

**Anabolic Steroid Use among Non-Competitive Male Bodybuilders:  
An Application of Two Theories of Deviant Behavior**


by

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(ABSTRACT)

The purpose of this research is to explain anabolic steroid use among non-competitive male bodybuilders. Two theories of deviant behavior are used in this research: rational choice theory and social learning theory. This thesis tests these theories on a sample of 50 males from fitness centers and gymnasiums. The results are interpreted in light of their implications for future research on the factors that encourage steroid use and other deviant behavior.

The findings suggest that anabolic steroid use among non-competitive male bodybuilders is a social problem with social roots. The decision to use steroids is not only influenced by the actor's perceptions of the costs and benefits associated with this activity, but is also influenced by the actor's peers.

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**CHAPTER I**  
**INTRODUCTION**

**1.1 Statement of the Problem**

The use of anabolic steroids by the elite athletic population has received a great deal of publicity recently. Former All-Pro football player Lyle Alzado recently died from inoperable brain cancer which he attributed to long term steroid use. Terry Long, a veteran member of the Pittsburgh Steelers football team, attempted suicide after failing a drug test for steroids. A Pennsylvania physician was indicted for illegally providing steroids to professional wrestlers, including former world champion Hulk Hogan. At the 1988 Summer Olympics, Ben Johnson was stripped of the gold medal he won for his record shattering 100 meter dash after testing positive for steroids.

While these were undoubtedly newsworthy events, they tend to give the public a distorted image of the steroid problem. Buckley et al. (1988) argued that the elite athletic population only accounts for a small percentage of steroid users. The majority of steroid users are low-level amateur and recreational male athletes, many of whom take these drugs to improve their physical appearance. According to Strauss (1989), the cosmetic use of steroids began a few years ago on the beaches of California and Florida and has

rapidly spread across the nation. It has been estimated that between 1 and 2 million Americans have used anabolic steroids (Shroyer 1990; Everson 1991). The overwhelming majority of steroid users are male (Buckley et al. 1988; Fuller and LaFountain 1988). A recent national survey of male high school seniors found that 6.6% have used anabolic steroids (Buckley et al. 1988). If this rate is applied to the population of male high school seniors nationwide, "it suggests that between 250,000 and 500,000 have used anabolic steroids" (Buckley et al. 1988, p. 3445). In a study of male students at six high schools, Johnson et al. (1989) found that 11.1% have used these drugs.

Todd (1987) presented evidence which suggests that the largest group of steroid users are non-competitive male bodybuilders. Anabolic steroids are useful to bodybuilders because they artificially promote gains in strength and muscularity (Donohoe and Johnson 1986; Colby and Longhurst 1988). These drugs reduce fatigue, allowing a bodybuilder to train more intensely and more often (Haupt and Rovere 1984; Nuzzo and Walker 1988). However, numerous adverse physical and psychological side effects are associated with anabolic steroid use. Moreover, anabolic steroids can potentially lead to psychological addiction. Furthermore, the possession of anabolic steroids is illegal without a medical prescription. Most athletes who use steroids don't

have a prescription; they buy their drugs off the black market (Burkett and Falduto 1984; Buckley et al. 1988). The FDA has estimated black market sales of these drugs to be between 300 and 500 million dollars a year (American Medical Association Council on Scientific Affairs 1990).

The purpose of this research is to explain anabolic steroid use among non-competitive male bodybuilders. Two theories of deviant behavior will be used in this research. First, a rational choice model will be used. According to this model, a potential offender weighs the perceived costs and benefits associated with committing a deviant act. Simply stated, if the perceived benefits outweigh the perceived costs, it is likely that the behavior will be engaged in. A rational choice model would predict that anabolic steroid use is most likely to occur when the perceived benefits exceed the perceived costs. A social learning model will also be used. According to this model, deviant behavior, like non-deviant behavior is learned mainly in primary groups. Such groups provide deviants with reinforcement for, as well as favorable definitions toward such behavior. Deviant behavior is learned in a general process of interaction that may also involve conventional peers and the mass media. A social learning model would suggest that perceived peer support will increase the likelihood of anabolic steroid use. Furthermore, it would predict that

steroid use is more likely to occur when favorable definitions are associated with that activity. This thesis tests these theories on a sample of 50 males from fitness centers and gymnasiums. The results are interpreted in light of their implications for future research on the factors that encourage steroid use and other deviant behavior.

## CHAPTER II

### LITERATURE REVIEW AND THEORETICAL ORIENTATION

#### 2.1 Review of Previous Research

There has been no sociological research done exclusively on anabolic steroid use by non-competitive male bodybuilders. Fuller and LaFountain (1987 & 1988) studied anabolic steroid use among weightlifting athletes. This group included football players, weightlifters, wrestlers, and bodybuilders. They conducted interviews with a self-selected sample of 50 athletes (48 were male). Their major area of interest was how these athletes rationalized their use of these drugs. The motivations of these steroid-using athletes were analyzed based on Sykes and Matza's (1957) techniques of neutralization.

Chng and Moore (1990) studied the prevalence of steroid use among athletes and non-athletes. They administered a questionnaire to a sample of 222 individuals (116 males and 106 females). Approximately one-third of the males surveyed reported using steroids. With few exceptions, all of the males who had used steroids were involved in athletics. The sports they participated in included football, wrestling, baseball, track and field, bodybuilding and powerlifting. These researchers also explored rationales for using these drugs. The most common reasons for using these drugs were

to increase strength and to improve physical appearance. The main reason given for not using these drugs was that they are potentially harmful.

Tricker, O'Neill, and Cook (1989) investigated the incidence of anabolic steroid use among male and female competitive bodybuilders in two midwestern states. They administered a survey to 176 bodybuilders (108 males and 68 females). Slightly more than half (54.6%) of the male bodybuilders reported using these drugs. The researchers also explored factors which influence anabolic steroid use. The main factors these researchers found for competitive male bodybuilders using these drugs were to promote gains in strength and muscle mass. Having friends who use steroids was also found to have a significant influence on individual steroid use.

Klien (1986) did an ethnographic study of Southern California's bodybuilding subculture. He addressed several features of this subculture, including the use of steroids by its members. However, the majority of the bodybuilders that he observed were training for major competitions. This is an important distinction since these bodybuilders are in competition for prize money and lucrative endorsements that accompany winning a major contest. Klien discovered that the majority of these bodybuilders used steroids. In light of the lack of sociological research on steroid use by non-

competitive male bodybuilders, the current undertaking can make a substantive contribution to understanding this phenomenon.

## **2.2 Rational Choice Theory**

A rational choice perspective has been widely applied to the study of illegal and deviant behavior (e.g Bennet 1986; Feeny 1986; Paternoster 1989b; Michaels and Miethe 1989). From this perspective, human behavior is guided by the actor's assessments of the relative costs and benefits of a particular activity. When confronted with alternative courses of action, the rational individual is said to choose that behavior with the highest rewards and the lowest costs. The rational choice perspective assumes that the decision to engage in an illegal or deviant act is the result of a cost-benefit calculation (see Heineke 1978; Cornish and Clarke 1986; Piliavin et al. 1986). In this decision making process, both the rewards and costs of crime and its alternatives are taken into consideration. Moreover, it is assumed that offenders will seek to benefit themselves by their behavior. If the perceived rewards of an illegal behavior outweigh the costs of that behavior, then it is likely that behavior will be engaged in (see Wilson and Herrnstein 1986; Paternoster 1989b).

In their article on deterrence, Pilivian et al. (1986) criticized previous work done in this area for omitting the reward or return component of the decision making process. Deterrence principles are included in rational choice theory, which is a more general theory of deviant behavior. While the deterrence doctrine is primarily concerned with the costs of illegal activities, rational choice models consider the perceived probabilities and magnitudes of both the punishments and rewards associated with such activities.

According to the rational choice perspective, both the rewards and costs associated with illegal behavior are subjective. In other words, rational choice models address the perceived rewards and costs associated with a given behavior, not the actual rewards and costs associated with that behavior. Often the expected rewards of illegal behavior are not material. For example, Feeny (1986) discovered that the majority of robbers claimed that material gain was not the main motive for their crime. Non-material reasons such as anger, excitement, and friendship were the motives for many robbers. Scully and Marolla (1985) investigated the motives of incarcerated rapists. They found a variety of perceived benefits for committing rape. These included: revenge; a source of power and impersonal sex; a method to

bolster self-esteem; and a sense of recreation and adventure.

The perceived costs of crime include both direct and indirect costs. Direct costs include criminal sanctions such as arrest and incarceration. Williams and Hawkins (1989) identified three types of indirect costs that are associated with crime. The first type is stigmatic costs which include family and personal humiliation. The second type is attachment costs such as damaged interpersonal relationships. The final type is commitment costs which include foreclosed opportunities and jeopardized investments.

Criminal behavior has often been conceptualized as a product of informed choice. However, the rational choice perspective argues that illegal behavior can be the consequence of imperfect or inaccurately informed decisions (Paternoster 1989b). Cornish and Clarke (1987) stressed that the decision making process of the offender is limited by the availability of relevant information.

Finally, rational choice is a theory of crime rather than criminality (Hirshi 1986). It focuses on the criminal act itself rather than the criminal. This crime specific focus is necessary because of the assumptions that rational choice makes about the nature of offending. Instead of making the assumption that offenders are driven by a general

disposition for crime, the rational choice perspective maintains that specific crimes are chosen for specific reasons (Cornish and Clarke 1987). Furthermore, the informational factors that influence offending are different for each particular offense (Paternoster 1989b). Offenders selectively respond to the costs and benefits which are associated with particular offenses (Cornish and Clarke 1987).

### **2.2.1 Benefits of Anabolic Steroids**

The major benefit bodybuilders receive from anabolic steroids is a muscular physique. In our society physical appearance is of great importance. For males, the strong, muscular, mesomorphic body type is the cultural ideal (Collins and Plahn 1984; Brodsky 1954; Lerner 1969; Wells and Siegel 1961; Strongman and Hart 1968; Tucker 1983). Research has shown that there is a perceived relationship between body build and personality traits in males (Brodsky 1954; Wells and Siegel 1961; Lerner 1969). Although the composition of the samples in these studies were different (i.e. Brodsky's sample was comprised of male college students, Lerner's of female college students, and Wells and Siegel's of adult males and females), the procedures used were essentially the same. The subjects were shown silhouette drawings or photographs which represented Sheldon's

major body types: endomorphic - fat or round; mesomorphic - muscular; and ectomorphic - thin. The subjects were then asked to classify these representations according to behavioral descriptions that the researchers provided. The most positive characteristics were consistently attached to the mesomorphic individual. For example, the mesomorph was rated as the most masculine, the strongest, the most attractive, the best leader, the best soldier, the most aggressive, the most self-sufficient, and the most desired as a friend.

