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Constructive thinking, interpersonal dependency and anabolic steroid use : in search of the "magic helper"

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**Constructive thinking, interpersonal dependency and anabolic
steroid use: In search of the "magic helper"**

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San Jose State University, 1994

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CONSTRUCTIVE THINKING , INTERPERSONAL DEPENDENCY AND
ANABOLIC STEROID USE:
IN SEARCH OF THE "MAGIC HELPER"

A Thesis

Presented to

The Faculty of the Department of Psychology
San Jose State University

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

by

John F. Jacobs

August 1994

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John F. Jacobs

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APPROVED FOR THE DEPARTMENT OF PSYCHOLOGY

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ABSTRACT

CONSTRUCTIVE THINKING, INTERPERSONAL DEPENDENCY AND
ANABOLIC STEROID USE:
IN SEARCH OF THE "MAGIC HELPER"

by John F. Jacobs

A significant amount of research has linked anabolic steroid use to a wide variety of physical, psychological and psychiatric ailments. The current study is an attempt to determine if there are certain personality characteristics associated with individuals who choose to use anabolic steroids for their muscle strength and size enhancing properties. It was hypothesized that individuals who were currently using anabolic steroids would have higher scores on the scales of the Interpersonal Dependency Inventory (IDI) and lower scores on the various scales of the Constructive Thinking Inventory (CTI) than previous users and subjects who had never used the drugs. Subjects were recruited from two local gyms. One hypothesis of the CTI was supported. None of the hypotheses of the IDI was supported.

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Constructive Thinking, Interpersonal Dependency and

Anabolic Steroid Use:

In Search of the "Magic Helper"

John F. Jacobs

San Jose State University

Running head: PERSONALITY AND ANABOLIC STEROID USE

Abstract

Anabolic steroid use has been linked to a wide variety of physical, psychological and psychiatric ailments. The current study is an attempt to determine if there are certain personality characteristics associated with individuals who choose to use anabolic steroids for their muscle strength and size enhancing properties. It was hypothesized that individuals who were currently using anabolic steroids would have higher scores on the scales of the Interpersonal Dependency Inventory (IDI) and lower scores on the various scales of the Constructive Thinking Inventory (CTI) than previous users and subjects who had never used the drugs. Subjects were recruited from two local gyms. One hypothesis of the CTI was supported. None of the hypotheses of the IDI was supported.

Androgenic-anabolic steroids (AAS) were developed and synthesized in 1935 in an attempt to minimize the androgenic (masculinizing) effects of testosterone while simultaneously promoting its positive (anabolic - muscle building) effects on protein synthesis (Brower, Blow, Beresford, & Fuelling, 1989; Daigle, 1990; Strauss & Yesalis, 1991). It was the goal of the medical community to use these drugs in the treatment of breast cancer, anemia, edema, growth failure, and osteoporosis, and to speed recovery from starvation, burns, and major surgery (Daigle, 1990; Strauss & Yesalis, 1991). However, once the anabolic and aggression enhancing properties became known outside of the medical community, AAS began to be used for non-medical purposes. Perhaps the first illicit use of the drugs was by the German military in World War II in an attempt to enhance the aggressiveness of their troops (Daigle, 1990; Wade, 1972).

The drugs are still widely used by the medical community today, including the treatment of testosterone deficient males, hereditary angioneurotic edema, and frequently to aid in the recovery from sports-related injuries (Strauss & Yesalis, 1991). However, illicit use of the drugs for the enhancement of athletic ability has spread from a few members of early Soviet weight-lifting teams in the 1950s (Fair, 1988) to widespread use in various athletic activities today. It has been reported by some football players that as many as 90% of the players of some professional football teams use steroids (Johnson, 1985).

Use of AAS is not limited to the ranks of professional or Olympic athletes. Their use has filtered down through college athletics into high school sports, especially those activities (e. g., football and track and field) that require strength and endurance (Buckley, Yesalis, Friedl, Anderson, Streit, & Wright, 1988). According to previous research, androgenic-anabolic steroid use by adolescents has reached alarming proportions in this country. It is conservatively estimated that between 5% and 7%, or perhaps as many as 500,000 boys under the age of 18 may be involved in this dangerous and illegal activity (Buckley et al. 1988). Further, many of these young athletes use parenteral (injectable)

preparations of the various steroid drugs. This is indicative of a high level of commitment to steroids, as the larger gauge needles required for proper injection are difficult to obtain, and the injections are not enjoyable (Yesalis et al., 1989).

The psychological and physical side-effects of AAS have been extensively investigated, primarily in case studies, but also in a few experimental designs (see Brower et al., 1990; Choi, Parrott, & Cowan, 1990; De Piccoli et al., 1991; Kuipers et al., 1991). The most common side-effects noted are: increased sex drive and libido (Daigle, 1990; Haupt & Rovere, 1984; Strauss & Yesalis, 1991); surges in self-esteem and energy; increased appetite; low pain tolerance; low frustration tolerance; enhanced feelings of well-being and euphoria; mood swings (Daigle, 1990); increased aggression and hostility; and in a small fraction of users, mental disorders requiring treatment, including acute psychoses, depression, hypomania, and schizophrenia (Brower et al., 1990; Daigle, 1990; Haupt & Rovere, 1984; Lefavi, Reeve, & Newland, 1991; Strauss & Yesalis, 1991; Wilson, 1988). Although a great deal of research has been conducted investigating the relationship between certain psychological and behavioral characteristics and the use of narcotic substances (see Lavelle, Hammersley & Forsyth, 1991; Schedler & Block, 1990; Schinke, Botvin & Orlandi, 1991) no research has examined whether a particular set of personality characteristics may predispose a person to use anabolic steroids (Yesalis, personal communication, 1993). Further, little if any research has been conducted to examine the relationship between practical intelligence, interpersonal dependency and steroid use. This study will focus on these last two questions.

