recreational", "quasi-compulsive" and "compulsive" cocaine users were compared on objective measures of object relations,

reality-testing and psychiatric symptomatology. They were also compared on demographic, cocaine use, and psychosocial consequences of cocaine use in order to see how these variables distinguished these groups. Comprehensive behavioral and psychological profiles of each group were generated and have clinical significance. The object relations profile of the compulsive and recreational user groups was compared to object relations profiles of three pathological and two nonpathological non-drug using groups studied by another investigator (Bell, Billington and Becker, 1985a). These comparisons explored the relationship between psychological functioning of cocaine users and other known psychopathological groups. The design of the study may be seen as both an exploratory comparison of social-recreational and compulsive cocaine users, as well as an attempt to provide support for the hypothesis that compulsive cocaine use is related to underlying character psychopathology.

The larger hope of this work is to make a contribution to an understanding of the psychological aspects of cocaine addiction and, by implication, addictive disorders in general.

The next Chapter will be a critical review of the literature relevant to this study and its underlying theoretical rationale.

## Chapter II

### LITERATURE REVIEW

This overview of the relevant literature will begin with a brief description of the chemistry and pharmacology of cocaine. Several important early reports on cocaine use in humans will then be summarized for historical background. Information about the effects and consequences of cocaine comes from two sources: controlled laboratory investigations in which cocaine is systematically administered to volunteers and reports based upon interviews and observations of cocaine users in the "field" or in treatment. The contemporary literature on cocaine use will be presented in two sections corresponding to these sources of information. The final section on the cocaine literature will be a critical summary of this literature which attempts to outline clinical questions and issues needing further clarification.

#### Cocaine: The Substance, Pharmacology and Routes of Administration

In examining the effects of cocaine in humans it is important to bear in mind the following "dimensions of analysis" suggested by Grinspoon and Bakalar (1976). One is the physiological versus the psychological, two distinct components of the user's subjective experiences. Another distinction is between acute versus chronic intoxication. Jones (1984) points out that single doses

may have significantly different effects than chronic repeated administration of the drug. Changes in drug effects can result from interactions between neurochemical mechanisms and behavioral conditioning or learning, electrophysiological changes, possible alterations in neuronal receptor sites and pharmacokinetic mechanisms. Drug dosage must also be considered in understanding a drug's effect since different doses may lead to very different, if not opposite, effects. Other important considerations are route of administration, "set" and "setting" (Peterson, 1977). Set refers to the user's expectations and psychological state while setting refers to the physical setting, interpersonal-emotional climate, and the social-cultural context in which drug use is occurring.

#### The Substance

Cocaine is one of the alkaloids naturally occurring in the coca leaf (*Erythroxylum coca*). The coca plant has been cultivated in South America for thousands of years and has had a major cultural significance among the indigenous and Hispanic peoples of South America which persists today (Peterson, 1977). While the coca leaf contains numerous other alkaloids, cocaine accounts for from 50 to 90% of the alkaloid content.

The drug is designated chemically as 2-beta carbo-methoxy - 3 - beta - benzoxytropene. Pure cocaine base is a colorless, odorless transparent crystalline substance

almost insoluble in water which is the form that is most desirable for smoking because of its physical characteristics. This form is referred to as "free-base" cocaine by users. Cocaine hydrochloride is a white crystalline substance with a slightly bitter taste which is water soluble. As a result, this form is used in oral, intranasal and intravenous routes of administration.

Cocaine is legally scheduled as a Schedule II drug by the U.S. Food and Drug Administration. Schedule II drugs are defined as having "an accepted medical use with high potential for abuse resulting in psychological or physical dependence" (Phillips & Wynne, 1980, p. 126). It has two pharmacologically distinct actions: 1) as a local anesthetic with vasoconstricting properties, its accepted medical use, and, 2) as a powerful central and peripheral nervous system stimulant, the action for which it is used recreationally.

#### Pharmacology

Local effects: Cocaine is an effective local anesthetic when applied topically and injected near nerves (Byck & Van Dyke, 1977). It is also a rapid acting vasoconstrictor and, thus, limits bleeding during surgical procedures. It is still widely used in otolaryngology (the medical specialty dealing with ear and throat) and anesthesiology.

Central nervous system effects: Cocaine's most prominent systemic effects are on the CNS. The drug

effect begins at the cortex and is manifested in man in garrulousness, restlessness, excitement and a sense of well-being or euphoria (Byck, Jatlow, Barash, & Van Dyck, 1977; Freud, 1974a; Resnick, Kestenbaum, & Schwartz, 1977). These effects will be described in more detail in a later section on cocaine's psychoactive effects. Respiratory rate is also increased by direct action of cocaine on the medulla (Ritchie & Cohen, 1975).

Sympathetic nervous system effects: The SNS is involved in many of the bodies responses to stress and is the activator of the "flight-fight" response. Cocaine potentiates excitatory and inhibitory responses of organs to sympathetic nerve stimulation and its chemical messengers: epinephrine and norepinephrine (Phillips & Wynne, 1980). As a result, heart rate, cardiac output and blood sugar levels are increased. Mydriasis (pupil dilation) and vasoconstriction are cocaine effects which also may be accounted for by this action.

Systemic effects: Cocaine has direct effects on the heart and blood vessels which reliably produce dose-related increases in heart rate and blood pressure in man. This has been demonstrated by intranasal (Resnick et al., 1977; Van Dyke & Byck, 1982), intravenous (Fischman, Schuster, Resnekov, Schick, Krasnegor, Fennell, & Freedman, 1976; Resnick et al., 1977) and intrapulmonary (Perez-Reyes, DiGuiseppi, Ondrusek, Jeffcoat, & Cook, 1982) routes of administration. In high doses,

cocaine increases body temperature (Byck, Van Dyck, Jatlow, & Barash, 1980).

Toxicity: Shortly after cocaine was introduced into medical practice as a local anesthetic, cocaine was reported to produce toxic, occasionally fatal reactions in some people (Ashley, 1975). There is, however, a large variation in what constitutes a toxic or lethal dose for a given individual. Freud (1974d) observed that "...this one unreliability of cocaine - that one does not know when a toxic reaction will appear - is very intimately tied in with another, which must be attributed to the drug itself - that one does not know when and in whom a general reaction is to be expected" (p. 174). As little as 20 mg applied to the nasal mucous membrane or 1.2 grams orally administered have reported caused death (Grinspoon & Bakalar, 1976).

The symptoms of cocaine poisoning include anxiety, depression, Cheyne-Stokes respiration (fast, irregular, shallow), rapid and weak pulse, dizziness, dry throat, fainting and tachicardia (Phillips & Wynne, 1980). Cocaine may also cause grand mal seizures and convulsions which can be rapidly followed by respiratory collapse and death. This results from cocaine's direct action on the medullary brain center controlling respiration (Wetli, 1982). In addition, if a large amount of cocaine rapidly enters the body, there may be a direct toxic effect on the

cardiac muscle that causes it to stop beating after ventricular fibrillation.

#### Routes of Administration

The metabolism and disposition of cocaine is the same regardless of the route of administration. However, the intensity and duration of cocaine's effects are dependent upon route and dose (Byck et al., 1980). Terminal half-life, the time it takes for the half the cocaine ingested to be eliminated, is about 60-80 minutes regardless of route.

Intranasal (IN): IN administration is the most common non-medical route of administration. Cocaine hydrochloride crystals or "rocks" are chopped into a fine powder and sniffed. The powder is deposited on nasal mucous membranes where it diffuses into the bloodstream. Absorption is more rapid than oral administration with more rapid onset of subjective effects (Jones, 1984; Van Dyke, Jatlow, Barash, & Byck, 1978). Cocaine can be detected in the plasma after three minutes and persists in the blood from four to six hours after administration with plasma levels reaching peak concentrations at 15 to 60 minutes after ingestion.

Oral: It is widely assumed that cocaine is inactive when taken orally and this route is not used by recreational users. Recently, Byck et al. (1978) demonstrated that oral cocaine was rapidly absorbed 30 minutes after ingestion and reached peak plasma concentrations and

subjective psychological effects very similar to the same dose administered IN. It is also noteworthy that Freud's early study of cocaine (1974a) was with orally administered cocaine.

Intravenous (IV): When administered by this route, intense psychological and physiological effects appear within 30 seconds, peak rapidly, and decrease over the next 30 minutes (Jones, 1984). This route is used almost exclusively by individuals with prior experience with IV drug use such as medical professionals and heroin users.

Free-base smoking (FB): very intense and relatively brief effects rapidly follow the smoking of free-base cocaine because it is a very efficient way of delivering a large dose of drug into the bloodstream. Perez-Reyes et al. (1982) recently demonstrated that this route induces psychological and physiological effects that are similar to or slightly more intense than those following IV administration.

### Psychoactive-Behavioral Effects

#### Early Work

Sigmund Freud was among the first to describe cocaine's mood elevating effects just over a hundred years ago (1974a). Using himself, friends and colleagues as subjects he described the effects in this way:

The psychic effect of cocaine muriaticum in doses of 0.05-0.10 g (orally) consists of exhilaration and lasting euphoria which does not differ in any way from the normal euphoria of the healthy person. One senses an increase in self-control and feels more vigorous and more capable of work. One is simply normal and

soon finds it difficult to believe that one is under the influence of any drug at all (p. 60). He states that "the symptoms of the wonderfully stimulating effect of cocaine" are:

- Long lasting intensive mental or physical work can be performed without fatigue, it is as though the need for food and sleep were completely banished...(cocaine) steels one to intellectual effort. (p. 60)
- The effect of a moderate dose of cocaine fades away so gradually, in normal circumstances, it is difficult to define its duration. (p. 61)
- Opinion is unanimous that the euphoria induced by cocaine is not followed by any feeling of lassitude or other state of depression. (p. 62)
- A first dose or even repeated doses produces no compulsive desire to use the stimulant further... (p. 62)

Freud (1974c) pointed out that "individual disposition plays a major role in the effects of cocaine, perhaps a more important role than with any other alkaloid" (p. 115). He stated that the subjective effects of cocaine differ from person to person and only a few persons experience "a pure euphoria without alteration" as he did. Others reported experiencing a mild intoxication with hyperkinesia and talkativeness, while some subjects had no subjective effect at all after taking the same dose as he had (approx. 50-100 mg).

Freud (1974b) also reported on two experiments which investigated cocaine's effect on muscle strength and reaction time. Using himself as a subject he measured the effect of 50-100 mg cocaine on muscle strength as measured by a hand dynamometer. He reported a "marked increase in motor power of the arm". Using a neuroambimeter to

measure reaction time, he found that reaction times were "shorter and more uniform" after cocaine. However, he reported that "sometimes, in a more cheerful and efficient mood (without cocaine) my psychic reactions were just as good" (p. 104). His interpretation of these effects is that they are indirect and result from an "improvement in the general state of well being" (p. 102).

Freud also recommended in his early papers that cocaine might be used therapeutically as a stimulant, a local anesthetic, and to treat "digestive disorders of the stomach" and "all diseases which involve degeneration of the tissues" (e.g. anemia, tuberculosis), asthma and morphine addiction. Finally, he suggested the possible psychiatric use of cocaine in treating "forms of illness that we interpret as state of weakness and depression of nervous system without organic lesions" (neurasthenia).

In 1887, Freud (1974b) published his final paper on cocaine. In this paper he changed his position on using cocaine to treat morphine addiction. He came to believe that cocaine was of no value to morphine addicts because they substitute cocaine for morphine and develop much more debilitating problems from daily high dose use of cocaine. He attributed this to his belief that they "are already so weak in will power that they will misuse any stimulant" (p. 173). He continued to maintain that cocaine posed no danger of addiction to others.

Thus, Freud described cocaine in small doses as a psychomotor stimulant which induces a sense of "normal" euphoria manifested by reduced need for food and sleep, increased capacity for mental and physical work, increased sense of self-control with no negative side effects and no addictive potential in individuals with no other drug dependence problems. He also noted that there was a great individual variation in subjective response to the drug and for that reason had limited medical value.

Another early report on the effects of cocaine echoed many of Freud's statements. William A. Hammond (1974), a former Surgeon General of the U. S., reported in 1887 on his clinical use of cocaine as well as an experiment he performed on himself to determine a dose-response relationship with cocaine. He reported successful treatment of the following disorders with cocaine wine: spinal irritations, digestive disturbances, vocal problems, neurasthenia and depression. He also reported that subcutaneous injections of cocaine hydrochloride were useful in treating depression, neuritis, and neuralgia. Finally, he reported successfully treating a "violent rhinitis in himself with topically applied cocaine solution an average of 1.3 grams a day. Regarding the "so-called cocaine habit", he denied its existence stating that both he and patients of his had taken cocaine daily for more than a month and had been able to stop with no subsequent craving for the drug and no withdrawal syndrome.

In an effort to describe cocaine's effects at various doses, Hammond administered cocaine hydrochloride subcutaneously to himself at a wide range of doses on separate nights and described his subjective experience in detail.

Five minutes after injecting 65 mg into the forearm he experienced a "pleasant thrill which seemed to pass through the whole body." There was also an increase in his pulse which was accompanied by a sense of exhilaration and increased mental activity and lucidity. That night he was only able to sleep for two or three hours and awoke with a severe headache. At 130 mg he reported that all the phenomena experienced at 65 mg were increased. But he now reported irregular heart-beat, muscle twitches in the face and tremor in the hands. On subsequent nights he took 260, 390, 520, 650, 780, and 1170 mg. The effects continued to increase with rising dosage. At 260 mg., heartbeat was "tumultuous" and with respiration irregular, there was a "sense of oppression" in the chest and sleep was impossible all night. Although he felt that his mental state amounted "at times almost to delirium", he believed that, if necessary, he could have functioned normally. At 1170 mg, he felt he lost control of himself, imagining that he was "exempt from the operation of deleterious influences." One half hour after administering the drug he lost consciousness of his behavior until the

following morning when he found his library strewn with books and chair overturned.

He concluded that he had come close to taking a fatal dose and noted that while hearing and vision were affected, hearing increased in acuteness and vision less sharp, he experienced no hallucinations.

In addition to glowing endorsement of cocaine from the "medical community", cocaine also prompted many literary figures to write songs of praise for cocaine around the turn of the century.

One example is from Aleister Crowley in 1918:

Look at this heap of crystals! They are hydrochloride of cocaine...never was there so instant magic as cocaine. Choose me the last loser on the earth; take hope, take faith, take love away from him. Then look, see the back of that worn hand, its skin dissolved and wrinkled, perhaps inflamed with some malignant sore. He places on it that shimmering snow, a few grains only, or little pile of starry dust. The wasted arm is slowly raised to the head that is little more than a skull; the feeble breath draws in that radiant powder. Now we must wait. One minute perhaps five minutes.

Then perhaps the miracle of miracles, as sure as death, and yet as masterful as life; a thing more miraculous, because so sudden, so apart from the usual course of evolution.

The melancholy vanishes, the eyes shine, the warm mouth smiles. Almost manly vigor returns, or seems to return. At least faith, hope and love throng very eagerly to the dance; all that was lost is found.

The man is happy.

I have travelled in every quarter of the globe; I have seen such wonders of nature that my pen yet sputters when I try to tell them; I have seen many a miracle of the genius of man; but I have never seen a marvel like to this." (pp. 153-154, reprinted in Phillips & Wynne, 1980).

In spite of claims by Freud, Hammond and others that cocaine did not give rise to compulsive patterns, reports to the contrary began to proliferate. Lewin (1924) reported that there was widespread cocaine use in Germany in the 1920's. Based upon clinical experience he described a compulsive pattern of use in which the user's life was dominated by the desire for cocaine. This pattern was also characterized by the following symptoms: diminished willpower, indecision, lack of sense of duty, capricious temper, obstinacy, forgetfulness, diffuseness in writing and speech, physical and intellectual instability, lying, social withdrawal, suspiciousness, hallucinations of vision, hearing, smell and taste, sexual disturbances, apathy, general neglect for the self and criminal activity. In many users he also saw a "confusional insanity" with "extreme alarm due to false impressions". He also reported that his patients experienced "abnormal sensations" which led them to believe that small animals crawled under the skin. One woman was reported to have injured herself with needles in an attempt to kill the "cocaine bugs".

Regarding the addictive nature of cocaine, Lewin stated that upon stopping there was an abstinence syndrome characterized by "extreme anguish and hallucinations" which demanded that the patient be treated in a sanitarium for a year or more. He was pessimistic about recovery and reported that most patients relapsed after treatment.

The contrasting views represented by these early reports on the use and abuse of cocaine have not been resolved by clinicians and observers in the field. Coming into the modern literature in the 1970's we find a similar lack of consensus.

### Contemporary Work

#### Laboratory Studies

The first controlled study of the subjective effects of cocaine was a clinical trial of cocaine's anti-depressant effect with moderately to severely depressed hospitalized patients (Post, Kotin, & Goodwin, 1974; Post 1976). Ten patients without histories of drug abuse received 12 double-blind trials of oral cocaine for an average of 10 days. Initial doses of 5 to 50 mg. per day were gradually increased to a final dose of 30 to 200 mg. When clear effect on mood were observed, cocaine was discontinued and placebo substituted. Of the 10 subjects, one appeared to have improved, three had equivocal responses, five showed no change and one became worse. Receiving the highest dose during the second trial (after showing no response on the first), this patient showed an exacerbation of his depression characterized by increasing agitation, verbal blocking and the development of paranoid ideation (Post, 1976).

Post et al. (1974; Post, 1976) then conducted a clinical trial of IV cocaine with hospitalized depressed patients. Twelve patients received 57 cocaine and 15

placebo infusions in a single-blind design. Mood changes and effects on pulse and blood pressure were assessed during a nonstructured interview by a non-blind psychiatrist. Selected placebo and cocaine infusions were also rated by a blind observer. Starting doses ranged from 2.5 mg to 8 mg and were increased to highest doses of 5 mg to 25 mg. A close relationship between effects on vital signs and mood was observed. Doses producing little physiological changes produced few changes in mood and behavior, mild to moderate changes in vital signs tended to be associated with positive affects and a sense of calmness and well-being, and the higher doses which were associated with marked physiological changes "produced intense mobilization of affect and sudden onset of tearfulness or a mixed euphoric-dysphoric picture with a predominance of dysphoria" (1976, p. 206). Some patients reported this experience as pleasant while others experienced "the sudden onset of emotional flooding" as unpleasant but all agreed they did not want to repeat the experience. (1976, p. 208).

Resnick et al. (1976) were the first contemporary workers to systematically investigate the acute systemic and subjective effects of cocaine in man. Nineteen volunteer subjects with a history of frequent, regular cocaine use during the previous six months were administered cocaine. In a repeated-measures design with each subject as his own control, subjects received placebo, 10

mg and 25 mg cocaine. Twelve received the dosages IN in nose drops and twelve received IV administration, five subjects participated in trials with both routes of administration. Before administration and at 2, 5, 10, 15, 20, 25 and 30 minutes after, the following measures were taken: physiological--heart rate, blood pressure, respiration, oral temperature and hand grip strength; subjective--"high", speeding, pleasantness, hunger, strength and acute effects. Acute effects were assessed by a modified Addiction Research Center Inventory for acute amphetamine effects in which the number of statements rated "true" out of 36 items are counted.

IN cocaine produced physical and subjective effects significantly different from placebo only at the 25 mg. dose. IV cocaine at 10 mg and 25 mg yielded dose-related effects on physical and subjective factors.

Following 25 mg IN cocaine, significant changes occurred on the acute effects scale ( $p .02$ ), the "high" scale ( $p .02$ ) and the pleasantness scale ( $p .05$ ). These effects peaked within 10 minutes and 54% to 68% of effects were still apparent at the end of the 30 minute period observed. Subject's reports suggested a "very mild and somewhat pleasant experience" (1976, p. 621).

IV cocaine produced significant ( $p .01$ ) dose related increases in all measures but strength; onset of effects occurring within two minutes and peaking within 10 minutes. Within 15 minutes following 10 mg., dose ratings

on pleasantness scale returned to baseline and within 25 minutes, ratings on "high", speeding, and hunger scales returned to baseline. After 25 mg ratings on all scales but the hunger scale virtually returned to baseline within 30 minutes. The most frequent spontaneous report of subjects was "I feel more relaxed."

On the Acute Effects Scale, the items often rated True but only at higher dose IV administration were:

1. I have a pleasant feeling in my stomach.
2. My thoughts come more easily than usual.
3. I feel less discouraged than usual.
4. My memory seems sharper than usual.
5. I fear that I will lose the contentment that I have now.
6. I have a weird feeling.
7. Right now I feel as if all my needs are satisfied.
8. I feel an increasing awareness of bodily sensations.
9. I have a floating feeling.

Items most frequent rated true following cocaine regardless of route or dose were:

1. I feel as if something pleasant had just happened home.
2. I am in the mood to talk about the feeling I have.
3. I thrill has gone through me one or more times since I started the test.

4. I feel like joking with someone.

Items more frequently rated "true" after 10 mg than 25 mg IV cocaine were:

1. I feel as though something pleasant had just happened to me.
2. I am in the mood to talk about the feeling I have.
3. I can completely appreciate what others are saying when I am in this mood.
4. I feel a very pleasant emptiness.
5. I feel so good that I know other people can tell it.
6. I feel like joking with someone.
7. I would be happy all the time if I felt as I feel now.

Some subjects, particularly the more experienced cocaine users, rated subjective effects lower than others with similar physiological changes.

One subject who had begun a trial of 25 mg IV cocaine feeling "depressed" reported an unpleasant experience with a strong "high". This is consistent with Post et al.'s (1974) findings reported above.

Four Ss began feeling mildly anxious and depressed 20 - 30 after the 25 mg IV dose and reported the persistence of these feelings beyond the observation period. One of these subjects reported a similar experience after 10 mg IV. These feelings were considered characteristic of a post-cocaine dysphoria commonly known as "crashing".

There was no evidence for increased muscle strength following cocaine.

While this study provides the first empirically derived profile of cocaine's subjective effects, results must be interpreted with caution. Since all subjects were experienced cocaine users and there is no control group of non-users, we cannot extrapolate these findings beyond the population of experienced users.

Fischman et al. (1976) study reported similar findings in a study of IV cocaine administration. Nine experienced cocaine users were administered cocaine 2-4 times a week in an ascending dose series from 4, 8, 12, 16, 20 - 24 mg. Three Ss received 28 mg and one received 32 mg. On the Profile of Mood States (POMS), an adjective checklist commonly employed to assess mood, cocaine caused statistically reliable dose-related increases in scores on friendliness, amphetamine-like feelings and vigor scales at doses above 4 mg. All doses above 4 mg were reliably discriminated from placebo but some subjects had difficulty distinguishing cocaine from amphetamine. Sixteen mg cocaine was rated as similar to the average dose on the "street" while 24 and 32 mg were rated as among the highest doses ever taken. A 10 mg IV dose of d-amphetamine was administered to all Ss and had a subjective effect similar to 12 - 16 mg cocaine. In more recent studies of the subjective effects of IV cocaine, Fischman, Schuster and Hatano and Fischman, Schuster and Rajfer

(1983) reported dose related elevations on the following POMS scales: Confusion, Anxiety, Friendliness, Vigor, Elation, Arousal and Positive Mood.

One study has demonstrated that cocaine taken orally produces increased "high" ratings in experienced cocaine user volunteers (Van Dyke et al., 1978). Subjects taking gelatin capsules with 2 mg/kg doses of cocaine reported increases in rating of "high" which peaked at 75 minutes and returned to baseline in about 3 hours. The authors suggest that the delay in onset of effect may indicate that cocaine is not well absorbed until it reaches the small intestine.

Perez-Reyes et al. (1982) recently conducted the only controlled study of the subjective effects of free base smoking and compared FB administration to IV administration. Six male volunteers with previous IN experience with cocaine smoked approximately 16 mg FB cocaine. This was followed one month later by a trial of 20 mg IV cocaine. The global subjective "high" of FB was of a slightly greater magnitude than that after IV administration. Peak ratings of the subjective high were reached faster with IV administration ( $\bar{X}=5.7\pm 1.0$  min vs  $\bar{X}=8.7\pm 2.0$  min) but were higher with FB than IV. Qualitatively the subjective features of the drug effect were essentially the same intensity. Ten minutes after both administrations there were increases in vigor/activity, tension/anxiety and stimulation factors and decreases in

depression and fatigue scales of the POMS and increases in the morphine-benzadrine (a measure of a drug's euphoric effects) and amphetamine scales of the Addiction Research Center Inventory, a true-false test of drug effects. FB effects was rated as significantly higher than IV effect on the vigor/activity factor. Subjects rated FB inhalation as more pleasant than IV administration and the degree of craving for cocaine was higher at 30 minutes after smoking than after IV. This last finding suggests free-basing may have the greatest abuse potential of all routes of administration.

#### The Recreational User

Ashley (1975) interviewed and observed 81 intranasal cocaine users who had access to high quality cocaine. Subjects were informally interviewed and most were seen at least twice, 21 being seen more than three times. Most were professionals or white collar workers and creative people, however, nearly 20% were drug dealers. Regarding positive effects, there was a wide variety of reported reactions. All reported euphoria, sexual stimulation, increased energy, and reduced fatigue and appetite but there was variation in the degree to which different effects were considered important. There was also a large variation in what users considered "moderate use". The range was from 1 gram every two weeks to several grams per day.

There was more agreement on what were considered adverse effects. Ashley, not a clinician, divided subjects into three categories based upon quantity and duration of use; moderate, chronic-moderate and heavy-chronic.

Moderate users were those who used 1/4 - 1/2 gram per day for a few days at a time or one or more grams in an evening every two weeks or so. There were 60 subjects in this group. When using in this pattern they reported no adverse effects. When using more than usual about 75% "experienced lassitude the next day very like that felt during a mild alcoholic hangover" (p. 72).

The chronic-moderate pattern was defined as 1/4 - 1/2 gram a day on a prolonged basis. Of the 17 who fell into this category, three reported that they never experienced adverse effects, while 14 reported the following after two to five weeks of continuous use: mild insomnia, occasional impotency (or possibly more than occasional according to their lovers) and the "definite feeling that their personalities had been modified to the extent that they reacted more sharply to criticism, felt more impatient when faced with minor problems and, in general, felt slightly on edge" (p. 172). These problems quickly disappeared when cocaine use stopped and users learned to stop for a week or two when adverse symptoms began. Four subjects fell into the heavy chronic group, that is, use of two to four grams a day for an extended period. They

all reported occasional adverse effects similar to those reported by moderates but in exaggerated form. Three reported mild paranoia after a "couple of weeks of heavy use" (p. 173).

He also reported that all users were able to titrate their use of cocaine to maximize the pleasurable effects and minimize the aversive effects associated with chronic high dose use.

None of these individuals reported depression or marked craving for cocaine when cocaine supplies were exhausted. Ashley suggests that his data supports the notion that cocaine is not an addictive drug. While Ashley makes an apparently strong case for the view that cocaine is a relatively benign recreational drug, his data must be regarded as having certain limitations. We do not know how his subjects were selected and thus do not know of whom they are representative. Ashley also does not report the chronicity of subjects' use so the stability over time of these patterns of use is uncertain.

Smith and Wesson (1978; Wesson & Smith, 1977) reported on the cocaine scene in San Francisco in the late 1970's. Their views evolved from numerous clinical contacts at the Haight Ashbury Free Medical Clinic, observations of rock concerts, medical consultations to courts and treatment contacts in private practice. With Grinspoon and Bakalar (1976) and Peterson (1977) they defend the value of anecdotal evidence in understanding cocaine's effects and

abuse potential. They believe that the subjective effect of any drug experience is a "complete interaction of expectations, setting and pharmacological effects of drug, drug response, idiosyncracies of the drug user, and many additional socio-cultural expectations" (p. 137). Given these considerations they conclude that patterns of cocaine use and abuse cannot be adequately studied in a laboratory setting because the setting itself will alter the subjective drug experience.

While they acknowledge that many social-recreational cocaine users regard cocaine as a benign drug without dependence liability, they believe that adverse reactions are related to dose, frequency and route of administration. They describe the effects of a single 25-30 mg IN dose as follows: 20-40 minutes of stimulation and euphoria, garrulousness, increased energy and self-confidence. These effects diminish without noticeable after effects.

They state that cocaine can produce extreme agitation with heightened suspiciousness, irritability and anxiety, and possibly a paranoid psychosis with violent acting-out. They also report on drug-induced depressions in individuals with no history of depression. They believe this is dose-related and may be related to depletions of brain catecholamines.

They report that IV cocaine use causes an intense pleasurable "rush" not experienced with IN use. After a

few days of chronic high dose IV use, "the pleasurable effects give way to an intense anxiety state with gross paranoid features, including auditory and visual hallucinations similar to amphetamine psychosis" (p. 143). They note that cocaine psychosis is much shorter than amphetamine psychosis.

They believe it is clear that psychological dependence does occur while it is still questionable whether physical dependence does. But they suggest that the depression following cocaine use may be viewed as a physical withdrawal syndrome.

Unlike Ashley, Smith and Wesson view cocaine as having a "moderately high abuse potential." While not directly discussing the factors which distinguish low dose recreational users from chronic high dose abusers suffering severe adverse effects, they imply that important factors may be the high cost of cocaine and certain socio-cultural rituals which support low dose use.

Resnick and Resnick (1977, 1984) conducted a more systematic interview-questionnaire study of 75 "regular" users and 199 individuals applying for opiate treatment. The subjects applying for opiate treatment were given structured clinical interviews which were recorded on a Cocaine Use Questionnaire.

They were the first authors to use the more qualitatively-oriented user profile categories suggested by the National Commission on Marijuana and Drug Abuse (1973):

1) Experimental: Use is motivated by curiosity or desire to experience altered mood, use is short-term and non-patterned, some find it dysphoric,

2) Social Recreational: The majority of users fall into this category, use is in a social situation to share a pleasurable experience, use is viewed as facilitating social interaction, tends not to escalate in frequency, characterized by "take it or leave it attitude."

3) Circumstantial: Use is associated with specific situations or circumstances. An example of this pattern is the musician who believes that he cannot perform satisfactorily unless using cocaine.

4) Intensified: Use of relatively small amounts of cocaine daily with the belief that the stimulant effects enhance everyday functioning. Use is only IN and there is no experience of "crashing." Adverse consequences not evident.

5) Compulsive: Cocaine dominates user's life, impairing social, vocational and psychological functioning. Large amounts used daily or episodic binge use.