Males may turn to bodybuilding to obtain the socially desirable muscular physique. Klien (1986; p.125) observed that "size, masculinity, and physical appeal are associated with bodybuilding." Lowen (1983) argued that while some men exercise to stay healthy, others use exercise as a means of conforming to the cultural ideal of a muscular physique. Tucker (1983) found that males experience an increase in self-esteem after beginning a weight training regime. As mesomorphic characteristics of the males in his sample began to increase, there was also an increase in their feelings of self-efficacy.

According to Yesalis (1990), our social fixation on physical appearance has helped to fuel the appetite for anabolic steroids. Donohoe and Johnson (1986) argued that many bodybuilders are image conscious individuals who use

steroids for cosmetic reasons. The cosmetic use of steroids apparently began a few years ago on the beaches of California and Florida and has rapidly spread across the nation (see Strauss 1989). The theory behind taking anabolic steroids is that they will artificially promote strength and muscular development (Donohoe and Johnson 1986; Colby and Longhurst 1988). In fact, one nickname for steroids is the 'bulk bomb'. These drugs reduce fatigue, allowing users to train more intensely and more often (Nuzzo and Walker 1988; Haupt and Rovere 1984). One steroid user told LaFountain and Fuller (1990, p.6) "I like being noticed, when I walk in a room and I'm big, people notice". In addition to increasing muscular size, steroids increase muscular definition, giving the user a 'ripped' look. This increase in muscularity may lead to an increase in self-esteem for some bodybuilders.

Recent studies which primarily focused on the prevalence of anabolic steroid use also investigated reasons for the use of these drugs. These studies have provided evidence which suggests that many individuals use steroids to increase strength, muscle mass, and physical attractiveness. Chng and Moore (1990) provided respondents with several possible rationales for using steroids. The most common reason given by steroid users for taking these drugs was to increase strength (46%). Other frequently provided reasons

for steroid use were to increase muscularity (37%) and to increase physical attractiveness (33%). In their study of anabolic steroid use by male high school students, Johnson et al. (1989) found that 50% of steroid users took these drugs to increase size, while 27% used the drugs to improve physical appearance. Finally, in their study of steroid use by competitive bodybuilders, Tricker, O'Neill, and Cook (1989) investigated variables that may be correlated to steroid use. These researchers discovered moderate correlations between steroid use by competitive male bodybuilders and increases in bodyweight ( $r=.30$ ) and increases in strength ( $r=.27$ ).

### **2.2.2 Risks Involved in Anabolic Steroid Use**

The following are the potential health risks related to anabolic steroid use. They are well documented in the medical and psychological literature:

#### **Physical Side Effects:**

1. Liver Tumors- (Wright 1980; Ryan 1981; Haupt and Rovere 1984; Lamb 1984; Strauss 1987).
2. Peliosis Hepatis- These are blood filled cysts which form on the liver and impair its ability to function properly (Wright 1980; Ryan 1981; Haupt and Rovere 1984; Lamb 1984; Strauss 1987).
3. Jaundice- (Wright 1978; American College of Sports Medicine 1987; Keenan 1988).

4. Decreased Sperm Count- This can eventually lead to infertility (Wright 1980; Haupt and Rovere 1984; Lamb 1984; Strauss 1987; George 1988).
5. Testicular Atrophy- (Wright 1980; Lamb 1984; Burkett and Falduto 1984; Strauss 1987; Pope and Katz 1988).
6. Kidney Tumors- (Wright 1978; Ryan 1981; Strauss 1987; George 1988).
7. Elevated Blood Pressure- (Wright 1980; Taylor 1982; Nuzzo and Walker 1984; Burkett and Falduto 1984; Strauss 1987).
8. Increased Risk of Atherosclerosis- (Wright 1980; George 1988; Nuzzo and Walker 1988).
9. Hair Loss- (Wright 1980; Nuzzo and Walker 1984; Burkett and Falduto 1984; Strauss 1987; Pope and Katz 1988).
10. Acne- (Wright 1978; Taylor 1982; Burkett and Falduto 1984; Colby and Longhurst 1988; Pope and Katz 1988).
11. Premature Bone Closure in Adolescents- (Wright 1978; American College of Sports Medicine 1987; Buckley et al. 1988; Nuzzo and Walker 1988).

#### **Psychological Side Effects:**

1. Increased Aggression- (Wright 1980; Lamb 1984; Strauss 1987; Lefavi, Reeve, and Newland 1990).
2. Change in Libido- This may be either an increase or a decrease (Wright 1980; Lamb 1984; Burkett and Falduto 1984; Strauss 1987; George 1988).
3. Increased Irritability- (Strauss 1987; Pope and Katz 1988; Lefavi, Reeve and Newland 1990).
4. Mood Swings- (Lamb 1984; American College of Sports Medicine 1987; Strauss 1987; Pope and Katz 1988).
5. Depression- (Pope and Katz 1988; Lefavi, Reeve and Newland 1990).
6. Paranoia- (Pope and Katz 1988; Lefavi, Reeve and Newland 1990).

7. Psychotic Episodes- (Lamb 1984; Lefavi, Reeve and Newland 1990).
8. Insomnia- (Taylor 1982; Lefavi, Reeve and Newland 1990).

Anabolic steroids are typically self-administered by the athletes without medical supervision. Steroids are taken in dosage regimes known as cycles. The typical cycle lasts from 2 to 16 weeks. The risk of AIDS is an additional health concern since some users share needles (Donohoe and Johnson 1986; Strauss 1987). The risks of the aforementioned side effects may be greatly increased by the fact that most users take doses which range from 4 to 40 times the recommended medical dosage (Burkett and Falduto 1984; Gough 1989). Ken Sprague, a former owner of Gold's Gym told Goldman (1987, p.150):

"I've seen people take 100 times the recommended medical dosage of the common steroids used. And they're not just taking one steroid, but 100 times the recommended dosage of several different steroids at the same time."

This practice of taking two or more steroids at the same time is known as stacking, and is very common (Taylor 1982).

Another risk associated with using anabolic steroids is the possibility of becoming psychologically addicted to these drugs (Wright 1978; Gough 1989; Brower et al. 1990; Bower 1991; Everson 1991). Bower (1991), who reviewed previous medical and psychological studies, posited that

nearly 15% of steroid users become addicted to these drugs. Some users suffer from withdrawal symptoms, such as depression and fatigue when they stop taking steroids (Brower et al. 1990; Bower 1991). Wright (1978) theorized that bodybuilders can become psychologically addicted to steroids since the gains in strength and muscularity related to their use are powerful reinforcers. Shroyer (1990) argued that the effect of looking good is as powerful as the high on another drug. A decrease in strength and muscularity usually follows the cessation of steroid use. For example, one former bodybuilder told Goldman (1987) that after discontinuing steroid use he was smaller than when he started. Many bodybuilders are reluctant to part with the gains they've achieved while taking steroids (Cahill 1991). The bodybuilder who uses steroids faces an insidious dilemma. He has used these drugs to help him gain a muscular physique, however most of these gains will disappear when he stops using these drugs.

A final risk associated with anabolic steroid use is criminal sanctions. Anabolic steroids have been added to the federal government's war on drugs (Shroyer 1991). The Anabolic Steroid Control Act, recently passed by congress, prohibits the possession, prescription, or distribution of steroids for any reason other than treatment of certain medical conditions (Ramotar 1991; Nightingale 1991). Al-

though the primary targets of this legislation are steroid distributors and dealers, steroid users face possible criminal action for possession of these drugs.

According to the rational choice perspective the costs associated with steroid use are subjectively perceived by the actor, not inherent in the act of steroid use itself. The existing literature suggests there is a great deal of risk involved with using steroids. Moreover, bodybuilding magazines such as Muscle and Fitness warn readers about these dangers. However, many bodybuilders do not heed these warnings. It has been argued that many bodybuilders do not have a clear perception of these risks. Donohoe and Johnson (1986) argued that bodybuilders are vaguely aware of the health problems they might encounter. Fuller and LaFountain (1987) observed that athletes are remarkably ignorant about the side effects of these drugs. Goldman (1987) referred to this lack of knowledge as frightening. The majority of steroids are obtained from 'black market' sources, and are used without medical supervision. Burkett and Falduto (1984) discovered that steroids are much easier to obtain than proper medical information about these drugs.

### **2.2.3 Summary of the Rational Choice Model**

Rational choice theory considers the decision to engage in a criminal or deviant act to be a function of the benefits and costs associated with that behavior as perceived by the actor. This theory considers both the probabilities and magnitudes of these benefits and costs. If the perceived benefits outweigh the perceived costs, then it is likely that the behavior will be engaged in. According to this theory, anabolic steroid use would be most likely to occur when the perceived benefits associated with the use of these drugs exceed the perceived costs. The major benefit related to anabolic steroid use for male bodybuilders is that these drugs facilitate the development of a muscular physique which may be accompanied by an increase in self-esteem. However, there are numerous costs associated with the use of these drugs. These costs include: physical and psychological side effects; the possibility of psychological addiction; and the risk of arrest for possession of these drugs.

### **2.3 Social Learning Theory**

Another theory of deviant behavior that may be useful in explaining anabolic steroid use among non-competitive male bodybuilders is social learning theory. Current formulations of this theory of deviance (e.g. Akers 1985) draw

heavily from Burgess and Akers' (1966) differential association-reinforcement theory. Burgess and Akers (1966) incorporated theories of operant conditioning into a reformulation of Sutherland's (1947) differential association theory. According to social learning theory, deviant behavior is learned mainly in primary groups which strengthen such behavior through differential reinforcement. Furthermore, deviants develop definitions and attitudes which are conducive to such behavior. This theory has been successfully applied to various forms of deviant behavior. For example, Michaels and Miethe (1989) found that social learning variables had a significant effect on academic cheating. In their research on adolescent substance use, Akers et al. (1979) used a social learning model which explained 68% of the variance in marijuana use, and 55% of the variance in alcohol use.

A major aspect of social learning formulations is the differential association component. Differential associations are the first part of the deviance process (Akers et al. 1979). Although differential associations refer to all groups which exert influence over an individual, the most important are primary groups such as friends (Krohn et al. 1985). Akers et al. (1979) found that deviant peer groups have an extremely strong effect on adolescent substance use. Differential associations may also play important part in

steroid use. Trickler, O'Neill, and Cook (1989) found a significant correlation between steroid use by competitive male bodybuilders and friendship with other drug users.