Steroids are viewed by a great many in the athletic community as an aid to performance, and are commonly referred to as "vitamins" and "supplements" by many who use them. Like users of other illegal drugs, steroid users are attempting to change their reality. However, these individuals see what they are doing as contributing to and improving their health and consider their actions to be proactive. That is, these individuals

believe that by using these drugs they will improve their physical abilities and their appearance. On the other hand, the actions of users of other drugs are reactive. Drugs are used to enhance or alter mood (Stuck, 1990), and intoxication is frequently a response to boredom and depression and can be an attempt to avoid unsatisfying mental states (Glassner & Loughlin, 1987). That is, users are not attempting to change their ability to respond to the demands of the environment, but are merely trying to change their perception of it. However, because the two types of drug users may share some underlying psychological characteristics (e. g., low self-esteem and low self-confidence), the main focus of this study will be to attempt to discern whether their relationship to self and others differentiates steroid users from non-users.

After parents, the second strongest influence on an individual's decision to use drugs is the peer group (Halebsky, 1987; Hawkins, Lishner, Catalano & Howard, 1986). Because one's status within the peer group affects the level of conformity to that group, lower status individuals will tend to follow the decisions of the group in order to maintain or enhance their status (Coleman, 1980). This suggests that low status individuals may attempt to improve their status if they can. Status in young adult and adolescent groups is dependent, in part, on athletic ability, and those who are less capable or skillful and lack other characteristics that might enhance their status (e. g., good looks, attractive personality characteristics, or academic success) will be relegated to lower status positions within the group (Coleman, 1980). Without the ability to rapidly change their intelligence or personality, these lower status individuals may attempt to improve their status in their group by means of improving their athletic ability or appearance. However, because not all individuals are naturally blessed with size or speed or strength, the possibility exists that some may attempt to develop these traits with the aid of anabolic steroids.

The current study will attempt to determine whether the influence of peers extends into the realm of anabolic steroid use by measuring the degree to which a person is

dependent upon his peers for approval, guidance and validation of his self-concept. As a concept of personality, interpersonal dependency has been described as a composition of "thoughts, beliefs, feelings, and behaviors which revolve around the need to associate closely with, interact with, and rely upon valued other people" (Hirschfeld, Klerman, Chodoff, Korchin, & Barrett, 1976 as cited in Hirschfeld, Klerman, Gough, Barrett et al., 1977, p. 610). Further, dependency has been conceptualized as an interpersonal schema, and has been demonstrated to be stable over time (Hammen, Marks, de Mayo, & Mayol, 1985, as cited in Franche & Dobson, 1992). Interpersonal dependency has also been linked as an antecedent of depression, alcoholism and other emotional disorders (Chodoff, 1972; Fenichel, 1945, as cited in Hirschfeld et al., 1977; Franche & Dobson, 1992).

The dependent individual has been characterized as someone who seeks the advice and guidance of others, acts in accordance with this advice, as opposed to following his own beliefs, and looks to others for support and nurturance (Bornstein, Krukonis, Manning, Mastrosimone, & Rossner, 1993). The central characteristics of dependency were summarized by Fromm (1947, pp. 62-63, as cited in Bornstein, Krukonis, Manning, Mastrosimone, & Rossner, 1993) who described these individuals as people who "are always in search of a 'magic helper.' They show a particular kind of loyalty, at the bottom of which is gratitude for the hand that feeds them and fear of ever losing it" (p. 263). Further, dependency has also been linked to numerous help-seeking behaviors in a variety of settings, including the laboratory, classroom, and social settings (Bornstein, Krukonis, Manning, Mastrosimone, & Rossner, 1993).

Bornstein et al. (1993) hypothesized that the help-seeking behavior of the dependent person may carry over into clinical settings where "magic helpers" (such as physicians and therapists) abound. It also seems likely that this behavior may extend into situations in which individuals have access to their own particular choice of "magic helper," such as alcoholism and drug abuse. The link to alcoholism has been established by

Chodoff (1972, as cited in Hirschfeld et al., 1977) and Fenichel (1945, as cited in Hirschfeld et al., 1977). It seems likely that the "magic helper" for dependent individuals who are attempting to improve their physical appearance via weight lifting may indeed be anabolic steroids.

Therefore, those individuals who are the least dependent upon their peers should be less likely to use steroids, and those who are more dependent should be more likely to use the drugs. This hypothesis is based on the findings that anabolic steroid use has also been associated with emotional disturbance and other forms of psychopathology (Brower et al., 1990; Kleinman, 1990; Lefavi, Reeve, & Newland, 1991; Pope & Katz, 1988, 1990), and that users should have more difficulty relating to their peers.

Further, the degree to which peers affect the decisions one makes should also be reflected by the individual's ability to solve interpersonal conflicts that arise from interactions with his peer group. An individual who is less dependent on his peers to provide solutions to his problems and approval of his actions is also more independent and less likely to be influenced by his peer group. This person is able to find practical solutions to everyday problems without the aid of peers. The hypothesis that less dependent individuals will be less likely to use steroids will be tested using the Interpersonal Dependency Inventory (IDI) (Hirschfeld et al., 1977).

The IDI has four scales: 1) The total dependency score measures one's ". . . emotional attachment to others, doubts about one's own capacity to function independently in designated situations, and finally an element of repression or denial in regard to the extent of one's dependency on others" (Hirschfeld et al., 1977, p. 617); 2) the Emotional Reliance on Another Person Scale which assesses the notions of attachment and dependency; 3) the Lack of Social Self-Confidence scale which almost exclusively reflects the notion of dependency; and 4) the Assertion of Autonomy scale which measures an individual's preference for being alone and for independent behavior.