The effects regarded as most desirable to both opiate and non-opiate using cocaine users are the same and are related to stimulant effect and "the facilitation of emotional expressiveness." These effects are described in this way:

Cocaine causes the user to feel more alert, energetic, sociable and talkative. It enhances emotional expressiveness by removing barriers that ordinarily block feelings of connectedness and love for others.

Cocaine creates an aura of being more loving, conciliatory, caring and socially related. (1984, p. 719)

They state that cocaine intoxication commonly prevents erection. However, if erection occurs, orgasm is inhibited and intercourse or masturbation is prolonged. The reputed "aphrodisiac" qualities of cocaine seem related to two effects: the intensification of sensual, especially tactile, feelings, and the promotion of sexual fantasies and the facilitation of their verbalization. This effect, they speculate is the result of cocaine's suspension of superego restraints against normally ego-alien feelings. For some people a major motive to take cocaine is this facilitation of sexual behavior.

Forty eight percent of subjects reported a dysphoric "crash" after the euphoric "high". The "crash" consisted of feelings of anxiety, depression, irritability fatigue and craving for more cocaine which is relieved by more cocaine. Thus, during drug episodes, subjects reported continued dosing until supplies were exhausted at which point sedatives, alcohol or opiates are generally consumed to induce sleep.

Without giving statistics, they state that some people do use cocaine chronically, but use does not increase in frequency or amount and has little risk. Some of their subjects reported using cocaine daily for periods ranging from 30 to 90 days with no change in acute effects from the first day of use to the last (i.e. no tolerance or sensitization to effects). There were also no reports of

cocaine psychosis. However, in another group of users, the reinforcing properties of cocaine do give rise to an overwhelming compulsion to use cocaine which is accompanied by serious negative psychological and social consequences.

In recent papers (1982, 1984) they attempt to describe the personality features and psychodynamics which they believe are involved with compulsive cocaine use. This work will be discussed in a later section dealing with personality and cocaine use.

Siegel (1977, 1980, 1984) has conducted the only longitudinal study of cocaine users to date. Reviewing the literature in the early 1970's he concluded that there was a clear increase in cocaine use, in particular, more intensified and compulsive users, and there were more psychological, physical and legal problems as a result. However, several issues were less clear. Namely: do recreational and circumstantial users necessarily escalate to more intensified and compulsive use patterns? Is long-term use of cocaine inevitably associated with an escalating dependency marked by more frequent use? Does increased use of cocaine increase the incidence of negative and toxic effects?, and what factors control and maintain stable patterns of chronic use?

In 1975 Siegel began a nine year longitudinal study of social-recreational users who were recruited through newspaper advertisements. Subjects were 99 social-

recreational users who met the initial requirement of using a minimum of one gram of cocaine per month for the previous 12 months. Seventy-three percent of his subjects were students with the balance consisting of a broad cross section of occupational categories: business people, teachers, secretaries, writers, housewives, attorneys, physicians and unemployed. Data were collected at six month intervals for the first four years and then at 18 month intervals for five years. The following instruments were used to collect data: a personal history questionnaire, a drug history questionnaire, subjective drug effects questionnaire, mental status exam, MMPI (for the first four years only), Experiential World Inventory (EWI), in-depth interviews, and physical examinations for most. A number of subjects dropped out of the study or could not be located for follow-up but a total of 61 subjects participated for the first four years and 50 were available in 1983.

All subjects were IN users at the start of the study. By 1978, 39% had experimented with smoking cocaine and 10% were primarily FB smokers. For the last five years there were two stable populations: IN (90%) and FB (10%). Between 1975 and 1978, IN users averaged 1 to 4 grams per month, and from 1978-1983 this increased to 1 to 3 grams per week. When using, FB users averaged one gram per day between 1975 and 1978, and 1.5 grams/day between 1979-1983. Smoking episodes would continue until cocaine

supplies were exhausted. Consumption ranged from 1 to 30 grams per 24-hour period but some users reported smoking as much as 150 grams in 72 hours.

Between 1975 and 1978, "75% (n=46) of the users still in the study (N=61) did engage in episodes of more frequent use but remained primarily social users" (1984, p. 100). From 1978 to 1983, 50% (N=25) of users still in the study (N=50) were still primarily social-recreational users with episodes of increased use, 32% (n=16) primarily circumstantial-situational users, 8% (n=4) became intensified users and 10% (n=5) became compulsive users. All subjects in the compulsive group were FB smokers.

A variety of acute intoxication effects were perceived as positive: euphoria, stimulation, reduced appetite and fatigue, garrulousness, increased mental ability and increased sociability. Negative effects reported were restlessness, anxiety, hyperexcitability, irritability and paranoia.

Between 1975 to 1978, all users experienced some positive effects in all intoxications and negative effects in 3% of intoxications. From 1979 to 1983 all users, except compulsives, reported positive effect in all intoxications and negative effects in 40% of intoxications. During this period compulsive users reported an absence of positive effects in 15% of intoxications and negative effects in 82%.

Chronic positive and negative effects were reported. Positive effects were a generalized feeling of increased energy, increased sensitivity to cocaine, general mood elevation and weight loss. Negative effects were restlessness, irritability, attentional or perceptual disturbances, nasal problems and fatigue or lassitude. Between 1975 and 1978 there was a gradual reduction in the frequency of chronic positive effects and a concomitant increase in chronic negative effects. Users reported some positive effects in all intoxications and negative effects in 11% of intoxications. However, the ratio of positive to negative effects dropped with patterns of increased use: circumstantial--positive effects in 74%, negative in 25%; intensified--positive in 56% and negative in 32%; compulsive--positive in all intoxications, negative in 71%.

Toxic physical and psychological crisis reactions showed a similar relationship to pattern of use. Toxic physical crises consisted of at least one of the following: myoclonic jerking, chest pains, nausea or vomiting, respiration difficulty or failure, seizures or convulsions or unconsciousness. Toxic psychological crises consisted of at least one of the following: hallucinations with delusions, violent loss of impulse control and attempted suicide. From 1975 to 1978 no toxic reactions were reported. From 1979-83 social-recreational users continued to report no toxic reactions; 18% of

circumstantial users reported a mean of four toxic physical and one toxic psychological reactions, all impulse dyscontrol; all intensified users had a mean of two physical crises and one psychological crisis; and all compulsives had physical and psychological crises in 10% on intoxications.

Some of Siegel's most interesting results emerge from the testing. Between 1975-1978, results of MMPI retesting yielded no pathological deviations from normal T-score means for adults. On EWI retesting, 38% of users showed elevated scores on the Euphoria scale, this is interpreted to suggest happiness and contentment with life, and 5% showed elevations in suspiciousness or paranoia, this generally reflected increased concern about the body rather than paranoid ideation about others. Between 1979 and 1983 testing continued only with the EWI. Social-recreational circumstantial users had no significant abnormal scores with some non-significant elevations on the euphoria scale; the four intensified users also had no significant elevations, but non-significant elevations suggested some increased concern about the body, ego-centricity and difficulty in social adjustment and communication; compulsive users now showed marked elevations in almost all T-scores. Siegel interpreted this as follows: "the typical configuration suggested a paranoid profile with features of depression, reduced frustration tolerance, problems with social adjustment and com-

munication, disturbances in the sleep-waking rhythm and difficulties in impulse regulation." (p. 103)

This work is an important contribution in several ways. A significant percentage of Siegel's recreational users maintained stable use patterns over nine years and did not escalate to more debilitating patterns of use. Thus, long term use of cocaine does not inevitably give rise to increased dependency. There does, however, seem to be a clear relationship between increased usage of cocaine and increased incidence of negative and toxic effects. Regarding factors which maintain patterns of use, the study is less clear. A common notion that the high cost of cocaine is responsible for controlled use is not supported by this work. Fourteen users were students in 1975, graduated and entered higher income levels, and only three escalated their use.

Siegel states that social-recreational users reported that their view of cocaine as an ideal social drug was a major factor in controlling the pattern of use. He also cited the inconsistent quality of street cocaine and a rapid tolerance to euphoric effects as additional factors. Thus, some users can titrate their cocaine intake to avoid serious consequences while a subgroup or users developed serious debilitating patterns of use.

Siegel did not address the question of personality factors which may differentiate these groups.

While this work seems to present strong evidence for the notion that some recreational users do not escalate their use, there are many questions left unanswered. This was a self-selected sample and we don't know how representative of the larger population of cocaine users it is. They may have been representative of a small percentage of the larger user population with stable use patterns and felt that they had little to hide about their use because of this. Would less well-functioning, less controlled users even participate in a study of this kind? It is also difficult to know how the periodic follow-up testing (clinical contact) may have influenced the stability of use patterns or the honesty of reporting. It is well known among clinicians who work with drug abusers that drug-using patients often deny or underestimate their drug use out of fear, shame or other transference feelings toward the therapist. This may have been operating with some of Siegel's subjects. On the other hand, the periodic contacts may actually have been a factor in limiting drug use. Knowing that they would be reporting to the research team, subjects may have been motivated to maintain greater awareness of their cocaine use and its negative effects and this may have contributed to their ability to "titrate" their use.

#### Summary and critique.

The studies reviewed above (Ashley, 1975; Resnick & Resnick, 1976, 1982, 1984; Siegel, 1977, 1980, 1984;

Wesson & Smith, 1977) describe several different groups of cocaine users which appear to stabilize in distinct patterns of using cocaine. These writers agree that some individuals are capable of maintaining social-recreational and circumstantial patterns of cocaine use over long periods of time without escalating dosage or frequency and without experiencing significant, if any, adverse consequences (Ashley 1975; Resnick & Resnick, 1984; Siegel, 1984). This group seems to be capable of titrating their use to minimize adverse consequences.

"Compulsive" and intensified" users were also briefly discussed in these reports as well but they were not described comprehensively in terms of demographics, amount, frequency or duration of cocaine use, psychiatric symptomatology and personality dynamics (except Resnick & Resnick, 1984). The next section of this review summarizes work focusing on these issues.

#### The Compulsive User.

Based upon clinical contacts with cocaine abusers over the past 10 years, Smith (1982, 1984) has come to believe that cocaine is "very addictive." His definition of addiction is that used by the self-help groups (Alcoholics Anonymous, Narcotics Anonymous), and consists of "compulsion, loss of control over drug use, and continued use in spite of adverse consequences." His view is that cocaine does not produce a well defined physical dependency and abstinence syndrome. But the dysphoric "crash"

following the euphoria of high dose abuse which consists of depression, lethargy, insomnia and irritability may be thought of as a withdrawal syndrome. However, for Smith, the compulsive aspect of the syndrome is most important; and he sees physical and psychological dependency as side effects of compulsive use.

Among Smith's population, low dose cocaine use may enhance sexuality, but, in high doses it can produce a wide range of sexual problems in the male including: low sexual desire, and erectile and ejaculatory failure, and, in the female, desire phase disorders. When administered in the 1-4 gram per day range with sleep deprivation, cocaine may cause a cocaine psychosis with auditory and visual hallucinations and paranoia with ideas of reference. This is mostly seen with FB and IV administration, but his group has occasionally seen it with IN use. Milder toxic reaction are anxiety reactions. Frequently, depression is seen, but Smith believes that only 10% of it reflects underlying psychopathology.

Another major problem emphasized by Smith is the "upper-downer" cycle wherein individuals abusing high doses of cocaine will secondarily abuse depressant drugs to medicate the dysphoria associated with this use. Alcohol, sedative-hypnotics and barbituates are common, but heroin is gaining ground in this area as well.

Carbajal (1980) has presented the only in-depth case study of a compulsive cocaine abuser that I am aware of.

While not describing psychodynamics, he gives a description of the syndrome which elucidates many of the points made by Smith. The patient described was followed for five years in Lima, Peru. This was a 29 year old married, successful business man who was brought to the hospital at his family's demand after using cocaine IN for 10 months. He reported initially feeling positive cocaine effects of vitality, cheerfulness and optimism. His usage soon became daily use of 2 grams, then occasionally 5 grams, and finally 9 to 15 grams daily.

He was brought for treatment for verbal aggression toward his wife who was accused of unfaithfulness with no basis, mood disturbances, paranoia, hallucinations of beings from space, and becoming enraged at running out of cocaine and beating his wife. Upon admission he complained that "he was nervous" due to excessive cocaine use for which he blamed his wife. He feared being murdered by people who he could not identify and he was intensely fearful. His fear of being murdered faded in a few days, although his "jealous delerium persisted elapsing with a depressive tone" over the 10 week course of treatment. After discharge, the patient's depressive tone and difficulty obtaining an erection persisted for four months during which time he had two relapses of 5 grams each. During this period he had strong impulses to use, but learned that the desire faded in 24 to 48 hours if he did not act on them. However, in 10 months, he relapsed,

resumed 5 to 8 grams of daily usage and developed a paranoid psychosis similar to the previous one. Again he was hospitalized with a similar course of recovery, was abstinent for two years and relapsed again with a symptom picture similar to previous ones. Following a seven-month recuperation in a hospital, he was abstinent for two years at the end of treatment.

Carbajal points to this case as evidence of a "strong psychological dependence" on cocaine in the form of a "compulsive appetite" for the drug during periods of abstinence as well as consumption. He also sees it as an example of a cocaine induced paranoid psychosis in which the patient is dangerous due to ideas of persecution. However, in his experience it is more frequent to see "hallucinatory states with paranoid tone" which only last a few hours. He states that the full blown psychosis occurs after prolonged periods of use, which are variable for each individual. The psychosis may last several weeks after stopping consumption, while impotence and depression may persist beyond this point.

Siegel (1983) has recently suggested that FB cocaine smoking constitutes a new abuse disorder. Based upon clinical observations he gives an extensive description of the nature and course of what he terms the cocaine smoking disorder.

After smoking FB, there is an immediate "rush" or euphoria, sense of well-being and self-confidence. This

is often followed by attentional dysfunction, confusion, rambling, incoherent speech, anxiety and apprehension. Increased sensitivity to light and sound, ringing in the ears and tactile hallucination (sensations of insects in the skin) may be present. Cognitive features may include ideas of reference, paranoia, sense of profound thoughts, increased sexual interest with decreased performance and startle reactions to minimal stimuli. An intense "crash" may occur within minutes after smoking which consists of anxiety and tremulousness, irritability, fatigue, depression and craving for cocaine.

Unlike earlier reports of IN recreational users, FB smokers do not appear capable of titrating their intake and will continue to smoke until supplies or the user is exhausted.

He points out that no clear evidence of physical dependence has been established. However, one or two days following cessation of smoking, a "withdrawal" syndrome is seen. The essential features are depressed mood, fatigue and prolonged sleep disturbances. There may also be hyperphagia (over-eating), chills, tremors, muscle pains, and involuntary motor movements. These symptoms may last for four or more days during which time, craving may be severe.

Ashley (1975) has criticized the "authorities" for presenting extreme cases such as Carbajal's as if that were the norm. Thus, it is important to see how rep-

representative this picture is of the larger population of chronic, compulsive users. Several different workers have recently conducted descriptive studies of different populations of compulsive user groups in order to address this question as well as to provide a more complete profile of compulsive cocaine abuse.

Helfrich, et al. (1983) criticized the earlier literature on cocaine because of the following limitations:

- 1) The controlled laboratory studies have described cocaine's psychological and physical effects as reported by non-dysfunctional volunteers who were administered relatively low doses on controlled schedules within controlled settings.

- 2) Studies which have interviewed large members of users about cocaine's effects and consequences have largely looked at social-recreational users.

- 3) Case studies typically address many factors of cocaine abuse but they report on small members of subjects which may be atypical cases.

Helfrich et al. conducted the following investigation in order to more adequately describe the impairment of functioning associated with dysfunctional patterns of cocaine use and to test the hypothesis that route of administration is related to the nature, extent and severity of problems.

Subjects were 136 consecutive voluntary admissions for cocaine abuse between 3/80 and 3/82 in clinics in Denver

and Aspen, Colorado. They examined sociodemographics, drug use patterns and psychological factors. Data were taken from admission interviews and the MMPI which was completed within two weeks of admission.

Subjects were primarily white (90%), employed (80%), males (78%), with an average age of 29 years old and two years of college. They were virtually evenly divided between upper and lower income categories with 28% married and the remainder single, separated or divorced. The majority were IN users (57%), followed by IV (33%) and FB (10%). Mean cocaine use per week was 8 grams with no significant differences between routes. Subjects averaged five years since first use of cocaine.

Symptoms reported were divided into eight symptom groups. Percentages of subjects reporting symptoms in each category are as follows: minor psychological (99%), interpersonal (87.5%), financial (83%), minor physical (81%), vocational (68%), major psychological (43%), major physical (22%), legal (15%). Eighty-five percent of subjects reported symptoms in four or more categories. There was a small but significant difference between the mean number of symptom groups reported by route of administration with IN reporting 4.7 and IV/FB, 5.3. This is of questionable clinical significance. Route of administration had little relationship to specific symptoms while dose estimate were highly correlated with number of symptoms presented at admission. The only

symptom group which correlated significantly with dose was major physical.

The MMPI testing (76 patients) yielded clinically elevated T-scores of 9 of 13 scales with no relationship between elevated scores and route of administration. Modest correlations were found between dose and two scales: F scale (elevations are associated with rebellion, unconventional thinking and severity of illness in a clinical population) and Pd scale (psychopathic deviate - elevations suggest social alienation, rebellion and resentment). Thus, Helfrich et al. conclude that psychological turmoil is clearly evidenced by this group in general and that higher dose usage "may be associated with greater rebelliousness, social alienation, anger and psychiatric dysfunction" (p. 7).

They challenge Siegel's (1977) method of classifying users stating anecdotically that many of their sample would fit his criteria for social-recreational use and that some "demonstrated adverse consequences with doses as small as 1/4 gram per week". Their study clearly shows that route of administration is not necessarily related to dose or adverse psychological and psychosocial consequences and that IN users (as Carbajal's case demonstrated) can develop syndromes that are not significantly different from those associated with IV and FB use.

Washton and Tatarsky (1984) presented similar findings from a sample of 55 random callers to a telephone cocaine

Helpline. Subjects were administered a questionnaire about demographics, past and present drug use, psychiatric history, and consequences of cocaine use on health and psychosocial functioning.

This sample was somewhat more heterogeneous than Helfrich et al.'s. They were 78% male, with a mean age of 33 years old and more racially mixed: 56% white, 35% black, 9% Hispanic. Mean level of education was 14.1 years with 49% earning over \$25,000 a year and 53% having occupations in the categories of white collar, professional or business owner.

Route of administration was split: IN, 51%, FB, 22%, and IV, 27%. With average weekly consumption of 8.2 grams, 56% used at least five days per week, and average spent per week was over \$800.00. No differences were found between IN, FB and IV groups regarding weekly dose, money spent weekly or frequency of cocaine use.

As with the previous studies, most callers reported minor physical health problems (98%), minor psychological (93%) symptoms of depression, irritability, anxiety, lack of motivation, loss of sex drive and concentration and memory problems, interpersonal problems (93%) with mates and friends, and financial problems (84%) related to cocaine use. Over half also reported vocational problems (64%), major psychological problems (56%), i.e. paranoid ideation (47%), panic attacks (20%), violent feelings (18%), hallucinations (16%), physically injured someone

(11%), suicide attempt (7%). Most callers in all three groups felt psychologically addicted to cocaine (92%), felt they had lost control over use (91%), craved and felt a compulsion to use (81%), and wanted to stop (80%) but felt unable to stop without help (75%).

The most interesting findings seemed to contradict many previous studies. Not only does there seem to be no relationship between route of administration and incidence or type of consequences, but in general, the number and type of negative consequences on health and psychosocial functioning showed no relationship to cocaine dose estimates or frequency of use.

Washton, Gold, and Pottash (1983) have reported nearly identical findings from a larger sample of 300 random callers to the 1-800 COCAINE helpline.

Differences in their data are in the direction of increasing severity of psychological problems. All of their subjects report feeling anxious, irritable and depressed with nearly half of the FB and IV callers and one-third of the IN subjects reporting suicidal ideation. Also notable is that 25% of all callers reported stealing from family, friends and jobs to support cocaine use.

This survey research is useful because it provides access to a large group of users who would not otherwise be available for study. However, it is limited by the fact that it is not possible to know how reliable these informants are; and we do not know how the subjective

reports of psychological symptomatology (e.g. anxiety) coincides with clinical judgments by professionals. But these studies demonstrate that large numbers of people using cocaine through all routes of administration at low and high dose patterns can develop compulsive loss of control with serious negative consequences.

### Summary

Taken as a whole, the growing body of reports reviewed above convincingly demonstrate that compulsive-addiction patterns of use develop in a broad cross-section of Americans. There is rather general agreement that these users are reporting an inability to control their use of cocaine in spite of experiencing a wide range of psychological, psychosocial and health problems as a result of their use. In spite of early claims that compulsive use and adverse consequences are related to route of administration (Ashley, 1975; Van Dyck, 1982) two of the more recent studies (Helfrich et al., 1983; Washton & Tatarsky, 1984) have reported findings to the contrary using large samples of self-defined compulsive users.

Thus, the earlier question, "Is cocaine dangerous?" seems to have changed into, "For whom is cocaine dangerous?" Or, asked another way, "What are the factors which contribute to the development of compulsive patterns of use?" In my view, this is the area we know least about. This question will be explored in the following section.

### Compulsive Cocaine Use: Personality and Psychopathology

Verebey and Gold (unpublished) have recently claimed that, given free access to cocaine, a large percentage, if not all users, would develop addictive patterns of use. They state that "in most cases" control of cocaine use depends upon external controls such as limited supply and price. They support a neurophysiological theory of cocaine's addictive quality: namely, that chronic cocaine use results in depletions of brain neurotransmitters (norepinephrine, dopamine, and serotonin) which give rise to increasing feelings of depression, fatigue, drug craving, agitation, paranoia and physical discomfort. In an effort to self-medicate these painful feelings, more cocaine is administered. Rosecan (1984) also points to depletions of central neurotransmitters in addition to cocaine-induced changes in sensitivity of post-synaptic receptors as possible physiological mechanisms underlying compulsive cocaine use.

While it is likely that these factors may contribute to the development of compulsive use patterns, much of the anecdotal and empirical work on cocaine use and abuse argue against the view that they are necessary or sufficient to account for why some users develop compulsive use patterns while many do not. On the one hand are the reports of recreational users who used cocaine over long periods of time without developing compulsive use patterns (Siegel, 1984). In fact, although many of these users

admit experiencing some adverse effects from their use (which Verebey and Gold suggest lead to compulsive loss of control), they are able to titrate or regulate and control their intake to minimize these problems. They do precisely what compulsives are unable to do. In addition, many of these users have easy access to high quality cocaine and are not limited by financial factors. Studies of compulsive users also suggest that something about the person rather than the drug distinguishes controlled from compulsive users. Studies cited above found no relationship between the development of compulsive use patterns and dose, frequency or route of administration (Helfrich et al., 1983; Washton & Tatarsky, 1984; Washton et al., 1983). IN subjects using weekly amounts as low as 1/4 to 1 gram reported compulsive use syndromes with major adverse consequences that were not significantly different from IV and FB users using substantially larger amounts of cocaine.

In spite of these considerations, the psychological factors which may make certain individuals vulnerable to developing compulsive patterns of use have not been explored at length. The small number of reports addressing this issue have generally suggested two main categories of psychological factors: affective disorder and personality disorders. These will be summarized and critiqued below.

Gold (1982) views cocaine addiction as resulting from an interaction between the "type" of person, duration of use, and route of administration. Drawing on his clinical experience with hospitalized working and superworking class cocaine abusers, he suggests that cocaine abusers are a heterogeneous group. According to him, the following groups are at high risk to develop compulsive patterns:

- 1) Those with access, such as doctors and performers with a great deal of disposable income.
- 2) "Self-medicators" with severe psychopathology.
- 3) People suffering from depression, lack of energy or wishing to deny the aging process.
- 4) Those attempting to increase socially desirable aspects of self (e.g. thinness, aggressiveness, perfectionistic overachievers).
- 5) People with medical illness such as vitamin deficiencies or anemia.

Weiss, Marin and Michael (1983) were particularly interested in the relationship between cocaine abuse and affective disorder. In an effort to develop a clinical profile of cocaine abusers and to outline formal diagnostic features associated with cocaine abuse, 30 hospitalized cocaine abusers were diagnosed by the treating psychiatrist. They were also administered the Symptom Checklist 90, the Beck Depression Inventory and the Hamilton Depression Rating Scale at admission.

The sample was primarily white (93.3%), males (63.3%) with a mean age of 30.4 years old. Fifteen were IN users, 10 were FB smokers and 5 were IV users. The sample showed significant depression on all three rating scales which was not significantly different from other drug abusers tested. But in contrast to Smith's (1982) claim that 90% of his cocaine abusing patients do not have underlying psychopathology, 63.3% of these patients were given Axis I diagnoses and 90% were given Axis II diagnoses of personality disorder. On Axis I, thirty percent were diagnosed with histories of depression (major depression and atypical depression), 23.4% bipolar disorder (bipolar and cyclothymic disorder), 3.3% atypical impulse disorder, 3.3% atypical psychosis and 3.3% generalized anxiety disorder. On Axis II, half were diagnosed as borderline (27%) or narcissistic (23%) personality disorder, with the balance, histrionic (16.7%), avoidant (3.3%), dependent (3.3%), schizoid (3.3%), antisocial (3.3%), mixed (10%), and none (10%).

They concluded that there are three subtypes of heavy users: 1) major depressives, 2) those with histories of bipolar or cyclothymic disorder, 3) patients with major characteriological pathology, primarily borderline and narcissistic.

Kleber and Gawin (1984) also see cocaine abusers as a heterogeneous group. In a study of 17 outpatient cocaine

abusers they found 30% to have depressive disorders and 20% with bipolar disorders.

Whereas these writers take a medical model approach and do not explore the psychodynamics of cocaine abuse, the following clinicians emphasize character pathology and psychodynamics in their discussion of this issue.

Resnick and Resnick (1984) base their views upon many years of clinical and research experience with a wide variety of cocaine abusers. They commonly see borderline or narcissistic personality disorders present in compulsive cocaine abusers. They describe the individuals as having a fragile and fragmented sense of self and inadequate relationships with others which are related to impairments in internalized object relations during the first three years of life. These difficulties become manifested in deficient self-soothing mechanisms and limited ability to deal with stress. They suggest that cocaine use is motivated by a desire to mask the chronic tension and feelings of emptiness and despair experience by these people. They also see it as an attempt to "heal the self" and substitute for love by creating feelings of warmth, openness, connectedness and intimacy.

Spotts and Schontz (1976, 1982, 1983) studied nine chronic cocaine abusers using the representative case method in an effort to describe the personality features and motives associated with cocaine use. In this approach, individuals fulfilling a specific research need

are examined intensively. Nine male cocaine users whose use ranged from 1/4 gram IN in two or three days to three or more grams IV per day were interviewed extensively regarding life history and drug experience and administered the Q-Sorts, WAIS, MMPI and 16PF tests. While Spotts and Schontz do not characterize their subjects using formal diagnostic categories, they provide detailed personality descriptions which are very similar to those described by Resnick and Resnick.

They describe these men as strong, willful, manipulative and action oriented. Counter-dependent, proud and achievement oriented, they strive to make their mark on the world. Most were motivated to take cocaine for the energy, self-confidence, optimism, ego-enhancement and aggressiveness it provides. They are preoccupied with independence, denying passivity and fearful of normal dependency relationships. While the low-dose users expressed needs to be nurtured, all Ss described themselves as being unable to get close to others or themselves. They cut themselves off from their own needs and motives and from sources of love and warmth in others.

They speculate that for these men, reaching out for parental affection in childhood was responded to in a depriving, harsh, rejecting way and, thus, having or expressing relational needs became a source of pain. The resulting striving for independence and autonomy was at the expense of inner emotional experience and was doomed

to fail. The cutting off of themselves from their needs and outer sources of love and warmth gives rise to chronic high levels of tension, and they frequently feel depressed and discouraged. Cocaine is then used in an effort to fortify or "expand" the ego because of the heightened sense of self-confidence and mastery it provides. It also provides the euphoria which substitutes for a longed for but unavailable loving relation with other people.

They see this character style as resulting from oedipal level conflicts and see the amount of cocaine used as negatively related to the extent of ego integrity. Higher dose users seem to use cocaine to reaffirm the integrity and influence of the ego and create an "illusion" of greater control over the world.

This small body of literature supports the hypothesis that cocaine abuse is commonly associated with severe underlying psychopathology. Using the descriptive psychiatric model of DSM III, Weiss et al. (1983) diagnosed three subtypes of cocaine abusers: depressive disorders, bipolar disorders and personality disorders (primarily borderline and narcissistic). Kleber and Gawin (1984) also used DSM III criteria and found significant numbers of depressed and bipolar patients among their sample of cocaine abusers. They note that the small samples in these studies make it difficult to evaluate the relevance of these findings to the larger population of cocaine abusers. They also point out that the therapeutic

relevance of "Axis I-like" psychiatric disorders is unclear and requires further study.

In contrast to these authors, Resnick and Resnick (1984) and Spotts and Schontz (1976, 1982, 1983) use developmental, psychodynamic frameworks for understanding cocaine abuse. They emphasize the importance of ego-structural and interpersonal (i.e. object-relational) factors as central to the psychological vulnerability to developing compulsive patterns of cocaine use. However, they disagree on where to locate the problem developmentally. Resnick and Resnick suggest that the primary psychopathology is of a pre-oedipal, borderline or narcissistic, nature which stems from problems in the first three years of life. Spotts and Schontz (1976), on the other hand, view the cocaine abuser's core psychopathology as oedipal phase problems which are manifested in more well-integrated character disturbances.