The majority of behavior, including deviant behavior, is learned in primary groups. Deviant peer groups play an important role by providing an individual with support and reinforcement for such behavior (see Krohn et al. 1985; Michaels and Miethe 1989). Differential reinforcement includes both positive and negative reinforcements associated with a given behavior (Akers 1990). Such reinforcements include approval or disapproval for engaging in a certain behavior. It is through these differential reinforcements that deviant behavior takes precedence over non-deviant behavior.

Another major component of social learning explanations is the development of favorable definitions regarding the deviant act (Krohn et al. 1985; Michaels and Miethe 1989). Differential associations provide an individual with such definitions. Akers (1985) advanced two categories of these definitions: (1) those that define the behavior in a positive manner; and (2) those that neutralize unfavorable definitions of that behavior. Overall, definitions are strongly related to engaging in deviant behavior when the positive and neutralizing definitions outweigh negative definitions.

The second category of definitions, neutralizations, may be especially important explaining anabolic steroid use among non-competitive male bodybuilders. As previously mentioned, Fuller and LaFountain's (1987 & 1988) research focused on how steroid using athletes rationalized their use of these drugs. They analyzed these on the basis of Sykes and Matza's (1957) techniques of neutralization. One of these techniques that may be especially useful is denial of the victim. Fuller and LaFountain (1987) found that many steroid users believed taking these drugs is a victimless crime. A second technique of neutralization that may also be useful is denial of injury. Fuller and LaFountain (1987) observed that many athletes used rationalizations to offset the health risk associated with these drugs. Bodybuilders often discount the harmful effects of steroids by using pseudoscientific explanations (Klien 1986). For example:

"Every drug has side effects. Did you ever read the printed material that comes with Tylenol. There is a long list of side effects. Steroids have less side effects than other drugs."

(Fuller and LaFountain 1987, p. 972)

In a recent interview on ESPN's The Best of American Muscle, a top ranked amateur bodybuilder was asked his opinions on anabolic steroids. He replied:

"...like any other drug, there is a difference between use and abuse. If you take two aspirins, you'll cure a headache; if you take the whole bottle, you'll burn a hole in your stomach."

I asked an aspiring bodybuilder what he thought about the side effects of anabolic steroids. His reply was as follows:

"That's bullshit man. All steroids are hormones. Chicks [sic] take the [birth control] pill. That's hormones. Steroids are no more dangerous than the pill is."

### **2.3.1 Summary of Social Learning Model**

The social learning model holds that deviant behavior, like non-deviant behavior, is learned in primary groups. Deviant peer groups strengthen such behavior through differential reinforcements. According to such a model, perceived peer support will increase the likelihood of anabolic steroid use. Moreover, these groups provide deviants with definitions that are conducive to such behavior. Not only do these definitions define such behavior in a favorable manner, but they also serve to neutralize or lessen any negative connotations associated with that behavior. Previous research (Fuller and LaFountain 1987 & 1988) suggests that the neutralization component may be especially important in explaining anabolic steroid use among non-competitive male bodybuilders. Consequently, a social learning

model would suggest that steroid use is likely to occur in the presence of favorable definitions toward that activity.

#### **2.4 Rational Choice Theory vs. Social Learning Theory**

Two theories of deviant behavior, rational choice theory and social learning theory, are used this research. Rational choice models address the cost-benefit analysis involved in the decision making process of the potential offender. However, these models tend to be negligent of antecedent factors which influence such calculations. Conklin (1992) criticized rational choice formulations for not examining the sources of an individual's methods for evaluating the costs and benefits associated with various courses of action. These models fail to explain why different individuals balance costs and benefits differently.

Social learning theory can be useful in determining the factors which influence an actor's rational choice calculation. This theory examines the influence of differential associations on the decision to participate in a criminal, delinquent, or deviant activity. Differential associations can serve as a source of an individual's perceptions of the benefits and costs associated with a given behavior. Not only do differential associations provide an individual with support and reinforcement for various types of behav-

ior, they also provide techniques for executing the deviant act as well as a group context to perform such activities. Differential associations serve another important function by providing their membership with definitions concerning a given behavior. Definitions undoubtedly influence an individual's cost-benefit analysis. Definitions which portray a deviant behavior in a positive light will have a direct bearing on the perceptions of the benefits associated with criminal activity. Definitions which portray a deviant behavior in a negative light will effect an individual's perception of the costs associated with that activity. Neutralizing definitions may minimize the costs associated with a given behavior.

A major component of social learning explanations of deviant behavior is differential reinforcements. These refer to the positive and negative reinforcements associated with a given behavior. In my opinion, differential reinforcement is included in rational choice models. In a recent critique of rational choice theory, Akers (1990) argued that rational choice theory does not make any unique contribution to criminological theory. He maintains that the cost-benefit calculation of rational choice is subsumable under the differential reinforcement component of social learning theory. While these variables can arguably fall under the domain of differential reinforcement, in practice this has

not been the case. While differential reinforcements can theoretically be social or non-social, applications of social learning theory have focused on the former (e.g. Akers et al. 1979; Krohn et al. 1985). Social reinforcements typically take the form of approval or disapproval from peers and family. Rational choice models consider a broader spectrum of costs and benefits. These included material costs and rewards, legal sanctions, foreclosed opportunities, as well as social reinforcements (e.g. peer approval or disapproval).

## **2.5 Hypotheses**

The major purpose of this research is to explain anabolic steroid use among non-competitive male bodybuilders. Two theories of deviant behavior, rational choice theory and social learning theory, will be used in this effort. From these theories, three hypotheses have been developed:

- Hypothesis 1-** The greater the perceived benefits of anabolic steroid use exceed the perceived costs, the greater the likelihood of anabolic steroid use.
- Hypothesis 2-** The greater the perceived peer support for anabolic steroid use, the greater the likelihood of anabolic steroid use.
- Hypothesis 3-** The more favorable definitions held toward anabolic steroid use, the greater the likelihood of anabolic steroid use.

**CHAPTER III**  
**RESEARCH METHODS**

**3.1 Sample**

A convenience sample was used to gather data for this research. This sampling method was used because of the temporal and monetary restrictions associated with a master's thesis. A survey instrument was designed to measure the pertinent variables (see Appendix A). Descriptive statistics for the items in the survey are shown in Table 1. The cover page of this instrument contained a letter which assured respondents anonymity and confidentiality. A self-addressed business reply envelope was attached to each of the instruments.

The actual sampling process became quite complicated. The original intent was to set up displays at several health clubs which requested male bodybuilders and weightlifters to voluntarily take a questionnaire. In accordance with this sampling strategy, displays were set up at four health clubs with permission of the on-duty staff on May 30, 1992. Three of these facilities were located in a metropolitan area in Virginia, while the other was located in a college town in Virginia. Approximately 75 surveys were left at each of the metropolitan locations, while 100 surveys were left at the

other facility. Serious complications arose with this original strategy.

On June 3, 1992, telephone inquiries regarding the status of the surveys were made to each of the metropolitan area facilities. A staff member at the first facility said the display was still there, but only a few surveys had been taken. When I called the second facility, I was told I needed to speak with a supervisor who wasn't there at that time. I finally reached her by telephone after several attempts. She informed me that the owner had discarded the surveys because I had not gotten his permission to leave them there. This was surprising since the staff member who was on duty when I dropped off the instruments was very cooperative. She told me there should be no problem with me leaving them there. I left my name and number with her, and told her I would immediately pick up the questionnaires if they were any problems. A staff member at the third facility told me that a good number of the surveys (approximately 25) had been taken. However, he told me that practically all of the male bodybuilders and weightlifters who regularly used that facility had taken one.

That same day I spoke with a highly reliable informant who is involved in weight training in that metropolitan area. He informed me that an on-going undercover police investigation concerning steroid sales was underway in that

area. He was aware of this because he knew a police officer involved in the investigation. He told me that members of two facilities that I left questionnaires at were under investigation. This was independently confirmed by a second informant who knew an individual who lifted at one of these facilities who was under investigation.

In light of this extremely abject situation, it was decided that the remaining surveys be retrieved from the metropolitan locations. At the first facility, where I was informed that only a few questionnaires were taken, the staff could not locate the display box. I spoke with the same staff member who allowed me to set up the display. He agreed to contact me if the surveys were located. However, the questionnaires were never found. As previously stated, the owner of the second facility threw away the instruments. The remaining instruments were successfully retrieved from the third metropolitan location. The remaining surveys were also removed from the health club located in the college town. Only 12 of 100 questionnaires left at that facility were taken.

Overall this original sampling procedure yielded 27 responses. Given the highly extraordinary circumstances that surrounded the original sampling design, it is impossible to assess the generalizability or representativeness of this small sample.

Because of the problems encountered with the original sampling procedure, a second sampling strategy was implemented. I contacted several individuals who were involved with or associated with weight training and requested their help. I asked them to personally distribute questionnaires to male bodybuilders and weightlifters at health clubs and gymnasiums. I explicitly requested that they hand out surveys to any male bodybuilder or weightlifter, not just those who appear to have used steroids. Twenty instruments were distributed in the weight room of a Pennsylvania university. Twenty instruments were distributed by gym owners at their Virginia facility. Ten more surveys were distributed by a bodybuilder in Wisconsin at a gym where he trains. Finally, five surveys were distributed by a professional boxer at a Pennsylvania gym where he lifts weights. A total of 25 of these instruments were returned for a response rate of 45%.

Although the sampling procedure used was somewhat unusual, it was necessary given the circumstances. A total of 52 completed surveys were received. This compares favorably to other research of this nature. Lefavi, Reeve, and Newland (1989) used a somewhat similar sampling strategy for their research concerning the psychological effects of steroids on bodybuilders. They received 45 completed instruments (from both users and non-users). Fuller and

LaFountain (1987 & 1988) interviewed a total of 50 weight training athletes for their research. Burkett and Falduto (1984) administered an oral questionnaire about the side effects of steroids to 24 athletes who had used the drugs. There may be some sampling bias present because of the methods used. Respondents are more likely to be interested in steroid use as a topic. However, there is no way to know if steroid users are over-represented or under-represented in this sample.

### **3.2 Dependent Variables**

The major dependent variable for this research is anabolic steroid use. Respondents were asked if they had ever used steroids as well as if they had used steroids in the past six months. These variables were coded 0=No and 1=Yes. Twenty-eight percent of the respondents reported previous steroid use, while only 8% reported using the drugs in the last six months. Respondents were also asked to estimate the likelihood that they would use these drugs in the future. Response choices on this six-point scale ranged from 1 (definitely would not use steroids) to 6 (definitely would use steroids). The mean value for this item was 1.80. The standard deviation of 1.43 indicates a good deal a variability across respondents on this item.

### **3.3 Rational Choice Measures**

The survey contained two scales which measured the probability and magnitudes of the respective costs and benefits associated with anabolic steroid use.