Practical intelligence is a label that accurately describes the ability to find answers to everyday problems. It is differentiated from other measures of "intelligence" because it measures the degree to which people are able to solve "all major non-intellective aspects of success in living, including success in work, in love, in social relationships, and in achieving and maintaining emotional and physical well-being" (Epstein & Meier, 1989, p. 334). The steroid user may have significant difficulties in these areas. Because they are dissatisfied with their physical body, they may attempt to exhibit direct control over this aspect of their lives by using drugs that will provide them with the ability to make a relatively rapid change in their outward appearance. Further, anabolic steroid use can also lead to the development and maintenance of euphoric feelings while the individual is under the influence of these drugs due to their affect on brain chemistry (Majewska, 1987).

Epstein and Meier (1989) developed the Constructive Thinking Inventory (CTI) to measure practical intelligence. This questionnaire consists of seven scales that measure various aspects of practical intelligence (global scale, emotional coping, behavioral coping, categorical thinking, superstitious thinking, naive optimism, and negative thinking). The items of the CTI describe automatic thoughts (both constructive and counterproductive) that people report having in everyday life (Epstein & Meier, 1989).

Hypotheses: for steroid users, I propose that 1) they will have lower scores on constructive thinking than both past users of anabolic steroids or those who have never used the drugs. They will have lower scores on the emotional coping scale of the CTI because they do not accept themselves, and illicit drug use of any kind is an overreaction to an unfavorable present experience. It is an overreaction because it endangers one's health, and the unfavorable present experience is their status in their peer group. Low scores on this scale are indicative of low self-acceptance and anxiety about the opinions of others.

2) Users will have higher scores on the behavioral coping scale of the CTI (in relation to those individuals who have previously used anabolic steroids and those

individuals who have never used the drugs), because they will be optimistic about the muscular physique they plan on developing. Regardless of the harmful effects of these drugs, using AAS and exercising is an action-oriented response to a problem which requires focus and planning to effectively carry out the plan of increasing physical size and strength. However, their scores on the scale of behavioral coping may be difficult to interpret because dependency can, in certain situations, be an effective means of obtaining the aid and support of others, and effective action may entail getting the approval and support of others.

In terms of subjects' responses to the IDI, I predict steroid users: 3) will also have higher scores on the first scale, Emotional Reliance on Another Person of the Interpersonal Dependency Inventory (IDI) compared to those individuals who have previously used anabolic steroids and those individuals who have never used the drugs. Anabolic steroid users need to receive social acceptance for their new physiques in the form of praise and compliments in order for the effort they put into exercise and AAS use to be validated.

4) They will have higher scores on the second scale of the IDI, Lack of Social Self-Confidence (in relation to those individuals who have previously used anabolic steroids and those individuals who have never used the drugs), because the AAS user has, most probably, sought little, if any, help in making the decision to use the drug(s), perhaps believe that their physiques can speak for themselves in social situations, and they have taken the initiative to change themselves.

5) They will have lower scores on the third scale of the IDI, Assertion of Autonomy (in relation to those individuals who have previously used anabolic steroids and those individuals who have never used the drugs), because the steroid user is dependent upon others' praise of his physical attributes for improvements in his self-esteem.

The only estimates of anabolic steroid use for the general population targeted a relatively young sample. Buckley et al. (1988) and Windsor and Dumitru (1989) have

established that approximately 5 - 7% of all male high school students have either used or are currently using anabolic steroids. Secondly, because the estimated use by women in this same age group is approximately 1% (Buckley et al., 1988; Windsor & Dumitru, 1989), it is, for the purposes of this investigation, impractical to attempt to recruit the number of female subjects necessary to develop a representative sample. The prevalence of AAS usage as a percentage of total population should be significantly higher in the weight lifting/gym population than the population at large.

For the purposes of the current investigation, current anabolic steroid users were defined as individuals who have used anabolic steroids at least once in the past 12 months. The drugs tend to remain biologically active for some time after initial ingestion, and individuals who use these strength and muscle enhancing drugs do so in cycles (a period of use lasting from 8 to 12 weeks). After completing a cycle, the steroid user will commonly go "off cycle" (not use the drug for approximately the same length of time) in order to "cleanse" his system. Further, discontinuation of use is not without its side-effects either, and is in many ways similar to withdrawal from other psychoactive compounds. Past steroid users were defined as individuals who have not used any anabolic steroid drugs for at least one year.

Methods

Subjects

An envelope containing the three inventories was distributed to 176 male members of Gold's Gym in San Jose, and in Santa Clara, California. Of the original sample, 97 men (mean age 29.19, $SD = 5.58$) returned completed questionnaires. The mean age of subjects in the "never-used" group was 28.97 ($SD = 5.81$) The mean age of subjects in the "past-users" group was 30.30 ($SD = 5.43$). The mean age of subjects in the "current-users" group was 28.54 ($SD = 4.72$). The minimum age of the subjects was 17, the maximum age was 51.

The ethnic breakdown was as follows: 73.2% White; 11.3% Asian; 7.2% Black; 7.2% Hispanic; and 1.0% other. The sample was relatively well-educated, with 40.2% indicating that they had attained at least a bachelor's degree, 46.4% had attended or currently do attend college, and only 13.4% indicated that they had not received education beyond the secondary level. Approximately two-thirds (64) of the subjects indicated that they had never used anabolic steroids, 20 indicated that they had not used steroids for at least one year, and 13 indicated that they had used steroids at least once in the last year.

Instruments and Measurements

Constructive Thinking. The Constructive Thinking Inventory (CTI) is a 64 item scale that was developed by Epstein and Meier (1989) as a means of measuring practical intelligence or the ability to solve everyday problems. The CTI is scored on a 1 to 5 Likert scale. The CTI is a measure of practical intelligence; it measures the degree to which people are able to solve "all major non-intellective aspects of success in living, including success in work, in love, in social relationships, and in achieving and maintaining emotional and physical well-being" (Epstein & Meier, 1989, p. 334). Specifically, the CTI is composed of seven scales that differentially measure various criteria of success in living.