If this group of reports is taken at face value, one might conclude that there may only be a very general relationship between compulsive cocaine abuse and psychological factors. Namely, that cocaine may be used compulsively by a broad range of people with different degrees of psychopathology for a wide variety of reasons; not a very meaningful statement. Only Spotts and Schontz make an attempt to relate severity of cocaine abuse to severity of psychopathology. They found a relationship between amount of cocaine used by their subjects and

degree of ego pathology. The other writers do not address the question of whether specific types or degrees of psychopathology are associated with various aspects of cocaine abuse such as dose, frequency, route of administration, duration of use, and severity of psychological, psychosocial and health problems resulting from cocaine use. These may be areas which are meaningfully related to underlying psychopathology and warrant further exploration. When viewed from another perspective, another meaningful hypothesis emerges. Different types of psychopathology were diagnosed from samples of different cocaine user populations. Weiss et al. (1983) and Gold (1982) based their findings on hospitalized patients and reported the broadest range of psychopathology including the most severe diagnoses. Kleber and Gawin (1984) findings were similar and were drawn from a pool of outpatients in treatment for cocaine abuse. Resnick and Resnick's (1984) "sample" was apparently much broader and diverse. Although not specified in their report, we may assume that they are basing their conclusions upon contact over ten years with cocaine abusers in private practice psychotherapy and research subjects (1976, 1982). These subjects might be presumed to be less acutely disturbed than patients in inpatient and outpatient treatment settings. Spotts and Schontz (1976) have suggested the least severe psychopathology is associated with cocaine abuse. These subjects were carefully selected research subjects, not

patients. When viewed from this perspective, the literature may be showing a relationship between severity of ego pathology and severity of cocaine abuse and related adverse consequences. However, because most of these studies did not specify the measurable aspects of cocaine abuse patterns and specific consequences of abuse, it is not possible to know if these are clinically distinguishable samples.

Another limitation of all the studies of psychopathology and cocaine abuse is that control groups of social-recreational users or non-users were not used. Therefore, we cannot know whether the observed psychopathology is only characteristic of compulsive users rather than all cocaine users.

### Chapter III

#### STATEMENT OF THE PROBLEM

In spite of the alarming dimensions of the current problem of cocaine abuse, there is surprisingly little consensus about why some individuals develop severe patterns of compulsive use while the majority of users do not. A variety of pharmacological and psychotherapeutic strategies for treating cocaine abuse are currently being explored and advocated (Gold, 1982; Kleber and Gavin, 1984; Resnick and Resnick, 1984; Rosecan, 1984). However, these approaches must all be viewed as highly experimental and without firm empirical support. This state of affairs parallels the limited understanding of what contributes to the development of compulsive use. Thus, from a practical as well as a theoretical point of view, the literature generally suggests many questions which warrant further clarification.

As noted in the previous section, several competing hypotheses have been suggested to account for compulsive cocaine use. Gold (1982) has argued that compulsive use is related to an interaction between individual factors, duration of use and route of administration. However, his report is anecdotal and does not specify with any precision the nature of this interaction. Reports by Helfrich et al. (1983) and Washton and Tatarsky (1984) from patient and non-patient cocaine abusers found no relationship between dose, duration and route of adminis-

tration and severity of problems associated with cocaine abuse. This contrast in results suggests the need for further, more systematic research in this area. Other authors have emphasized various psychological factors that they see as central to compulsive use. However, there is also limited agreement in this area as well and design limitations make it impossible to resolve apparently contradictory findings.

The design of this study was exploratory-descriptive in nature because it was felt that the lack of consensus in the literature on the relationship between specific psychopathology and cocaine abuse did not support specific hypotheses.

This study is a unique contribution in several ways. Unlike all previous studies of cocaine abuse, compulsive cocaine users were compared to controlled recreational users on a variety of dimensions. A third group which met some, but not all of the criteria for compulsive use was also described and compared to the other groups. This group was designated quasi-compulsive. The basis for assigning group membership to subjects was their own subjective sense of the degree to which they felt they could control their use of cocaine. This was determined by their responses to four questions about various attitudes toward their cocaine use. The specific criteria will be described fully in the Methods section of this work. The rationale for this subjective method of group

assignment is based upon the idea that the designation of any behavior as compulsive is by definition, subjective; that is, the behavior is experienced by the individual as ego alien and not under one's control. In addition, no previous studies of cocaine users, that I am aware of, have precisely operationalized their use of the terms, social-recreational or compulsive use. For example, Siegel (1984) and Resnick and Resnick (1984) refer to the National Commission on Marijuana and Drug Abuse's (1973) definitions which themselves rely on imprecise language. Resnick and Resnick (1984) in part define compulsive cocaine use as a pattern in which "cocaine dominates the users life." And Siegel (1984) describes social-recreational cocaine use as "use generally occurring in social settings among friends or acquaintances who wished to share an experience perceived by them as acceptable and pleasurable. Such use was primarily motivated by social factors and did not tend to escalate to more individually oriented patterns of use" (p. 100, my italics). While these definitions convey a general sense of what is meant, they are clearly dependent upon judgments and subjective interpretation on the part of both the subjects and the investigators.

In order to avoid these definitional problems, this investigation began with the user's own attitudes about his or her cocaine use and "operationalized" these self-assessments by generating detailed profiles of each

group's use of cocaine. Group profiles consisted of data from the following areas: demographic characteristics, quantitative and qualitative aspects of cocaine use, psychosocial consequences of cocaine use, degree of object relations and reality testing impairment and psychiatric symptomatology. Thus, the following question could be asked, "What behavioral and psychological factors are associated with the subjective experiences of being able or unable to control the use of cocaine?"

In order to identify the specific variables which distinguished the three groups of users, groups were compared on each of the areas mentioned above. A discriminant analysis was used to see how accurately compulsive and recreational users could be distinguished from each other solely on the basis of psychological functioning. This procedure also aimed at identifying which psychological factors best discriminated them.

A series of correlations between quantitative measures of cocaine use and all psychological variables was conducted for each group. These procedures explored the relationships between specific features of cocaine use and a variety of aspects of psychological functioning. Trends across groups and group differences were discussed.

Finally, as an empirical test of clinical reports by Resnick and Resnick (1984), Spotts and Schontz (1975), Weiss et al. (1983) and others, the following comparisons were conducted. The recreational and compulsive user

groups were compared on a measure of object relations impairment to three psychopathological groups; borderline personality disorder, other character disorder and major affective disorder; and two nonpathological groups which were reported on in a study by Bell et al. (1985a). The comparisons addressed the question of whether or in what ways the object relations profiles of these groups of cocaine users are comparable to those of pathological groups which the literature has suggested as having a vulnerability to compulsive use of cocaine.

In summary, this study is aimed at describing and exploring, in a variety of unique ways, the relationship between the use and abuse of cocaine and psychological functioning. The clinical implications of the results of this investigation will be discussed.

## Chapter IV

### METHODOLOGY

Eighty eight cocaine users were assigned to recreational (R), compulsive (C) or quasi-compulsive (QC) cocaine use groups by their answers to the following four questions about their attitudes toward their use of cocaine:

1. Do you feel that you've lost control of your cocaine use?
2. Do you feel that you're psychologically addicted to cocaine?
3. Do you feel capable of stopping cocaine use completely on your own without help?
4. Do you want to stop using cocaine?

The criteria for assignment to each group will be described specifically under the Subjects section below.

Subjects were obtained in two ways. Forty two subjects were consecutive patients seen for evaluation at the Cocaine Abuse Consultation Service at the DiMele Center for Psychotherapy in New York City. Forty six subjects were recruited by advertisements placed in New York City newspapers. Demographic and other descriptive data will be presented separately for each group in the Results section.

#### Subjects

##### Recreational Cocaine User Group (R Group)

Thirty one subjects, all respondents to the newspaper advertisements, were assigned to this group based upon

their reports that they a) did not feel that they had lost control of their cocaine use, b) did not feel psychologically addicted to cocaine, c) did feel that they were capable of completely stopping their cocaine without help but, d) did not want to stop using cocaine. Thus, they indicated that their use was under their control and was not a problem for them but they felt that they could stop if they chose to without help.

The initial design of this study had an additional criterion that subjects report the use of a minimum of one gram of cocaine for the previous 12 months as in Siegel's (1977) study of social-recreational cocaine users. This criterion was ultimately relaxed because the majority of subjects meeting the criteria for controlled use reported using smaller amounts. Instead, amount used became a dependent variable. This change permitted exploration of the relationship between amount of cocaine used each month and psychological functioning.

Two subgroups of controlled users were initially created. Seventeen "regular recreational" users (RR) reported using cocaine at least once each month and 14 "occasional recreational" (OR) users used less than once each month. All subjects reported using in their current pattern for at least one year.

Statistical comparisons between these groups were conducted on the following relevant dependent variables to see whether the groups were comparable and could be com-

bined: psychosocial consequences of cocaine use, object relations and reality testing subscales (seven subscales of the Bell Object Relations and Reality Testing Inventory (BORRTI)) and 12 measures of psychiatric symptomatology (subscales of the Symptom Checklist-90 (SCL-90)). The psychosocial consequences check-list of the Cocaine Use Questionnaire, the BORRTI and SCL-90 will be described in the Assessment Tools section of this chapter.

The results of chi-square comparisons between these groups for each psychosocial consequence of cocaine use are presented in Table 1. T-test results of comparisons between these groups on BORRTI subscale means are summarized in Table 2 and on SCL-90 subscale means in Table 3.

As can be seen in Tables 1, 2 and 3, none of these comparisons showed significant group differences. On this basis, these groups of users were judged to be comparable on these variables and were combined into one larger group. The implications of this will be discussed in the general Discussion section of this study.

#### Compulsive Cocaine User Group (C group)

Thirty eight subjects were assigned to this group based upon their reports that they a) did not feel that they could control their use of cocaine, b) did feel that they were psychologically addicted to cocaine, c) did not feel able to stop using cocaine completely on their own without help and, d) did want to stop using cocaine. Additional criteria were the report of at least one nega-

Table 1

Comparison of Occasional and Regular Recreational Groups  
on Negative Psychosocial Consequences of Cocaine Use,  
Using the Chi-Square Test

| Consequence                                       | Group                 |          |                   |          | $\chi^2$ |
|---------------------------------------------------|-----------------------|----------|-------------------|----------|----------|
|                                                   | Occasional<br>(N=14)  |          | Regular<br>(N=17) |          |          |
|                                                   | <u>n</u> <sup>a</sup> | <u>%</u> | <u>n</u>          | <u>%</u> |          |
| Arguments with Mate                               | 2                     | 14.3     | 4                 | 23.7     | .04      |
| Mate Threatened to<br>Leave                       | 0                     | 0        | 0                 | 0        | N/A      |
| A Relationship<br>Broke Up                        | 1                     | 7.1      | 0                 | 0        | .01      |
| Became Socially<br>Isolated and<br>Withdrawn      | 2                     | 14.3     | 0                 | 0        | .77      |
| Harmed Social Life,<br>Feel Less Social           | 2                     | 14.3     | 0                 | 0        | .77      |
| Harmed Sexual<br>Relationship                     | 0                     | 0        | 1                 | 5.9      | .00      |
| Harmed Ability to<br>Talk Openly                  | 1                     | 7.1      | 2                 | 11.8     | .00      |
| Came Late to<br>Work/School                       | 3                     | 21.4     | 2                 | 11.8     | .06      |
| Missed Days of<br>Work/School                     | 3                     | 21.4     | 3                 | 17.6     | .00      |
| Reduce Your<br>Productivity                       | 3                     | 21.4     | 5                 | 29.4     | .01      |
| Spend Too Much<br>Time on Breaks                  | 0                     | 0        | 0                 | 0        | N/A      |
| Harmed Relationship<br>with Supervisor<br>or Boss | 1                     | 7.1      | 0                 | 0        | .01      |

Table 1 (Continued)

Comparison of Occasional and Regular Recreational Groups  
on Negative Psychosocial Consequences of Cocaine Use,  
Using the Chi-Square Test

| Consequence                                                    | Group                 |          |                   |          | x <sup>2</sup> |
|----------------------------------------------------------------|-----------------------|----------|-------------------|----------|----------------|
|                                                                | Occasional<br>(N=14)  |          | Regular<br>(N=17) |          |                |
|                                                                | <u>n</u> <sup>a</sup> | <u>%</u> | <u>n</u>          | <u>%</u> |                |
| Got Fired from a Job                                           | 0                     | 0        | 0                 | 0        | N/A            |
| Used all Money in<br>Bank Account                              | 0                     | 0        | 1                 | 5.9      | .00            |
| Gotten into Debt                                               | 2                     | 14.3     | 2                 | 11.8     | .00            |
| Unable to Keep Up<br>with Bills                                | 2                     | 14.3     | 1                 | 5.9      | .03            |
| No Extra Money                                                 | 3                     | 21.4     | 6                 | 35.3     | .20            |
| Arrested for Sale or<br>Possession of<br>Cocaine               | 0                     | 0        | 0                 | 0        | N/A            |
| Arrested for Other<br>Crimes Related to<br>Use/Sale of Cocaine | 0                     | 0        | 0                 | 0        | N/A            |
| Have a Car Accident                                            | 0                     | 0        | 1                 | 5.9      | .00            |
| Have a Physical Fight                                          | 0                     | 0        | 1                 | 5.9      | .00            |
| Have an Unwanted<br>Sexual Encounter                           | 0                     | 0        | 1                 | 5.9      | .00            |
| Physically Hurt<br>Someone                                     | 0                     | 0        | 0                 | 0        | N/A            |
| Attempt Suicide                                                | 0                     | 0        | 0                 | 0        | N/A            |

Note: All Chi-square results are nonsignificant.

<sup>a</sup>n= The number of subjects in each group that reported each consequence. These do not equal N since the consequences are not mutually exclusive and subjects may report more than one consequence.

Table 2

T-Test For Comparison of BORRTI Subscale Group Means (M)  
for Occasional and Regular Recreational Cocaine Users

| Variable                        | Group                |           |                   |           | T-test   |
|---------------------------------|----------------------|-----------|-------------------|-----------|----------|
|                                 | Occasional<br>(N=14) |           | Regular<br>(N=17) |           | Results  |
|                                 | <u>M</u>             | <u>SD</u> | <u>M</u>          | <u>SD</u> | <u>t</u> |
| Alienation                      | -.55                 | .376      | -.32              | .641      | 1.19     |
| Insecure Attachment             | -.19                 | .654      | -.42              | .618      | 1.03     |
| Egocentricity                   | -.43                 | .454      | -.45              | .447      | 0.16     |
| Social Incompetence             | -.14                 | .981      | 0.36              | .719      | 0.71     |
| Reality Distortion              | -.36                 | .393      | -.41              | .425      | 0.33     |
| Undertainty<br>of Perception    | -.31                 | .484      | -.42              | .482      | 0.62     |
| Hallucinations<br>and Delusions | -.18                 | .332      | -.38              | .154      | 2.03     |

Note: All results are nonsignificant.

Table 3

T-Test For Comparison of SCL-90 Subscale Group Means (M)  
for Occasional and Regular Recreational Cocaine Users

| Variable                           | Group                |           |                   |           | T-test<br>Results |
|------------------------------------|----------------------|-----------|-------------------|-----------|-------------------|
|                                    | Occasional<br>(N=14) |           | Regular<br>(N=17) |           |                   |
|                                    | <u>M</u>             | <u>SD</u> | <u>M</u>          | <u>SD</u> | <u>t</u>          |
| Somatization                       | 57.14                | 9.39      | 55.93             | 7.24      | .40               |
| Obsessive-<br>Compulsive           | 57.64                | 9.40      | 60.93             | 4.92      | 1.18              |
| Interpersonal<br>Sensativity       | 61.50                | 10.75     | 58.25             | 9.31      | .89               |
| Depression                         | 61.14                | 11.35     | 60.44             | 7.06      | .21               |
| Anxiety                            | 58.64                | 12.33     | 56.88             | 10.50     | .42               |
| Hostility                          | 57.5                 | 10.85     | 55.31             | 6.36      | .68               |
| Phobic Anxiety                     | 58.86                | 11.63     | 54.44             | 10.15     | 1.11              |
| Paranoia                           | 57.64                | 11.83     | 55.56             | 9.70      | .53               |
| Psychotocism                       | 56.57                | 11.66     | 55.63             | 8.31      | .26               |
| Global Severity<br>Index           | 58.64                | 11.82     | 60.31             | 7.45      | .47               |
| Positive Symptom<br>Total          | 59.93                | 12.41     | 60.38             | 8.27      | .12               |
| Positive Symptom<br>Distress Index | 53.79                | 11.1      | 53.87             | 6.03      | .03               |

Note: All results are nonsignificant.

tive psychosocial consequence of their cocaine use and a duration of at least one month.

Thus, they experienced their cocaine use as a problem which they could not manage alone in spite of their awareness of the problem.

These criteria closely parallel the definition of addiction used by Cocaine Anonymous and other self-help groups as well as prominent workers in the field (e.g. Smith, 1982). According to this definition, addiction is chemical abuse that is characterized by:

- a. loss of control over use
- b. compulsion and craving
- c. continued use in spite of consequences.

They also meet DSM III criteria for cocaine abuse (American Psychiatric Association, 1980). The diagnostic criteria are:

- A. Pattern of pathological use
- B. Impairment in social or occupational functioning
- C. Duration of at least one month.

Thirty of these subjects were seen for evaluations at the Cocaine Abuse Consultation Service at the DiMele Center for Psychotherapy and eight were recruited by the newspaper ads.

#### Quasi-compulsive Cocaine User Group (QC group)

Nineteen subjects who met some, but not all, criteria for compulsive cocaine use were assigned to this group.

Twelve were seen for evaluations at the DiMele Center and seven were recruited through the advertisements. Most subjects indicated that they felt addicted to cocaine but did not feel that they could not control their use. Other subjects were uncertain about these issues. Thus, it was inferred that these individuals felt that their use was in some way problematic for them but not sufficiently so to commit themselves to all compulsive criteria. Thirteen members of the group said that they did want to stop using cocaine while only four felt they could not stop on their own. The group was seen as affording the possibility of addressing clinical questions about individuals who admit some difficulty with their cocaine use but continue to feel that they have some control.

#### Assessment Tools

The data for this study were collected by the following instruments: a Personal Data Questionnaire, the Cocaine Use Questionnaire, the Bell Object-Relations and Reality-Testing Self-Report Inventory, the Symptom Checklist - 90 (SCL-9). Descriptions of these instruments are presented below.

##### Personal Data Questionnaire (PDQ):

This questionnaire was created for this study to gather detailed descriptive data on variables which might be relevant to cocaine use. The questionnaire gathers data on the following variables: age, race, sex, marital status, income, occupational category, educational back-

ground, significant medical history, past psychiatric history and other drug use. A copy of the Personal Data Questionnaire is included in Appendix A.

Cocaine Use Questionnaire (CUQ):

The CUQ was designed to develop a detailed profile of current cocaine use pattern, estimates of quantitative measures of cocaine use, negative psychosocial consequences of cocaine use and attitudes about cocaine use.

Under Cocaine Use section, questions will address the following areas: route of administration, frequency of use, amount used, money spent for cocaine, pattern (e.g. weekend only, weekdays only, binges until supplies run out, small amounts throughout the day, etc.), setting (e.g. with friends, alone, with spouse or mate), duration of current pattern of use, duration since first tried cocaine, attitudes regarding cocaine use (feel out of control?, feel addicted?, feel able to stop without help?, want to stop?). A series of questions asked if a variety of negative psychosocial consequences of cocaine use were experienced by subjects. Five areas were addressed: interpersonal, vocational, financial, legal and miscellaneous. The Cocaine Use Questionnaire is included in Appendix B.

## Bell Object Relations and Reality Testing Self Report

### Inventory: (BORRTI)

This instrument consists of 90 items from the Bell Object Relations Self-report Scale and the Bell Reality Testing Self report Scale which are interspersed. These scales are described below. A copy of the BORRTI is included in Appendix C with object relations and reality testing items designated on the left; OR for object relations and RT for reality testing.

### Bell Object Relations Self-Report Scale

(Bell, et al. 1985a)

This instrument has been designed to assess object-relations pathology. It is composed of 45 true/false statements which represent a range of object relational paradigms and interpersonal beliefs corresponding to the continuum of object relations proposed by Bellak, Hurvich and Gediman (1973). Four factor subscales have been derived from factor analysis and are: Alienation (ALN), Insecure Attachment (IA), Egocentricity (EGC), and Social Incompetence (SI).

Alienation indicates the degree of basic trust in interpersonal relationships, capacity for intimacy and degree of empathy for others. Insecure Attachment measures the painfulness of interpersonal relations and the presence of concerns about being liked and accepted by others. Egocentricity refers to pathologically narcissistic attitudes toward others; others exist only in

relation to oneself. Social Incompetence reflects the self-experience of competence in dealing with members of the opposite sex, friends and society at large. Detailed descriptions of the interpretations of these subscales are given in Appendix D. Descriptions are taken from the manual for handscoring the BORRTI (Billington and Bell, 1985).

The instrument has been shown to have a high level of split-half reliability ( $r=.91$ ) (Bell, Metcalf, Ryan, 1980). Factor scales have low correlations with the Marlowe Crown Social Desirability Scale (Crowne, Marlowe, 1960), Global Assessment Scale Ratings of symptomatology (Endicott, Spitzer, Fliess, 1976), and with Brief Psychiatric Ratings Scale sum scores (Overall, Gorham, 1962). This suggests that factors have little overlap with symptomatology in a psychiatric sample.

The subscales were derived from a factor analysis of an earlier version of the Bell Object Relations Scale. Intercorrelations between subscales were moderate. Cronbach's alpha and Spearman-Brown split-half reliability coefficients for each of the four factors were high ( $\text{Aln}=.90,.90$ ;  $\text{Ia}=.82,.81$ ;  $\text{Egc}=.78.78$ ;  $\text{Si}=.79,.82$ ). Means for the following seven pathological and non-pathological groups have been calculated and are available for comparison: borderline, schizophrenic, mixed, other character disorders, affective disorders, students and high functioning community involved adults.

These investigators conducted a replication study that found a high degree of replication of the four factors. Similarity coefficients were  $Aln=.97$ ,  $Ia=.90$ ,  $Egc=.84$  and  $Si=.93$ . These high values support construct validity.

Bell Reality Testing Self-report Scale

(Bell, Billington and Becker, 1985b)

This instrument has been designed to assess reality testing. It is composed of 45 true/false questions which represent a range of reality testing items corresponding to the points on the continuum of reality testing suggested by Bellak, et al. (1973). Three subscales are yielded corresponding to three factors: Reality Distortion (RD), Uncertainty of Perception (UP), and Hallucinations and Delusions (HD). Reality Distortion suggests severe deficits in the capacity to distinguish internal and external reality. Uncertainty of Perception measures the sense of doubt or certainty about one's perception of internal and external reality. It indicates sufficient reality testing to have a reflective awareness about one's perceptions. Hallucinations and Delusions indicates hallucinatory and delusional thought content. Detailed subscale descriptions from the manual for hand-scoring the BORRTI (Billington & Bell, 1985) are contained in Appendix E. These factors have Cronbach's alpha and Spearman-Brown split-half reliability coefficients of:  $Rd=.87,.85$ ;  $Up=.82,.77$ ; and  $Hd=.85,.83$ . Means for the

same seven criterion groups as for Bell Object Relations Self-report Scale are also available for comparison.

#### Symptom Checklist-90 (SCL-90)

The SCL-90 (Derogatis, 1977) is a psychiatric symptom checklist of 90 items. Subjects rate each of 90 symptoms in terms of how distressing they have been within the past seven days. Symptoms are rated on a five point scale (0-4.0) from "not at all" to "extremely." The 90 symptoms are grouped into nine categories: somatization (SOM), obsessive compulsiveness (O-C), interpersonal sensitivity (I-S), depression (DEP), anxiety (ANX), anger-hostility (HOS), phobic anxiety (PHOB), paranoid ideation (PARA), psychoticism (PSY). Three global measures of psychopathology are also included: the Global Symptom Index (GSI), the Positive Symptom Distress Index (PSDI), and the Positive Symptom Total (PST). The author indicates that the GSI is the most meaningful overall measure of the patient's distress. A copy of the instrument is provided in Appendix F.

#### Procedure

Applicants to the Cocaine Abuse Consultation Service at the DiMele Center in New York City completed all five instruments as a routine part of initial evaluations for treatment. All completed instruments were given to the experimenter with names blacked out and a number code to insure patient confidentiality.

The balance of subjects were recruited by newspaper ads placed in New York City newspapers.

The ad ran as follows:

COCAINE USERS AND NONUSERS WANTED. Ph.D. CANDIDATE IN CLINICAL PSYCHOLOGY CONDUCTING QUESTIONNAIRE RESEARCH ON PATTERNS OF USING COCAINE. PLEASE CALL: ANDREW TATARSKY 674-1696.

Individuals who expressed interest in participating in the study were mailed packets containing all instruments, a cover-letter describing the procedure for completing research instruments and the purpose of the study in general terms. The cover letter is shown in Appendix G. Specifically, subjects were told that the study is being conducted to increase our knowledge of patterns of using cocaine. They were provided with a stamped envelope addressed to the investigator and asked to return the materials without including their name to ensure confidentiality. A postcard addressed to the investigator was included. Subjects were instructed to return it separately with their name and address if they wished a summary of research findings when the study was completed.

## Chapter V

### RESULTS

The results of this study have been organized in the following way: 1) a summary of descriptive statistics for each group, 2) comparisons between these groups, 3) correlational analyses between psychological and quantitative cocaine use variables, 4) discriminant analyses, and 5) comparisons between recreational and compulsive groups and five of Bell's normative groups.

#### Summary of Descriptive Statistics

##### for Each Group

##### Recreational Group (R group)

This group was predominantly white (87.1%), unmarried (83.9%) and relatively well educated ( $\bar{X}$  yrs. of education = 14.8%). The group was almost evenly divided between men (48.4%) and women (51.6%) and had an average age of 30.7 years. Fifty percent of the sample was employed in blue-collar, technician, unskilled, housewife or unemployed occupational categories and 50% in white collar, self-employed, professional or student categories. The group had an average annual income of \$22,400.

Regarding cocaine use, the subjects were all intranasal (IN) users. One subject reported current free base (FB) smoking but described a general pattern of IN use.

Most (92.9%) subjects reported controlled use of small amounts of cocaine rather than binging as their typical pattern of use. Examples of typical comments are: "small amounts until runs out in few days", "a few lines for

three days. Repeat in 1 or 2 weeks." Two subjects were classified as bingers based upon the following responses. "All in one shot", and "whenever it is available I will use it until its gone".

A majority of subjects reported that they did not use cocaine alone (71%) or at work (80.6%) and did use at parties (74.2%), at home (51.6%), with friends (90.3%), with their mates (51.6%) and mainly on the weekend (67.7%). Twenty percent of the group reported that they had stopped using before and, of eleven subjects giving reasons for starting to use cocaine again after stopping, six gave reasons categorized as "social" (e.g. a friend offering) while five reported "psychological" reasons (e.g. "Because of some strange desire to do it", "Because its fun").

On the average these subjects first used cocaine about eight and a half years ( $\bar{X}$ =102.6 months) ago and reported using in their present pattern for almost four and a half years ( $\bar{X}$ =53.2 months). Thus, their pattern appears to be very stable over time. Subjects reported using cocaine an average of .52 days per week and 3.4 days per month in mean amounts of .27 grams per week or 1.38 grams per month. About a quarter (25.8%) of the sample reported using cocaine each week (Range = 1-3 days per week), 29.0% reported regularly using each month but not on a weekly basis (Range = 1-7 days per month), and the rest reported using less than once a month. The average amount of money

spent on cocaine each week by these users was \$15.48, (Range = \$0-200), the average per month \$85.84 (Range = \$0-900).

On the average, subjects last used cocaine 42.7 days prior to completing the research questionnaires. This figure is somewhat misleading due to the presence of several occasional users who had not used for several months. Actually, 54.8% (17 people) of the sample had used within the previous week (32.3% within the prior three days), 19.4% within the prior month, 9.7% within three months and 16.1% within five months.

Regarding drug use other than cocaine, 93.5% of these subjects reported some use of either marijuana or alcohol while only a small percentage, 6.5% (2 subjects), reported use of other drugs. Nearly half (48.4%) of these subjects were categorized as heavy marijuana smokers (12-30x per month) and just over half (51.6%) were heavy alcohol drinkers (12-30x per month). Twenty nine percent were light to moderate (1-11x per month) marijuana smokers and 35.5% light to moderate drinkers and 22.6% were non users of marijuana while 12.9% did not use alcohol. Concerning the two subjects who used other drugs, one reported light use of tranquilizers (1-7x per month) and light use of amphetamines and, the other, light use of tranquilizers only. About half, 45.2% smoked cigarettes.

Regarding psychosocial consequences of cocaine use, the following percentages of subjects in this group

reported at least one consequence in each of the following categories: Interpersonal, 29%; Vocational, 32.2%; Financial, 32.2%; Legal, 0%; Miscellaneous, 9.7%. Concerning specific consequences, fifty-four point eight percent of the R group reported no negative consequences of their use. Just over one quarter of the group reported that cocaine had caused them to reduce their productivity at work or at school (29.8%) and to have no extra money (29%). The next most frequently checked categories were arguments with mate (19.4%), miss days of work/school (19.4%), came late to work/school (16.1%), became socially isolated and withdrawn (12.9%) and gotten into debt (12.9%). All other categories had three or less (less than 10%) subjects reporting positive responses.

Regarding both ego functioning (as measured by the Bell Object Relations and Reality Testing Inventory (BORRTI)) and psychiatric status (SCL-90), the R group appears, in general, to be functioning in the non-pathological range. BORRTI subscale means for the group are: ALN= -.43, IA= -.32, EGC= -.45, SI= -.26, RD= -.38, UP= -.37 and HD= -.29. Compared to BORRTI nonpathological norms (See Appendix H), all means are well within normal limits between the 57th and 40th percentiles. The percentage of subjects scoring above Bell's suggested cutoff indicating pathological ego-functioning (above the 85th percentile) was small for six subscales (ALN=6.5%,

IA=9.7%, EGC=6.5%, SI=12.9%, RD=6.5%, HD=9.7%) and zero for one (UP).

SCL-90 subscale means for this group are all below the clinical range suggested by Derogatis (1977). The clinical range is 65 through 80. While there are slight elevations in O-C (x=59.4), I-S (x=59.8), DEP (x=60.8), GSI (x=59.5) and PST (x=60.2), all scales, except PSDI (x=53.8) are within five points of each other (SOM, x=56.5; ANX, x=57.7; HOS, x=56.3; PHOB, x=56.5; PARA, x=56.5; PSY, x=56.1).

#### Compulsive Group (C group)

These users were mostly men (86.8%), with an average age of 29.5 years, 68.4% were white, 31.6% non-white; almost half were married (42.1%), and 60.5% were in blue collar, technician, unskilled, housewife or unemployed, occupational categories as opposed to 39.5% white collar, professional, self-employed and student. These subjects had, on the average, 12.9 years of education and earned a mean yearly income of \$23,200.