#### **3.3.1 Costs**

The survey contained a scale which measured respondents' perceptions of the probability of the costs associated with anabolic steroid use. Respondents were asked to indicate how likely they thought it was that the average male bodybuilder who uses steroids would experience each of four possible costs. These costs were (a) negative physical side effects, (b) negative psychological side effects, (c) addiction to steroids, and (d) arrest for possession of these drugs. Response options on this scale ranged from 1 (not at all likely) to 6 (very high likelihood). The reliability of this scale as indicated by Cronbach's alpha was .70. Respondents indicated that the costs with the highest likelihood were negative psychological side effects (mean=4.88) and negative physical side effects (mean=4.79). They estimated the likelihood for being arrested for possession of these drugs as rather low (mean=2.23).

The survey also included a four-item scale which measured the respondents perceptions of the magnitude of the costs identified above. Respondents were asked to indicate the seriousness of each of these costs. Response choices ranged from 1 (not at all serious) to 5 (extremely serious). Cronbach's alpha for this scale was .58. Respondents indicated that the most serious costs were negative physical side effects (mean=4.20). Respondents estimated that the cost with the lowest seriousness was penalties for possession of these drugs (mean=2.86).

### **3.3.2 Benefits**

The survey contained a five-item scale which represented the possible benefits associated with anabolic steroid use. These benefits are (a) an increase in muscle size, (b) an increase in definition, (c) an increase in strength, (d) an increase in physical attractiveness to members of the opposite sex, and (e) an increase in self-esteem. Respondents were asked to indicate how likely they thought it was that the average male bodybuilder who uses steroids would experience each of these benefits. Response options for this scale ranged from 1 (not at all likely) to 6 (very high likelihood). Cronbach's alpha for this scale was .77.

Respondents indicated that the most likely benefits associated with steroid use are an increase in muscle size (mean=5.60) and an increase in strength (mean=5.44). The mean scores for all of the other items on this scale were over 4.00 which is rather high.

A five-item scale was used to measure the respondents' perceptions of the magnitude of each of the benefits identified above. They were asked to indicate how much of an increase the average male bodybuilder who uses steroids would experience in each of those areas. Response options ranged from 1 (no increase) to 5 (very large increase). Cronbach's alpha for this scale was .72. Respondents rated an increase in strength (mean=4.12) and an increase in muscle size (mean=4.10) as the benefits with the greatest magnitudes. The benefit with the lowest estimated magnitude was an increase in attractiveness to members of the opposite sex (mean=2.79).

### **3.3.3 General Utility**

Finally, respondents were requested to indicate their own view of the balance between the costs and benefits associated with anabolic steroid use. Response options on this seven-point scale ranged from 1 (risks outweigh the gains by a large margin) to 7 (gains outweigh the risks by a

large margin). The average score of 2.12 on this item indicates that the typical respondent viewed "the risks outweighing the gains by a moderate margin". However, a standard deviation of 1.77 indicates that there was a good deal of variability across respondents on this item.

### **3.4 Social Learning Measures**

The survey instrument contained items which measured two major components of social learning theory (differential associations and definitions about steroid use).

#### **3.4.1 Differential Associations**

The survey included two scales which measured differential associations. Respondents were asked to estimate what proportion of male bodybuilders have used steroids. They were also asked to estimate how many of their friends who are involved in bodybuilding have used these drugs. Response options for both of these items ranged from 1 (none) to 6 (practically all). Cronbach's alpha for this scale was .58. This scale will be henceforth called the differential association scale. The mean value for the item which asked the respondents to estimate the proportion of male bodybuilders that have used steroids was 4.88. This high mean value indicates that respondents think that a large percent-

age of male bodybuilders have used these drugs. A mean value of 2.86 on the other item indicates that most respondents believe they have relatively few friends involved in bodybuilding who have taken steroids.

A six-item scale was used to measure the perceived peer support for steroid use. The first three items asked respondents to indicate how their parents, best friend, and friends who are involved in bodybuilding would react if they found out the respondent had used steroids. In the other three items, respondents were asked to indicate how they thought most male bodybuilders, most of their friends who are involved in bodybuilding, and most of their other friends regard steroid use. Values on this five-point response scale ranged from 1 (very negatively) to 5 (very positively). The mean values for all of these items were less than 3.00. This indicates that in general, most respondents perceive little peer support for anabolic steroid use. However, Cronbach's alpha for this scale was only .22. This low reliability suggests that these items are not strongly related and should not be combined in a composite index.

### **3.4.2 Definitions**

The survey included four items which measured pro-steroid attitudes and two items which measured anti-steroid attitudes. Pro-steroid items were (a) "a bodybuilder who doesn't take steroids ends up losing out in the end to those who do", (b) "using steroids is not as serious as using other drugs (e.g. cocaine, marijuana)", (c) "there is no harm involved in using steroids", and (d) "there is nothing wrong with using steroids if you are dedicated to bodybuilding". Response choices for these items ranged from 1 (agree strongly) to 6 (disagree strongly). The mean values for these items were all greater than 4.80. Anti-steroid items were measured on the same scale and included (a) "there is no acceptable justification for using steroids", and (b) "using steroids is taking the 'easy way out'". The mean values for both of these item were less than 3.00. The pro- and anti-steroid definition items were rescored so that higher values for each item represented pro-steroid attitudes. Cronbach's alpha for this summation scale is .73.

### **3.5 Other Variables**

Respondents were presented with a six-item scale which measured their general attitudes toward fitness and bodybuilding. The items were (a) "Americans in general are more

fitness conscious now than they were 20 years ago", (b) "men with muscular physiques tend to be more self-disciplined than those who do not have such physiques", (c) "I personally feel it is important for a male to have a muscular physique", (d) "my friends think it is important for a male to have a muscular physique", (e) "women find muscular men more attractive than non-muscular men", and (f) "being physically fit and having a muscular physique is highly valued in our society". Response choices on this six-point scale ranged from 1 (agree strongly) to 6 (disagree strongly). The mean values for all of these items except (d) were under 3.00. The mean value for "my friends think it is important for a male to have a muscular physique" was 3.08. This indicates a general agreement among respondents to these items. Cronbach's alpha for this scale was .73.

Several items were included to measure respondents' experiences with bodybuilding and other athletic endeavors. First, respondents were asked how close they were to their ideal physique. Response choices for this item ranged from 1 (not at all close) to 5 (already at my ideal physique). More than two-thirds of respondents indicated that they were at least moderately close to their ideal physique. Respondents were questioned as to how long they had been involved in weight training. Response options ranged from 1 (less than 1 year) to 4 (more than 5 years). Ninety percent of

respondents have been lifting weights for more than a year. Respondents were also asked to report how frequently they lift weights. Response choices for this item ranged from 1 (less than once a week) to 4 (five times a week or more). The majority of respondents (54%) lift weights five times a week or more. Respondents were also asked to indicate how easy they thought it was for a male bodybuilder to obtain steroids. Response options for this item ranged from 1 (very difficult) to 4 (very easy). A mean value of 3.34 for this item indicates that in general, respondents feel these drugs are easy to obtain. Respondents were also asked if they were on a special diet for bodybuilding, (48% reported that they were), if they had ever entered a bodybuilding competition (12% reported that they had done so), if they plan to compete in the future (30% reported that they plan to), and if they had participated in high school or inter-collegiate sports (84% reported such participation). These items were all coded 1=No and 2=Yes.

Several items which measured social structural variables were included in the survey. These items were included because they are sometimes associated with deviant behavior. Age was measured in numbered years. The mean age of the respondents is 25.2 years. Respondents were asked if they were married and if they had children. Both of these items were coded so 1=No and 2=Yes. Twenty-two percent of

the respondents are married, and 18% have children. Race was coded as follows 1=Caucasian, 2=African-American, 3=Asian-American, and 4=Other. The vast majority of respondents (88%) are caucasian. The respondents' occupation was coded as follows 1=Student, 2=Business owner/proprietor, 3=Manager or professional, 4=Clerical or sales, 5=Skilled laborer, 6=Unskilled laborer, and 7=Other. Forty-two percent of the respondents indicated that they are students, while 34% indicated they are a "manager or professional". Education was measured on a six-point scale ranging from 1 (8th grade or less) to 6 (post-graduate work). Respondents are fairly well educated. All are high school graduates and 42% are college graduates. Finally, church attendance was measured on a nine-point scale ranging from 0 (never) to 8 (several times a week). In general, respondents do not attend church frequently. Only 24% said they attended church "nearly every week" or more.

## CHAPTER IV

### RESULTS

#### 4.1 Bivariate Analysis

Bivariate relationships were examined as an initial part of this analysis. Table 3 presents the zero-order correlations between the independent and dependent variables. The variable which measures steroid use during the previous six months was not included because only 8% of the respondents reported using steroids during that period. Composite measures have been included in this analysis. The magnitudes and probabilities of the benefits associated with steroid use were combined to obtain a total benefits measure. A total costs measure was calculated similarly.

It should be noted that dichotomous social structural variables and general items are omitted from this table. Fisher's Chi-square statistic was calculated for these dichotomous variables and previous steroid use. However, no statistically significant relationships were found. T-tests were calculated for these dichotomous variables (as well as age) and future steroid use. This information is reported in Table 2. However, no statistically significant t-values were found.

The rational choice general utility item ( $r=.3897$ ) is a significant correlate of previous steroid use. This sug-

gests that male bodybuilders who perceive the benefits of steroid use as outweighing the costs are more likely to have used these drugs.

The social learning variables which are significant correlates of previous steroid use are the differential association scale ( $r=.4041$ ) and best friend's perceived reaction to the respondent's steroid use ( $r=.3065$ ). This suggests that male bodybuilders who perceive that a large proportion of male bodybuilders (including their friends) have used steroids are more likely to have used these drugs. Moreover, male bodybuilders who perceive that their best friend would not react negatively to their steroid use are more likely to have used these drugs. Similar to the social structural variables, the general items which were included in this part of the analysis are not significant correlates of previous steroid use.

All but one of the rational choice measures included in the bivariate analysis is a significant correlate of future steroid use. Correlations between this dependent variable and total benefits ( $r=.3140$ ) and the magnitude of benefits ( $r=.3050$ ) suggest that male bodybuilders who estimate the total benefits and magnitudes of these benefits as high report a higher likelihood of future steroid use. Other significant correlates of future steroid use are the magnitude of costs ( $r=-.3113$ ), the probability of costs

( $r=-.4692$ ), and the total costs ( $r=-.4484$ ). This indicates that male bodybuilders who estimate the costs associated with steroid use as being low tend to report a higher likelihood of using these drugs in the future. The general utility item ( $r=.6155$ ) is highly correlated with future steroid use. This suggests that male bodybuilders who perceive the benefits of steroid use as outweighing the costs report a higher likelihood of future steroid use.