The Global Scale includes items from each of the specific scales except Naive Optimism. It assesses the denial of destructive thinking as well as the acceptance of constructive thinking (Epstein & Meier, 1989). The Emotional Coping scale of the CTI is a bipolar scale whose items measure the "tendency not to take things personally, not to be sensitive to disapproval, and not to worry excessively about failure and disapproval" (Epstein & Meier, 1989, p. 338). The Behavioral Coping scale is also bipolar, and measures the ability to maintain a positive approach to life and to think in ways that promote effective action (Epstein & Meier, 1989). The items of the Categorical Thinking scale assess one's tendency to think in ". . . extreme, unmodulated, or rigid ways and to

being judgmental and intolerant of others" (Epstein & Meier, 1989, p. 339). The Superstitious Thinking scale includes items that refer to conventional and personal superstitions (Epstein & Meier, 1989). The Naive Optimism scale measures the tendency to grossly overgeneralize following positive outcomes and to hold simplistic and stereotypic beliefs (Epstein & Meier, 1989). The items of the Negative Thinking scale ". . . describe a pervasive tendency to interpret events negatively . . . and interpret the past, present, and future with a negative bias (Epstein & Meier, 1989, p. 339). The most reliable scales of the CTI are the Global scale, the Emotional Coping scale and the Behavioral Coping scale with alpha reliability values of .80, .78, and .70 respectively.

Drug Use. A demographic inventory and health and fitness questionnaire was developed by the author to measure the frequency and type of exercise that subjects regularly engage in, body image, health-related behaviors, including the use of anabolic steroids and their attitudes towards their use. The full questionnaire is listed in Appendix A.

Interpersonal Dependency. Interpersonal dependency was assessed using Hirschfeld, Klerman, Gough, Barrett, Korchin, and Chodoff's (1977) Interpersonal Dependency Inventory (IDI) which was developed as a means of measuring a person's views of self, others, and one's relationship to them, and the value one places on friendship, intimacy, and interdependency. The IDI is a 48-item self-report inventory that requires subjects to rate the degree to which each statement is characteristic of themselves. The IDI is scored on a 1 to 4 Likert scale, from "not characteristic of me" to "very characteristic of me."

The items of the Emotional Reliance on Another Person scale of the interpersonal dependency questionnaire demonstrate a wish for emotional support from and contact with other people. These items involve a general desire for acceptance and attention from others. The items of the second scale, Lack of Social Self-Confidence, express an individual's wish for help in decision making, social situations, and taking initiative. The items of the

third scale, Assertion of Autonomy, measure the degree to which the subject's self-esteem is dependent on the approval of others, his preferences for being alone, and for independent behavior.

Scores on the three scales have corrected split half reliabilities of .87, .76, and .84, respectively. Intercorrelations among the three scales are as follows: Emotional Reliance on Another Person and Lack of Social Self-Confidence is .41; Emotional Reliance on Another Person and Assertion of Autonomy was .10; and between Lack of Social Self-Confidence and Assertion of Autonomy was .16.

Procedure

Subjects were recruited from Gold's Gym in San Jose, California, and the Gold's Gym in Santa Clara, California. The author, who is an employee of the McCall Gym Group which owns these facilities, contacted members of the gyms as they were leaving the facilities, and asked them if they would be willing to complete the questionnaires and mail them to the author's campus address. Subjects were told that the study was a measure of people's views about health and exercise. In return for their participation, the author told them that he would randomly draw three membership numbers from the list of participants, and award the individuals the following sums: The first drawn would be awarded \$100.00, the second \$50.00, and the third \$25.00. Further, the author told the members that copies of the completed study will be left at the front desk of each of the gyms. Upon completion of the data collection the author awarded the prizes.

Subjects were given the three questionnaires to take home and complete. The test battery consisted of the CTI, the IDI, and the demographic inventory and health survey. Subjects recruited at the health clubs were instructed to complete the questionnaires and mail them in the stamped, self-addressed envelope to the author's campus address at San Jose State University.

Confidentiality and anonymity were insured by asking respondents not to put any

personal identification on the questionnaires. No names or other identifying information were asked of the subjects. Subjects were asked to give the author their membership number when they received the questionnaire so that he could use it to award the prizes. The author wrote down this number on a separate sheet of paper next to the corresponding number of the questionnaire. The author used this list to ensure that only subjects who completed and returned the questionnaires were eligible for the prizes. Once this was done the author destroyed the list of membership numbers and questionnaire numbers.

Results

Descriptive Statistics

The means for each of the three groups (current users, past users, and never users) on six of the seven scales of the Constructive Thinking Inventory were very similar (see Table 1).

The means for each of the three groups (current users, past users, and never users) on all four of the scales of the Interpersonal Dependency Inventory were also very similar (see Table 2).

The mean scores of subjects on the various scales of the CTI and IDI in this study do not vary greatly from the means of various subject pools of other studies. Recent research with samples of upper-division college students (Feist, Bodner, Jacobs, Miles & Tan, 1994; Hurley, 1990, 1991) yielded scores on the CTI that are not radically different from the scores of subjects in this study (see Table 3). A power analysis of subjects' scores on the global scale of the CTI in the current study and to university undergraduate subjects in the Feist et al. (1994) study yielded a moderate effect size ($d = .53$) (Cohen, 1977, as cited in Rosenthal & Rosnow, 1991). Information regarding exercise habits and behaviors were not collected in the Feist et al. (1994) or Hurley (1990, 1991) studies; therefore, no conclusions can be made regarding the similarities of the samples on this variable or the significance of this effect size. The samples are relatively similar in age and educational