Sixty five point eight percent of these subjects reported IN use of cocaine with 34.2% reporting no IN use. Forty-four point seven percent reported FB smoking and 10.5% reported some IV use. Seventeen (44.7%) subjects reported only IN use, 11 (28.9%) reported FB only and two (5.3%) used only IV. Eight (21.1%) subjects reported mixed routes of administration. Thirty one (91.2%) of 34 subjects reporting described their char-

acteristic patterns of use as binging with only 3 (8.8%) reporting controlled use. Some examples of responses categorized as binging are: "All at once without pause"; "use whatever I have until its gone, using larger and larger amounts to finish it, to get rid of it (only to go buy more?)", "once I have it I do it", "\$50 then another \$50 until all my money runs out for the night". A large majority of compulsive subjects (86.8%), reported that they did use cocaine alone, and almost two thirds (65.8%) said that they did not use mainly on the weekends. A majority (65.8%) did not use at work, and did use at parties (63.2%), at home (76.3%) and with friends (73.2%). Fifty seven point nine percent said that they did not use with their mates. Over three quarters (76.3%) of these users reported having stopped using before. Of 24 users giving reasons for why they started again, almost all (83.3%) gave "psychological" reasons (e.g. "uncontrollable desire", "Felt deprived, isolated").

These subjects reported first trying cocaine, on the average, just over eight years ( $\bar{x}$ =96.5 months) ago and said they were at their present pattern for a little over two years ( $\bar{x}$ =25.3 months). The average days per week that cocaine was used was 3.3 with an average weekly consumption of 4.13 grams of cocaine or 18 grams monthly. Eight (21.2%) subjects reported using 6 or 7 days per week and eight (21.1%) reported using one or less days per week.

Subjects spent an average of \$312.32 per week and \$1,321.45 per month on the drug. Subjects last used cocaine an average of 2.2 days before completing research questionnaires with the majority (56.8%) using within the previous 24 hours, 21.5% within the previous two days, 16.2% within the previous week and 5.4% within the previous two weeks. Seventy-two point seven percent of these users reported using marijuana or alcohol but no other drugs in addition to cocaine, 21.2% (seven subjects) used drugs other than these and 6.1% (2 subjects) used cocaine only. Thirty nine point five percent of the sample reported heavy marijuana use (12-30x per month), 15.8% light to moderate (1-1x per month) use and 44.7% reported no use of marijuana. Almost two thirds (60.4%) of the group reported heavy alcohol use, 18.4% reported light to moderate use and 21.1% reported no alcohol use. Over three quarters (76.3%) of the sample were cigarette smokers. Of the seven subjects who used drugs other than marijuana or alcohol, 6 also used marijuana or alcohol: two used tranquilizers lightly (1-7x per month) 1 used PCP occasionally, 1 used heroin about once a week and two were poly abusers of alcohol, marijuana, tranquilizers, sleeping pills and heroin. One subject used heroin daily with cocaine but no other drugs.

All of these subjects reported some negative psychosocial consequences of their cocaine use. The following percentages of subjects reported at least one consequence

in each of the following categories: Interpersonal=94.7%, Financial=94.7%, Vocational=81.6% and Miscellaneous=44.7%. The most frequently checked single consequence was no extra money (81.6%) followed in the financial category by gotten into debt (78.9%), used all money in bank accounts (73.7%) and unable to keep up with bills (63.2%). In the Interpersonal category the consequence with the largest percentage of subjects reporting was arguments with their spouse or mate (78.9%) followed by mates had threatened to leave which was reported by 52.6% of the sample. Half of the sample reported that cocaine had caused them to become socially isolated and withdrawn and between one-half and one-third of the sample reported positive responses in all other interpersonal categories. Over a half of these subjects also had problems in the following vocational areas: reduce your productivity (57.9%), miss days of work/school (55.3), and come late to work/school (52.6); and nearly one quarter of the group (23.7%) had gotten fired from a job because of cocaine use.

Small but alarming, percentages of the sample gave positive responses for the following consequences of cocaine use: have an unwanted sexual encounter (34.2%), arrested for other crimes related to the use or sale of cocaine (18.4%), have a car accident (15.8%), have a physical fight (15.8%), attempt suicide (15.8%), physically hurt someone (12.5%).

Compared to Bell's nonpathological norms (Appendix H), all BORRTI object relations subscale means except SI are elevated with ALN approaching the 85th percentile (ALN=.24, IA=.29, EGC=.08, SI= -.22). SI is virtually identical to the Recreational user group mean and close to the 50th percentile of Bell's normative sample. The BORRTI reality testing factor means are around the 85th percentile (RD=.30, UP=.38, HD=.32), RD and HD above and UP just below. Following are the percentages of subjects who scored in the "pathological" range for each BORRTI subscale: ALN=28.9%, IA=34.2%, EGC=26.3%, SI=7.9%, RD=31.6%, UP=34.2% and HD=34.2%.

SCL-90 subscale mean scores are generally somewhat elevated with peaks on DEP (69.9), ANX (68.3), and GSI (68.2), which are in the clinical range. O-C (64.8), PSY (63.5), PSDI (64.2) and PST (64.0) approach the clinical range, while the remaining subscale means are somewhat lower (SOM=60.9, I-S=62.1, HOS=61.5, PHOB=61.6, PARA=60.0).

#### Quasi-compulsive Group (QC group)

This group had an average age of 28.2 years, was 68.4% male, 31.6% female, mostly white (78.9%), about two thirds (63.2%) unmarried and roughly half (52.6%) employed in white-collar, professional, self-employed and student positions and the rest in (47.4%) in blue collar, technician, housewife and unemployed categories. The average annual income was \$41,800 but this was somewhat skewed by three subjects with annual incomes of \$100,000 or more.

Excluding these subjects the average was \$19,533. Average years of education was exactly the same as for the R group, 14.8 years.

Most (89.5%) of these subjects were IN users with two (10.5%) subjects reporting FB smoking only and three (15.8%) combining IN and FB administration. No subjects reported IV use. Over half (58.8%) of this group described their typical pattern as bingeing. A majority of subjects (68.4%) did use cocaine alone and did not use cocaine mainly on the weekends (52.6%) or with their mates (63.2%). A large majority (78.9) of these users did not use at work and a majority used at parties (68.4%), with friends (68.4%) and at home (63.2%).

The majority (63.2%) of this group reported trying to stop before and, of those, 76.9% gave "psychological" reasons for starting again. On the average, this group first tried cocaine just over seven years ago ( $\bar{x}$ =85.0 months) and are rather stable in their present use pattern reporting an average of three and a half years using as they presently do ( $\bar{x}$ =41.7 months). Similar to the C group, these subjects used cocaine an average of 2.95 days per week with 15.8% using 6 or 7 days per week and 12.1% using 1 or less days per week. Subjects reported an average weekly consumption of 1.59 grams and 6.85 grams per month and spent an average of \$112.89 weekly and \$480.68 monthly on the drug. On the average, this group last used cocaine seven days prior to completing the

research questionnaires with a little more than a quarter (26.3%) of subjects using in the previous 24 hours, 47.4% within the previous week, 21.1% within two weeks and one (5.3%) within a month.

Use of only marijuana or alcohol in addition to cocaine was reported by 88.9% of this group, one subject (5.6%) reported also using tranquilizers (2x per week) and one (5.6%) reported using no drugs other than cocaine. Regarding marijuana use, 15.8% of the sample were heavy users (12-30x per month) 47.4% were light to moderate users (1-1x per month) and 36.8% did not use. Fifty-seven point nine percent of the sample were heavy users of alcohol (12-30x per month), 31.6% were light to moderate users and 10.5% did not use alcohol. Less than a third (31.6) of this group smoked cigarettes.

Ninety-four percent of subjects reporting reported some negative psychosocial consequences of their cocaine use (seventeen of eighteen subjects). The following percentages of subjects reported at least one consequence in each of the following categories: Interpersonal=83.3%, Vocational=61.1%, Financial=61.1%, Legal=5.5%, Miscellaneous=22.2%. Arguments with mate was the individual consequence reported most frequently by the sample (72.2%) and half of this group reported that their mates threatened to leave as a consequence. No extra money was the second (61.1%) most frequently checked consequence. Over a quarter of this group checked the following con-

sequences: reduce your productivity (38.9), harmed ability to talk openly with others (33.3%), harmed sexual relationship (33.3%), caused a relationship to break up (27.8%), come late to work/school (27.8%), while almost a quarter of the group reported the following consequences: became socially isolated (22.2%), harmed social life (22.2%), and gotten into debt (22.2%). Three or less subjects checked all remaining consequences.

All BORRTI object relations subscale means except SI are in the upper third compared to Bell's non-pathological norms with ALN highest (ALN=.05, IA=.17, EGC= -.05, SI= -.29) and all three reality testing subscale means are elevated with HD above the 85th percentile and RD and UP below it (RD=.10, UP= -.01, HD=.21). Over a quarter of quasi-compulsive subjects scored in the pathological range on all BORRTI subscales except SI: ALN=26.3%, IA=26.3%, EGC=31.6%, SI=10.5%, RD=31.6%, UP=36.8% and HD=26.3%. SCL-90 subscale means are all below the clinical range except for DEP (65.8). ANX (64.5) and PST (64.0) are approaching the clinical range. Other subscale means in descending order are: GSI (63.7), I-S 62.7), HOS (62.3), PAR (61.2), PSY (61.1), O-C (60.5), PHOB (60.4), PSDI (58.4) and SOM (57.1).

#### Comparison of Recreational, Quasi-compulsive, and Compulsive Groups

Analyses were carried out to identify differences between each group in demographics, cocaine use, other

drug use, negative psychosocial consequences of cocaine use, ego functioning (i.e., the BORRTI's four object relations factors and three reality testing factors) and psychiatric symptomatology (i.e., SCL-90).

#### Demographics

Either t-tests or chi-squares were performed comparing groups on demographic variables. Each pair of groups was compared with chi-squares on categorical variables and t-tests on quantitative variables. Chi-square results are presented in Table 4 and t-tests results in Table 5.

Chi-square comparisons between the R group and the C group yielded significant differences for gender ( $p < .01$ ), with a greater percentage of males in the C group than in the R group, and marital status ( $p < .05$ ), a larger percentage of compulsive users were married than recreational users. These groups did not differ with regard to race, occupational status, history of serious medical problems, history of outpatient psychotherapy or previous treatment for drug or alcohol problems. The QC group was not significantly different from either of the other groups on any categorical variable.

Of three quantitative variables, groups differed significantly on one. T-tests revealed that the R and QC groups both had significantly more education than the C group. Groups did not differ on age or income.

Table 4

Comparison of Recreational, Quasi-Compulsive and Compulsive Groups  
on Categorical Demographic and Descriptive Variables

| Variable                                                   | Group a     |          |              |          |             |          | Comparative Groups   |                      |                      |
|------------------------------------------------------------|-------------|----------|--------------|----------|-------------|----------|----------------------|----------------------|----------------------|
|                                                            | R<br>(N=31) |          | QC<br>(N=19) |          | C<br>(N=38) |          | R-QC                 | QC-C                 | R-C                  |
|                                                            | <u>n</u>    | <u>%</u> | <u>n</u>     | <u>%</u> | <u>n</u>    | <u>%</u> | <u>χ<sup>2</sup></u> | <u>χ<sup>2</sup></u> | <u>χ<sup>2</sup></u> |
| <u>Gender</u>                                              |             |          |              |          |             |          |                      |                      |                      |
| Male                                                       | 15          | 48.4     | 13           | 68.4     | 33          | 86.8     | 1.19                 | 1.70                 | 10.16**              |
| Female                                                     | 16          | 51.6     | 6            | 31.6     | 5           | 13.2     |                      |                      |                      |
| <u>Race</u>                                                |             |          |              |          |             |          |                      |                      |                      |
| White                                                      | 27          | 87.1     | 15           | 78.9     | 26          | 68.4     | .13                  | .27                  | 2.38                 |
| Non-White                                                  | 4           | 12.9     | 4            | 21.1     | 12          | 31.6     |                      |                      |                      |
| <u>Marital Status</u>                                      |             |          |              |          |             |          |                      |                      |                      |
| Unmarried                                                  | 26          | 83.9     | 12           | 63.2     | 22          | 57.9     | 1.75                 | .01                  | 4.28*                |
| Married                                                    | 5           | 16.1     | 7            | 36.8     | 16          | 42.1     |                      |                      |                      |
| <u>Occupational Status<sup>b</sup></u>                     |             |          |              |          |             |          |                      |                      |                      |
| Blue Collar, Technician,<br>Housewife, Unemployed          | 15          | 50.0     | 9            | 47.4     | 23          | 60.5     | .00                  | .44                  | .39                  |
| White Collar, Profes-<br>sional, Self-employed,<br>Student | 15          | 50.0     | 10           | 52.6     | 15          | 39.5     |                      |                      |                      |
| Hx Serious Medical<br>Problems                             | 8           | 25.8     | 3            | 15.8     | 8           | 21.1     | .23                  | .01                  | .03                  |
| Hx Outpatient<br>Psychotherapy<br>or Counselling           | 9           | 29.0     | 6            | 31.6     | 7           | 18.4     | .00                  | .61                  | .55                  |
| Hx Psychiatric Hospital                                    | 2           | 6.5      | 0            | 0.00     | 4           | 10.5     | .15                  | .84                  | .03                  |
| Hx Treatment for Drug<br>or Alcohol Problems               | 2           | 6.5      | 2            | 10.5     | 9           | 23.7     | .00                  | .69                  | 2.61                 |

\*R-Recreational; QC-Quasi-Compulsive; C-Compulsive. <sup>b</sup>N=30 for Recreational group.

\*p .05. \*\*p .01.

Table 5

Comparison of Recreational, Quasi-Compulsive and Compulsive GroupsQuantitative Demographic Variables

| <u>Variable</u>              | <u>Group a</u> |           |           |           |          |           | <u>Comparative Groups</u> |             |            |
|------------------------------|----------------|-----------|-----------|-----------|----------|-----------|---------------------------|-------------|------------|
|                              | <u>R</u>       |           | <u>QC</u> |           | <u>C</u> |           | <u>R-QC</u>               | <u>QC-C</u> | <u>R-C</u> |
|                              | (N=31)         |           | (N=19)    |           | (N=38)   |           |                           |             |            |
|                              | <u>M</u>       | <u>SD</u> | <u>M</u>  | <u>SD</u> | <u>M</u> | <u>SD</u> | <u>t</u>                  | <u>t</u>    | <u>t</u>   |
| Age                          | 30.07          | 9.1       | 28.2      | 6.9       | 29.5     | 5.5       | 1.03                      | .75         | .66        |
| Years of Education           | 14.8           | 2.17      | 14.8      | 2.52      | 12.9     | 2.68      | .05                       | 2.59*       | 3.14**     |
| Annual Income<br>(thousands) | 22.4           | 18.4      | 41.8      | 61.5      | 23.2     | 15.8      | 1.30                      | 1.26        | .19        |
|                              | (n=29)         |           | (n=18)    |           | (n=37)   |           |                           |             |            |

<sup>a</sup>R-Recreational; QC-Quasi-Compulsive; C-Compulsive.

\*p .05. \*\*p .01.

### Cocaine Use

A series of t-tests was carried out comparing each group to each other group on nine quantitative cocaine use variables. Table 6 summarizes these analyses.

Comparisons between recreational users and the compulsive users yielded significant differences on all variables except time since first use of cocaine. Compulsive users used significantly more frequently (each week,  $p < .001$ , and each month,  $p < .001$ ), and used much larger amounts of cocaine (weekly,  $p < .001$ , and monthly,  $p < .001$ ). As a group, compulsive users had been using significantly less time in their current pattern of use than recreational users ( $p < .05$ ) and reported significantly less time since last using cocaine than recreational subjects ( $p < .01$ ). The QC group was compared to both other groups to see whether these users represented a point on a hypothetical continuum between recreational and compulsive users. T-tests comparing the R and QC groups showed that they were significantly different on seven of these nine quantitative variables. Similar to the compulsive users, the quasi-compulsive subjects used significantly more frequently (each week,  $p < .01$ , and each month,  $p < .001$ ), used more cocaine (each week,  $p < .01$ , and each month,  $p < .01$ ) and spent more money (each week,  $p < .01$ , and each month,  $p < .01$ ) on cocaine than the recreational users. The QC group also reported significantly less time since last using cocaine ( $p < .01$ ) than the R group. There was no

Table 6

Comparison of Recreational, Quasi-Compulsive and Compulsive GroupsOn Quantitative Measures of Cocaine Use

| <u>Variable</u>                     | <u>Group a</u> |           |           |           |          |           | <u>Comparative Groups</u> |             |            |
|-------------------------------------|----------------|-----------|-----------|-----------|----------|-----------|---------------------------|-------------|------------|
|                                     | <u>R</u>       |           | <u>QC</u> |           | <u>C</u> |           | <u>R-QC</u>               | <u>QC-C</u> | <u>R-C</u> |
|                                     | <u>M</u>       | <u>SD</u> | <u>M</u>  | <u>SD</u> | <u>M</u> | <u>SD</u> | <u>t</u>                  | <u>t</u>    | <u>t</u>   |
| Months Since First Tried Cocaine    | 102.6          | 53.02     | 85.0      | 70.39     | 96.5     | 58.11     | .98                       | .60         | .44        |
| Months Using in Current Pattern     | 53.2           | 52.91     | 41.7      | 68.59     | 25.3     | 27.56     | .64                       | .95         | 2.58*      |
| Days Since Last Use of Cocaine      | 42.7           | 70.63     | 7.0       | 7.80      | 2.2      | 2.93      | 2.78**                    | 2.58**      | 3.19**     |
| Days per Week Using Cocaine         | .52            | .93       | 2.95      | 2.15      | 3.3      | 2.16      | 4.68***                   | .65         | 7.29***    |
| Days per Month Using Cocaine        | 3.40           | 4.05      | 11.15     | 8.37      | 14.80    | 8.94      | 3.79***                   | 1.50        | 7.07***    |
| Grams of Cocaine Used Each Week     | .27            | .66       | 1.59      | 1.67      | 4.13     | 4.42      | 3.17**                    | 3.12**      | 5.31***    |
| Grams of Cocaine Used Each Month    | 1.38           | 2.65      | 6.85      | 6.52      | 18.00    | 17.87     | 3.48**                    | 3.42***     | 4.60***    |
| Dollars Spent Each Week on Cocaine  | 15.48          | 40.71     | 112.89    | 126.37    | 312.32   | 395.14    | 3.26**                    | 2.83**      | 4.60***    |
| Dollars Spent Each Month on Cocaine | 85.84          | 172.95    | 480.68    | 520.94    | 1321.45  | 1655.23   | 3.20**                    | 2.86**      | 4.57***    |

Note: The average amount of cocaine used each month by each group is larger than 4.3X the average weekly amount used by that group because some subjects in all groups did not report weekly cocaine usage.

<sup>a</sup>R-Recreational; QC-Quasi-Compulsive; C-Compulsive.

\*p .05. \*\*p .01. \*\*\*p .001.

significant difference regarding time using in current use pattern or time since first use of cocaine. When compared to the C group, quasi-compulsive users were significantly distinguished on five of nine variables. Compulsive users used significantly more cocaine (weekly,  $p < .01$ , and monthly,  $p < .001$ ), spent more money (each week,  $p < .01$ , and each month,  $p < .01$ ) on cocaine and reported less time since last use of cocaine than quasi-compulsive users but there was no difference between these groups on frequency of use (days per week and days per month), time using in current use pattern and time since first use. Thus, the quasi-compulsive group represents a distinct step on a continuum regarding amount of cocaine used and, corresponding to this, money spent on cocaine. Whereas, quasi-compulsive users appear to be like compulsives in their frequency of use.

A set of chi-square comparisons were performed between each pair of groups on 13 categorical descriptive cocaine use variables. The percentage of subjects in each group responding positively on each variable and the results of each chi-square comparison are presented in Table 7.

Chi-squares between recreational and compulsive users on percentages of group members reporting each of the three routes of administration yielded significant differences for two of the three routes. Significantly more compulsive users reported no IN use than recreational users ( $p < .001$ ) and more compulsive users reported FB

Table 7

Comparison of Recreational, Quasi-Compulsive and Compulsive Groups  
on Categorical Cocaine Use Variables

| Variable                                           | Group a |       |    |      |    |      | Comparative Groups |          |           |
|----------------------------------------------------|---------|-------|----|------|----|------|--------------------|----------|-----------|
|                                                    | R       |       | QC |      | C  |      | R-QC               | QC-C     | R-C       |
|                                                    | n       | %     | n  | %    | n  | %    | $\chi^2$           | $\chi^2$ | $\chi^2$  |
| Snort                                              | 31      | 100.0 | 17 | 89.5 | 25 | 65.8 | 1.23               | 2.54     | 10.93***  |
| Free-base                                          | 1       | 3.2   | 5  | 26.3 | 17 | 44.7 | 5.96*              | 1.12     | 13.18***  |
| Intravenous                                        | 0       | 0.0   | 0  | 0.0  | 4  | 10.5 | N/A                | .84      | 1.80      |
| Use Alone                                          | 9       | 29.0  | 13 | 68.4 | 33 | 86.8 | 5.9*               | 1.7      | 21.59**** |
| Use at Work                                        | 6       | 19.4  | 4  | 21.1 | 13 | 34.2 | 0.0                | .51      | 1.22      |
| Use at Parties                                     | 23      | 74.2  | 13 | 68.4 | 24 | 63.2 | .01                | .01      | .52       |
| Use at Home                                        | 16      | 51.6  | 12 | 63.2 | 29 | 76.3 | .23                | .53      | 3.57      |
| Use with Friends                                   | 28      | 90.3  | 13 | 68.4 | 28 | 73.7 | 2.49               | .01      | 2.1       |
| Use with Mate                                      | 16      | 51.6  | 7  | 36.8 | 16 | 42.1 | .52                | .01      | .3        |
| Use mainly on Weekends                             | 21      | 67.7  | 9  | 47.4 | 13 | 34.2 | 1.27               | .45      | 6.4*      |
| Pattern of Use: <sup>b</sup>                       |         |       |    |      |    |      | 11.92***           | 5.61*    | 40.24**** |
| Small Controlled Amounts                           | 26      | 92.9  | 7  | 41.2 | 3  | 8.8  |                    |          |           |
| Binging                                            | 2       | 7.1   | 10 | 58.8 | 31 | 91.2 |                    |          |           |
| Stopped Before                                     | 6       | 20.0  | 12 | 63.2 | 29 | 76.3 | 7.55**             | .53      | 19.09**** |
| If Stopped, Reason For Starting Again <sup>c</sup> |         |       |    |      |    |      |                    |          |           |
| Psychological                                      | 5       | 45.5  | 10 | 76.9 | 20 | 83.3 | 1.35               | .00      | 3.61      |
| Social                                             | 6       | 54.5  | 3  | 23.1 | 4  | 16.7 |                    |          |           |

\*R-Recreational; QC-Quasi-Compulsive; C-Compulsive. <sup>b</sup>N=28 for Recreational group, N=17 for Quasi-compulsive group, N=34 for Compulsive group. <sup>c</sup>The number of subjects giving reasons for starting cocaine use again are: N=11 for Recreational group, N=13 for Quasi-compulsive group, N=24 for Compulsive group.

\*p .05. \*\*p .01. \*\*\*p .001. \*\*\*\*p .0001.

administration than recreationals ( $p < .001$ ). Although the only four IV users in the study were in the C group, this did not yield a significant statistic when compulsive users were compared to recreational or quasi-compulsive users. The QC group was not significantly different from either other group regarding IN use. Regarding FB use, this group was not significantly distinct from the C group but was when compared to the R group ( $p < .05$ ).

Regarding context of use, only one of six categories showed group differences. Both the C and QC groups had significantly larger ( $p < .0001$  and  $p < .05$  respectively) percentages of subjects reporting that they used cocaine alone than the R group while compulsive and quasi-compulsive users were not significantly different on this variable. There were no differences between any of the groups regarding percent of group members checking use at parties, use at home, use with friends, use with mate, and use at work.

Three of the four remaining descriptive variables were important discriminators between the C and R groups. Significantly more recreational users reported using mainly on the weekend than compulsive users ( $p < .05$ ). The largest difference between these groups was found on the variable pattern of use (i.e. small controlled amounts vs. binging until supply runs out). Most compulsives reported binging compared to a large majority of recreational users reporting use of small controlled amounts; this difference

was highly significant ( $p < .0001$ ). Also highly significant was the difference between a majority of compulsive users reporting that they had stopped before compared to only 20% of recreationals ( $p < .0001$ ). Although a greater percentage of compulsive than recreational users gave "psychological" as opposed to "social" reasons for beginning to use cocaine after stopping, this difference was not significant.

The QC group was ordinally placed between the R and C groups on all four of these variables. The percentages of quasi-compulsive subjects reporting use mainly on the weekends and psychological vs. social reasons for using again after stopping were not significantly different from either group. However, the percentage of quasi-compulsive subjects reporting binging vs. small controlled amounts was significantly greater than recreational users ( $p < .001$ ) and less than compulsive users ( $p < .05$ ). Significantly more quasi-compulsive than recreational users reported having stopped before ( $p < .01$ ) but there was no difference between quasi-compulsive and compulsive users on this variable.

#### Other drug use

Chi-square comparisons were computed between each group on percentages of subjects in non-user, light-moderate user (1-11x per month) and heavy user (12-30x per month) for alcohol and marijuana use. The results of these tests are presented in Table 8. Chi-squares for

Table 8

Comparison of Recreational, Quasi-Compulsive and Compulsive Groups  
on Other Drug Use, Using Chi-Square Test

| Drug and<br>Level of Use <sub>a</sub> | Group b |       |    |      |    |      | Comparative Groups |          |          |
|---------------------------------------|---------|-------|----|------|----|------|--------------------|----------|----------|
|                                       | R       |       | QC |      | C  |      | R-QC               | QC-C     | R-C      |
|                                       | n       | %     | n  | %    | n  | %    | $\chi^2$           | $\chi^2$ | $\chi^2$ |
| <u>Marijuana</u>                      |         |       |    |      |    |      | 5.43               | 7.24*    | 4.1      |
| Non-User                              | 7       | 22.6  | 7  | 30.8 | 17 | 44.7 |                    |          |          |
| Light-Moderate                        | 9       | 29.0  | 9  | 47.4 | 6  | 15.8 |                    |          |          |
| Heavy User                            | 15      | 48.4  | 3  | 15.8 | 15 | 39.5 |                    |          |          |
| <u>Alcohol</u>                        |         |       |    |      |    |      | .19                | 1.78     | 2.8      |
| Non-User                              | 4       | 12.9  | 2  | 10.5 | 8  | 21.1 |                    |          |          |
| Light-Moderate                        | 11      | 35.5  | 6  | 31.6 | 7  | 18.4 |                    |          |          |
| Heavy User                            | 16      | 51.6  | 11 | 57.9 | 23 | 60.4 |                    |          |          |
| <u>Cigarettes</u>                     |         |       |    |      |    |      | .43                | 8.84**   | 5.79*    |
| Non-Smoker                            | 17      | 54.8  | 13 | 68.4 | 9  | 23.7 |                    |          |          |
| Smoker                                | 14      | 45.2  | 6  | 31.6 | 29 | 76.3 |                    |          |          |
| <u>Tranquilizers</u>                  |         |       |    |      |    |      |                    |          |          |
| Non-User                              | 29      | 93.5  | 18 | 94.4 | 28 | 84.8 |                    |          |          |
| Light-Moderate                        | 2       | 6.5   | 1  | 5.6  | 4  | 12.1 |                    |          |          |
| Heavy User                            | 0       | 0     | 0  | 0    | 1  | 3.0  |                    |          |          |
| <u>Sleeping Pills</u>                 |         |       |    |      |    |      |                    |          |          |
| Non-User                              | 31      | 100.0 | 18 | 94.4 | 31 | 94.0 |                    |          |          |
| Light-Moderate                        | 0       | 0     | 0  | 0    | 1  | 3.0  |                    |          |          |
| Heavy User                            | 0       | 0     | 1  | 5.6  | 1  | 3.0  |                    |          |          |

Chi-Squares not computed  
 due to the small numbers  
 of subjects in all other  
 drug use categories for  
 all groups.

Table 8 (continued)

Comparison of Recreational, Quasi-Compulsive and Compulsive Groups  
on Other Drug Use, Using Chi-Square Test

| Drug and<br>Level of Use | Group b  |          |          |          |          |          | Comparative Groups   |                      |                      |
|--------------------------|----------|----------|----------|----------|----------|----------|----------------------|----------------------|----------------------|
|                          | R        |          | QC       |          | C        |          | R-QC                 | QC-C                 | R-C                  |
|                          | <u>n</u> | <u>%</u> | <u>n</u> | <u>%</u> | <u>n</u> | <u>%</u> | <u>x<sup>2</sup></u> | <u>x<sup>2</sup></u> | <u>x<sup>2</sup></u> |
| <u>Amphetamines</u>      |          |          |          |          |          |          |                      |                      |                      |
| Non-User                 | 30       | 96.8     | 19       | 100.0    | 33       | 100.0    |                      |                      |                      |
| Light-Moderate           | 1        | 3.2      | 0        | 0        | 0        | 0        |                      |                      |                      |
| <u>Heroin</u>            |          |          |          |          |          |          |                      |                      |                      |
| Non-User                 | 31       | 100.0    | 19       | 100.0    | 29       | 87.9     |                      |                      |                      |
| Light to Moderate        | 0        | 0        | 0        | 0        | 3        | 9.0      |                      |                      |                      |
| Heavy User               | 0        | 0        | 0        | 0        | 1        | 3.0      |                      |                      |                      |

Chi-Squares not computed  
due to the small numbers  
of subjects using.

<sup>a</sup>Light-Moderate User =1-11x per month; Heavy User =12-30x per month.  
<sup>b</sup>R-Recreational; QC-Quasi-Compulsive; C-Compulsive.  
<sup>\*</sup>p .05. <sup>\*\*</sup>p .01.

alcohol use were not significant for any pair of groups. Concerning marijuana use, the only pair of groups that was significantly different was the QC with C pair ( $p < .05$ ) with the QC having more users in the light to moderate user category and the C group having a larger percentage in the heavy and non-user categories. Neither group was significantly different from the recreational group.

Chi-squares for group differences regarding percentage of cigarette smokers were significant comparing recreational to compulsive users ( $p < .05$ ) and quasi-compulsive to compulsive users ( $p < .01$ ). Both the R group and the QC group had a significantly smaller percentage of smokers than the C group.