Several social learning variables are significant correlates of future steroid use. These include pro-steroid attitudes ( $r=.4903$ ); the differential association scale ( $r=.4135$ ); the perceived reaction of friends who are involved in bodybuilding to the respondent's steroid use ( $r=.3903$ ); and how an individual's friends who are involved in bodybuilding regard steroid use ( $r=.6899$ ). There are several implications associated with these correlations. First, male bodybuilders who hold pro-steroid attitudes report a higher likelihood of future steroid use. Moreover, male bodybuilders who perceive that a large proportion of male bodybuilders (including their friends) have used steroids report a higher likelihood of using these drugs in the future. Finally, bodybuilders who perceive their bodybuilding peers are supportive of steroid use report a higher likelihood of future steroid use.

One of the social structural variables included in this analysis, church attendance ( $r=.3798$ ), is a significant correlate of future steroid use. This suggests that male bodybuilders who have higher church attendance report a higher likelihood of future anabolic steroid use. Neither the scale of general attitudes towards fitness and bodybuilding, or the general items included in this part of the analysis are significant correlates of future steroid use.

The results of the bivariate analysis are generally supportive of Hypothesis 1. Hypothesis 1 states that the greater the perceived benefits of anabolic steroid use exceed the perceived costs, the greater the likelihood of steroid use. The rational choice general utility item is a significant correlate of previous steroid use. Furthermore, several rational choice measures are significant correlates of future steroid use. These include the total benefits, the magnitude of benefits, the magnitude of costs, the probability of costs, the total costs, as well as the general utility item. However, the general utility item is the strongest correlate of future steroid use. A possible explanation for this is that the single item (i.e. general utility statement) may be a better indicator of individuals' cost-benefit calculations than summation measures. The other rational choice measures were derived from multiple items in which several costs and benefits were enumerated

for the respondents. However, some respondents may not have considered the probability and magnitude of each of the possible costs and benefits when deciding whether or not to use steroids. Similarly, they may not have considered the probability and magnitude of each possible cost and benefit when answering the general utility item.

The results of the bivariate analysis are generally supportive of the second hypothesis. Hypothesis 2 posits that the greater the perceived peer support for anabolic steroid use, the greater the likelihood of anabolic steroid use. The differential association scale and best friend's perceived reaction to the respondent's steroid use are both significant correlates of previous steroid use. Significant correlates of future steroid use include the differential association scale, friends who are involved in bodybuilding perceived reaction to the respondent's steroid use, and how these friends are thought to regard steroid use.

Finally, the third hypothesis is only partially supported by the results of the bivariate analysis. Hypothesis 3 states that the more favorable definitions held toward anabolic steroid use, the greater the likelihood of anabolic steroid use. Although the pro-steroid attitude scale is not a significant correlate of previous steroid use, it is significantly correlated with future steroid use.

## 4.2 Multivariate Analysis

The results of the multiple regression analysis for selected independent variables and previous steroid use are shown in Table 4. Table 4 shows the logistic regression coefficients for each of the independent variables. It should be noted that the pro-steroid attitude scale was not included in these regression equations because it is not a significant correlate of previous steroid use. This is inconsistent with Hypothesis 3. The general utility item was used to represent the rational choice variables. Model 1 contains this general utility item as well as the differential association scale. The logistic regression coefficient for the general not utility statement is not statistically significant. However, the logistic regression coefficient for the differential association scale is significant. Model 1 explains approximately 18% of the variance in previous steroid use ( $R^2=.1750$ ). In Model 2, best friend's perceived reaction to the respondent's steroid use is added to the variables used in Model 1. The logistic regression coefficient for best friend's perceived reaction to the respondent's steroid is statistically significant. The logistic regression coefficient for the differential association scale is also statistically significant. However, the logistic regression coefficient for the general

utility statement is not significant in Model 2. Model 2 explains approximately one-quarter of the variance in previous steroid use ( $R^2=.2543$ ). The insignificant effect of the general utility item in both of these models is inconsistent with Hypothesis 1. The significant logistic regression coefficients for best friend's perceived reaction to the respondent's steroid and the differential association scale are supportive of Hypothesis 2.

The results of the multiple regression analysis for selected independent variables and future steroid use are shown in Table 5. Four models are shown in this table. Variables were entered into these models based on the strength of their zero-order correlations with future steroid use. The general utility item, which is the strongest rational choice correlate of future steroid use, was again chosen to represent the rational choice variables. This general utility item, along with how an individual's friends who are involved in bodybuilding are thought to regard steroid use comprise Model 3. Both of these variables are significant predictors of future steroid use in Model 3, as well as the other three models. An examination of the relative size of the standardized regression coefficients for all these models reveals that how an individual's friends who are involved in bodybuilding are thought to regard steroid use is a stronger predictor than the general

utility statement. Model 3 accounts for approximately 60% of the variance in future steroid use ( $R^2=.5941$ ). The differential association scale is entered into the equation in Model 4. However, it is not a significant predictor of future steroid use in any of the models. Its inclusion in Model 4 does very little to improve the explanatory power of that equation ( $R^2=.6089$ ) over that accounted for in Model 3. Church attendance enters into the regression equation in Model 5. It's a significant predictor of future steroid use in both Model 5 and Model 6. However, its predictive effect is not as strong as either how an individual's friends who are involved in bodybuilding are thought to regard steroid use or the general utility statement. The inclusion of church attendance in Model 5 adds a small amount of explanatory power to the regression equation ( $R^2=.6525$ ). Finally, the pro-steroid attitude scale, which is included in Model 6, is not a significant predictor of future steroid use. Furthermore, virtually no gain is made in the explanatory power of the regression equation by adding this variable ( $R^2=.6534$ ).

The results of the multiple regression analysis for future steroid use are supportive of Hypothesis 1. The rational choice general utility statement is a significant predictor of future steroid use in all four models. The results of the regression analysis for future steroid use

are only partially supportive of Hypothesis 2. How an individual's friends who are involved in bodybuilding are thought to regard steroid use is a significant predictor of future steroid use in all of the models. This variable is also the strongest net predictor of future steroid use. That is consistent with Hypothesis 2. Contrary to Hypothesis 2, the differential association scale is not a significant predictor of future steroid use. The results of this regression analysis do not support Hypothesis 3. The fact that the pro-steroid attitude scale was not a significant predictor of future steroid use is inconsistent with Hypothesis 3. Finally, although not hypothesized, church attendance is a significant predictor of future steroid use.

## CHAPTER V

### Discussion and Conclusions

The use of anabolic steroids is a growing problem in our society. Media attention has tended to focus on members of the elite athletic population who have taken these drugs. However, these individuals account for only a small fraction of anabolic steroid users. It has been estimated that between 1 and 2 million Americans have used anabolic steroids (Shroyer 1990; Everson 1991). It has been suggested that the largest group of steroid users are non-competitive male bodybuilders (Todd 1987). Many of these individuals use steroids to improve physical appearance. According to Strauss (1989), the cosmetic use of anabolic steroids began a few years ago on the beaches of California and Florida and has rapidly spread across the county. Anabolic steroids are useful to bodybuilders because they artificially facilitate gains in strength and muscularity (Donohoe and Johnson 1986; Colby and Longhurst 1988). However, several potential risks are involved with using these drugs. There are numerous adverse physical and psychological side effects associated with anabolic steroid use. Also, anabolic steroids can potentially lead to psychological addiction. Furthermore, the possession of anabolic steroids is illegal without a

medical prescription. Most steroid users don't have a prescription; they buy their drugs off the black market.

This research seeks to explain anabolic steroid use among non-competitive male bodybuilders based on two theories of deviant behavior, rational choice theory and social learning theory. Three hypotheses were derived from these theories and tested on a sample of 50 males from fitness centers and gymnasiums. There are certain limitations involved with the sampling procedure used. First, there was a great deal of difficulty involved in gathering the data for this research and consequently the sample size is small. However, the sample size compares favorably with other studies of steroid use (e.g. Lefavi, Reeve, and Newland 1989; Fuller and LaFountain 1987 & 1988; and Burkett and Falduto 1984). Furthermore, a convenience sample was used to gather the data for this research and there may be some sampling bias present. Respondents are more likely to be interested in steroid use as a topic. However, there is no way to know if steroid users are over-represented or under-represented in this sample.

Hypothesis 1, which was derived from rational choice theory, was partially supported by the data from this study. This hypothesis states that the greater the perceived benefits of anabolic steroid use exceed the perceived costs, the greater the likelihood of steroid use. This hypothesis was

generally supported at the bivariate level. An item which measured the general utility variable was used to represent rational choice theory in multivariate analyses. Although the logistic regression coefficient for the general utility item is not significant in the models for previous steroid use, it is a significant predictor of future steroid use.

Hypothesis 2, which originated from social learning theory, was generally supported by the data from this study. This hypothesis states that the greater the perceived peer support for anabolic steroid use, the greater the likelihood of anabolic steroid use. Several of the variables derived from this hypothesis were significant correlates of steroid use. The logistic regression coefficients for best friend's perceived reaction to the respondent's steroid and differential association scale are significant in the models for previous steroid use. Moreover, how an individual's friends who are involved in bodybuilding are thought to perceive steroid use is the most powerful predictor of future steroid use. On the other hand, the differential association scale is not a significant predictor of future steroid use.

Hypothesis 3, which was also derived from social learning theory, was not strongly supported by the data in this study. This hypothesis posits that the more favorable definitions held toward anabolic steroid use, the greater the likelihood of anabolic steroid use. A scale of pro-

steroid attitudes was used to represent this hypothesis. Although the pro-steroid attitudes scale was not a significant correlate of previous steroid use, it was a significant correlate of future steroid use. However, this scale was not a significant predictor of future steroid use.

Church attendance is a significant correlate and a significant predictor of future steroid use. Moreover, this is a positive relationship. Respondents who reported higher church attendance tended to report a higher likelihood of future steroid use. Although this variable was not part of the original theoretical formulation, it was included in the survey because it is sometimes related to deviant behavior. Although some contradictory evidence exists, it is generally thought that there is an inverse relationship between church attendance and deviant behavior (see Ellis 1985). However, the results of this current undertaking are inconsistent with that notion. One possible explanation for this unexpected finding is that steroid use may not be part of a typical deviant mentality. Goldman (1987:315) argued that steroid users are often people who would otherwise be considered "straight as an arrow".