Table 1

Subjects' mean scores on the scales of the Constructive Thinking Inventory

Scale	User Groups					
	Never Used (n=64)		Past Users (n=20)		Current Users (n=13)	
	M	SD	M	SD	M	SD
Con Think	95.59	14.56	91.75	15.55	94.46	12.91
BehavCope	59.39	7.57	57.70	9.06	58.92	5.28
EmoteCope	51.17	9.44	49.30	9.25	49.00	7.76
NaiveOp	16.92	3.55	16.65	3.94	16.25	4.96
NegThink	18.92	6.66	20.40	7.37	18.69	5.27
Cat Think	10.42	3.29	12.10	2.97	10.00	2.31
SupThink	7.89	3.03	9.35	3.34	10.42	3.50

Note: ConThink - constructive thinking; BehavCope - behavioral coping; EmoteCope - emotional coping;

NaiveOp - naive optimism; NegThink - negative thinking; CatThink - categorical thinking;

SupThink - superstitious thinking

Table 2

Subjects' mean scores on the scales of the Interpersonal Dependency Inventory						
Scale	User Groups					
	Never Used (n=64)		Past Users (n=20)		Current Users (n=13)	
	M	SD	M	SD	M	SD
Dependency	46.69	5.39	47.53	3.53	45.24	3.03
EmotRely	35.56	8.49	37.20	7.59	34.15	8.92
LackSoSc	25.97	5.54	26.55	4.30	25.31	2.87
AssAuton	29.69	6.45	30.10	6.19	33.23	6.21

Note: EmotRely - emotional reliance on another person; LackSoSc - lack of social self-confidence
AssAuton - assertion of autonomy

Table 3

Cross-study comparison of scale scores on the Constructive Thinking Inventory

Scale	Sample							
	<u>Feist, et al.(1994)</u>		<u>Hurley (1990)</u>		<u>Hurley (1991)</u>		<u>Present</u>	
	M	SD	M	SD	M	SD	M	SD
Constructive Thinking	86.86	15.08	97.40	12.70	95.90	12.90	94.65	14.50
Behavioral Coping	55.92	7.75	45.80	6.70	45.80	6.70	58.98	7.60
Emotional Coping	44.78	10.10	28.40	6.50	27.80	6.00	50.49	9.16
Naive Optimism	17.26	3.25	23.00	5.20	23.80	4.70	16.78	3.79
NegativeThinking	22.09	6.48	26.50	5.50	25.80	5.80	19.20	6.61
Categorical Thinking	9.70	2.93	22.00	5.30	23.90	6.10	10.71	3.17
Superstitious Thinking	8.85	3.39	19.20	5.60	20.60	5.90	8.52	3.26

level; however, all three studies have predominantly female subject samples, whereas this study only surveyed males. Therefore, specific conclusions regarding the normalcy of these scores cannot be drawn.

The IDI has only one form, and has been more widely used than the CTI; therefore, comparisons to other samples' means is somewhat easier. Although information regarding exercise habits and behaviors were not collected, sample populations ranged from the standard subject pool of university undergraduates to psychiatric patients (Bornstein, Krukoni, Manning, Mastro Simone & Rossner, 1993; Bornstein, Manning, Krukoni, Rossner, & Mastro Simone, 1993; Ehrenreich, 1990; Franche & Dobson, 1992; Hirschfeld et al., 1977). For each sample, and on each scale of the IDI, the means and standard deviations of the non-psychiatric patients do not appear to be greatly different from the subjects in the current investigation (see Table 4). A power analysis of subjects' scores on the three scales of the IDI (emotional reliance on another person, lack of social self-confidence, and assertion of autonomy) and that of a recent study (Ehrenreich, 1990) produced large effect sizes ($d = .95, 1.06, .93$) (Cohen, 1977, as cited in Rosenthal & Rosnow, 1991). This suggests that the subjects in this sample are more self-confident and autonomous, and less attached and dependent than other sample populations.

Inferential Statistics

The results of the ANOVAs conducted on the scores of each of the three groups on the scales of the CTI indicated that there were no significant differences between the groups on six of the seven scales: 1) the global scale of the CTI [$F(2,96) = .53$, ns.]; 2) the behavioral coping scale [$F(2,96) = .37$, ns.]; 3) the emotional coping scale [$F(2,96) = .51$, ns.]; 4) the naive optimism scale [$F(2,94) = .17$, ns.]; 5) the negative overgeneralization scale [$F(2,96) = .42$, ns.]; and, 6) the categorical thinking scale [$F(2,96) = 2.59$, ns.]. The only significant difference was found between the means of the three groups on the superstitious thinking scale of the CTI [$F(2,94) = 4.11$, $p < .02$]. This

Table 4

Cross-study comparison of scale scores on the Interpersonal Dependency Inventory

Scale	Sample											
	Franchise											
	<u>Ehrenreich*</u>		<u>& Dobson*</u>		<u>Bornstein (a)</u>		<u>Bornstein (b)</u>		<u>Hirshfeld</u>		<u>Current Study</u>	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Dependency	52.81	N/A	46.98	N/A	45.31	10.39	44.97	10.70	49.84	N/A	46.67	4.80
EmotRely	43.70	8.50	31.20	9.14	N/A	N/A	43.54	6.10	38.20	7.90	35.71	8.33
LackSoSC	31.65	5.70	27.95	4.32	N/A	N/A	29.86	4.15	30.10	6.00	26.00	5.00
AssAuton	24.50	6.00	30.85	8.73	N/A	N/A	28.43	3.09	31.60	6.40	30.25	6.41

Note: (*) - scores from male and female subjects; EmotRely - Emotional Reliance on Another Person; LackSoSC - Lack of Social Self-Confidence; AssAuton - Assertion of Autonomy

Ehrenreich (1990); Franche & Dobson (1992); Bornstein et al. (1993a); Bornstein et al. (1993b); Hirschfeld et al. (1977)

finding indicates that subjects in the group who identified themselves as current users of anabolic steroids have higher scores on the superstitious thinking scale of the CTI than past users of the drugs and subjects who have never used the drugs.