Statistical comparisons between groups for drugs used other than marijuana and alcohol were not done because of the small numbers of subjects reporting use of other drugs. It is interesting, however, that the only subjects reporting use of heroin were four compulsive subjects.

#### Negative Psychosocial Consequences of Cocaine Use

Chi-square tests were conducted between all pairs of groups to determine which psychosocial consequences best distinguished recreational users from compulsive users and where quasi-compulsive users stood relative to these other groups. The results of these analyses are presented in Table 9.

The C group had significantly greater percentages of subjects reporting positive responses than the R group for

Table 9

Comparison of Groups on Negative Psychosocial Consequences  
of Cocaine Use, Using the Chi-Square Test

| Consequence                                    | Group                  |          |                            |          |                      |          | Comparative Groups   |                      |                      |
|------------------------------------------------|------------------------|----------|----------------------------|----------|----------------------|----------|----------------------|----------------------|----------------------|
|                                                | Recreational<br>(N=31) |          | Quasi-Compulsive<br>(N=18) |          | Compulsive<br>(N=38) |          | R-QC                 | QC-C                 | R-C                  |
|                                                | <u>n</u>               | <u>%</u> | <u>n</u>                   | <u>%</u> | <u>n</u>             | <u>%</u> | <u>χ<sup>2</sup></u> | <u>χ<sup>2</sup></u> | <u>χ<sup>2</sup></u> |
| Arguments with Mate                            | 6                      | 19.4     | 13                         | 72.2     | 30                   | 78.9     | 11.27***             | .05                  | 21.97****            |
| Mate Threatened<br>to Leave                    | 0                      | 0.0      | 9                          | 50.0     | 20                   | 52.6     | 15.8****             | 0.0                  | 20.49****            |
| A relationship Broke Up                        | 1                      | 3.2      | 5                          | 27.8     | 14                   | 36.8     | 4.31*                | .13                  | 9.45**               |
| Became Socially Isolated<br>and Withdrawn      | 4                      | 12.9     | 4                          | 22.2     | 19                   | 50.0     | .2                   | 2.83                 | 8.97**               |
| Harmed Social Life, Feel<br>Less Social        | 2                      | 6.5      | 4                          | 22.2     | 15                   | 39.5     | 1.37                 | .94                  | 8.33**               |
| Harmed Sexual<br>Relationship                  | 1                      | 3.2      | 6                          | 33.3     | 17                   | 44.7     | 6.15*                | .27                  | 13.18***             |
| Harmed Ability to Talk<br>Openly               | 3                      | 9.7      | 6                          | 33.3     | 13                   | 34.2     | 2.83                 | 0.0                  | 4.47*                |
| Came Late to Work/<br>School                   | 5                      | 16.1     | 5                          | 27.8     | 20                   | 52.6     | .37                  | 2.13                 | 8.33**               |
| Missed Days of Work/<br>School                 | 6                      | 19.4     | 3                          | 16.7     | 21                   | 55.3     | 0.0                  | 5.94*                | 7.8**                |
| Reduce Your Productivity                       | 8                      | 25.8     | 7                          | 38.9     | 22                   | 57.9     | .41                  | 1.09                 | 5.91*                |
| Spend Too Much Time on<br>Breaks               | 0                      | 0.0      | 2                          | 11.1     | 7                    | 18.4     | 1.31                 | .09                  | 4.49*                |
| Harmed Relationship with<br>Supervisor or Boss | 1                      | 3.2      | 1                          | 5.6      | 8                    | 21.1     | 0.0                  | 1.18                 | 3.34                 |

Table 9 (Continued)

Comparison of Groups on Negative Psychosocial Consequences  
of Cocaine Use, Using the Chi-Square Test

| Consequence                                                    | Group                  |          |                            |          |                      |          | Comparative Groups   |                      |                      |
|----------------------------------------------------------------|------------------------|----------|----------------------------|----------|----------------------|----------|----------------------|----------------------|----------------------|
|                                                                | Recreational<br>(N=31) |          | Quasi-Compulsive<br>(N=18) |          | Compulsive<br>(N=38) |          | R-QC                 | QC-C                 | R-C                  |
|                                                                | <u>n</u>               | <u>%</u> | <u>n</u>                   | <u>%</u> | <u>n</u>             | <u>%</u> | <u>χ<sup>2</sup></u> | <u>χ<sup>2</sup></u> | <u>χ<sup>2</sup></u> |
| Got Fired from a Job                                           | 0                      | 0.0      | 1                          | 5.6      | 9                    | 23.7     | .08                  | 1.64                 | 6.48*                |
| Used all Money in Bank<br>Account                              | 1                      | 3.2      | 1                          | 5.6      | 28                   | 73.7     | 0.0                  | 20.06****            | 31.95****            |
| Gotten into Debt                                               | 4                      | 12.9     | 4                          | 22.2     | 30                   | 78.9     | .2                   | 14.19***             | 27.21****            |
| Unable to Keep Up<br>with Bills                                | 3                      | 9.7      | 2                          | 11.1     | 24                   | 63.2     | 0.0                  | 11.29***             | 18.32****            |
| No Extra Money                                                 | 9                      | 29.0     | 11                         | 61.1     | 31                   | 81.6     | 3.61                 | 1.75                 | 17.25****            |
| Arrested for Sale or<br>Possession of Cocaine                  | 0                      | 0.0      | 0                          | 0.0      | 1                    | 2.6      | N/A                  | 0.0                  | 0.0                  |
| Arrested for Other Crimes<br>Related to Use/Sale<br>of Cocaine | 0                      | 0.0      | 1                          | 5.6      | 7                    | 18.4     | .08                  | .77                  | 4.5*                 |
| Have a Car Accident                                            | 1                      | 3.2      | 0                          | 0.0      | 6                    | 15.8     | 0.0                  | 1.75                 | 1.74                 |
| Have a Physical Fight                                          | 1                      | 3.2      | 2                          | 11.1     | 6                    | 15.8     | .24                  | 0.0                  | 1.74                 |
| Have an Unwanted Sexual<br>Encounter                           | 1                      | 3.2      | 3                          | 16.7     | 13                   | 34.2     | 1.24                 | 1.08                 | 8.31**               |
| Physically Hurt Someone                                        | 0                      | 0.0      | 3                          | 17.7     | 4                    | 10.5     | 2.99                 | .05                  | 1.8                  |
| Attempt Suicide                                                | 0                      | 0.0      | 0                          | 0.0      | 6                    | 15.8     | N/A                  | 1.75                 | 3.56                 |

\*R-Recreational; QC-Quasi-Compulsive; C-Compulsive.

\*p .05. \*\*p .01. \*\*\*p .001. \*\*\*\*p .0001.

18 of 24 specific consequences. Financial problems best differentiated the groups: the C group had percentages of subjects in all four consequences in this category that were significantly greater than the R group at the  $p .0001$  level. Interpersonal problems was the second best distinguishing category. All seven consequences were significantly different for these groups at the following levels in decreasing order: arguments with mate ( $p .0001$ ), mate threatened to leave ( $p < .0001$ ), harmed sexual relationship ( $p < .001$ ), caused a relationship to break up ( $p < .01$ ), become socially isolated and withdrawn ( $p < .01$ ), and harmed social life, felt less social ( $p < .01$ ). In the area of vocational problems, five of six consequences were significantly different for these groups. They were: come late to work/school ( $p < .01$ ), miss days of work/school ( $p < .01$ ), got fired from a job ( $p < .05$ ), reduce your productivity ( $p < .05$ ), spend too much time on breaks ( $p < .05$ ). Of the two legal consequences inquired about, only one, arrested for other crimes related to use/sale of cocaine ( $p < .05$ ) significantly distinguished these groups. Of the remaining five miscellaneous items, only have an unwanted sexual encounter ( $p < .01$ ), had significantly more compulsive users reporting positively.

When compared to the recreational and compulsive users, an interesting pattern of problems emerges for the QC group. For 16 of 24 items there are no significant

differences between the QC group and recreationals or compulsives. On 13 of these sixteen, the QC group is positioned ordinally between the R group, which had a smaller percentage of subjects reporting positively, and the C group, with a larger percentage. Regarding the remaining eight consequences, for three of four financial items, the QC group had a significantly lower percent of subjects responding positively than the C group: Used all money in bank accounts ( $p < .0001$ ), gotten into debt ( $p < .001$ ), unable to keep up with bills ( $p < .001$ ). On these items there is no significant difference between QC and R groups. On four of the seven interpersonal items, the pattern of responding is reversed. The QC had significantly more positive responses on the following items than the R group: mate threatened to leave ( $p < .0001$ ), arguments with mate ( $p < .001$ ), harmed sexual relationship ( $p < .05$ ), caused a relationship to break up ( $p < .05$ ). On these items, the QC group was not significantly different from the C group. Only one other item distinguished quasi-compulsives from either other group. On miss days of work/school, the QC group had significantly less positive responses than the C group ( $p < .05$ ) but was not significantly different from the R group.

#### Object Relations and Reality Testing (BORRTI)

All groups were compared on each BORRTI subscale group mean. Results of t-tests between all group pairs are presented in Table 10. T-tests between the R and C groups

Table 10

T-test Comparisons of BORRTI Subscale Means Obtained by  
All Groups with Means (M) and Standard Deviations (SD)

| <u>Subscale</u> | <u>Group</u>        |           |                         |           |                   |           | <u>Comparative Groups<sup>a</sup></u> |             |            |
|-----------------|---------------------|-----------|-------------------------|-----------|-------------------|-----------|---------------------------------------|-------------|------------|
|                 | <u>Recreational</u> |           | <u>Quasi-Compulsive</u> |           | <u>Compulsive</u> |           | <u>R-QC</u>                           | <u>QC-C</u> | <u>R-C</u> |
|                 | <u>M</u>            | <u>SD</u> | <u>M</u>                | <u>SD</u> | <u>M</u>          | <u>SD</u> | <u>t</u>                              | <u>t</u>    | <u>t</u>   |
| ALN             | -0.43               | 0.54      | 0.05                    | 0.76      | 0.24              | 0.75      | 2.58*                                 | 0.88        | 4.13***    |
| IA              | -0.32               | 0.64      | 0.17                    | 0.97      | 0.29              | 0.88      | 1.92                                  | 0.5         | 3.23***    |
| BGC             | -0.45               | 0.44      | -0.05                   | 0.81      | 0.08              | 0.85      | 1.94                                  | 0.58        | 3.32***    |
| SI              | -0.26               | 0.84      | -0.29                   | 0.55      | -0.22             | 0.68      | 0.13                                  | 0.39        | 0.24       |
| RD              | -0.38               | 0.42      | 0.10                    | 0.91      | 0.30              | 1.35      | 2.18*                                 | 0.60        | 2.98**     |
| UP              | -0.37               | 0.48      | -0.01                   | 0.74      | 0.38              | 0.92      | 1.91                                  | 1.60        | 4.37***    |
| HD              | -0.29               | 0.27      | 0.21                    | 1.33      | 0.32              | 1.17      | 1.62                                  | 0.33        | 3.16**     |

<sup>a</sup>R-Recreational; QC-Quasi-Compulsive; C-Compulsive.

\*p .05. \*\*p .01. \*\*\*p .001.

showed that the C group subscale means were significantly higher (i.e., more pathological) on six of seven subscales. In descending order of magnitude these were: UP ( $p < .001$ ), ALN ( $p < .001$ ), IA ( $p < .001$ ), EGC ( $p < .01$ ), HD ( $p < .01$ ) and RD ( $p < .01$ ). The QC group was not significantly different from the C group on any subscale and was significantly higher than the R group on ALN ( $p < .05$ ) and RD ( $p < .05$ ). All three groups means for SI were virtually identical and not significantly different from one another.

Chi-square comparisons between each pair of groups were performed on the percentage of subjects with scores above a cut-off value indicating pathological elevation (i.e., the 85th percentile) on each BORRTI subscale. These results are presented in Table 11. When compared to the R group, the C group had a significantly larger percentage on UP ( $p < .001$ ), RD ( $p < .05$ ), HD ( $p < .05$ ), IA ( $p < .05$ ), and ALN ( $p < .05$ ). Chi-square tests between the C and QC groups, were not significant for any subscale. Compared to the R group, the QC group had larger percentages of subjects scoring in the pathological range on six of seven subscales but only one was significant, UP ( $p < .01$ ).

#### Psychiatric Symptomatology (SCL-90)

T-tests compared all groups to each other on each SCL-90 subscale. Results of these analyses are presented in Table 12.

Table 11

Number and Percent of Each Group that Scored in the Pathological Range

(Above 85th Percentile) on Each BORTI Subscale and Chi-Square

Comparisons Between Groups on These Percentages

| <u>Variable</u>                 | <u>Groups a</u> |          |           |          |          |          | <u>Comparative Groups</u>  |                            |                            |
|---------------------------------|-----------------|----------|-----------|----------|----------|----------|----------------------------|----------------------------|----------------------------|
|                                 | <u>R</u>        |          | <u>QC</u> |          | <u>C</u> |          | <u>R-QC</u>                | <u>QC-C</u>                | <u>R-C</u>                 |
|                                 | <u>n</u>        | <u>%</u> | <u>n</u>  | <u>%</u> | <u>n</u> | <u>%</u> | <u><math>\chi^2</math></u> | <u><math>\chi^2</math></u> | <u><math>\chi^2</math></u> |
| Alienation                      | 2               | 6.5      | 5         | 26.3     | 11       | 28.9     | 2.39                       | 0.0                        | 4.28*                      |
| Insecure Attachment             | 3               | 9.7      | 5         | 26.3     | 13       | 34.2     | 1.35                       | 0.91                       | 4.47*                      |
| Egocentricity                   | 2               | 6.5      | 6         | 31.6     | 10       | 26.3     | 3.82                       | 0.01                       | 3.40                       |
| Social Incompetence             | 4               | 12.9     | 2         | 10.5     | 3        | 7.9      | 0.0                        | 0.0                        | .08                        |
| Reality Distortion              | 2               | 6.5      | 6         | 31.6     | 12       | 31.6     | 3.82                       | 0.0                        | 5.20*                      |
| Uncertainty of Perception       | 0               | 0.0      | 7         | 36.8     | 13       | 34.2     | 10.39**                    | 0.0                        | 10.93***                   |
| Hallucinations and<br>Delusions | 3               | 9.7      | 5         | 26.3     | 13       | 34.2     | 1.346                      | 0.09                       | 4.47*                      |

\*R-Recreational; QC-Quasi-Compulsive; C-Compulsive.

\*\*p .05. \*\*\*p .01. \*\*\*\*p .001.

Table 12

T-test Comparisons of SCL-90 Subscale Means Obtained by  
All Groups with Means (M) and Standard Deviations (SD)

| Subscale | Group a      |       |                  |       |            |       | Comparative Groups |       |         |
|----------|--------------|-------|------------------|-------|------------|-------|--------------------|-------|---------|
|          | Recreational |       | Quasi-Compulsive |       | Compulsive |       | R-QC               | QC-C  | R-C     |
|          | M            | SD    | M                | SD    | M          | SD    | t                  | t     | t       |
| SOM      | 56.5         | 8.19  | 57.1             | 9.93  | 60.9       | 13.11 | .21                | 1.08  | 1.60    |
| O-C      | 59.4         | 7.41  | 60.5             | 10.65 | 64.8       | 10.16 | .39                | 1.42  | 2.38*   |
| I-S      | 59.8         | 9.96  | 62.7             | 12.24 | 62.1       | 14.70 | .9                 | .14   | .74     |
| DEP      | 60.8         | 9.15  | 65.8             | 10.21 | 69.9       | 10.34 | 1.78               | 1.34  | 3.69*** |
| ANX      | 57.7         | 11.23 | 64.5             | 10.76 | 68.3       | 13.31 | 2.06*              | 1.03  | 3.39*** |
| HOS      | 56.3         | 8.66  | 62.3             | 9.8   | 61.5       | 12.50 | 2.21*              | .26   | 1.90    |
| PHOB     | 56.5         | 10.11 | 60.4             | 12.02 | 61.6       | 10.91 | 1.15               | .36   | 1.84    |
| PARA     | 56.5         | 10.61 | 61.2             | 13.09 | 60.0       | 13.93 | 1.34               | .28   | 1.11    |
| PSY      | 56.1         | 9.84  | 61.1             | 10.01 | 63.5       | 12.73 | 1.71               | .67   | 2.56*   |
| GSI      | 59.5         | 9.59  | 63.7             | 12.83 | 68.2       | 11.5  | 1.27               | 1.29  | 3.23**  |
| PST      | 60.2         | 10.22 | 64.0             | 11.31 | 64.0       | 10.31 | 1.21               | .01   | 1.47    |
| PSDI     | 53.8         | 8.60  | 58.4             | 10.01 | 64.2       | 8.11  | 1.67               | 2.24* | 4.92*** |

\*R-Recreational; QC-Quasi-Compulsive; C-Compulsive.

\*p .05. \*\*p .01. \*\*\*p .001.

Compared with the R group, subscale means for the C group were significantly higher on six of 12 SCL-90 subscales. These were: PSDI ( $p < .001$ ), DEP ( $p < .001$ ), ANX ( $p < .001$ ), GSI ( $p < .01$ ), and PSY ( $p < .05$ ). The remaining six subscales means were all higher for the C group with HOS ( $p < .10$ ) and PHOB ( $p < .10$ ) approaching significance.

T-tests comparing the QC group to the other two groups yielded a similar result to the series of t-tests on BORRTI subscale means. On nine of 12 subscales, the QC group was not significantly different from either R or C groups. The subscale mean for PSDI was significantly lower for the QC group than for the C group ( $p < .05$ ) but there was no significant difference when the QC and R groups were compared. However, on HOS and ANX, the QC group was significantly higher than the R group ( $p < .05$  for both subscales) and not significantly different from the C group. The QC group was marginally higher than the R group on DEP ( $p < .10$ ) and PSY ( $p < .10$ ). Quasi-compulsive users had subscale means falling between recreationals users (on the lower end) and compulsives (on the higher end) on eight of the 12 subscales.

#### Relationship between Psychological Variables and Cocaine Use

A series of correlational analyses was conducted to explore the relationship between psychological functioning and quantitative measures of cocaine use. Nine quantitative measures of cocaine use were correlated with the

seven BORRTI subscales and the 12 SCL-90 subscales for each group.

#### Recreational Group

Correlations between BORRTI and SCL-90 subscale means and nine quantitative measures of cocaine use and their significance are presented for the R group in Table 13. Regarding correlations between ego functioning and cocaine use, three of four BORRTI object relations subscales and one of three BORRTI reality testing subscales were significantly correlated with some measures of cocaine use. ALN was highly positively correlated with money spent each month on cocaine ( $p < .001$ ) and each week ( $p < .01$ ) and grams of cocaine used each week ( $p < .01$ ) and each month ( $p < .01$ ). However, this variable was negatively related to duration of the present pattern of use ( $p < .05$ ). EGC was negatively correlated with months since first tried cocaine ( $p < .01$ ) but positively related to amount of cocaine used per week ( $p < .01$ ) and per month ( $p < .05$ ). SI was also negatively related to months since first tried cocaine ( $p < .05$ ) but positively related to money spent each week ( $p < .05$ ) and each month ( $p < .05$ ). RD was the only reality testing subscale significantly related to any cocaine use variable; it was highly positively correlated with money spent each week ( $p < .01$ ) and each month ( $p < .01$ ).

IA, UP and HD were not significantly related to any cocaine use variables. Days since last used cocaine, days per week and days per month were all not significantly related to any BORRTI subscale.

Table 13

Correlations Between BORDI and SCL-90 Subscale Scores and Quantitative Measures of Cocaine Use For  
Recreational Cocaine Users

| BORDI and<br>SCL-90<br>Subscales | Quantitative Measures of Cocaine Use |                                   |                            |                           |                            |                            |                             |                            |                             |
|----------------------------------|--------------------------------------|-----------------------------------|----------------------------|---------------------------|----------------------------|----------------------------|-----------------------------|----------------------------|-----------------------------|
|                                  | Months<br>Since<br>First Used        | Duration of<br>Present<br>Pattern | Days<br>Since<br>Last Used | Days<br>Per Week<br>Using | Days<br>Per Month<br>Using | Grams<br>Per Week<br>Using | Grams<br>Per Month<br>Using | Money<br>Spent<br>Per Week | Money<br>Spent<br>Per Month |
| ALN                              | -.18                                 | -.41*                             | -.05                       | .27                       | .22                        | .42**                      | .45**                       | .48**                      | .52***                      |
| IA                               | -.28                                 | -.04                              | .22                        | -.15                      | -.19                       | -.01                       | -.02                        | .14                        | .13                         |
| BGC                              | -.51**                               | -.09                              | -.13                       | .19                       | .05                        | .42**                      | .41*                        | .26                        | .26                         |
| SI                               | -.39*                                | -.21                              | .13                        | -.05                      | -.10                       | .09                        | .11                         | .34*                       | .41*                        |
| RD                               | -.25                                 | -.08                              | .06                        | .08                       | -.00                       | .24                        | .25                         | .45*                       | .47**                       |
| UP                               | .04                                  | .02                               | .02                        | .04                       | -.03                       | .20                        | .24                         | .23                        | .26                         |
| HD                               | .10                                  | .18                               | .27                        | -.12                      | -.14                       | -.20                       | -.25                        | -.24                       | -.07                        |
| SOM                              | .01                                  | -.07                              | .22                        | .26                       | .09                        | .26                        | .18                         | .15                        | .11                         |
| OC                               | .04                                  | -.30                              | .00                        | .32*                      | .30                        | .28                        | .29                         | .39*                       | .38*                        |
| IS                               | -.11                                 | -.12                              | .09                        | .28                       | .08                        | .36*                       | .29                         | .40*                       | .37*                        |
| DEP                              | .25                                  | .17                               | -.01                       | .26                       | .11                        | .23                        | .17                         | .33*                       | .29                         |
| ANX                              | .04                                  | -.01                              | .05                        | .32*                      | .18                        | .27                        | .20                         | .30                        | .25                         |
| HOS                              | -.13                                 | -.10                              | .17                        | .20                       | .02                        | .18                        | .12                         | .09                        | .07                         |
| PHOB                             | .07                                  | .32*                              | -.20                       | .31*                      | .11                        | .36*                       | .27                         | .35*                       | .30                         |
| PANA                             | .24                                  | .21                               | -.08                       | .21                       | .09                        | .28                        | .24                         | .21                        | .19                         |
| PSY                              | -.27                                 | -.19                              | .06                        | .25                       | .12                        | .20                        | .15                         | .27                        | .24                         |
| GSI                              | .15                                  | .04                               | -.04                       | .33*                      | .23                        | .32*                       | .29                         | .37*                       | .34*                        |
| PST                              | .09                                  | -.02                              | .01                        | .31*                      | .18                        | .28                        | .24                         | .28*                       | .35*                        |
| PSDI                             | -.10                                 | -.05                              | .12                        | .19                       | .14                        | .30                        | .30                         | .12                        | .14                         |

Note: For correlations between ALN through HD and cocaine use variables, n=31, except for Months Since First Used, n=28, and Duration of Present Pattern, n=29. For SOM through PSDI and cocaine use variables, n=30, except Months since First Used, n=27, and Duration of Present Pattern, n=28.

\*p < .05. \*\*p < .01. \*\*\*p < .001.

Regarding the relationships between psychiatric symptomatology and cocaine use, seven of 12 SCL-90 subscales were significantly correlated with some cocaine use variables. All significant correlations were positive and significant at the  $p < .05$  level. Duration of the present pattern was significantly correlated with PHOB. Days per week was significantly related to O-C, ANX, PHOB, GSI and PST. Grams per week was significantly correlated with IS, PHOB and GSI. Money spent each week was significantly correlated with six subscales, O-C, IS, DEP, PHOB, GSI and PST, while money spent each month with four, O-C, I-S, GSI and PST.

It is interesting to note that neither days since last used nor days per month were significantly correlated with any BORRTI or SCL-90 subscales.

#### Compulsive Group

Correlations between BORRTI and SCL-90 subscale means and quantitative measures of cocaine use are presented for this group in Table 14. Three of four BORRTI object relations subscales were significantly correlated with at least one cocaine use variable and all of these were correlated in the positive direction. ALN was not correlated with any cocaine use variables at all. EGC was highly related to measures of frequency (days per week,  $p < .01$  and days per month,  $p < .01$ ), amount used (grams per week,  $p < .001$  and grams per month,  $p < .001$ ) and less highly with money spent on cocaine (each week,  $p < .05$  and each

Table 14

Correlations Between BOMPTI and SCL-90 Subscale Scores and Quantitative Measures of Cocaine Use For  
Compulsive Cocaine Users

| BOMPTI and<br>SCL-90<br>Subscales | Quantitative Measures of Cocaine Use |                                   |                            |                           |                            |                            |                             |                            |                             |
|-----------------------------------|--------------------------------------|-----------------------------------|----------------------------|---------------------------|----------------------------|----------------------------|-----------------------------|----------------------------|-----------------------------|
|                                   | Months<br>Since<br>First Used        | Duration of<br>Present<br>Pattern | Days<br>Since<br>Last Used | Days<br>Per Week<br>Using | Days<br>Per Month<br>Using | Grams<br>Per Week<br>Using | Grams<br>Per Month<br>Using | Money<br>Spent<br>Per Week | Money<br>Spent<br>Per Month |
| ALM                               | .01                                  | .09                               | .18                        | .10                       | .10                        | .08                        | .09                         | .11                        | .11                         |
| LA                                | .05                                  | -.02                              | -.02                       | .35*                      | .35*                       | .12                        | .12                         | .13                        | .13                         |
| BGC                               | -.01                                 | -.21                              | -.09                       | .46**                     | .44**                      | .47***                     | .48**                       | .28*                       | .27*                        |
| SI                                | .23                                  | .39**                             | .24                        | -.14                      | -.12                       | -.18                       | -.18                        | -.17                       | -.16                        |
| RD                                | .04                                  | -.18                              | -.01                       | .38**                     | .37*                       | .41**                      | .41**                       | .43**                      | .42**                       |
| UP                                | .19                                  | .05                               | .03                        | .13                       | .12                        | .15                        | .15                         | .05                        | .04                         |
| HD                                | .23                                  | -.09                              | .07                        | .24                       | .24                        | .27*                       | .27*                        | .32*                       | .30*                        |
| SOM                               | .15                                  | .12                               | .02                        | .12                       | .13                        | .01                        | .03                         | -.02                       | .00                         |
| OC                                | .04                                  | .22                               | .13                        | .12                       | .14                        | -.05                       | -.01                        | -.07                       | -.04                        |
| IS                                | .01                                  | .25                               | .12                        | .06                       | .06                        | .01                        | .06                         | -.07                       | -.04                        |
| DEP                               | .12                                  | .18                               | .12                        | .20                       | .21                        | -.03                       | .00                         | -.14                       | -.12                        |
| ANK                               | .20                                  | .27                               | .11                        | .20                       | .21                        | -.03                       | .00                         | -.08                       | -.05                        |
| HOS                               | .02                                  | -.01                              | .13                        | .25                       | .24                        | .13                        | .14                         | .06                        | .07                         |
| PHOB                              | .05                                  | .31*                              | .01                        | -.03                      | -.03                       | -.05                       | -.01                        | -.14                       | -.11                        |
| PARA                              | -.00                                 | .01                               | .00                        | .30*                      | .29*                       | .21                        | .24                         | .13                        | .15                         |
| PSY                               | .20                                  | .20                               | .07                        | .09                       | .09                        | .16                        | .19                         | .13                        | .16                         |
| GSI                               | .12                                  | .33*                              | .17                        | .13                       | .14                        | -.06                       | -.01                        | -.11                       | -.01                        |
| PST                               | .11                                  | .31*                              | .15                        | .18                       | .19                        | -.06                       | .02                         | -.08                       | -.05                        |
| PSDI                              | .05                                  | .06                               | .13                        | .02                       | .03                        | -.04                       | -.01                        | -.05                       | -.05                        |

Note: For correlations between ALM through HD and cocaine use variables, n=38, except for Days Since Last Used, n=37.  
 For SOM through PSDI, n=33.

\*p .05. \*\*p .01. \*\*\*p .001.

month,  $p < .05$ ). IA was significantly correlated with only frequency of use (days per week,  $p < .05$  and days per month,  $p < .05$ ) and SI was rather highly associated with duration of the present pattern of use ( $p < .01$ ).

In the area of reality testing, two of three BORRTI subscales were significantly correlated, all positively, with some cocaine use variables. RD was significantly correlated with frequency (days per week,  $p < .01$ , and days per month,  $p < .05$ ), amount used (grams per week,  $p < .01$ , and grams per month,  $p < .01$ ) and money spent (per week,  $p < .01$ , and per month,  $p < .01$ ). HD was significantly related to amount used (weekly,  $p < .05$  and monthly,  $p < .05$ ) and money spent (weekly  $p < .05$  and monthly,  $p < .05$ ). UP was not significantly related to any cocaine use variable.

Two measures of cocaine use were not significantly correlated with any BORRTI subscale, months since first used cocaine and days since last used cocaine.

Concerning the relationship between psychiatric symptomatology and cocaine use only four of 12 SCL-90 subscales are significantly related to cocaine use variables. PHOB, GSI and PST were positively correlated with duration of present pattern of use (all at  $p < .05$ ) and PARA was positively correlated with frequency of use (days per week,  $p < .05$ , and days per month,  $p < .05$ ). Months since first use, days since last use and measures of amount used and money spent were not significantly related to any SCL-90 subscale.

Quasi-compulsive Group

Table 15 presents correlations between BORRTI and SCL-90 subscale means and quantitative measures of cocaine use for the QC group. For this group, correlations between object relations subscales and cocaine use variables yielded different results than those for the recreational and compulsive groups. Only one subscale was significantly (positively) correlated with cocaine use variables: IA with months since first used cocaine ( $p < .05$ ) and duration of present pattern of use ( $p < .05$ ). One factor contributing to this was the fact that the small sample size of this group, 19, required larger correlations to achieve significance. For this reason, correlations which approached significance, that is, where  $p < .10$ , are also reported. Positive correlations approaching but not reaching significance were found between ALN and months since first used, and EGC and duration of the present pattern and days per week. IA was marginally correlated negatively with money spent each month ( $p < .10$ ).