The statistical models that were developed explain a much greater proportion of the variance in future steroid use than previous steroid use. The model with the best explanatory value for future steroid use accounts for ap-

proximately two-thirds of the variance in future steroid use. However, the model with the best explanatory value for previous steroid use accounts for only about one-fourth of the variance in previous steroid use. There are several possible reasons for this discrepancy. First, a respondent's current cost-benefit analysis regarding steroid use may differ from the one that preceded his use of these drugs. Personally experiencing the costs and benefits associated with steroids will certainly have an effect on an individual's current cost-benefit analysis. Experiences with steroids may increase or decrease an individual's perceptions of the general utility of steroid use. For example, one respondent commented:

"Unfortunately, I have used steroids in the past and found they hurt me more than they helped me... Yes, I was able to gain weight and lift heavier weights, but I lost my definition to water gain. I also suffered a loss in taste for food (food didn't taste as good). After about a month, I quit. I suffered great losses. Tendinitis and muscle fatigue made me almost give up the sport."

Previous steroid use will also have an effect on a person's current attitudes toward these drugs. Furthermore, a person's current peer group may be different from their previous peer group. For example, in the past, a male bodybuilder may have been exposed to peers who condoned steroid use. However, his current peer group may not approve of steroid use. Also, some of the respondents may have taken steroids

several years ago, before the adverse effects of these drugs were well publicized. Finally, previous steroid use may be under-reported, or the likelihood of future steroid use may be over-estimated (or both).

The results of this research suggest the important influence of the norms of the bodybuilding peer group on steroid use. The data suggests that the norms of this peer group have a greater impact on steroid use than the broader social norms. Several items which tap the societal norms about the preferential body type for males were included in the scale of general attitudes toward fitness and bodybuilding. These items were not significant correlates of steroid use. However, these norms may explain certain cases of steroid use. One particularly articulate respondent commented:

"I am a college educated male weightlifter who first tried steroids during my Freshman year of college. Along with facilitating the long, tedious ritual of improving your body (size and general good looks being the standard goals), steroids were a vehicle for the male to further "masculinize" his attitude, ego and self-worth that was basically a predetermined prerequisite that society had nicely defined what the male gender should be."

It has been suggested that such social norms influence a male to become initially involved in bodybuilding (e.g. Lowen 1983). However, once a male does become involved in

bodybuilding he is then exposed to the norms of the bodybuilding peer group which in turn influence steroid use.

This research suggests that anabolic steroid use among non-competitive male bodybuilders is a social problem with social roots. The two theories used in this research, rational choice theory and social learning theory, are useful in explaining this problem. The decision to use steroids is not only influenced by the actor's perceptions of the costs and benefits associated with this activity, but is also influenced by the actor's peers.

The results of this research attest to the value of an integrated model for anabolic steroid use. Rational choice theory and social learning theories are complementary theories. Rational choice theory examines how a male bodybuilder weights the costs and benefits associated with steroid use. Social learning theory considers antecedent factors (e.g. peer group, attitudes) which influence the rational choice calculation.

In future research, other theories could be incorporated into an integrated model of steroid use. Social bond measures could be included in such a model. These measures could include attachment to family and other conventional peers, as well as well as involvement in conventional institutions (e.g. education, employment, and religion). In the current undertaking, church attendance was positively corre-

lated with future steroid use. The inclusion of additional social bond measures could determine if steroid use is in fact not part of the typical deviant mentality. An integrated model could also benefit from some measure of identity salience. Perhaps the salience of the identity of a bodybuilder may be related to steroid use. Finally, psychological scales which measure self-esteem and self-efficacy could also be included. Low self-esteem and/or low self-efficacy could be related to steroid use. Future research on this topic which uses a such an integrated model on a larger sample would be extremely valuable in adding to our understanding of anabolic steroid use.

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APPENDIX A  
Survey Questionnaire

## BODYBUILDING AND STEROIDS

There has been a growing concern about the use of steroids by male bodybuilders and others involved in physical fitness. Yet, we know relatively little about the attitudes, beliefs, and behaviors of these individuals regarding steroids. The purpose of this study is to collect information on this subject. I am asking only male bodybuilders and weightlifters to fill out this survey as part of my master's thesis. Having been personally involved in weight training for several years, I realize that male bodybuilders and weightlifters have important opinions concerning this subject.

In order for my results to represent the attitudes, beliefs, and behaviors of male bodybuilders and weightlifters, it is important that all of the surveys be completed and returned to me in the attached self-addressed envelope. The mailing won't cost you anything, since the postage has been prepaid. By mailing back the survey directly to me, there is no way anyone can determine who participated in the study. **YOU ARE GUARANTEED COMPLETE ANONYMITY AND CONFIDENTIALITY.** It should only take you a few minutes to complete this survey. Obviously, your participation is completely voluntary, but I would greatly appreciate your help on this important project.

THANK YOU FOR YOUR HELP.

Keith F. Durkin  
Department of Sociology  
Virginia Tech  
Blacksburg, Va. 24061  
Phone: (703)-231-6455

**For each item, please place the number of the response you have chosen in the blank preceding that item.**

1. Here are some questions about physical fitness. Please indicate the extent to which you agree or disagree with each of these statements using the following response codes:

1 = Agree strongly	4 = Disagree slightly
2 = Agree moderately	5 = Disagree moderately
3 = Agree slightly	6 = Disagree strongly

- \_\_\_\_\_ A. Americans in general are more fitness conscious now than they were 20 years ago.
- \_\_\_\_\_ B. Men with muscular physiques tend to be more self-disciplined than those who do not have such physiques.
- \_\_\_\_\_ C. I personally feel it is important for a male to have a muscular physique.
- \_\_\_\_\_ D. My friends think it is important for a male to have a muscular physique.
- \_\_\_\_\_ E. Women find muscular men more attractive than non-muscular men.
- \_\_\_\_\_ F. Being physically fit and having a muscular physique is highly valued in our society.

2. Each of the following items expresses an attitude or viewpoint about steroid use by male bodybuilders (these steroids include anabolic steroids, androgenic steroids, and artificial growth hormones). Please indicate your agreement or disagreement with each statement by using the following response code:

1 = Agree strongly	4 = Disagree slightly
2 = Agree moderately	5 = Disagree moderately
3 = Agree slightly	6 = Disagree strongly

- \_\_\_\_\_ A. A bodybuilder who doesn't take steroids ends up losing out in the end to those who do.
- \_\_\_\_\_ B. Using steroids is not as serious as using other drugs (e.g. cocaine, marijuana).

- \_\_\_ C. There is no acceptable justification for using steroids.
- \_\_\_ D. There is no harm involved in using steroids.
- \_\_\_ E. Using steroids is taking the 'easy way out'.
- \_\_\_ F. There is nothing wrong with using steroids if you are dedicated to bodybuilding.

**Here are some items about perceptions of, and reactions to steroid use.**

- \_\_\_ 3. What portion of male bodybuilders do you think have used steroids?

- |                                  |                                  |
|----------------------------------|----------------------------------|
| 1 = None                         | 4 = About half                   |
| 2 = Very few                     | 5 = Significantly more than half |
| 3 = Significantly less than half | 6 = Practically all              |

- \_\_\_ 4. What portion of your friends who are involved in bodybuilding do you think have used steroids?

- |                                  |                                  |
|----------------------------------|----------------------------------|
| 1 = None                         | 4 = About half                   |
| 2 = Very few                     | 5 = Significantly more than half |
| 3 = Significantly less than half | 6 = Practically all              |

- \_\_\_ 5. How would your parents react if they found out you had used steroids?

- |                                       |                         |
|---------------------------------------|-------------------------|
| 1 = Very negatively                   | 4 = Somewhat positively |
| 2 = Somewhat negatively               | 5 = Very positively     |
| 3 = Neither negatively nor positively | 9 = Don't Know          |

- \_\_\_ 6. How would your **best friend** react if he/she found out you had used steroids?

- |                                       |                         |
|---------------------------------------|-------------------------|
| 1 = Very negatively                   | 4 = Somewhat positively |
| 2 = Somewhat negatively               | 5 = Very positively     |
| 3 = Neither negatively nor positively | 9 = Don't Know          |

- \_\_\_\_\_ 7. How would your **friends who are involved in bodybuilding** react if they found out you had used steroids?
- |  |                         |
|--|-------------------------|
| 1 = Very negatively                      | 4 = Somewhat positively |
| 2 = Somewhat negatively                  | 5 = Very positively     |
| 3 = Neither negatively<br>nor positively | 9 = Don't Know          |
- \_\_\_\_\_ 8. In general, how do you think most male bodybuilders regard steroid use?
- |  |                         |
|--|-------------------------|
| 1 = Very negatively                      | 4 = Somewhat positively |
| 2 = Somewhat negatively                  | 5 = Very positively     |
| 3 = Neither negatively<br>nor positively | 9 = Don't Know          |
- \_\_\_\_\_ 9. How do you think most of your **friends who are involved in bodybuilding** regard steroid use?
- |  |                         |
|--|-------------------------|
| 1 = Very negatively                      | 4 = Somewhat positively |
| 2 = Somewhat negatively                  | 5 = Very positively     |
| 3 = Neither negatively<br>nor positively | 9 = Don't Know          |
- \_\_\_\_\_ 10. How do you think most of your **other friends** regard steroid use?
- |  |                         |
|--|-------------------------|
| 1 = Very negatively                      | 4 = Somewhat positively |
| 2 = Somewhat negatively                  | 5 = Very positively     |
| 3 = Neither negatively<br>nor positively | 9 = Don't Know          |
11. Each of the following items deals with your perceptions of the possible risks and benefits associated with steroid use. Use the following response code to answer these items:
- |                         |                          |
|-------------------------|--------------------------|
| 1 = Not at all likely   | 5 = High likelihood      |
| 2 = Very low likelihood | 6 = Very high likelihood |
| 3 = Low likelihood      | 9 = Don't Know           |
| 4 = Moderate likelihood |                          |
- \_\_\_\_\_ A. How likely do you think it is that the average male bodybuilder who uses steroids will suffer negative physical side effects? (e.g. liver damage, reproductive system damage, hair loss, acne)

- \_\_\_\_\_ B. How likely do you think it is that the average male bodybuilder who uses steroids will experience negative psychological side effects? (e.g. irritability, aggression, mood swings, depression)
- \_\_\_\_\_ C. How likely do you think it is that the average male bodybuilder who uses steroids will become addicted to steroids?
- \_\_\_\_\_ D. How likely do you think it is that the average male bodybuilder who uses steroids will be arrested for the possession of steroids?
- \_\_\_\_\_ E. How likely do you think it is that the average male bodybuilder who uses steroids will increase his muscle size?
- \_\_\_\_\_ F. How likely do you think it is that the average male bodybuilder who uses steroids will become more defined?
- \_\_\_\_\_ G. How likely do you think it is that the average male bodybuilder who uses steroids will become stronger?
- \_\_\_\_\_ H. How likely do you think it is that the average male bodybuilder who uses steroids will become more attractive to members of the opposite sex?
- \_\_\_\_\_ I. How likely do you think it is that the average male bodybuilder who uses steroids will increase his self-esteem?