A simple comparison analysis was conducted to determine the nature of the difference between the three steroid user groups on the superstitious thinking variable. The results of this analysis indicated that the difference between never users and current users was significant [$t(92) = 2.54, p = .013$]. The difference between never users and past users was not significant [$t(92) = 1.80, ns.$], as was the difference between past users and current users [$t(92) = .93, ns.$]. This suggests that steroid users tend to be more superstitious than those who have never used the drugs, but not significantly more superstitious than past users.

The ANOVAs conducted on the groups on each of the four scales of the IDI were all non-significant: 1) the dependency scale [$F(2,95) = .41, ns.$]; 2) the emotional reliance on another person scale [$F(2,95) = .55, ns.$]; 3) the lack of social self-confidence scale [$F(2,95) = .24, ns.$]; and, 4) the assertion of autonomy scale [$F(2,95) = 1.68, ns.$].

Exploratory Data Analysis: Correlations

Other unplanned analyses were also conducted to further explore the relationships between the variables. Several variables from the Health and Fitness Survey were significantly correlated with various scales of the IDI and CTI, however, the effect sizes were relatively small. For instance, the effect size of the largest correlation between health and dependency accounts for less than 12% of the variance in the scores.

There were significant correlations between subjects' self-rating of their own strength (as compared to their peers) and their scores on the dependency and lack of social self-confidence scales of the IDI, and the constructive thinking, emotional coping and superstitious thinking scales of the CTI (see Table 5). These results indicate that subjects who considered themselves to be stronger than their peers in general had: a) lower scores

Table 5

Correlations of Health and Fitness variables and the CTI and IDI

Scale	Strength	Health	AASHelp
Dependency	-.27**	-.34**	.07
EmotRely	-.20	-.24*	.02
LackSoSc	-.29**	-.32**	.08
AssAuton	.07	.13	-.06
ConThink	.23*	.29**	-.11
BehavCope	.16	.26**	-.12
EmotCope	.20*	.24*	-.04
NaiveOptimism	-.04	-.20	.22*
NegThink	-.17	-.26*	.08
CatThink	-.16	-.20*	.05
SupThink	-.24*	-.19	.03

* p < .05 ** p < .01

Note: Strength - physical strength compared to peers; Health - physical health compared to peers;

AASHelp - belief that anabolic steroids improve size and strength

on the dependency scale of the IDI; b) lower scores on the lack of social self-confidence scale of the IDI; c) higher scores on the constructive thinking scale of the CTI; d) higher scores on the emotional coping scale of the CTI; and, e) lower scores on the superstitious thinking scale of the CTI.

There was no correlation between steroid use and age or any of the other variables from the Health and Fitness Survey. There were significant correlations between subjects' self-rating of their own health (as compared to their peers) and their scores on three scales of the IDI (dependency, emotional reliance on others, and lack of social self-confidence) and five scales of the CTI (constructive thinking, behavioral coping, emotional coping, negative thinking, and categorical thinking) (see Table 5). These results indicate that subjects who considered themselves to be healthier than their peers in general had: a) lower scores on the dependency scale of the IDI; b) lower scores on the emotional reliance on another person scale of the IDI; c) lower scores on the lack of social self-confidence scale of the IDI; d) higher scores on the constructive thinking scale of the CTI; e) higher scores on the behavioral coping scale of the CTI; f) higher scores on the emotional coping scale of the CTI; g) lower scores on the negative thinking scale of the CTI; and, h) lower scores on the categorical thinking scale of the CTI. Another significant correlation was found between subjects' belief that anabolic steroids help increase muscle size and strength and the naive optimism scale of the CTI ($r = .22, p < .05$).

Discussion

Constructive Thinking

The current investigation provided limited support for the major hypotheses of this investigation. Steroid users' only differed from non-users on their higher levels of superstitious thinking, a subscale of the CTI. Recall that the superstitious thinking scale is bipolar and measures people's adherence to personal and conventional superstitions, and "... includes belief in esoteric and questionable phenomena, such as astrology, ...

ghosts, . . . and [thought projection] (Epstein & Meier, 1989, p. 339). Personal superstitions are relatively abundant in the athletic community. For example, many professional and amateur athletes will only consume certain foods or beverages, or put on their clothing or uniform in the same order, in preparation for competition. Some of these athletes have developed these behaviors out of habit and long-term involvement in their sport, but a great number of them firmly believe that their success in upcoming athletic events will be adversely affected if they fail to perform these rituals (McCallum, 1988).

In regard to anabolic steroid use, it seems essential that the steroid user have some level of superstitious thinking. The vast majority of users do not obtain their steroids via a physician's prescription, but instead purchase them on the black market. These black market drugs rarely originate in medical settings, but are generally the product of "underground" laboratories, or are intended for veterinary use. These drugs are frequently of dubious quality and their pharmacological properties, sterility and toxicology are uncertain (Daigle, 1990; Kleinman, 1990; Wilson, 1988). Therefore, it would seem to be a prerequisite before starting a cycle of use that the user have a firm belief that what he is about to swallow and/or inject will have the desired effects.

Perhaps the reason underlying the non-significant differences between users and non-users on almost all other scales is the ambiguity inherent in anabolic steroid use. The drugs, when used "properly," can significantly enhance and develop muscular size and strength. However, these substances can simultaneously cause deleterious effects on brain chemistry, liver and kidney function, and many other physiological systems. In terms of behavioral coping and anabolic steroids, athletes who choose to use these substances are, to a certain degree, thinking in ways that promote effective action, and of necessity, must have an optimistic approach to their use. In order to maximize the effects of the steroids, the user must spend a great deal of time and energy planning their drug usage, diets, and work out schedules and routines.