Two of three reality testing subscales were significantly correlated with cocaine use variables. RD was positively related to duration of the present pattern ( $p < .05$ ) and approached significance ( $p < .10$ ) in positive correlations with months since first used and days per month. HD was positively related with the following four cocaine use variables in order of descending significance: duration of present pattern ( $p < .001$ ), days per month

Table 15

Correlations Between BORRTI and SCL-90 Subscale Scores and Quantitative Measures of Cocaine Use for  
Quasi-Compulsive Cocaine Users

| BORRTI and<br>SCL-90<br>Subscales | Quantitative Measures of Cocaine Use |                                   |                            |                           |                            |                            |                             |                            |                             |
|-----------------------------------|--------------------------------------|-----------------------------------|----------------------------|---------------------------|----------------------------|----------------------------|-----------------------------|----------------------------|-----------------------------|
|                                   | Months<br>Since<br>First Used        | Duration of<br>Present<br>Pattern | Days<br>Since<br>Last Used | Days<br>Per Week<br>Using | Days<br>Per Month<br>Using | Grams<br>Per Week<br>Using | Grams<br>Per Month<br>Using | Money<br>Spent<br>Per Week | Money<br>Spent<br>Per Month |
| ALN                               | .31+                                 | .12                               | .26                        | .30                       | .14                        | .19                        | .13                         | -.07                       | -.08                        |
| IA                                | .41*                                 | .53*                              | .22                        | .20                       | .09                        | -.18                       | -.26                        | -.22                       | -.35+                       |
| BOC                               | .13                                  | .35+                              | .03                        | .35+                      | .28                        | .01                        | -.07                        | -.04                       | -.17                        |
| SI                                | -.07                                 | -.04                              | .09                        | -.23                      | -.23                       | -.00                       | -.02                        | -.07                       | -.15                        |
| RD                                | .35+                                 | .54*                              | .04                        | .29                       | .31+                       | -.07                       | -.10                        | -.07                       | -.18                        |
| UP                                | .25                                  | .37+                              | .05                        | .22                       | .09                        | -.00                       | -.10                        | -.13                       | -.23                        |
| HD                                | .48*                                 | .69***                            | .00                        | .52*                      | .53**                      | -.00                       | -.03                        | -.03                       | -.07                        |
| SOM                               | -.26                                 | -.37*                             | .37+                       | .20                       | .01                        | .18                        | .06                         | .09                        | -.04                        |
| OC                                | .23                                  | -.35+                             | .09                        | .40*                      | .34+                       | .10                        | .02                         | .10                        | .02                         |
| IS                                | .24                                  | .44*                              | .11                        | .29                       | .24                        | .17                        | .07                         | .15                        | .02                         |
| DEP                               | .33+                                 | .47*                              | .23                        | .16                       | .08                        | .11                        | .07                         | .09                        | .06                         |
| ANX                               | .24                                  | .51*                              | .04                        | .22                       | .19                        | .07                        | .04                         | .07                        | .06                         |
| BOS                               | .30                                  | .41+                              | .19                        | .52*                      | .44*                       | .30                        | .22                         | .35+                       | .24                         |
| PHOB                              | .27                                  | .43*                              | -.03                       | .48*                      | .36+                       | .33+                       | .23                         | .35+                       | .25                         |
| PARA                              | .23                                  | .30                               | .33+                       | .27                       | .19                        | .18                        | .11                         | .21                        | .09                         |
| PSY                               | .19                                  | .50*                              | .08                        | .35+                      | .37+                       | .09                        | .06                         | .12                        | .02                         |
| GSI                               | .27                                  | .45*                              | .13                        | .39+                      | .33+                       | .15                        | .09                         | .15                        | .09                         |
| PST                               | .22                                  | .27                               | .19                        | .35+                      | .25                        | .15                        | .06                         | .12                        | .06                         |
| PSDI                              | .06                                  | .39+                              | .19                        | .18                       | .14                        | .13                        | .12                         | .10                        | .02                         |

Note: For correlations between ALN through HD and cocaine use variables, n=19, except for Duration of Present Pattern, n=17. For correlations between SOM through PSDI and cocaine use variables, n=18, except for Duration of Present Pattern, n=16.

\*p .10. \*\*p .05. \*\*\*p .01. \*\*\*\*p .001.

( $p < .01$ ), days per week ( $p < .05$ ) and months since first used ( $p < .05$ ). UP was not significantly correlated with any cocaine use variable and approached significance in a positive correlation with duration of present pattern ( $p < .10$ ). Duration of present pattern was significantly correlated with three ego function subscales (IA, RD, and HD) and marginally with two (EGC and UP).

Regarding the relationship between psychiatric symptomatology and cocaine use variables, duration of the present pattern was again the cocaine use variable most highly related to psychological functioning. This variable was significantly positively correlated with the following (all  $p < .05$ ); I-S, DEP, ANX, PHOB, PSY and GSI. Positive correlations which approached significance ( $p < .10$ ) were found between this variable and O-C, HOS, and PSDI and there was a negative correlation approaching significance ( $p < .10$ ) with SOM. Frequency of use was the only other cocaine use variable with significant positive correlations to SCL-90 scales: days per week was correlated with O-C ( $p < .05$ ), HOS ( $p < .05$ ) and PHOB ( $p < .05$ ) and days per month with HOS ( $p < .05$ ). Other correlations approaching significance (all  $p < .10$ , all positive) were: days per week with PSY, GSI and PST; days per month with O-C, PHOB, PSY and GSI; grams per week with PHOB; money spent per week with HOS and PHOB; and days since last use with SOM and PARA.

### Discriminant Analyses

A discriminant analysis was performed between the R and C groups using the set of 10 psychological variables which were significantly different for these two groups. This set included three BORRTI object relations subscales: ALN, IA and EGC; three BORRTI reality testing subscales: RD, UP and HD; and four SCL-90 subscales representing individual symptom clusters: O-C, DEP, ANX, and PSY. Although two other SCL-90 subscales had significantly different group means for the R and C groups, GSI and PSDI, these were not used in the analysis because they are based upon the individual symptom subscales and are not distinct symptom groups themselves. Five of the 10 original predictors used were significant discriminators in this analysis. In the order in which they were chosen, these are: ALN, DEP, O-C, UP and HD.

In addition to determining which of the original 10 variables best predict group membership, the discriminant analysis routine also produced the classification accuracy results for this set of predictors.

The results of this discriminant analysis are presented in Table 16. Of 30 recreational subjects and 33 compulsive subjects with complete data, the percent of "grouped" cases correctly classified was 80.95%: 86.7% of recreational users were classified as recreational and 75.8% of compulsive users were classified as compulsive.

Table 16

Discriminant Analysis of Recreational and Compulsive  
Cocaine Users

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Predictors: Ten BORRTI and SCL-90 Subscales which significantly distinguished R and C groups (ALN, IA, EGC, RD, UP, HD, OC, DEP, ANX and PSY)

Significant discriminators: ALN, DEP, O-C, UP and HD

---

| <u>Group</u>        | <u>Classified As</u> |          |                   |          |
|---------------------|----------------------|----------|-------------------|----------|
|                     | <u>Recreational</u>  |          | <u>Compulsive</u> |          |
|                     | <u>n</u>             | <u>%</u> | <u>n</u>          | <u>%</u> |
| Recreational (n=30) | 26                   | 86.7     | 4                 | 13.3     |
| Compulsive (n=33)   | 8                    | 24.2     | 25                | 75.8     |

Overall Classification Accuracy: 80.95%

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Six subjects were not included in this analysis because of incomplete data.

In order to see how individual quasi-compulsive subjects compared to the other two groups in terms of their psychological functioning, the canonical discriminant function obtained from the previous analysis was used to classify the quasi-compulsive subjects. This procedure resulted in classification of 66.7% of these subjects as compulsive and 33.3% as recreational. One subject was excluded from this analysis because of incomplete data.

Comparison between Recreational and Compulsive Cocaine users and Five of Bell's normative groups on object relations subscales

In order to look at the relationship between the object relations profile of cocaine users and other diagnostic groups that have been discussed in the literature as being related to cocaine abuse, the following series of statistical comparisons was performed. T-tests compared the group means of this study's recreational and compulsive cocaine user groups to the following five of Bell's (Bell, et al., 1985a) original normative groups on each object relations subscale: borderline personality disorder (BPD), other axis II character disorders (Other II), major affective disorder (Affective), students, and community active adults (CAA). T-tests treated Bell's groups as populations since standard deviations were not available for his groups.

The groups were described by Bell, et al. (1985a) as follows: "Sixteen male and 44 female community active adults from the voluntary board of directors of a social service agency and a business organization comprised a high functioning sample. Seventy-seven male and 68 female undergraduates from three universities represented average functioning with no identified pathology. Few were psychology majors, and many were adult part-time students. Fifteen male and 25 female outpatients met DSM III criteria for personality disorder other than

borderline...They are included to represent a wide range of disorders commonly serviced by outpatient clinics. Twenty-two females and two male outpatients and one female and 12 male inpatients met DMS III criteria for borderline personality disorder. Inpatients were assessed on eight diagnostic criteria from structured clinical interview, record review, and observed behavior on an inpatient unit. Those meeting five or more criteria as judged by consensus of two raters and their supervisor were designated borderline." (pp. 2-8). Twenty-five men and four women psychiatric inpatients were diagnosed with major affective disorder without evidence of schizophrenia by agreement of three raters using criteria from DSM III and five other rating scales. Object relations subscale means for each of these group are provided by Bell, et al. (1985a) with results of t-test comparisons between these groups. These data are summarized in Appendix I.

T-test results comparing the R group to Bell's groups are shown in Table 17. As can be seen, the R group had significantly lower means than the BPD, Other II and Affective groups on every subscale. On ALN, the Recreational group was not significantly different from the Student group and was significantly higher than the CAA group; on IA and SI the R group means were located ordinally between the Student and CAA groups but were not significantly different from either, and on EGC the R

Table 17

T-test Comparison of Recreational Cocaine Users to Five of  
Bell's Normative Groups on BORRTI Object Relations  
Subscale Means

| <u>Comparative</u><br><u>Groups<sup>a</sup></u> | <u>Subscale</u> |           |           |         |
|-------------------------------------------------|-----------------|-----------|-----------|---------|
|                                                 | ALN             | IA        | EGC       | SI      |
| BPD-R                                           | 17.01***        | 10.174*** | 14.304*** | 3.31**  |
| Other II-R                                      | 10.515***       | 7.07***   | 6.962***  | 3.245** |
| Affective-R                                     | 5.876***        | 3.362**   | 7.342***  | 3.046** |
| Students-R                                      | 1.546           | 1.379     | 3.291**   | .728    |
| CAA-R                                           | 2.577*          | 1.466     | .633      | .662    |

Note: ALN=Alienation, IA=Insecure Attachment,  
 EGC=Egocentricity, SI=Social Incompetence.

<sup>a</sup>R-Recreational User Group, BPD-Borderline Personality  
 Disorder, Other II-Other Character Disorder,  
 Affective-Major Affective Disorder, CAA-Community Active  
 Adults.

\*p .05. \*\*p .01. \*\*\*p .001.

group mean was significantly lower than the Student group and not significantly different from the CAA group.

T-test results for comparisons between C group subscale means and Bell's five groups are shown in Table 18. As would be expected, comparisons between the C group and Bell's groups yielded a very different pattern of results than the comparisons between the R group and Bell's groups. T-tests showed that the C group mean for ALN was significantly lower than those of the BPD and Other II groups, higher than the Student and CAA groups and not significantly different from the Affective group. On IA, the C group mean was significantly lower than the BPD group mean and higher than the Student and CAA group means but not significantly different from Affective and Other II group means. For EGC, t-tests results were not significant when comparing the C group mean to the Other II, Affective and Student group means but showed that the C group mean was significantly lower than the BPD group mean and significantly higher than the CAA group mean. On SI, the C group mean had the same relationship to Bell's groups as the R group, significantly lower than BPD, Other II and Affective group means and not significantly different from Student and CAA group means.

Table 18

T-test Comparison of Compulsive Cocaine Users to Five of  
Bell's Normative Groups on BORRTI Object Relations  
Subscale Means

| <u>Comparative</u><br><u>Groups<sup>a</sup></u> | <u>Subscale</u> |          |          |          |
|-------------------------------------------------|-----------------|----------|----------|----------|
|                                                 | ALN             | IA       | EGC      | SI       |
| BPD-C                                           | 8.046***        | 3.921*** | 4.348**  | 4.182*** |
| Other II-C                                      | 2.874**         | 1.471    | .145     | 4.09***  |
| Affective-C                                     | .821            | 1.541    | .507     | 3.818*** |
| Students-C                                      | 4.269***        | 3.151**  | 1.957    | .636     |
| CAA-C                                           | 7.553***        | 5.462*** | 3.478*** | 1.273    |

Note: ALN=Alienation, IA=Insecure Attachment,  
 EGC=Egocentricity, SI=Social Incompetence.

<sup>a</sup>C-Compulsive User Group, BPD-Borderline Personality  
 Disorder, Other II-Other Character Disorder,  
 Affective-Major Affective Disorder, CAA-Community Active  
 Adults.

\*p .05. \*\*p .01. \*\*\*p .001.

## CHAPTER VI

## DISCUSSION

The discussion of this investigation's findings will be organized in the following way. First, each of the major findings will be presented and discussed separately. A separate section will summarize the major findings and discuss the theoretical and clinical implications of the study. Finally, a section will be devoted to a discussion of the limitations of this work and recommendations for future research.

The major findings will be presented in the following order:

1. Recreational cocaine user profile.
2. Compulsive cocaine user profile.
3. Comparisons of recreational and compulsive cocaine users on all variables to identify distinguishing characteristics.
4. Correlational analyses between quantitative cocaine use measures and psychological variables separately for
  - a) recreational cocaine user group and,
  - b) compulsive cocaine user group.
  - c) Summary.
5. Quasi-compulsive cocaine user profile with comparisons to other groups.

## Recreational and Compulsive

### Cocaine User Profiles

#### Recreational Cocaine Users

##### Demography

The majority of these users were white, unmarried and relatively well-educated. The average age of these subjects was 31 years old and the group was well balanced regarding gender and occupational category. Average annual income was \$22,000.

##### Cocaine Use

All subjects were intranasal cocaine users who used cocaine mainly in social/interpersonal situations on the weekends. Almost all users reported controlled use of small amounts of cocaine as opposed to binging. A minority of users had stopped using cocaine in the past. The sample was broadly heterogeneous regarding frequency of cocaine use with a quarter of the group using cocaine weekly, another quarter using at least once each month and the rest using less frequently. However, over one half the sample had used cocaine in the week prior to completing questionnaires and almost three quarters had used in the prior month.

Preliminary comparisons between subjects who reported using cocaine at least once a month ("regular") and the group that used less often ("occasional") revealed no group differences on psychosocial consequences of use or any psychological variable tested for. However, there

were significant correlations between the frequency of use and psychological variables which indicate a more subtle relationship in this area. These will be discussed below in a separate section of this chapter on the correlational analyses.

The group used an average of almost one and a half grams of cocaine each month and spent about \$85 each month on cocaine. Since cocaine currently sells for about \$100 for a gram, this dollar amount is low. This is a reflection of the fact that many of these users did not generally buy cocaine but, rather, used mainly when it was offered to them at parties or by friends. More stringent initial criteria for minimum frequency of use or amounts of cocaine used would have prevented these subjects from being included in the sample. The "regular" - "occasional" user comparisons would not have been possible and correlations with frequency and amounts of cocaine used would have had a more restricted range of values to work with.

The average reports of four and a half years of use in the current pattern and eight and a half years since first trying cocaine indicate that this sample is very stable in its pattern of use.

#### Other Drug Use

Most of these users reported concurrent use of either alcohol or marijuana or both and the majority were characterized as heavy (or frequent) users of one of these

substances. Less than half the group smoked cigarettes. Only a small fraction of the group reported use of other drugs. This suggests that the group is not a group of polyabusers.

#### Negative Psychosocial Consequences

Almost half of this sample reported some negative consequences which they attributed to their use of cocaine. However, the particular consequences reported tended to be what could be called minor ones. The most frequent consequences were reductions in productivity and having no extra money reported by just over a quarter of the group. Smaller percentages of subjects had arguments with their spouses, missed or came late to work, became socially withdrawn and got into debt because of their cocaine use. Virtually no subjects reported major problems (loss of jobs or major relationships, legal difficulties, etc.) resulting from their cocaine use. Thus, for these subjects, cocaine use did lead to some impairment in functioning, the impairment was relatively minor and did not escalate to more serious psychosocial dysfunction. This finding supports reports by Ashley (1974) and Siegel (1984) that recreational users are able to titrate their use of cocaine to minimize risk.

#### Psychological Functioning

On all dimensions of psychological and psychiatric functioning tested, these users appear to be generally similar to a normal, nonpatient population.

BORRTI object relations and reality testing subscales are all close to the 50th percentile of Bell's non-pathological norms and only a small percentage of subjects have pathological scores on each subscale. These findings suggest that in general these users are functioning in the normal neurotic range in these areas. Comparisons of BORRTI object relations subscales to three psychopathological patient groups and two normal to high functioning nonpatient groups further support this conclusion. Recreational user subscale group means were all significantly less pathological than those for borderline, other character disorder and major affective disorder groups. Compared to nonpathological groups, the recreational users were similar to the student group, representing average functioning, on the Alienation subscale; not significantly different from either the students or a higher functioning group on Insecure Attachment and Social Incompetence; and most like the higher functioning group on Egocentricity. These findings imply a normal to superior degree of ego integration in the recreational user group. These are people who have a well integrated sense of self, are able to regulate self-esteem internally and see themselves as competent in their dealings with other people and the world. They experience their relationships with others as safe and see other people empathically as separate objects who are able to adequately meet their relational needs. Reality testing

is intact and provides the capacity to distinguish internal and external perceptions and maintain boundaries around the self. This, in turn, gives rise to a sense of certainty about what is real and what is fantasy and, thus, minimal hallucinatory or delusional thought content.

Similar to the BORRTI results, SCL-90 subscale means are all below the clinical range and indicate non-pathological functioning in all areas. Slight elevations on obsessive-compulsiveness, interpersonal sensitivity, depression and general level of distress and total symptom measures suggest mild difficulty in these areas. These symptom clusters may represent motives for using cocaine in this group. These scales would be interpreted as indicating a mild obsessional personality style with some feelings of personal inadequacy and mild depressive tendencies which are not in the pathological range.

#### Summary

Demographically, this group does not appear strikingly different from previous studies of recreational (Ashley, 1975, Siegel, 1984) or compulsive (Helfrich et al, 1983; Washton and Tatarsky, 1984) cocaine users.

In general, these self-selected controlled users report a pattern of cocaine use which is completely in accord with the impressionistic definition of "social-recreational" use provided by the National Commission on Marijuana and Drug Abuse (1973). They generally report

controlled intranasal use of relatively small amounts of cocaine primarily on the weekends in social situations.

The fact that most users in this group were not weekly users and did not use a minimum of one gram of cocaine each month may indicate that individuals who use with higher frequency and larger amounts of cocaine are at greater risk to develop compulsive patterns and, thus, tend not to show up in this group. On the other hand, the fact that the mean length of time in the recreational use pattern reported by these subjects was four and a half years suggests that this group, with its diversity of frequency patterns, is a very stable group of users. This finding constitutes the first empirical confirmation of Siegel's (1984) report of recreational cocaine users who maintained their cocaine use pattern of a long period of time.

While about half the sample reported some negative consequences of their use, these tended to be minor problems which did not escalate into major proportions. This may be seen as further evidence that these users are able to titrate or control their level of use to minimize the consequences.

Psychological measures indicate that this sample is not significantly different from the normal population in quality of object relations and reality testing. They tend to have an integrated, stable identity sense with the capacity to enter into satisfying relationships with

others who are seen empathically as separate integrated others. Reality testing is intact and there is minimal hallucinatory or delusional ideation reported.

Psychiatrically, there are no clinical elevations in this group. Mild subscale elevations suggest the presence of mild neurotic level feelings of personal inadequacy with obsessive-compulsive and depressive trends. These trends may represent the motives for using cocaine; that is, for the euphoria, energy and "ego-expansion" provided by cocaine which result in heightened self-confidence and mastery (Spotts and Schontz, 1975).

#### Compulsive Cocaine Users

##### Demography

The majority of these users were white males with an average age of thirty years old. Two out of five subjects in this sample were married, they were evenly divided in occupational status and had an average of about one year of post secondary education. Average annual income was about \$23,000.

##### Cocaine Use

Regarding route of administration of cocaine the sample was diverse. The most common route was intranasal which was used exclusively by almost half the sample. But over one fourth the group only free-based cocaine and two subjects were exclusive intravenous users. About twenty percent of the groups combined intranasal use with either free-basing or intravenous use. Compared to two earlier

studies of compulsive users (Helfrich et al, 1983, and Washton and Tatarsky, 1984), this group has a larger percentage of subjects using the free-base route and smaller percentages reporting intranasal and intravenous use. Almost all subjects in this group reported bingeing on cocaine whenever they used it. They were not able to exercise control and generally could not stop their use in a particular episode until their supplies were exhausted. Some subjects reported that they would continue to buy more cocaine, after they had finished what they had, until they ran out of money.

Although most subjects indicated that they continued to use with other people, the majority reported that they used cocaine alone and did not in general confine their use to the weekends. An indication that these subjects had some remaining control over their use was the finding that a majority did not use the drug at work.

Over three quarters of the sample had stopped using cocaine at some time in the past but were unable to maintain abstinence. Thus, the inability to control the use of cocaine is suggested by both bingeing as well as the inability to stick to a prior decision to stop using cocaine.

The report of an average of eight years since first using cocaine and two years using in the current compulsive pattern may be significant in two ways. It suggests that these subjects used cocaine for six years

before beginning to notice a problem with their use. And, for the 30 subjects who came to the Cocaine Abuse Consultation Service for evaluations, two years elapsed before the problem became serious enough to motivate them to go for help.

The group was rather diverse in its frequency of using cocaine. With the average weekly frequency between three and four days per week, the majority used between two and five days weekly and the remainder was evenly split between subjects who used six or seven days each week and those using one or less days each week. Nearly four out of five users reported using weekly. In spite of these figures, over half the group reported using within 24 hours of completing the research questionnaires and over three quarters within two days.

The average weekly amount of cocaine used by this group was four grams for which \$300 was spent. Compared to three other studies in which amounts of cocaine used by subjects were specified, this is low. Helfrich et al.'s (1983) and Washton and Tatarsky's (1984) compulsive samples reported using over twice this amount. Solely in terms of amount, this study's sample would fall between Ashley's (1975) chronic moderate (1/4-1/2 gram per day) and heavy chronic (2-4 grams per day) groups, both of which reported the ability to stop using cocaine without difficulty.

In terms of amount and frequency of use, this study's sample represents a broad spectrum of use. Subjects used between once every two weeks to everyday in amounts ranging one half gram each month, on the low end, to 20 grams each week, on the high end. This last amount was reported by a free-base smoker who claimed to spend \$6000 each month on cocaine.

#### Other Drug Use

All but two subjects used drugs other than cocaine. Most used alcohol and/or marijuana with a majority reporting heavy use of one or both of these substances. A relatively small percentage, 18.4%, used other drugs such as sedatives, amphetamines and heroin. All four heroin users in the study were in this group. Over three quarters of the group were cigarette smokers. This high percentage may indicate that factors which predispose one toward smoking are similar to those predisposing to cocaine use. Anecdotal reports by these subjects indicated that they smoked much more heavily when they were using cocaine than when not. This may represent a not well recognized danger associated with using cocaine.

#### Negative Psychosocial Consequences

All subjects in this group reported some psychosocial problems which they attributed to using cocaine. Almost every compulsive user experienced some interpersonal and financial problems while a slightly smaller percent had

vocational problems. About one fifth of the group had been arrested because of their cocaine use.

The typical user in this group spent all of his extra money on cocaine, used all the money in his bank accounts and went into debt to buy cocaine. The typical pattern also included arguments with mates and reduction of productivity at work with lateness and missed days. About half of this group had trouble paying bills and had their mates threaten to leave them because of their cocaine use. Between a quarter and a third of the group lost major relationships and jobs, experienced problems in sexual relationships and communication and became socially isolated because of cocaine. A smaller percentage of the group reported physical fights in which they hurt someone, unwanted sexual encounters, car accidents and suicide attempts which they attributed to their cocaine use.

In spite of this sample's smaller average use of cocaine than the samples studied by Helfrich et al (1983) and Washton and Tatarsky (1984), this group actually had larger percentages of subjects reporting problems in all major categories compared to those groups.

#### Psychological Functioning

There is evidence indicative of substantial impairment in all three general categories of psychological functioning explored.

The BORRTI object relations profile shows the greatest impairment on the Alienation dimension with slightly lower

elevations on Insecure Attachment and Egocentricity. The group mean for Social Incompetence is close to the 50th percentile of nonpathological norms suggesting that, for this group, social competence is a relative strength. This imbalance is evident as well in the fact that between a quarter and a third of these subjects scored in Bell's pathological range on Alienation, Insecure Attachment and Egocentricity, while less than eight percent of the sample scored pathologically on SI, almost half the percentage in the recreational use group.

When comparing this group's object relations subscale means to Bell's three pathological and two nonpathological criterion groups, the significance of the compulsive user group's subscale elevations becomes more clear. This sample shows significantly less impairment than the borderline group on all subscales. On the Alienation subscale this group appears to be not significantly different from the major affective disorder group while it is less impaired than the other character disorder group and more so than the two nonpathological groups. Their pathology on Insecure Attachment is not significantly different from the other character disorder or major affective disorder group and is more disturbed than both normal groups. On Egocentricity the group is not distinguishable from the other character disorder and affective disorder groups but is also not significantly different from the student group. There is significantly

more impairment on this dimension compared to the high-functioning group. This result parallels Bell's (Bell, Billington and Becker, 1985a) finding of no difference between the other character Disorder, major affective disorder and Student groups on this subscale. As might be expected from the earlier discussion of Social Incompetence, the compulsive users' sense of social competence is not statistically distinct from both normal groups and is significantly less impaired than all pathological groups.

These findings indicate that the quality of object relations of this group of compulsive cocaine users is significantly less impaired than borderline personality disorder and most similar to that of depressed and neurotic character disorder groups. What appears most unique to these subjects is their relatively high degree of social competence.

Relative to object relations impairment, the reality testing of this sample is more disturbed. There is particularly high elevations on the BORRTI subscale means for Reality Distortion and Hallucinations and Delusions with a slightly lower elevation on Uncertainty of Perception. These data indicate that these subjects experience substantial difficulties distinguishing inner from outer perceptions with major breaks in reality testing which manifest in hallucinations and delusions. The elevation on Uncertainty of Perception indicates a significant sense

of doubt about the accuracy of perception with sufficient observing ego to gain some distance from the reality testing distortions which are present.

SCL-90 subscale means indicate a degree of psychopathology which is comparable to clinical populations in the areas of depression, anxiety and overall degree of general distress. Obsessive-compulsive symptomatology, schizoid tendencies, the measure of intensity of distress and total number of symptoms approached but didn't reach Derogatis' (1979) clinical level. This profile closely approximates the SCL-90 profile for outpatient depressives provided by Derogatis (1979).

#### Summary

Demographically the compulsive user group is not obviously different from previous samples of compulsive users reported in the literature except in the area of education. These subjects tended to have slightly less education than the groups looked at by Helfrich, et al 1983, and Washton and Tatarsky, 1984.

The mix of routes of administration and the increased percentage of free-base users relative to other recent studies suggest that all routes may give rise to compulsive cocaine use and that free-basing is rapidly increasing among cocaine users.

The cocaine use profile of this group generally matches previous descriptions of compulsive cocaine abuse (Carbajal, 1980, Helfrich, et al. 1983, etc.) in the

literature and provides empirically derived indicators of "pathological" use described in DSM III. The typical subject in this group reported uncontrolled bingeing whenever cocaine was used, did not confine his use to the weekends, used cocaine alone and had attempted to stop using cocaine in the past. Most subjects used large amounts of cocaine at least three days each week but there was a broad range of typical frequencies and amounts used by these subjects. Typical amounts of cocaine used by this group were small compared to other studies of compulsive users. Estimates of duration of use suggest that these subjects generally used for many years before developing compulsive use patterns and used in this fashion for two years before coming for evaluations. This may roughly indicate the time it takes for compulsive patterns become severe enough to motivate users to seek help.

The majority of these subjects used marijuana and/or alcohol frequently while only a minority used other drugs. This is in line with Washton and Tatarsky's (1984) similar results and supports their contention that individuals who are not otherwise heavily involved with "hard" drugs are increasingly found in the cocaine addicted population.

Negative psychosocial consequences were reported by all users in this group. Typically these subjects had major interpersonal, financial and vocational problems

which they attributed to their cocaine use. Smaller but substantial percentages of subjects reported that cocaine caused them to have unwanted sex, become physically violent, have car accidents and attempt suicide. The pervasiveness of psychosocial dysfunction in this group was as bad or worse than reports from previous studies reviewed.

Psychologically, these subjects tended to have significant pathology in object relations, reality testing and psychoactive status.

These subjects experience substantial mistrust in their relationships, have fragile self-esteem associated with painfulness of relations with others and concerns about being liked and accepted and tend to be mildly narcissistic in relation to others. In these areas they are most similar to depressed and neurotic character disorder patients and less impaired than borderlines. They appear to have particular strength in their sense of social competence which parallels that of normal, non-pathological groups. Reality testing is relatively more impaired with the most severe disturbance in the capacity to inner and outer perceptions. There is evidence of gross breaks in reality testing manifested in hallucinatory and delusional ideation. A sense of doubt about the accuracy of perception is substantial.

SCL-90 subscale means indicate the presence of clinical levels of depression, anxiety and general distress

with substantial obsessive-compulsive and schizoid trends. Intensity of distress and the range of symptomatology approach clinical proportions.

The absence of elevations in measures of hostility and paranoia are notable because they conflict with previous reports of these symptoms in compulsive cocaine users (Helfrich, et al, 1983; Siegel, 1984). The absence of clinical levels of hostility in this group may be indicative of a particular conflict in this area which results in difficulty experiencing this affect directly. The elevation in obsessive-compulsive symptoms could reflect defensive efforts to manage unacceptable rage. The relatively low group mean for paranoia suggests that the breaks in reality testing which are typical for this group appear more frequently as general confusion about what is real rather than as systemized paranoid systems.