12. Please indicate how serious you think possible risks associated with steroids are by using the following response code:

1 = Not at all serious	4 = Very serious
2 = Not very serious	5 = Extremely serious
3 = Somewhat serious	9 = Don't Know

- \_\_\_\_\_ A. How serious do you think the physical side effects associated with steroid use are (e.g. liver damage, reproductive system damage, hair loss, acne)?
- \_\_\_\_\_ B. How serious do you think the psychological side effects associated with steroid use are (e.g. irritability, aggression, mood swings, depression)?

- \_\_\_ C. How serious do you think addiction to steroids is?
- \_\_\_ D. How serious do you think the penalties for steroid possession are?

13. Please indicate your opinion of the magnitude of the possible benefits associated with steroids by using the following response code:

- |                       |                         |
|-----------------------|-------------------------|
| 1 = No increase       | 4 = Large increase      |
| 2 = Small increase    | 5 = Very large increase |
| 3 = Moderate increase | 9 = Don't Know          |

- \_\_\_ A. How much of an increase in muscle size will the average male bodybuilder get from using steroids?
- \_\_\_ B. How much of an increase in definition will the average male bodybuilder get from using steroids?
- \_\_\_ C. How much of an increase in strength will the average male bodybuilder get from using steroids?
- \_\_\_ D. How much of an increase in attractiveness to members of the opposite sex will the average male bodybuilder get from using steroids?
- \_\_\_ E. How much of an increase in self-esteem will the average male bodybuilder get from using steroids?

**The following are some general items about steroid use.**

- \_\_\_ 14. Rate the risks associated with using steroids relative to the gains associated with using anabolic steroids?

- |   |
|---|
| 1 = Risks outweigh the gains by a large margin    |
| 2 = Risks outweigh the gains by a moderate margin |
| 3 = Risks outweigh the gains by a slight margin   |
| 4 = Risks and gains are relatively equal          |
| 5 = Gains outweigh the risks by a slight margin   |
| 6 = Gains outweigh the risks by a moderate margin |
| 7 = Gains outweigh the risks by a large margin    |

- \_\_\_ 15. If a male bodybuilder wants to use steroids, how easy do you think it would be for him to get them?

- |                        |                   |
|------------------------|-------------------|
| 1 = Very difficult     | 3 = Somewhat easy |
| 2 = Somewhat difficult | 4 = Very easy     |



\_\_\_\_\_ 24. Do you hope to enter a bodybuilding competition in the future?

1 = No

2 = Yes

\_\_\_\_\_ 25. Have you ever participated in high school or intercollegiate sports?

1 = No

2 = Yes (which ones)

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

\_\_\_\_\_ 26. How old are you? (please fill in blank)

\_\_\_\_\_ 27. Are you married? 1 = No 2 = Yes

\_\_\_\_\_ 28. Do you have any children? 1 = No 2 = Yes

\_\_\_\_\_ 29. What race are you?

1 = Caucasian

3 = Asian-American

2 = African-American

4 = Other

\_\_\_\_\_ 30. Which of the following best describes your occupation?

1 = Student

5 = Skilled laborer

2 = Business owner/  
proprietor

6 = Unskilled laborer

3 = Manager or  
professional

7 = Other

4 = Clerical or sales

\_\_\_\_\_ 31. What is the last grade or level in school you completed?

1 = 8th grade or less

4 = Some college

2 = Some high school

5 = College graduate

3 = High school graduate

6 = Post graduate work

\_\_\_\_\_ 32. How often do you attend religious services?

- 0 = Never
- 1 = Less than once a year
- 2 = About once or twice a year
- 3 = Several times a year
- 4 = About once a month
- 5 = Two or three times a month
- 6 = Nearly every week
- 7 = Every week
- 8 = Several times a week

---

**Please use the space below for any additional comments about steroid use by male bodybuilders you may have.**

**THANK YOU FOR YOUR HELP ON THIS PROJECT. PLEASE RETURN THIS COMPLETED SURVEY IN THE ATTACHED SELF-ADDRESSED ENVELOPE.**

APPENDIX B

Tables

Table 1

Descriptive Statistics

1A. Americans in general are more fitness conscious now than they were 20 years ago.

1 - Agree strongly	61.2%
2	26.6%
3	6.1%
4	4.1%
5	2.0%
6 - Disagree strongly	0.0%
	MEAN = 1.59
	S.D. = 0.93

1B. Men with muscular physiques tend to be more self-disciplined than those who do not have such physiques.

1 - Agree strongly	18.4%
2	34.7%
3	24.5%
4	10.2%
5	6.1%
6 - Disagree strongly	6.1%
	MEAN = 2.69
	S.D. = 1.39

1C. I personally feel it is important for a male to have a muscular physique.

1 - Agree strongly	26.5%
2	26.5%
3	30.6%
4	8.2%
5	4.1%
6 - Disagree strongly	4.1%
	MEAN = 2.49
	S.D. = 1.31

1D. My friends think it is important for a male to have a muscular physique.

1 - Agree strongly	18.4%
2	12.2%
3	38.8%
4	12.2%
5	10.2%
6 - Disagree strongly	8.2%
	MEAN = 3.08
	S.D. = 1.47

1E. Women find muscular men more attractive than non-muscular men.

1 - Agree strongly	22.9%
2	47.9%
3	22.9%
4	2.1%
5	2.1%
6 - Disagree strongly	2.1%
	MEAN = 2.19
	S.D. = 1.02

1F. Being physically fit and having a muscular physique is highly valued in our society.

1 - Agree strongly	32.7%
2	28.5%
3	32.7%
4	6.1%
5	0.0%
6 - Disagree strongly	0.0%
	MEAN = 2.12
	S.D. = 0.95

2A. A bodybuilder who doesn't take steroids ends up losing out in the end to those who do.

1 - Agree strongly	14.3%
2	4.1%
3	4.1%
4	4.1%
5	10.2%
6 - Disagree strongly	63.2%
	MEAN = 4.82
	S.D. = 1.88

2B. Using steroids is not as serious as using other drugs (e.g. cocaine, marijuana).

1 - Agree strongly	2.0%
2	6.1%
3	8.2%
4	8.2%
5	20.4%
6 - Disagree strongly	55.1%
	MEAN = 5.04
	S.D. = 1.37

2C. There is no acceptable justification for using steroids.

1 - Agree strongly	32.7%
2	14.3%
3	8.2%
4	28.5%
5	10.2%
6 - Disagree strongly	6.1%
	MEAN = 2.88
	S.D. = 1.65

2D. There is no harm involved in using steroids.

1 - Agree strongly	2.0%
2	4.1%
3	0.0%
4	6.1%
5	18.4%
6 - Disagree strongly	69.4%
	MEAN = 5.43
	S.D. = 1.14

2E. Using steroids is taking the 'easy way out'.

1 - Agree strongly	48.9%
2	18.4%
3	18.4%
4	8.2%
5	0.0%
6 - Disagree strongly	6.1%
	MEAN = 2.10
	S.D. = 1.42

2F. There is nothing wrong with using steroids if you are dedicated to bodybuilding.

1 - Agree strongly	2.0%
2	2.0%
3	4.1%
4	16.3%
5	18.4%
6 - Disagree strongly	57.2%
	MEAN = 5.27
	S.D. = 1.05

3. What portion of male bodybuilders do you think have used steroids?

1 - None	0.0%
2 -	0.0%
3 -	14.6%
4 -	45.8%
5 -	16.7%
6 - Practically all	22.9%
	MEAN = 4.48
	S.D. = 1.01

4. What portion of your friends who are involved in bodybuilding do you think have used steroids?

1 - None	12.2%
2 -	32.8%
3 -	26.5%
4 -	16.3%
5 -	10.2%
6 - Practically all	2.0%
	MEAN = 2.86
	S.D. = 1.26

5. How would your parents react if they found out you had used steroids?

1 - Very negatively	73.9%
2 -	23.9%
3 -	2.2%
4 -	0.0%
5 - Very positively	0.0%
	MEAN = 1.28
	S.D. = 0.50

6. How would your **best friend** react if he/she found out you had used steroids?

1 - Very negatively	50.0%
2 -	40.9%
3 -	9.1%
4 -	0.0%
5 - Very positively	0.0%
	MEAN = 1.59
	S.D. = 0.66

7. How would your **friends who are involved in bodybuilding** react if they found out you had used steroids?

1 - Very negatively	17.8%
2 -	40.0%
3 -	35.6%
4 -	6.6%
5 - Very positively	0.0%
	MEAN = 2.31
	S.D. = 0.85

8. In general, how do you think most male bodybuilders regard steroid use?

1 - Very negatively	4.3%
2 -	52.2%
3 -	10.9%
4 -	23.9%
5 - Very positively	8.7%
	MEAN = 2.80
	S.D. = 1.13

9. How do you think most of your **friends who are involved in bodybuilding** regard steroid use?

1 - Very negatively	14.9%
2 -	59.6%
3 -	10.6%
4 -	12.8%
5 - Very positively	2.1%
	MEAN = 2.78
	S.D. = 0.95

10. How do you think most of your **other friends** regard steroid use?

1 - Very negatively	43.8%
2 -	43.8%
3 -	12.4%
4 -	0.0%
5 - Very positively	0.0%
	MEAN = 1.69
	S.D. = 0.69

11A. How likely do you think it is that the average male bodybuilder who uses steroids will suffer negative physical side effects?

1 - Not at all likely	2.1%
2 -	2.1%
3 -	6.3%
4 -	20.7%
5 -	41.7%
6 - Very high likelihood	27.1%
	MEAN = 4.79
	S.D. = 1.11

11B. How likely do you think it is that the average male bodybuilder who uses steroids will experience negative psychological side effects?

1 - Not at all likely	2.0%
2 -	6.0%
3 -	4.0%
4 -	16.0%
5 -	34.0%
6 - Very high likelihood	38.0%
	MEAN = 4.88
	S.D. = 1.26

11C. How likely do you think it is that the average male bodybuilder who uses steroids will become addicted to steroids?

1 - Not at all likely	0.0%
2 -	9.1%
3 -	13.6%
4 -	31.9%
5 -	29.5%
6 - Very high likelihood	15.9%
	MEAN = 4.30
	S.D. = 1.17

11D. How likely do you think it is that the average male bodybuilder who uses steroids will be arrested for the possession of steroids?

1 - Not at all likely	23.4%
2 -	38.4%
3 -	34.0%
4 -	2.1%
5 -	0.0%
6 - Very high likelihood	2.1%
	MEAN = 2.23
	S.D. = 0.98

11E. How likely do you think it is that the average male bodybuilder who uses steroids will increase his muscle size?