The lack of any significant differences between groups on emotional coping may be due, in part, to the nature of the scale and not necessarily to a lack of variability among users (past and present) and non-users. Emotional coping is "characterized more by a failure to engage in negative thinking than by engaging in positive thinking . . ." (Epstein & Meier, 1989, p. 339). The subjects in this study indicated that they exercise, on average, 4-5 times a week. It seems apparent that individuals who are dedicating this amount of time and effort to exercise and to developing and maintaining a healthy body would be unlikely to engage in negative thinking. It would seem essential for their mental health that they (regardless of drug use) firmly believe that the amount of time they are investing in exercise is benefiting them and that they will see the results of their labors.

The similarity of the groups' scores on the negative thinking scale may also be a function of this dedication to exercise and fitness, irrespective of the use of performance enhancing drugs. Epstein and Meier (1989) described this as the "doom and gloom" scale, and defined the characteristics of high scorers on this scale as people who have a negative bias that overshadows their interpretation of the past, present and future. Clearly, the type of dedication that the subjects of this study show towards fitness is not indicative of people who do not regard what they are doing in a positive light, or expect to see positive changes in the future, especially in regards to their body.

Subjects who score highly on categorical thinking tend to think in relatively rigid, extreme, and inflexible ways (Epstein & Meier, 1989). The nature of athletics in general, and steroid use in particular, virtually mandates adaptability and flexibility in thinking at certain times during the course of training and competition. In order to succeed, the steroid user and the athlete must be willing and ready to accept change and adapt to changes in performance and ability. Due to the fact that the body does not always respond to exercise or steroid use exactly as one may hope it will, the steroid user, and weight lifter, must be willing to adapt their exercise routines, diets, training schedules, and drug usage to

maximize their development and to meet the changing requirements of their bodies. It must be acknowledged that many athletes continue to engage in old superstitious and habits because prior successes have been associated with them.

Regular exercisers, whether they use anabolic steroids or not, tend to be cognizant of their physical capacities and abilities, and appreciate that their level of strength and fitness is a direct result of the amount of time and effort they have invested in exercise. Although many will take any shortcut they can find to "maximize" their potential, it seems unlikely that such individuals would believe that they developed their physical abilities or capacities easily, or only as a result of some "magic helper" and not hours of intensive effort. All of the anabolic steroid users who the author has spoken to in the past several years do not believe that steroids alone increase their size or strength. Instead, most realize that they must exercise even more intensely in order to achieve the full "benefits" of the drugs.

Dependency

The lack of heterogeneity of the sample may also be part of the reason that steroid users did not significantly differ from past users and non-users on any of the four scales of the IDI. The general concept of dependency ". . . refers to a complex of thoughts, beliefs, feelings, and behaviors which revolve around the need to associate closely with, interact with, and rely upon valued other people" (Hirschfeld, Klerman, Chodoff, Korchin, & Barrett, 1976, as cited in Hirschfeld et al., 1977, p. 610). The overall, or total dependency, scale as conceptualized by Hirschfeld et al. (1977) involves ". . . emotional attachment to others, doubts about one's own capacity to function independently in designated situations, and finally an element of repression or denial in regard to the extent of one's dependency on others" (p. 617). As previously mentioned, the sample was recruited from a gym that caters to people who place a high priority on fitness. This dedication to fitness may be an underlying personality trait that develops or exists regardless of the exerciser's relationship

to peers or fellow athletes, or use of anabolic steroids.

The hypothesis that anabolic steroid users would be more dependent than non-users was not supported. This may be due in part to the nature of weight lifting. As a sport and form of exercise, weight lifting does not demand as high a level of dependency on others as team sports. Rarely do individuals lift weights in groups larger than three, and it is more common for weight lifters to exercise in pairs. Therefore, the nature of weight lifting and body building may attract individuals who are less dependent on others than participants in other sports. This may have confounded measures of dependency which appear to focus on an individual's relationship to larger groups.

Steroid users did not have higher scores on the emotional reliance on another person scale compared to past- and non-users. Although social vanity plays an important role in body building, it is conceivable that all weight lifters, regardless of drug use, need more than the approval and praise of their peers for their developing physiques in order for the effort they put into exercise to be validated. The primary validation of their efforts may be of a more personal nature (e. g., when he steps on the scale or looks in a mirror and notices appreciable gains in size, strength or appearance).

The second scale, lack of social self-confidence, echoes the concept of dependency almost exclusively - "... its items express wishes for help in decision making, in social situations, and in taking initiative" (Hirschfeld et al., 1977, p. 617). It is likely that the steroid user is already a comparatively elite weight lifter, and probably has developed some measure of self-confidence prior to starting a cycle. Because his physique is rather well-developed, he may believe that his physique already speaks for himself in social situations, which allows him a measure of self-confidence. Further, the steroid user may only consult trusted friends and associates when making the decision to use the drug(s). Other non-using and less-experienced lifters may also consult others for advice, though this consultation may be limited to exercise in general. This tendency to seek the advice of only

a few trusted others, who are relatively well-known to the lifter, may be specific to the sport, and may not have a large enough effect to skew scores on this scale of the IDI.

The items of the third scale of the IDI, Assertion of Autonomy, "... tend to deny either dependency or attachment. They assert preferences for being alone, and for independent behavior" (Hirschfeld et al., 1977, p. 617). The lack of a significant difference between users and non-users on this scale indicates that steroid use, in and of itself, is not indicative of dependency upon other's praise for one's physical attributes and accomplishments to maintain or improve one's self-esteem.