#### Comparisons of Recreational and Compulsive Cocaine Users

These groups were compared on all dependent variables in order to identify the particular variables which significantly distinguished them.

#### Demography

Three of the 11 variables looked at distinguished these groups: gender, marital status and education. The compulsive group had significantly more males, more of these subjects were married and they had less average education. There were no group differences regarding age,

occupational status, income, race, psychotherapy involvement, history of psychiatric hospitalizations past medical illness or previous treatment for drug or alcohol problems.

Except for education, all variables indicative of the capacity to to function in the world are not significant discriminators. One interpretation of this is that, prior to developing cocaine problems, the compulsive users were high-functioning individuals who did not suffer from problems in psychosocial functioning. The fact that they had significantly less education than the recreational user group but achieved comparable occupational and income status' supports this possibility. The lack of significant group differences in medical, psychiatric, psychotherapeutic and drug abuse treatment histories suggests that the compulsive users have not generally been chronic dysfunctional drug abusers and that the substantial psychopathology present in the group is acutely related to the current compulsive cocaine abuse syndrome and not indicative of pre-existing psychopathology.

The lack of difference between groups on occupational status and income argue against the idea that the high cost of cocaine is currently a significant factor limiting individual's use of cocaine (put forward by Smith and Wesson, 1978) and the earlier association of high dose cocaine use with wealthy or "jet set" populations with the money and connections necessary for easy availability (Ashley, 1975).

The finding that the compulsive user groups had significantly less education than the recreational users must be regarded as having questionable significance beyond the description of this sample. Two other studies (Helfrich et al, 1983; Washton and Tatarsky, 1984) described groups of compulsive cocaine users with educational levels closer to this study's recreational user group.

The higher percentage of males in the compulsive user group than in the recreational user group parallels other studies whose samples were primarily male (Helfrich et al, 1983; NIDA, 1977; Washton and Tatarsky, 1984; Weiss et al, 1983). These data suggest that males are more vulnerable than females to developing problems with cocaine. The higher percentage of married subjects in the compulsive user group may reflect the fact that for many of these subjects, the spouse's threat to leave the marriage was a primary reason that they come for an evaluation.

#### Cocaine Use

Compared to recreational users, compulsive users tended to use cocaine significantly more frequently in larger amounts and spent more money on cocaine. They also reported less time since last using cocaine prior to completing the research questionnaires and less time in their present pattern of use. They were not, however, different on time since first use of cocaine.

Significantly more compulsive users free-based cocaine and less used intranasally than recreational users. This,

combined with the fact that no recreational users were free-basers, supports recent anecdotal claims that free-base cocaine smoking is a highly addictive route of administration (Siegel, 1983).

While not distinguished from recreational users in the percentages of subjects using in social situations and at work, significantly more compulsive users used cocaine alone. Significantly more compulsive users also typically binged on cocaine whenever they used it, did not use cocaine mainly on the weekends and had "stopped" using cocaine before.

Thus, both quantitative and qualitative variables describe two significantly different patterns of using cocaine for these groups. Statistical comparisons support all apparent group differences in the earlier profile descriptions.

#### Other Drug Use

No significant differences were found between these groups regarding use of other mood altering drugs. However, only a rough estimate of other drug use (days per month) was used in this study and it is likely that more precise measures of intensity (e.g., amount used each episode of use) would have picked up group differences. I received numerous verbal reports from compulsive subjects indicating that they used massive amounts of alcohol when binging on cocaine.

There were significantly more cigarette smokers in the compulsive user group.

#### Psychosocial Consequences of Cocaine Use

In general, compulsive users reported significantly more problems in all major psychosocial categories looked at. The most substantial group differences were in the area of financial problems. In this area, the largest group differences were in the percentage of compulsive users who had used up all the money in their bank accounts, followed, in descending order, by gotten into debt, unable to pay bills and no extra money.

Interpersonal problems were the next best discriminators with the largest group differences on arguments with mate, followed by mate threatened to leave. More compulsive users also reported that cocaine had caused problems in their sexual relationships and interpersonal communication and led to social isolation and the loss of major relationships. There were smaller, but significant, differences in the vocational area with significantly more compulsive users reporting that cocaine use led them to come late or miss days at work, reduce productivity, spend too much time on breaks and get fired from jobs. More compulsive users also got arrested because of this use of cocaine and engaged in unwanted sex. Differences for miscellaneous items such as car accidents, violent behavior and suicide attempts were not statistically significant.

These comparisons support previous findings that compulsive cocaine use is related to major psychosocial problems in all areas of functioning (Helfrich et al, 1983; Washton and Tatarsky, 1984) and underscore problem areas that are specific to the compulsive user. The magnitude of difference between these groups on each major psychosocial category may be a rough indication of the category's vulnerability to disruption by cocaine use. Thus, financial problems would show up first in the early stages of a cocaine abuse problem with interpersonal and, then, vocational problems surfacing as the problem worsened. Violent behavior, car accidents and suicide attempts do not appear to be typical of compulsive cocaine users; groups were not distinguished by these consequences.

#### Psychological Functioning

Statistical comparisons between the compulsive and recreational groups supported all differences between these groups that were apparent from their psychological profile descriptions.

Compulsive users were typically more impaired than recreational users on BORRT1 measures of Alienation, Insecurity of Attachment and Egocentricity; all BORRT1 reality testing subscales; the three SCL-90 subscales which were in the clinical range for the compulsive user group (depression, anxiety and general distress); and three of four SCL-90 subscales which approached clinical

range for the compulsive user group (obsessive-compulsiveness, psychotocism and intensity of distress).

Regarding the percentage of subjects scoring in the pathological range of each BORRTl subscale significantly more compulsive than recreational subjects scored pathologically on Alienation, Insecure Attachment, Reality Distortion, Uncertainty of Perception, and Hallucinations and Delusions. Groups did not have significantly different percentages one Egocentricity and Social Incompetence.

A discriminant analysis between these groups provided further evidence that these groups are, in general, psychologically distinct. Using the 10 specific symptom subscales from the BORRTl and SCL-90 which significantly differentiated these groups as predictors, the analysis correctly classified (81%) of these subjects. A large majority of recreational users (87%) were classified as recreational and a smaller, but substantial, percent of compulsive users (76%) were classified as compulsive. The five predictors used in the discriminant analysis were, in the order in which they were chosen, were Alienation, Depression, Obsessive-compulsiveness, Uncertainty of Perception and Hallucinations and Delusions. Alienation appears to be the most important discriminator between these groups.

### Summary

Demographic comparisons between these groups demonstrated that the C group was distinguished from the R group by having significantly more males and married subjects and having less education. Other measures of current and previous level of psychosocial functioning did not distinguish these groups. It was suggested that these findings indicate that the compulsive cocaine users in this sample were particularly capable, achievement oriented people prior to their problems with cocaine. The substantial psychopathology present in the compulsive cocaine user group seems acutely related to the compulsive cocaine use and not indicative of preexisting psychopathology.

The differences between recreational and compulsive user groups on cocaine use variables that are apparent from the earlier profile descriptions are all statistically significant. Thus, an empirical basis for defining certain behavioral and drug use characteristics as particular to each type of cocaine user is provided. Compulsive users use more cocaine and spend more money for the drug, use cocaine more frequently and report less time in their present pattern of use. Behaviorally, these users are distinguished in the following ways; they 1) tended to use cocaine alone, 2) binged uncontrollably whenever they used cocaine, 3) did not confine their use to the weekends and, 4) tended to have stopped using

cocaine in the past. In contrast, recreational users tended to use relatively small amounts of cocaine and spent relatively little money for the drug because they often got it for free at parties or from friends. Their use pattern had been stable over an average of four and a half years. When they used cocaine they 1) tended to use small controlled amounts in 2) social situations 3) mainly on the weekends and 4) most had not stopped using cocaine in the past. These findings support previous anecdotal and empirical reports that there are two distinct groups of users that maintain stability in their patterns over time (Ashley, 1974; Smith and Wesson, 1978; Siegel, 1984). They argue against Verebey and Gold's (unpublished) position that given free access, a large percentage, "if not all" cocaine users would develop compulsive patterns of use.

While no group differences were found for other drug use, significantly more compulsive users smoked cigarettes than recreational users.

Regarding psychosocial consequences of cocaine use, the most substantial group differences were in the area of financial problems, followed by interpersonal problems, vocational problems, legal problems and miscellaneous items. It was suggested that this may be the order in which the problem areas are vulnerable to disruption as the cocaine problem becomes more severe. The specific nature of problems reported may be seen as a rough indi-

cation of where a given individual is on this continuum of severity.

Comparisons of psychological variables confirmed that the psychological differences between these groups which were apparent in the earlier group profiles were virtually all statistically different as well.

### Correlational Analyses

Correlational analyses examined the relationship between the quantitative measures of cocaine use and all psychological measures for each group. This discussion will summarize the findings for each group and discuss differences between groups.

#### Recreational Group

Regarding object relations dimensions, subjects who used more cocaine both weekly and monthly tended to have greater problems in the areas of basic trust in relationships (ALN) and seemed more narcissistically involved in their relations with others (EGC). Subjects who reported spending more money for cocaine also showed more impairment in basic trust (ALN) in addition to demonstrating a greater sense of social incompetence (SI). Interestingly, two measures of duration of cocaine use were negatively related to psychopathology. Subjects who reported using cocaine in their present pattern for longer periods of time tended to have a greater sense of trust in their relationships with other people (ALN) while those who reported longer periods of time since they had first tried

cocaine, in general, were less narcissistically involved in their relationships (EGC) and had a greater sense of social competence (SI). The subscale referring to painfulness of interpersonal relations (IA) was not associated with any measure of cocaine use. Days since cocaine was last used and frequency of using cocaine, were not significantly related to any object relations subscale.

Only one significant correlation between reality testing subscales and cocaine use was obtained. Money spent for cocaine both on a weekly and monthly basis, correlated with RD, the distortion of internal and external reality. Uncertainty of Perception and Hallucinations and Delusions were not related to any cocaine measure. Frequency of use, days since cocaine was last used, both measures of duration of use and amount of cocaine used were not related to any dimensions of reality testing.

The relationships between cocaine use and psychiatric symptomatology were somewhat different than those with object relations and reality testing. Three measures of weekly use are significantly related to psychiatric problems whereas only one monthly measure is. Subjects who used cocaine more frequently on a weekly basis report more obsessive compulsive symptoms, anxiety, phobic anxiety, more general distress and more total symptoms. Subjects who spent larger amounts of money on cocaine each week similarly tended to experience more obsessive compulsive

problems, phobic activity, general distress, total symptoms, feelings of personal inadequacy and inferiority (I-S) and depression. Larger weekly amounts of cocaine were associated with greater feelings of inadequacy and general distress. Subjects who spent larger amounts of money on cocaine each month generally had more obsessive compulsive symptoms, feelings of personal inadequacy, general distress and total symptoms. Individuals reporting larger amounts of time using in their current patterns tended to report more phobic anxiety. Monthly measures of frequency of use and amount used were not related to psychiatric symptoms. And length of time since first use of cocaine and days since cocaine was last used were not related to psychiatric problems

The fact that days since cocaine was last used was not correlated with any psychological variable is notable as it suggests that whatever effect cocaine use may have on psychological functioning is not an acute effect or an effect of "cocaine withdrawal", that is, a post-use effect. This point will be returned to later.

These results indicate that subjects in this group who tend to generally use more cocaine and spend more money for cocaine appear more similar in their object relations profile to the compulsive user profile; particularly on measures of alienation and egocentricity. And, subjects who use more cocaine, spend more and with greater frequency on a weekly basis, in particular, also tend to show

more psychiatric problems; most are in areas elevated in the compulsive user profile: obsessive-compulsiveness, anxiety, depression, general level of distress, feelings of inadequacy and phobic anxiety. On the other hand, subjects able to maintain their recreational use pattern for longer periods of time appear less like compulsive users in the areas of alienation, egocentricity and social incompetence. Reality testing problems do not generally appear to be related to cocaine use in these users.

#### Compulsive Group

The basic trust dimension of object relations (ALN) was not significantly related to any measure of cocaine use. Compulsive subjects who used cocaine more frequently tended to be more narcissistic in their relations (EGC) and experienced their relationships as more painful with greater concern about being liked by others (IA). These findings both contrast with those from the recreational user in which, ALN was highly related to amount of cocaine used and money spent on cocaine while frequency was unrelated to any object relations subscale. Positive correlations between weekly and monthly amounts of cocaine used and narcissistic orientation (EGC) were large for the compulsive group and were the only cocaine use-object relations relationship that the recreational users shared with this group.

Finally, compulsive users who reported longer periods of time in their present use patterns were less socially

competent (SI). This contrasts with the recreational users who tended to become less impaired in object relations with more experience using cocaine. It is probably indicative of the disruptive impact that chronic compulsive cocaine use has on competence compared to the recreational pattern which users are able to positively adapt to.

There were significant correlations between two of three reality testing subscales and cocaine use measures. Subjects who used cocaine more frequently, tended to have greater elevations in Reality Distortion. However, the subjects using larger amounts of cocaine and spending more money for the drug had even more problems in this area (RD), as well as having more hallucinatory and delusional ideation. Uncertainty of perception was not significantly related to any measure of cocaine use. This would suggest that, for these subjects, Uncertainty of Perception, like Alienation, is more related to the general syndrome of cocaine abuse than to specific features of use.

Time since first using cocaine and since last using cocaine were unrelated to any object relations or reality testing subscale.

The pattern of correlations between psychiatric symptomatology (SCL-90 subscales) and cocaine use measures is notable because of the fact that five of six subscales which distinguished the recreational and compulsive groups were not significantly related to any measure of cocaine

use (Depression, Anxiety, Psychotocism, Obsessive-compulsiveness and intensity of distress - PSDI). On the other hand, two symptoms which did not distinguish recreational and compulsive user groups were correlated significantly with aspects of cocaine use. Subjects reporting longer periods of time using in their present pattern were more phobic, had greater general distress and more reported total symptoms. Those who used cocaine with greater frequency tended to be more paranoid.

All measures of psychiatric functioning which distinguish compulsive users from recreational users are apparently unrelated to actual amount (dose) of cocaine used, acute effects or withdrawal ("crash") and frequency of use. Paranoia does not appear in this group to be related to dosage but rather to frequency of use.

Among the compulsive users in this group, those using larger amounts of cocaine, spending more money for cocaine and using more frequently tended to be more egocentric, have greater self-esteem problems in relationships and to show greater reality testing impairment with pervasive hallucinatory and delusional experiences. Higher frequency of cocaine use was also related to paranoia. Subjects who reported longer periods of time in their present pattern tended to experience more phobic anxiety, general distress and total symptoms.

The lack of significant correlations between measures of alienation, uncertainty of perception, depression,

anxiety, psychotocism, obsessive-compulsiveness and intensity of distress, and cocaine use suggests that these areas are related in a general way to the syndrome of compulsive cocaine use rather than to particular features of use.

Time since last use of cocaine was unrelated to any psychological variable

#### Summary of Corelational Analyses

In general, recreational users who used more cocaine and spent more money on cocaine tended to experience more alienation from others and were more egocentric in their relationships. Subjects in this group who used more cocaine and more frequently on a weekly basis, in particular, also tended to report more of the following: obsessive-compulsive symptoms, anxiety, depression, general distress, phobic anxiety and feelings of inadequacy. Thus, we see increased use in this group associated with psychological functioning more closely approximating that of the compulsive users in the areas of object relations and psychiatric symptomatology. On the other hand, recreational users who reported longer periods of time in their recreational use pattern were less alienated and egocentric and more socially competent. This suggests that the ability to maintain a controlled-recreational cocaine use pattern is specifically associated with a particularly high level of object relations integration. The finding of no significant corelations

between Insecure Attachment and all reality testing dimensions and any cocaine use variable indicates that these areas of psychological functioning are not related to specific aspects of cocaine use for these subjects. Problems in these areas may not be seen as either motives for using cocaine or as resulting from the use of cocaine in the recreational user group.

The relationship between psychological functioning and cocaine use for the compulsive user group was very different from the relationship for recreational users. Compulsive users who used more cocaine, spent more mainly on cocaine and used more often were more egocentric, experienced more concern about being liked by others and had greater reality testing problems with severe breaks manifested in hallucinations and delusions. Subjects in this group who used more often also tended to be more paranoid. Whereas egocentricity is similarly related to cocaine use in both groups, concerns about being liked and reality testing impairment are only related to cocaine use measures for the compulsive user group. Thus, it may be that impairment in these aspects of ego functioning are specifically related to the higher dose, high frequency use patterns. There were no correlations between any cocaine use variables and measures of alienation, uncertainty of perception, depression, anxiety, psychotocism, obsessive-compulsiveness and intensity of distress. In contrast to the findings for the recreational user group,

these psychological factors appear to be generally related to the compulsive cocaine use syndrome and not to specific aspects of cocaine use.

Time since cocaine was last used was not significantly correlated to any psychological variable in either group. This finding strongly suggests that any relationships found between psychological functioning and cocaine use are not the result of acute effects or after effects ("withdrawal", rebound) of cocaine. They must be seen then as either chronic effects or pre-existing phenomena.

#### The "Quasi-compulsive" Cocaine User

As the reader will recall, the subjects in this group met some, but not all initial criteria for compulsive use of cocaine. This group was created in order to develop a profile of the cocaine user who admits to some difficulty in his or her use of cocaine but does not admit to the inability to control his use and believes that the problem is not severe enough for the user to need help in order to stop.

The central question about this group is whether these users are a) a distinct group of users, possibly representing a point on a continuum of compulsivity suggested by Wurmser (1978); b) compulsive users with a greater degree of defensive denial about the severity of their problem; or, c) a mixed group of recreational and compulsive users who were grouped together because of dif-

ferent interpretations of the initial classifying questions.

This section will first summarize the results of the comparisons between the quasi-compulsive user group and the other, recreational and compulsive user, groups. It will conclude with a brief discussion addressing the above question.

Summary of Comparisons with  
Recreational and Compulsive Users

Demographics

The QC group did not differ significantly from either R or C groups or any categorical demographic variables. The group was ordinarily between these groups on both variables on which the R and C groups differed, marital status and gender. Of the three quantitative variables, the QC group only differed from the C group on one, education. In general these users were better educated than the compulsive users and had the same mean years of education as the recreational users. There were no group differences on age or income.

Cocaine Use

On quantitative and qualitative-categorical cocaine use variables this group was either most like the compulsive group or not significantly different from either group.

Categorical variables on which the QC group was not significantly different from the C group but was different

than the R group were percentage of subjects who free-based cocaine, used cocaine alone and had stopped using cocaine in the past. There were no significant differences between the QC and R or C groups regarding intranasal cocaine use or use mainly on the weekends; on these variables the QC group percentages were ordinally between the other groups. The percentage of bingers in this group was also ordinally between the R and C groups but was significantly different from each group.

Regarding quantitative measures of cocaine use, the QC group appears to be a distinct ordinal step between the R and C groups on three measures of intensity of use: the amount of cocaine used, the money spent on cocaine, and time since last using cocaine. They were similar in their frequency of use to compulsive users and significantly different than recreational users on this dimension. On measures of duration, there were no differences with other groups.

Thus, on intensity of cocaine use, the ability to restrict cocaine use to the weekends and the smaller percentage of bingers, the quasi-compulsive user appears to have more capacity to limit his cocaine use than the compulsive user. However, in the following respects he is similar to the compulsive user: frequency of use, using cocaine alone and having stopped using cocaine in the past.

### Other Drug Use

In this area the QC group is not distinguishable from the R group. The QC group has more light-moderate marijuana smokers than the C group which has more non and heavy marijuana smokers. This group also has less cigarette smokers, like the R group, than the C group.

### Negative Psychosocial Consequences

Most of these subjects reported some negative consequences associated with their cocaine use. The percentage of QC subjects reporting specific consequences fell ordinally between the R and C groups but was not significantly different from either group for most consequences. There were eight variables on which group comparisons were significant. The QC group was not significantly different from the C group but was when compared to the R group on percentages reporting arguments with their mates, mates threatening to leave, sexual problems and actual loss of major relationships because of cocaine. The relationship was reversed on the remaining four variables. The QC group was similar to the R group and significantly different from the C group on percent of subjects reporting that they had used all their money in bank accounts, gotten into debt, been unable to pay bills and missed days of work because of cocaine.

To summarize, QC users are generally situated between the other two groups in the reported degree of psychosocial impairment due to cocaine. They appear more like

compulsive users in the degree of impairment of interpersonal functioning but are similar to recreational users in their ability to function at work and not develop serious financial problems because of their use of cocaine. These findings tend to parallel those for cocaine use. They both indicate that this group is generally able to set limits on the intensity of their use such that it does not interfere substantially with their capacity to attend to day to day life demands. However, in both cocaine use and this area, there are indications that their pattern of use has become more individualized than the recreational user pattern and does interfere with their ability to relate well with significant others.

#### Psychological Functioning

All QC object relations subscale means except Social Incompetence are in the upper third of Bell's non-pathological norms with a peak elevation on Alienation. Social Incompetence is close to the 50th percentile and virtually identical to the recreational and compulsive user groups. Reality testing is rather impaired with the HD subscale above Bell's pathological cutoff, RD just below it and UP in the upper third of Bell's norms.

No BORRTI object relations or reality testing QC group subscale mean was significantly different than the C group. QC group means for Alienation and Reality Distortion showed significantly greater impairment than those of the R group, but there were no significant differences

between these groups on the other five subscales (Insecure Attachment, Egocentricity, Social Incompetence, Uncertainty of Perception and Hallucinations and Delusions).

Group comparisons of the percent of QC users with pathological BORRTI scores yielded only one significant result. The QC group had significantly more subjects with pathological scores on Uncertainty of Perception than the R group.

Thus, compared to compulsive users, these subjects' substantial sense of mistrust in relationship and general reality testing impairment seem to be offset somewhat by slightly better self-esteem and comfort in relationships (IA), firmer self-other differentiation (EGC) and less gross reality testing failure (HD). QC users seem to have a somewhat firmer, better integrated identity sense with better defined self-object boundaries than the compulsive group but compared to the R group have substantially more mistrust of others and general reality testing problems with a trend toward greater doubt in their reality sense.

Similarly, the psychiatric status of the QC group generally overlapped that of the other two groups with only three SCL-90 symptoms clusters showing significant group differences. The QC group only had a clinically elevated mean score for depression with anxiety and total number of symptoms approaching the clinical range. The QC group tended to be significantly more hostile and anxious than the R group and was not significantly different from

the C group on these symptom clusters. However, the QC users had significantly less intensity to their symptomatology than compulsive users and were not distinguished from recreational users in this area. QC users were also more similar to recreational users than compulsive users were to recreational users on measures of obsessive-compulsive and depressive symptomatology and general level and intensity of distress. The QC group mean for hostility is significantly higher than the R group mean for this symptom while the C and R groups are not significantly different on this dimension. The pattern is reversed for depression, the C group is significantly more depressed than the R group while the QC group is not. This may indicate that the QC user has a greater capacity to allow the experience of anger than the C users. This relates to an earlier point made that the absence of significant anger in C group members may suggest a specific inability or difficulty with this affect in compulsive cocaine users. In compulsive cocaine users anger may not be experienced or acted on directly but, rather, bound up in obsessive compulsive symptomatology and acted out in compulsive use of cocaine.

The canonical discriminant function from the analysis used to discriminate R and C group subjects was used to classify QC subjects to see how they compared in their psychological functioning to the other groups. The results were equivocal since two thirds of the sample was

classified as compulsive and one third as recreational cocaine users.

Thus, the majority of QC users appear to function psychologically like compulsive users. However, a substantial percentage also appear similar to recreational subjects.

#### Correlational Analysis

Regarding the object relations profile of QC users, both measures of duration of use, time since first use of cocaine and time in present pattern, were highly correlated in a positive direction with concerns about being liked and accepted by others and the painfulness of relationships (IA). The following relationships only approached significance. Subjects reporting more time since their first use of cocaine also tended to have greater mistrust of relationships (ALN) while those reporting more time in their current pattern of use appeared more narcissistic in their relationships with others (EGC). Subjects who reported greater weekly frequency of cocaine use also appeared more narcissistic (EGC) in their relationships. General reality testing impairment (RD) and the presence of gross breaks in reality testing (hallucinations and delusional ideation) (HD) were both positively correlated with the length of time users were in their present pattern of use as well as the length of time since first using cocaine. Individuals using cocaine with greater frequency tended to have more

hallucinatory and delusional ideation and general problems with Reality Distortion. There was a smaller tendency for subjects who reported longer periods of time in their present pattern to have a greater sense of doubt about their perception of reality (UP). Thus, for this group, measures of duration were related to all areas of ego functioning tested except SI. Frequency of use was only slightly related to object relations (EGC only) and rather highly associated with hallucinatory and delusional ideation.

It is notable that amount of cocaine used or money spent on cocaine and time since last use of cocaine were not significantly or marginally related to any of the BORRTI measures.

The relationship between psychiatric symptomatology and cocaine use is very similar to the BORRTI - cocaine relationship. Subjects reporting longer time in their present pattern of use were more prone to experience feelings of personal inadequacy and uneasiness (1-s), depression, anxiety, phobic activity, psychotocism and general distress and, less markedly, obsessive-compulsive symptomatology, hostility and general intensity in their symptomatology. They also experienced slightly less somatic distress (SOM). Frequency of cocaine use was the next most important variable. Subjects who reported using cocaine more often reported more obsessive compulsive symptoms, phobic anxiety and hostility and, to a lesser

extent, psychotocism, general distress and more total symptoms. Subjects using larger amounts of cocaine were slightly more phobic while those spending more money were more phobic and angry. There was also mild trend for subjects reporting more time since last using cocaine to be more somatically distressed and paranoid. This is notable because it is the only relationship across all three groups between last use of cocaine and any psychological symptoms.

#### Summary

The overview of this group presented above presents a cocaine pattern that is similar in many ways to the compulsive use pattern but also deviates from it in certain key respects. These users describe an individualized pattern of frequent use which they have regarded in the past as a problem, like the compulsive user profile, but it is a less intense level of use (amount, money spent) and these users apparently exercise greater control in being able to confine their usage mainly to the weekends and report a lower incidence of bingeing. The incidence of psychosocial consequences in this group is similar to the C group regarding interpersonal problems but more similar to the R group in vocational and financial areas. This is further empirical evidence that Quasi-compulsive users generally have greater control than compulsive users.

The psychological profile of this group is similar to that of the compulsive users in impairment of basic trust

and general reality testing problems. It is somewhat less impaired than the compulsive user group regarding concerns about being liked by others, egocentricity, uncertainty of perception and gross disruption of reality testing by hallucinatory and delusional experiences. This group is generally more anxious and angry than the R group but have less intensity in their pathology than compulsive users. Finally, the quasi-compulsive users appear to be less depressed and obsessive-compulsive but more angry than the compulsive users relative to the recreational user group.

Correlations between cocaine use and psychological variables suggest that as QC users engage in this pattern of use for longer periods of time they look more like the compulsive group in the degree of object relations (IA, EGC) and reality testing (RD, UP, HD) impairment and severity of symptomatology in the areas that distinguish the compulsive and recreational groups: depression, anxiety, psychotocism, obsessive-compulsiveness, general distress and intensity of distress. Greater frequency is also associated with psychological impairment more closely approximating that of the compulsive user group; greater egocentricity, reality distortion with hallucinations and delusions, obsessive-compulsive symptoms, phobic anxiety, hostility, psychotocism, general distress and total symptoms.

The correlational analysis supports the hypothesis that the quasi-compulsive user is a user on the way to

developing psychological problems in both ego functioning and psychiatric symptomatology more typical of the compulsive user. We may assume that increased psychological impairment contributes to further psychosocial dysfunction which present additional stress to the deteriorating ego. Thus, we see an interaction between chronic drug effects, deteriorating psychological functioning and increased psychosocial stress giving rise to an increase in the compulsive use of cocaine.

#### Summary of the Major Findings

Comprehensive descriptive profiles were generated of recreational and compulsive cocaine users. The recreational user cocaine use profile generally met the impressionistic definition of social-recreational use suggested by the National Commission on Marijuana and Drug Abuse (1973). The compulsive cocaine user profile matched in a general sense, previous descriptions of compulsive cocaine use from the recent literature (Helfrich et al, 1983; Resnick and Resnick, 1984; Washton and Tatarsky, 1984) and met DSMIII criteria for Cocaine Abuse Syndrome. Thus, the initial designation of subjects as controlled-recreational and compulsive users according to their attitudes about their cocaine use proved to be in accord with previous descriptions of social-recreational and compulsive patterns of cocaine use.

Comparisons between recreational and compulsive user groups yielded an empirically derived set of qualitative

descriptive cocaine use factors which specifically distinguished the compulsive group from the recreational user group. These factors may constitute diagnostic criteria for compulsive cocaine use, and were:

1. using cocaine alone.
2. typically binging whenever using cocaine.
3. does not mainly confine cocaine use to the weekends.
4. has stopped using cocaine in the past.

Comparisons of quantitative cocaine use variables showed that compulsive users tended to use larger amounts of cocaine, spend more money on cocaine and use the drug more frequently than recreational users.

Compulsive users generally reported significantly more negative consequences of their cocaine use than recreational users in all major psychosocial categories. Financial problems best distinguished the groups followed by interpersonal, vocational, legal and, then, miscellaneous problems. While alarming percentages of compulsive users reported that cocaine use caused car accidents, violent behavior and suicide attempts, these problems were not significantly different for these groups and must be considered as atypical for most compulsive users.

This investigation's compulsive user group reported as great or greater incidences of problems in all major psychosocial areas compared to groups examined in two previous studies while the average weekly amount of

cocaine used by this study's sample was roughly half the amount used by these other groups (Helfrich et al., 1983; Washton & Tatarsky, 1984). This finding further supports the reports from these two studies of no direct relationship between dose of cocaine used and the severity of problems associated with cocaine abuse.

Psychological profiles were also substantially different for this study's recreational and compulsive user groups. In general, the recreational users appear to have achieved a degree of personality integration that approximates that of average to high functioning nonpathological groups. This finding is consistent with the results from the only previous systematic study of social-recreational cocaine users (Siegel, 1984). In that study, 25 social-recreational users who were stable in their pattern of use over nine years showed no pathological elevations on MMPI and EWI testing throughout this period. This study's recreational user group did show some non-clinical elevations on SCL-90 subscales for obsessive-compulsiveness, low self-esteem, depression and measures of general distress. These findings suggest the presence in these users of mild neurotic symptomatology which may constitute motives for the use of cocaine.