1 - Not at all likely	0.0%
2 -	0.0%
3 -	0.0%
4 -	6.0%
5 -	28.0%
6 - Very high likelihood	66.0%
	MEAN = 5.60
	S.D. = 0.61

11F. How likely do you think it is that the average male bodybuilder who uses steroids will become more defined?

1 - Not at all likely	2.1%
2 -	4.2%
3 -	8.3%
4 -	20.8%
5 -	33.3%
6 - Very high likelihood	31.3%
	MEAN = 4.73
	S.D. = 1.23

11G. How likely do you think it is that the average male bodybuilder who uses steroids will become stronger?

1 - Not at all likely	0.0%
2 -	0.0%
3 -	2.0%
4 -	8.0%
5 -	34.0%
6 - Very high likelihood	56.0%
	MEAN = 5.44
	S.D. = 0.73

11H. How likely do you think it is that the average male bodybuilder who uses steroids will become more attractive to members of the opposite sex?

1 - Not at all likely	0.0%
2 -	4.4%
3 -	26.7%
4 -	42.2%
5 -	17.8%
6 - Very high likelihood	8.9%
	MEAN = 4.02
	S.D. = 1.00

11I. How likely do you think it is that the average male bodybuilder who uses steroids will increase his self-esteem?

1 - Not at all likely	0.0%
2 -	4.1%
3 -	2.0%
4 -	38.8%
5 -	36.7%
6 - Very high likelihood	18.4%
	MEAN = 4.63
	S.D. = 0.95

12A. How serious do you think the physical side effects associated with steroid use are?

1 - Not at all serious	0.0%
2 -	2.0%
3 -	22.4%
4 -	28.6%
5 - Extremely serious	47.0%
	MEAN = 4.20
	S.D. = 0.87

12B. How serious do you think the psychological side effects associated with steroid use are?

1 - Not at all serious	2.1%
2 -	8.3%
3 -	22.9%
4 -	35.4%
5 - Extremely serious	31.3%
	MEAN = 3.85
	S.D. = 1.03

12C. How serious do you think addiction to steroids is?

1 - Not at all serious	0.0%
2 -	13.6%
3 -	29.5%
4 -	22.7%
5 - Extremely serious	34.2%
	MEAN = 3.77
	S.D. = 1.08

12D. How serious do you think the penalties for steroid possession are?

1 - Not at all serious	14.0%
2 -	34.9%
3 -	20.9%
4 -	11.6%
5 - Extremely serious	18.6%
	MEAN = 2.86
	S.D. = 1.34

13A. How much of an increase in muscle size will the average male bodybuilder get from using steroids?

1 - No increase	0.0%
2 -	0.0%
3 -	14.3%
4 -	61.2%
5 - Very large increase	24.5%
	MEAN = 4.10
	S.D. = 0.62

13B. How much of an increase in definition will the average male bodybuilder get from using steroids?

1 - No increase	4.2%
2 -	12.5%
3 -	37.4%
4 -	31.3%
5 - Very large increase	14.6%
	MEAN = 3.40
	S.D. = 1.03

13C. How much of an increase in strength will the average male bodybuilder get from using steroids?

1 - No increase	0.0%
2 -	2.0%
3 -	16.3%
4 -	49.0%
5 - Very large increase	32.7%
	MEAN = 4.12
	S.D. = 0.75

13D. How much of an increase in attractiveness to members of the opposite sex will the average male bodybuilder get from using steroids?

1 - No increase	7.0%
2 -	41.9%
3 -	23.2%
4 -	20.9%
5 - Very large increase	7.0%
	MEAN = 2.79
	S.D. = 1.08

13E. How much of an increase in self-esteem will the average male bodybuilder get from using steroids?

1 - No increase	2.1%
2 -	14.9%
3 -	31.9%
4 -	36.2%
5 - Very large increase	14.9%
	MEAN = 3.47
	S.D. = 1.00

14. Rate the risks associated with using steroids relative to the gains associated with using anabolic steroids?

1 - Risks outweigh gains by large margin	60.0%
2 -	14.0%
3 -	6.0%
4 -	6.0%
5 -	6.0%
6 -	4.0%
7 - Gains outweigh risks by large margin	4.0%
	MEAN = 2.12
	S.D. = 1.77

15. If a male bodybuilder wants to use steroids, how easy do you think it would be for him to get them?

1 - Very difficult	2.0%
2 -	8.0%
3 -	44.0%
4 - Very easy	46.0%
	MEAN = 3.34
	S.D. = 0.71

16. Have you **ever** used steroids?

0 - No	72.0%
1 - Yes	28.0%

17. Have you used steroids **in the past six months**?

0 - No	92.0%
1 - Yes	8.0%

18. If the opportunity to take steroids were to arise **in the future**, do you think you would or would not use them?

1 - Definitely would not use steroids	70.0%
2 -	6.0%
3 -	10.0%
4 -	6.0%
5 -	4.0%
6 - Definitely would use steroids	4.0%
	MEAN = 1.80
	S.D. = 1.43

19. How close are you to what you consider to be your ideal physique?

1 - Not at all close	10.0%
2 -	22.0%
3 -	52.0%
4 -	14.0%
5 - Already at my ideal physique	2.0%
	MEAN = 2.76
	S.D. = 0.89

20. How long have you been lifting weights?

1 - Less than a year	10.0%
2 -	30.0%
3 -	20.0%
4 - More than five years	40.0%
	MEAN = 2.90
	S.D. = 1.06

21. How many times a week do you lift weights?

1 - Less than once a week	0.0%
2 -	4.0%
3 -	42.0%
4 - Five times a week or more	54.0%
	MEAN = 3.50
	S.D. = 0.58

22. Are you on a special diet for bodybuilding?

1 - No	52.0%
2 - Yes	48.0%

23. Have you ever entered a bodybuilding competition?

1 - No	88.0%
2 - Yes	12.0%

24. Do you hope to enter a bodybuilding competition in the future?

1 - No	70.0%
2 - Yes	30.0%

25. Have you ever participated in high school or intercollegiate sports?		
1 - No		16.0%
2 - Yes		84.0%
26. How old are you?	MEAN = 25.2	
	S.D. = 5.21	
27. Are you married?		
1 - No		78.0%
2 - Yes		22.0%
28. Do you have any children?		
1 - No		82.0%
2 - Yes		18.0%
29. What race are you?		
1 - Caucasian		88.0%
2 - African-American		4.0%
3 - Asian-American		6.0%
4 - Other		2.0%
30. Which of the following best describes your occupation?		
1 - Student		42.0%
2 - Business owner/proprietor		6.0%
3 - Manager or professional		34.0%
4 - Clerical or sales		6.0%
5 - Skilled laborer		8.0%
6 - Unskilled laborer		2.0%
7 - Other		2.0%
31. What is the last grade or level in school you completed?		
1 - 8th grade or less		0.0%
2 - Some high school		0.0%
3 - High school graduate		2.0%
4 - Some college		56.0%
5 - College graduate		34.0%
6 - Post graduate work		8.0%
	MEAN = 4.48	
	S.D. = 0.68	

32. How often do you attend religious services?

0 - Never	10.0%
1 - Less than once a year	8.0%
2 - About once or twice a year	24.0%
3 - Several times a year	22.0%
4 - About once a month	6.0%
5 - Two or three times a month	6.0%
6 - Nearly every week	14.0%
7 - Every week	8.0%
8 - Several times a week	2.0%
	MEAN = 3.32
	S.D. = 2.19

Table 2

Mean Values for Future Steroid Use  
by Levels of Control Variables

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	Mean Value for Future Steroid Use
Occupation	
Student	1.76
Non-Student	1.83
Race	
Caucasian	1.71
Other	2.50
Age	
≤ 25	1.97
> 25	1.50
Special Diet	
Yes	2.04
No	1.58
Entered Competition	
Yes	2.00
No	1.77
Enter Competition in Future	
Yes	2.00
No	1.71
Participated in sports	
Yes	1.67
No	2.50
Marital Status	
Married	1.64
Not Married	1.85
Children	
Yes	1.78
No	1.81

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\*  $p < .05$

Table 3  
Zero-Order Correlations

Independent Variable	Previous Steroid Use	Future Steroid Use
1. Rational Choice		
a. Benefits	.1705	.3410**
Magnitude	.1650	.3050*
Likelihood	.1220	.2562
b. Costs	-.1622	-.4484**
Magnitude	-.0156	-.3113*
Likelihood	-.2772	-.4692**
c. General Utility (Q14)	.3897**	.6155**
2. Social Learning		
a. Pro-steroid Attitudes	.2676	.4135**
b. Differential Ass. Scale (Q3 Q4)	.4041**	.4903**
Parents React	.1943	-.1722
Best Friend React	.3065*	-.0737
BB Friends React	.2557	.3903**
Male BB Regard	-.0289	.2735
BB Friends Regard	.2953	.6899**
Other Friends Regard	.0529	-.0953
3. General Attitudes	.1305	-.2719
4. General Items		
Opportunity	-.1104	.0677
Ideal Physique	.2731	.2334
Yrs. Lifting	.2731	-.0135
Freq. of Training	.0000	-.0985
5. Social Structural Var.		
Education	-.1143	.0380
Church Attendance	.0723	.3798**

\*p<.05    \*\*p<.01

Table 4

Logistic Regression Coefficients  
for Selected Independent Variables  
with Previous Steroid Use

Variables	r	Model 1	Model 2
Differential Ass. Scale	.4041**	.467*	.563*
General Utility	.3897**	.144	.094
Best Friends Reaction	.3065*		.632*
R <sup>2</sup> (ols)		.175	.2543
F		4.11*	4.37*

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

Table 5

Standardized Regression Coefficients  
for Selected Independent Variables  
with Future Steroid Use

Variables	r	Model 3	Model 4	Model 5	Model 6
Gen. Utility	.6155**	.4015**	.3552*	.3417*	.3181*
BB Friends Regard	.6899**	.5381**	.4597**	.4511**	.4451**
Diff. Ass.	.4903**		.1599	.1349	.1398
Church Att.	.3798**			.2124*	.2136*
Pro-Steroid Attitudes	.4135**				.0380
R <sup>2</sup>		.5941	.6089	.6525	.6534
F		31.5**	21.8**	19.24**	15.1**

\*p<.05    \*\*p<.01

## **Vita**

Keith F. Durkin was born in Kearny, New Jersey on July 24, 1967. He attendend Marywood College in Scranton, Pennsylvania from 1985-1990. He received a bachelor's degree in Sociology, magna cum laude, in May 1990. He began graduate studies in Sociology at Virginia Polytechnic Institute and State University in August 1990, and is receiving his master's degree in December, 1992.

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