Exploratory Data Analysis - Conclusions

The findings from the exploratory data analysis can be discussed in terms of subjects' self-rating of their own strength and health. Subjects who considered themselves to be stronger than their peers can generally be characterized as less dependent, more socially self-confident, better constructive thinkers and emotional copers, and less superstitious than their fellow subjects. These findings suggest that these individuals do not rely upon others for solutions to their problems and are relatively confident in social settings. Further, these subjects are better at solving everyday problems in their lives and are less superstitious than their peers.

Subjects who considered themselves to be healthier than their peers can generally be characterized as less dependent, less emotionally reliant on others, and more self-confident in social situations than their peers. Further, these individuals are better constructive thinkers, behavioral and emotional copers, positive thinkers and more flexible thinkers than their fellow subjects. These findings suggest that these individuals do not rely upon others for solutions to their problems or their emotional well-being, and are relatively confident in social settings. Further, these subjects are better at solving their everyday problems, think less rigidly and negatively, and are less superstitious than their peers.

Subjects' who believe in the effectiveness of anabolic steroids tend to have higher

scores on the naive optimism scale of the CTI. The anabolic steroid user generally purchases his drugs from the black market, and may not always be sure that the drugs he is buying are genuine. This may plant a seed of doubt in his mind about the efficacy of the drugs until he begins to make progress in his workouts. The user may then overgeneralize size and strength gains and conclude that the results are due to his "magic helper." This may also be due, in part, to individuals who are less educated in the efficacy and mechanisms of steroids, and who believe that they are "get big quick" drugs.

Confounds

The confounds inherent in studies based on self-report data are well-known. Even well-designed measures are not entirely immune to random responses and are limited in their ability to assess underlying personality characteristics (Rosenthal & Rosnow, 1984). Any study that attempts to determine relationships between illicit drug use and various personality traits and constructs is limited by the willingness of subjects to respond openly and honestly about their drug use. Although the investigator explicitly stated to the subjects that their responses were anonymous and confidential, it is likely that a certain percentage of respondents under-reported their drug use.

The sample may also have been relatively homogeneous on a number of underlying personality traits and dispositions. One of the marketing points of Gold's Gym is that it is the "Mecca of Body Building" and is regarded by many to be a facility for those who are very serious about fitness and exercise. It is likely that these selling points attract people who share many of the same or similar underlying personality characteristics. The amount and frequency of exercise engaged in by this sample may be indicative of an underlying compulsion to develop and maintain a high level of fitness. Further, regular exercisers have been described as: optimistic, energetic, perfectionistic, competitive, somewhat compulsive, self-confident, psychologically resilient, self-disciplined (Hogan, 1989); high in achievement motivation and psychic vigor, low on anxiety, depression, and confusion

(Walker & Hailey, 1987); able to effectively cope with stress (Jasnowski, Holmes, & Banks, 1988) and attain improvements in self assurance and creative or free thinking (Plante & Rodin, 1990). Therefore, it is possible that any differences between steroid users and non-users may either be masked by their similarities on the aforementioned traits, or that other instruments need to be used to determine where these differences, if any, exist.

The return rate of the questionnaires, while relatively high for survey research at just over 55%, is still not ideal for research on anabolic steroid use. Though the short-term psychological and behavioral effects of steroid use have been established for some time, relatively little is known about the personalities of users. Although approximately one-third of the sample admitted to steroid use at some point in their lives, only a small fraction of the entire sample (13%) admitted to current use ("at least once in the past year"). Ideally, the groups would have been closer in size and larger (35 - 50 subjects each) to enhance the generalizability of this study. Further, the definition of current use may have been too broadly defined. Though the drugs, by design, remain physiologically active for some time after ingestion, and the psychological side-effects are generally more prevalent during periods of use than during the "off cycle" (Brower et al., 1989; Pope & Katz, 1988), the behavioral and psychological side-effects may subside relatively rapidly after discontinuance of the cycle of use.

Future studies on personality and steroid use should consider the aforementioned confounds before investigating this area. The return rate can be significantly improved with follow-up phone calls to remind subjects to complete and return the survey. Second, steroid use is not confined to the sport of body building. A sample that includes athletes from football, track and field, baseball and other sports will increase the heterogeneity of the population and improve generalizability. Finally, measures that are more specifically directed at superstitious behavior and thinking and that assess personal and social vanity may be better able to determine the underlying psychological reasons for steroid use.

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Appendix

Health and Fitness Survey

Instructions: 1) circle all responses on this form, except #1 (write in age).

2) Do not write your name on this form. Please answer every item.

1. What is your current age? _____
2. Which group best describes your racial or ethnic background?
a. White b. Black c. Hispanic d. Asian e. Other
3. What is the highest level of education you have completed?
a. High School b. Some college c. Bachelor's/Graduate Degree
4. How often do you exercise/work out?
a. Once a week or less c. 4-5 times a week
b. 2-3 times a week d. more than 5 times a week
5. What is your main/primary form of exercise?
a. running/jogging c. cycling/mountain biking e. other
b. weight lifting/body building d. swimming
6. How would you rate your overall strength compared to your peers?
a. Less than average c. Greater than average
b. Average d. Don't know
7. How would you rate your overall health compared to your peers?
a. Excellent c. Good e. Poor
b. Very Good d. Fair
8. Do you feel that vitamins improve one's overall health?
a. Yes b. No c. Don't know
9. Are you currently taking vitamins? a. Yes b. No
10. Do you feel that protein or carbohydrate supplements (for example: Metabolol, Heavyweight Gainer 900, Promax, Carbo Force) improve one's muscle size and strength?
a. Yes b. No c. Don't know
11. Are you currently taking any protein or carbohydrate supplements?
a. Yes b. No
12. Do you think that anabolic steroids help increase one's muscle size and strength?
a. Yes b. No c. Don't know
13. Have you ever used anabolic steroids?
a. Yes, but not in the last 12 months.
b. Yes, at least once in the last 12 months. c. No, never.