In contrast to the recreational user profile, compulsive users tended to have significantly more impairment in the quality of object relations, reality testing and six psychiatric symptom clusters: depression, anxiety,

general distress, obsessive-compulsiveness, psychotocism, and intensity of distress. A discriminant analysis was able to classify recreational and compulsive users with a high degree of accuracy solely based on psychological functioning.. The most important psychological discriminator was degree of impairment in basic trust.

Object relations comparisons between the compulsive user group and Bell's (Bell, Billington, and Becker, 1985a) five criterion groups and SCL-90 profile comparison with Derogatis' (1977) outpatient depressive group suggest that the degree of impairment in the compulsive user group is most similar to depressed and neurotic character disorder patients but significantly less impaired on all dimensions than patients with borderline personality disorder. This group also appears to be particularly intact in the area of social competence. In conjunction with the previous finding that there were few differences between recreational and compulsive user groups in previous level of psychosocial adaptation, these comparisons suggest that the psychological and psychiatric impairment evident in the compulsive group is very related to current problems with their compulsive use of cocaine and not indicative of a chronic psychosocial dysfunction. This interpretation is in accord with Smith's (1984) anecdotal report that only 10% of the depression seen in compulsive cocaine users reflects underlying depression.

While it is likely that the compulsive user group does contain some subjects who present a borderline level of ego integration (between one quarter and one third of this group had "pathological" object relations subscale scores), the findings of this investigation are most consistent with the clinical hypotheses advanced by Spotts and Schontz (1976) that compulsive cocaine abuse is associated with character problems of an oedipal nature.

Correlations between cocaine use and psychological functioning in the recreational user group indicated that these users appear more like compulsive users in their object relations and psychiatric status as they increase the amount of cocaine used and their frequency of use. However, the more stable recreational users who maintained their use pattern over more time actually appeared to have healthier object relations. Among the compulsive users, increased use of cocaine was specifically associated with greater levels of egocentricity, concerns about being liked by others and major reality testing problems. However, impairment of basic thrust was not related to any measure of cocaine use and appears then to be a general feature of the compulsive cocaine user syndrome. This was also true of five of six psychiatric symptoms which distinguished the compulsive and recreational user groups (depression, anxiety, psychoticism, obsessive-compulsiveness and intensity of distress).

The quasi-compulsive user group was created to include subjects who met some, but not all, criteria for compulsive cocaine use. The cocaine use profile of this group appeared closest to that of the compulsive users in qualitative aspects of their cocaine use. Measures of intensity of cocaine use suggested that these users are able to exercise greater control over their use than compulsive users do. This ability to control and set limits over their use is further suggested by comparisons of psychosocial consequences of cocaine use. The quasi-compulsive group reported significantly less financial and vocational problems than the compulsive group. These groups were similar in the area of interpersonal consequences. The comparisons between the quasi-compulsive group and the other two groups on psychological variables likewise indicate that this group is less impaired than the compulsive user group but also similar to it in many respects. The correlational analysis suggested that as these users maintain their pattern of use over time they look more similar to compulsive users psychologically. These findings are consistent with the hypothesis that the quasi-compulsive user is between the other two groups on a continuum of compulsivity of use and develops more of the features of the compulsive users over time.

#### Implications of This Investigation

This study has described two distinct groups of cocaine users that are significantly different from one

another in their pattern and intensity of cocaine use, negative psychosocial consequences of cocaine use and psychological functioning. By classifying cocaine users according to their own self-report of whether and to what extent they felt addicted to cocaine and unable to control their use of cocaine, groups of controlled-recreational and compulsive cocaine users were created. These groups corresponded closely to previous impressionistic definitions of social-recreational and compulsive use given by the National Commission on Marijuana and Drug Abuse (1973).

The subjective experience of being able to control the use of cocaine and not feeling addicted was related to low dose, low frequency intranasal use of cocaine primarily in social situations on the weekends that did not lead to major psychosocial problems. The subjects in this category were not significantly different in the degree of object relations and reality testing integration from normal, nonpathological comparison groups. Non-pathological levels of obsessive-compulsive symptoms, feelings of inadequacy, depression and general distress were present in these subjects. These findings are indicative of a neurotic level obsessive-compulsive personality style with mild self-esteem problems and depressive tendencies. Individuals with this personality configuration may be particularly drawn to cocaine because of its reputed ability to increase the sense of self-control (Freud, 1974b), provide energy, self confidence and

greater optimism (Spotts & Schontz, 1975); qualities which would be particularly attractive to this personality. Individuals who are able to maintain their recreational pattern of use over longer periods of time appear to be among the more well integrated members of this group regarding object relations. And those who use larger amounts of cocaine and with greater frequency tend to have more impaired object relations and more severe psychiatric symptomatology which moves in the direction of the compulsive user profile.

These findings support previous claims (Ashley, 1975; Siegel, 1984) that some individuals are able to engage in stable recreational cocaine use with minimal psychosocial problems. However, they also suggest that increased use in this population is associated with greater object relations impairment and psychiatric symptomatology.

This impairment may constitute an increased vulnerability to the seductive pull of cocaine which enables these individuals to self-medicate these painful affects. This is consistent with the hypothesis suggested by Spotts and Schontz (1975) that greater ego impairment is associated with increasing severity of cocaine abuse.

Subjects who were classified as compulsive users based upon their sense of being addicted to cocaine, unable to control their use and unable to stop using cocaine without help in spite of their desire to do so generated a group profile which corresponded to previous clinical des-

criptions of compulsive cocaine abuse. Comparisons between this group and the recreational user group yielded significant differences in cocaine use, psychosocial consequences of cocaine use and psychological variables. A set of qualitative cocaine use variables which were distinct for the compulsive user was described which constitute empirically derived diagnostic criteria for compulsive cocaine abuse.

The psychological profile of these users is most consistent with the clinical descriptions given by Spotts and Schontz (1975) regarding compulsive cocaine abusers. These authors studied nine cocaine abusers using the representative case method. While not formally diagnosing their subjects, they described them as strong, willful, achievement oriented men who were preoccupied with independence and fearful of normal dependency relationships. Counter-dependent behaviors are used to fortify a fragile self-image and compensate for a profound sense of despair about getting their needs met through their relationships with others. They speculate that this character style is based upon oedipal conflicts and constitutes a vulnerability to compulsive use of cocaine.

While the present investigation yielded a profile of the compulsive cocaine user that is similar to the clinical description of Spotts and Schontz, the object relations impairments in this study's compulsive users suggest that their core psychopathology is pre-oedipal in

nature and closer to the clinical formulations of Giovacchini (1978) regarding the narcissistic character neuroses. He suggests that these individuals rely heavily on the defense of externalization as a way of over-compensating for a frightened, confused and helpless inner orientation toward the world. They strive to maintain a sense of invulnerability and self-containment as a way of fortifying the self-image and preventing psychic collapse. Thus, self esteem is derived by acting on the world, rather than through relations with people.

For these individuals, cocaine's "ego fortifying effects" may initially serve as an ideal defensive support to the neurotic character's striving for mastery over the world. However, as cocaine is increasingly relied upon, chronic neurochemical depletions (Verebey and Gold, unpublished; Rosecan, 1984) would give rise to the increased psychiatric distress and psychosocial dysfunction described in this study. This deterioration in functioning would represent, for these individuals, a further threat to their fragile self-esteem.

Wurmser (1978) has written the most comprehensive text on the psychodynamics of compulsive drug use to date. He suggests that the specific cause of compulsive drug use is a narcissistic crisis. A disappointment or letdown from expectations of one's own grandeur lets loose overwhelmingly painful primitive affects which threaten further psychic deterioration.

The gradually increasing deterioration of psychological and psychosocial functioning associated with chronic cocaine abuse would represent, to the individuals described in this study, a kind of gradual narcissistic crisis. This, in turn, would increase the need for ego defense and, thus, for cocaine. Positive correlations, in the quasi-compulsive group, between duration of cocaine use and increased psychopathology support this hypothesis.

Although this investigation's findings do not constitute experimental proof for these formulations, they are entirely consistent with them. The fact that the recreational users in this study who were generally able to maintain their controlled use of cocaine over larger periods of time were the better integrated members of the group, further supports the hypothesis that object relations impairment is related to the vulnerability to developing compulsive cocaine use patterns. However, the finding of few differences between recreational and compulsive users in previous levels of psychosocial adaptation qualifies this statement. The implication here is that the psychological status of the compulsive users in this study was relatively stable prior to their problems with cocaine. The current level of psychological impairment must be seen as a deterioration of functioning resulting from an interaction between premorbid per-

sonality, the effects of chronic cocaine use and the stress of accumulating in psychosocial problems.

The limitations of this study's design do not permit more precise theoretical statements about the relative importance of these three factors in the development of compulsive cocaine use to be made. However, this investigation has clear implications for the treatment of compulsive cocaine abusers. The relatively high degree of social competence shown by the compulsive users in this study suggests that they have the capacity to mask the more severe impairments in object relations, reality testing and psychiatric functioning that are indicated in their profile. Their pervasive lack of basic interpersonal trust could constitute a motive for hiding their psychic pain from others and, thus, function as a resistance to seeking help or entering into a therapeutic alliance with a therapist.

Severe reality testing impairment is also associated with this group of compulsive users and may be well hidden behind the facade of competence these users seem able to maintain, even in the face of clinical levels of depression and anxiety. It would appear then that the lack of trust and capacity to maintain a facade of competence in these users would have to be specifically addressed in their treatment. Treatment approaches which do not adequately consider them would probably have limited long term success. The relative lack of attention to these

issues in many current approaches to cocaine abuse treatment may be one reason that these patients are considered particularly difficult to treat by many therapists.

(J. V. Spotts, personal communication, November 11, 1985).

In a general sense, this investigation suggests that the quality of one's relationship to other people and intrapsychic pain are intrinsically related to the vulnerability to developing severe cocaine problems. The "delusion producing" effects of cocaine suggested by Verebey and Gold (unpublished) do not appear to be sufficient to account for the development of this debilitating disorder. This investigation's findings concur with the suggestion made by Rado in 1933 that it is "not the toxic agent but the impulse to use it, (that) makes a an addict" (p. 2). But this study further suggests that it is the interaction between the impulse and the chronic effects of cocaine use which together give rise to cocaine addiction.

#### Limitations of the Present Study and

#### Suggestions for Further Research

##### Limitations

Several methodological limitations will be discussed below which provide a framework for considering the findings and implications of this study.

Most importantly, the exploratory design of this investigation precludes direct cause and effect statements from being made about the relationship between cocaine

abuse and psychological functioning. The inferences which were drawn from the study's results must be regarded as clinical hypotheses. These hypotheses may now be tested in more rigorous experimental and clinical designs.

As a clinician, I often struggled with another major limitation of this study. In an effort to make general statements about elements common to the groups of cocaine users in this study, many of the finer nuances of these individuals' inner experience had, of necessity, to be ignored or were washed out in the averaging of differences. Thus, general statements could be made at the expense of the richness and diversity present in these groups. The profiles generated in this study should not be regarded as reflecting "real" people. Their value is in that they narrow the field of inquiry and suggest a direction for future research and clinical practice to pursue.

Sampling limitations must also be considered. Because most members of the compulsive users came voluntarily to the Cocaine Abuse Consultation Service for evaluations, they must be regarded, a priori, as representing a somewhat motivated group with some degree of insight into their problem. Thus they may represent a relatively healthy group of cocaine users. The data from this group cannot be considered to be representative of users who do not volunteer for evaluations or hospitalized cocaine

users. These other groups may be more psychologically impaired than the subjects in this sample.

Similarly, since the recreational users in this study were self-selected respondents to a newspaper advertisement and received no compensation for their participation in the study, it is not possible to know how representative this group is of most recreational users. It is possible that the subjects in this group participated in the study because they were on the healthier end of the continuum of psychological functioning. More disturbed individuals may not have participated because of mistrust of the experimenter's intentions or a sense of being "ripped-off" by giving their time without monetary compensation. These sentiments were expressed to the experimenter over the telephone by prospective subjects who chose not to participate in the study.

A final limitation regards the use of self-report instruments in this study. As with most self-report instruments, the possibility for social desirability reporting is substantial. While this possibility does need to be considered in evaluating this study's finding, the fact that all recreational and some quasi-compulsive users participated anonymously through the mail may have encouraged more accurate reporting by subjects. And the balance of quasi-compulsive and the compulsive users who came for evaluations for which they paid would have had an incentive to be honest in that their evaluations depended

to a large extent on their responses to the research questionnaires.

#### Suggestions for Future Research

Several strategies may be employed to see how representative this study's findings are regarding the impairments in psychological functioning found in the compulsive user group. The instruments used in this study may be given to other groups of hospitalized and non-hospitalized compulsive cocaine users to see whether hospitalized users are more impaired in their functioning. A longitudinal design could follow these groups over time, periodically administering the research questionnaires to see how the psychological variables looked at in this study change or remain constant over time. Subjects who remain abstinent from cocaine over time may be compared to patients who continue to use cocaine in order to more specifically describe the way in which psychological functioning is affected by continued cocaine use compared to abstinence.

It would also be interesting to see whether the clinical hypotheses developed in this study are valuable in treating cocaine abusers. Two programs could be selected that offer similar cocaine abuse treatment approaches. One program's counseling and psychotherapy staff would receive special training and supervision to address their work toward the specific object relational hypotheses suggested by this study. The other program would receive training and supervision in other accepted

approaches to cocaine abuse treatment. These could also constitute two approaches offered in the same clinic to which incoming patients were randomly assigned. The success of patients in these two program could be compared as an empirical test of the hypotheses.

Future research could also explore the question of how the psychological status of compulsive cocaine users compares to that of compulsive users of other drugs. In order to address this question, groups of compulsive users of other drugs could be compared to this study's cocaine users using the same instruments (BORRTI and SCL-90) to see whether there are systematic differences related to the choice of drug.

## APPENDIX A

PERSONAL INFORMATION QUESTIONNAIREIDENTIFYING DATA

1. Sex: ☐ female, ☐ male.
2. Age: \_\_\_\_\_.
3. Racial or ethnic group: \_\_\_\_\_.
4. Religion: \_\_\_\_\_.
5. Marital status: \_\_\_\_\_.
6. Education (highest grade completed): \_\_\_\_\_.
7. Occupation: \_\_\_\_\_.
8. Annual income: \_\_\_\_\_, spouse's income: \_\_\_\_\_.

MEDICAL-PSYCHIATRIC HISTORY

1. Have you suffered from any serious medical problems? If yes, describe:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_.

2. Have you been in outpatient psychotherapy or counseling? ☐ yes, ☐ No.  
 If yes, please complete below: (put dates and reason for treatment)

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_.

3. Have you been hospitalized for psychiatric reasons? If yes, complete:

| <u>Dates</u> | <u>Reason for treatment</u> |
|--------------|-----------------------------|
| _____        | _____                       |
| _____        | _____                       |
| _____        | _____                       |

4. Have you been in treatment for drug or alcohol problems?

If yes, please complete below:

| <u>Dates</u> | <u>Reason for treatment</u> |
|--------------|-----------------------------|
| _____        | _____                       |
| _____        | _____                       |
| _____        | _____                       |

5. Have you ever used cocaine? Yes, No. If you answered yes, please complete the Cocaine Information Questionnaire and the Self-Report Inventory; if you answered no, only complete the Self-Report Inventory.

ADDITIONAL INFORMATION OR COMMENTS:

Today's date: \_\_\_\_\_

COCAINE INFORMATION 1

1. When did you first try cocaine? (Month and year) : \_\_\_\_\_
2. How do you use cocaine currently? (Check all that apply to you):
  - a. \_\_\_\_\_ snort
  - b. \_\_\_\_\_ free-base
  - c. \_\_\_\_\_ intravenously
3. When do you use cocaine? (Check all that apply to you):
  - a. \_\_\_\_\_ when you are alone
  - b. \_\_\_\_\_ when you are at work
  - c. \_\_\_\_\_ when you are at a party
  - d. \_\_\_\_\_ when you are at home
  - e. \_\_\_\_\_ when you are with friends
  - f. \_\_\_\_\_ when you are with your spouse or mate
4. Do you use cocaine mainly on the weekend? \_\_\_\_ Yes \_\_\_\_ No
5. How frequently do you use cocaine currently? \_\_\_\_ days per week  
\_\_\_\_ days per month
6. How many grams do you use currently? \_\_\_\_ grams per week  
\_\_\_\_ grams per month
7. How much money do you currently spend on cocaine? \$ \_\_\_\_ per week  
\$ \_\_\_\_ per month
8. Describe your pattern of use: (eg. small amounts throughout the day, binging until supply runs out, etc.)
9. How long have you been using cocaine in the way that you are now?
10. Below is a list of cocaine effects that many people report. Check all of those that you feel when you use cocaine:
  - a. \_\_\_\_\_ feel less depressed
  - b. \_\_\_\_\_ feel less stress
  - c. \_\_\_\_\_ helps you forget problems or worries
  - d. \_\_\_\_\_ feel less bored
  - e. \_\_\_\_\_ feel more "mellow"
  - f. \_\_\_\_\_ pleasurable feeling, better mood
  - g. \_\_\_\_\_ think faster, racing thoughts
  - h. \_\_\_\_\_ think more clearly
  - i. \_\_\_\_\_ think of good ideas that later seem foolish
  - j. \_\_\_\_\_ feel increased mental activity
  - k. \_\_\_\_\_ feel more like having fun
  - l. \_\_\_\_\_ feel more sociable
  - m. \_\_\_\_\_ feel more talkative
  - n. \_\_\_\_\_ feel more creative
  - o. \_\_\_\_\_ feel more alive, stronger
  - p. \_\_\_\_\_ feel more self confidence
  - q. \_\_\_\_\_ feel more energetic
  - r. \_\_\_\_\_ feel younger, worry less about getting old
  - s. \_\_\_\_\_ relieves fatigue
  - t. \_\_\_\_\_ feel more alert
  - u. \_\_\_\_\_ better able to work and get things done
  - v. \_\_\_\_\_ feel sexually stimulated
  - w. \_\_\_\_\_ have decreased appetite, eat less

COCAINE INFORMATION-2

11. Check all of the following that you feel when you use cocaine:

| <u>Consequence</u>                | <u>When High</u> | <u>When cocaine wears off</u> | <u>A day after a run</u> |
|-----------------------------------|------------------|-------------------------------|--------------------------|
| a. feel run down and weak         |                  |                               |                          |
| b. nausea                         |                  |                               |                          |
| c. vomiting                       |                  |                               |                          |
| d. heart palpitations             |                  |                               |                          |
| e. shortness of breath            |                  |                               |                          |
| f. sweating                       |                  |                               |                          |
| g. headaches                      |                  |                               |                          |
| h. chills                         |                  |                               |                          |
| i. sleep too much                 |                  |                               |                          |
| j. difficulty sleeping            |                  |                               |                          |
| k. hands tremble                  |                  |                               |                          |
| l. double vision                  |                  |                               |                          |
| m. ringing in your ears           |                  |                               |                          |
| n. dizziness                      |                  |                               |                          |
| o. seizures/loss of consciousness |                  |                               |                          |
| p. smoke more cigarettes          |                  |                               |                          |
| q. decreased appetite             |                  |                               |                          |
| r. diarrhea                       |                  |                               |                          |
| s. muscle/joint aches             |                  |                               |                          |

**COCAINE INFORMATION-3**

**12. Check all of the following mental/emotional consequences that you feel when you use cocaine:**

| <b><u>Consequence</u></b>                                        | <b><u>When high</u></b> | <b><u>When cocaine wears off</u></b> | <b><u>A day after a run</u></b> |
|------------------------------------------------------------------|-------------------------|--------------------------------------|---------------------------------|
| <b><u>a. memory problems</u></b>                                 |                         |                                      |                                 |
| <b><u>b. nervous, anxious, restless</u></b>                      |                         |                                      |                                 |
| <b><u>c. lazy, unmotivated</u></b>                               |                         |                                      |                                 |
| <b><u>d. low on energy</u></b>                                   |                         |                                      |                                 |
| <b><u>e. depressed, gloomy, bad mood</u></b>                     |                         |                                      |                                 |
| <b><u>f. difficulty concentrating</u></b>                        |                         |                                      |                                 |
| <b><u>g. confused</u></b>                                        |                         |                                      |                                 |
| <b><u>h. paranoid, overly suspicious</u></b>                     |                         |                                      |                                 |
| <b><u>i. see, hear or smell things<br/>that others don't</u></b> |                         |                                      |                                 |
| <b><u>j. panic attacks</u></b>                                   |                         |                                      |                                 |
| <b><u>k. feel violent, desire to<br/>hurt others</u></b>         |                         |                                      |                                 |
| <b><u>l. feel like committing suicide</u></b>                    |                         |                                      |                                 |
| <b><u>m. loss of sex drive</u></b>                               |                         |                                      |                                 |
| <b><u>n. craving for cocaine</u></b>                             |                         |                                      |                                 |
| <b><u>o. irritability</u></b>                                    |                         |                                      |                                 |

**COCAINE INFORMATION 4**

13. Check all of the following physical problems cocaine has caused:

- |                                                        |                                                                          |
|--------------------------------------------------------|--------------------------------------------------------------------------|
| a. <input type="checkbox"/> hepatitis                  | f. <input type="checkbox"/> persistant cough                             |
| b. <input type="checkbox"/> endocarditis (heart valve) | g. <input type="checkbox"/> persistant sore throat                       |
| c. <input type="checkbox"/> infection                  | h. <input type="checkbox"/> weight loss ( <input type="checkbox"/> lbs.) |
| d. <input type="checkbox"/> nasal sores                | i. <input type="checkbox"/> abscesses at injection sites                 |
| e. <input type="checkbox"/> nasal bleeding             |                                                                          |

14. Describe your life at the time you began using cocaine as you currently do?: (Any major changes, how were you feeling?, etc.)

15. When do you find yourself using more cocaine than you usually do?

16. Have you tried to stop using cocaine before? ☐ If yes, how long were you clean and how did you feel at that time?

17. If you have stopped using cocaine in the past, why did you begin again?

18. Are you more sensitive to any cocaine effects now than when you began using cocaine? ☐ If yes, which effects?

19. Are you less sensitive to any cocaine effects than you were when you began using cocaine? ☐ If yes, which effects?

20. Do you need to take more cocaine to get the same effect as when you started using cocaine?

## COCAINE INFORMATION-5

## 21. Other drug use

Check all other drugs you are currently using. Include how often and the amount each time you use.

| <u>Drug</u>                                           | <u>How often</u> | <u>Amount</u> |
|-------------------------------------------------------|------------------|---------------|
| <input type="checkbox"/> marijuana                    | _____            | _____         |
| <input type="checkbox"/> tranquilizers (valium, etc.) | _____            | _____         |
| <input type="checkbox"/> quaaludes                    | _____            | _____         |
| <input type="checkbox"/> sleeping pills               | _____            | _____         |
| <input type="checkbox"/> amphetamines                 | _____            | _____         |
| <input type="checkbox"/> PCP                          | _____            | _____         |
| <input type="checkbox"/> heroin                       | _____            | _____         |
| <input type="checkbox"/> methadone                    | _____            | _____         |
| <input type="checkbox"/> alcohol                      | _____            | _____         |
| <input type="checkbox"/> other drugs _____            | _____            | _____         |
| _____                                                 | _____            | _____         |
| _____                                                 | _____            | _____         |

22. Do you smoke cigarettes? If yes, how many per day? \_\_\_\_\_

## 23. Check any effects of cocaine on your relationships with other people:

- ☐ caused arguments with spouse/mate
- ☐ spouse/mate has threatened to leave
- ☐ caused relationship to break up
- ☐ became socially isolated and withdrawn
- ☐ harmed social life, feel less social
- ☐ harmed sexual relationship
- ☐ harmed ability to talk openly with others

## 24. Check any effects that cocaine use has produced on your work or studies:

- ☐ come late to work/school
- ☐ miss days of work/school
- ☐ reduce your productivity
- ☐ spend too much time on breaks
- ☐ harmed relationship with supervisor or boss
- ☐ got fired from job

COCAINE INFORMATION -6

25. Check any effects of cocaine on your financial situation:

☐ used up all money in bank accounts    ☐ unable to keep up with bills  
☐ gotten into debt    ☐ no extra money

26. Check any legal consequences of your cocaine use:

☐ arrested for possession or sale of cocaine  
☐ arrested for other crimes related to cocaine sale/use

27. Has your cocaine use caused you to:

☐ have a car accident    ☐ physically hurt someone  
☐ have a physical fight with someone else    ☐ attempt suicide  
☐ have an unwanted sexual encounter(s)

28. Do you feel that you've lost control over your cocaine use? ☐ yes ☐ no

29. Do you feel that you're psychologically addicted to cocaine? ☐ yes ☐ no

30. Do you feel capable of stopping cocaine use completely on your own  
without any help? ☐ yes ☐ no

31. Do you want to stop using cocaine? ☐ yes ☐ no

32. Have you ever been in treatment for cocaine abuse? If yes, describe  
and give dates: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

33. When did you last use cocaine? \_\_\_\_\_

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These consist of pages:

|                              |                |
|------------------------------|----------------|
| <u>Self-Report Inventory</u> | <u>201-205</u> |
| <u>Scale Descriptions</u>    | <u>206-209</u> |
| <u>Reality Testing</u>       | <u>210-212</u> |
| <u>SRI-Part two</u>          | <u>213-214</u> |
| <u> </u>                     | <u> </u>       |
| <u> </u>                     | <u> </u>       |

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## APPENDIX G

Dear Prospective Participant:

I am a Ph.D. candidate in clinical psychology at the City University of New York. I am requesting 30 minutes of your time to participate in a study I am conducting for my doctoral dissertation. The study has been designed to increase our understanding of the various patterns of using cocaine and the people who engage in them.

Your participation simply requires that you complete three questionnaires: the Personal Data Questionnaire, the Cocaine Use Questionnaire, and the Self-Report Inventory. When you have completed all questionnaires, return them to me in the stamped manila envelope that I have enclosed. In order to assure your anonymity, I am requesting that you do not put your name on any materials that you return to me. If you wish to receive a summary of the results of the study when it is completed, return the enclosed postcard to me separately with your name and address on it. Since I have asked cocaine users and non-users to complete questionnaires for the study, and will be receiving postcards from both, I will not know which group you belong to.

If you have any questions about the study or would like to speak to me personally about your participation in the study, I can be reached at (212) 674-1696.

Thank you very much for your time and your participation in this research. Your participation will help to increase our knowledge of this very important area.

Sincerely,



Andrew Tatarsky

## APPENDIX H

|     | FACTOR SCORES |      |      |      |      |      |      | NON-PATHOLOGICAL NORMS |      |      |      |      |      |      |
|-----|---------------|------|------|------|------|------|------|------------------------|------|------|------|------|------|------|
|     | ALN           | IA   | EGC  | SI   | RD   | UP   | HD   | ALN                    | IA   | EGC  | SI   | RD   | UP   | HD   |
| 100 | .45           | 1.49 | 1.36 | 1.78 | 1.56 | 1.20 | 1.35 | .82                    | 1.49 | .85  | 1.49 | .74  | .80  | .59  |
| 90  | .44           | .80  | .51  | 1.10 | .91  | .63  | .20  | .35                    | .75  | .44  | .99  | .30  | .50  | .22  |
| 80  | .30           | .67  | .38  | .92  | .17  | .45  | .09  | .30                    | .67  | .38  | .92  | .17  | .45  | .09  |
| 70  | .08           | .13  | .17  | .59  | -.02 | .26  | -.08 | .01                    | .30  | .07  | .38  | -.11 | .13  | -.15 |
| 60  | -.17          | .14  | -.05 | .06  | -.21 | -.05 | -.21 | -.27                   | .05  | -.13 | -.09 | -.27 | -.12 | -.24 |
| 50  | -.37          | -.10 | -.24 | -.25 | -.35 | -.23 | -.23 | -.42                   | -.18 | -.29 | -.35 | -.39 | -.30 | -.31 |
| 40  | -.54          | -.32 | -.38 | -.43 | -.45 | -.41 | -.34 | -.59                   | -.41 | -.44 | -.48 | -.47 | -.48 | -.36 |
| 30  | -.66          | -.53 | -.50 | -.55 | -.53 | -.57 | -.59 | -.68                   | -.61 | -.54 | -.59 | -.56 | -.63 | -.40 |
| 20  | -.75          | -.73 | -.63 | -.64 | -.59 | -.73 | -.43 | -.78                   | -.82 | -.67 | -.67 | -.62 | -.78 | -.46 |
| 10  | -.84          | -.97 | -.72 | -.73 | -.66 | -.87 | -.47 | -.87                   | -.88 | -.76 | -.78 | -.69 | -.97 | -.51 |
| 0   | -.94          | -.84 | -.83 | -.85 | -.73 | -.86 | -.57 |                        |      |      |      |      |      |      |

## Appendix I

Comparison of Object Relations Subscale Means  
of Bell's Five Normative Groups

| Group      | Subscale          |                    |                    |                    |
|------------|-------------------|--------------------|--------------------|--------------------|
|            | ALN               | IA                 | EGC                | SI                 |
| Borderline | 1.22 <sub>a</sub> | .85 <sub>a</sub>   | .68 <sub>a</sub>   | .24 <sub>ab</sub>  |
| Other II   | .59 <sub>b</sub>  | .50 <sub>ab</sub>  | .10 <sub>bc</sub>  | .23 <sub>ab</sub>  |
| Affective  | .14 <sub>c</sub>  | .07 <sub>bc</sub>  | .15 <sub>bc</sub>  | .20 <sub>ab</sub>  |
| Students   | -.28 <sub>d</sub> | -.16 <sub>cd</sub> | -.19 <sub>cd</sub> | -.15 <sub>bc</sub> |
| CAA        | -.68 <sub>e</sub> | -.49 <sub>d</sub>  | -.40 <sub>d</sub>  | -.36 <sub>c</sub>  |

Note: The data in this table are all From "A Scale For the Assessment of Object Relations: Reliability, Validity and Factorial Invariance" by M. Bell, R. Billington and B. Becker, Unpublished. Means with the same subscript do not differ significantly ( $\alpha = .05$ , Student Newman-Keuls Procedure).  
 ALN=Alienation, IA-Insecure Attachment,  
 EGC=Egocentricity, SI=Social Incompetence.

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