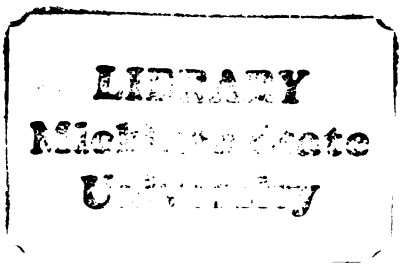

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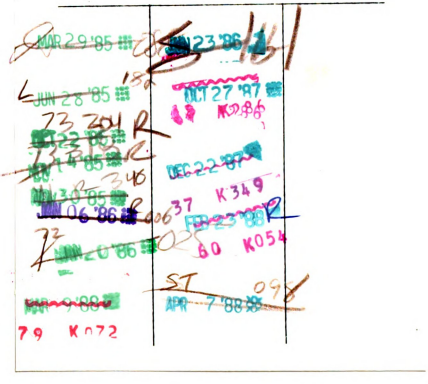

ANXIETY AND ACTIVATION THEORY:
AN EXPLORATORY STUDY

By

Richard Genirberg

A THESIS

Submitted to
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ABSTRACT

ANXIETY AND ACTIVATION THEORY: AN EXPLORATORY STUDY

By

Richard Genirberg

This study investigated the relationship between the level of anxiety reported by clients before psychotherapy and change in reported symptoms and the average intensity of interpersonal reflexes over the course of therapy. Sixty-three male and female adult clients completed intrapersonally and interpersonally oriented self-report inventories before therapy commenced, during the course of therapy, and after termination.

It was hypothesized that a moderate level of reported anxiety before therapy would be predictive of greater change over the course of therapy than lower or higher levels of reported anxiety. This hypothesis was confirmed. It was also hypothesized that when cases with at least one elevated dimension of distress (besides Anxiety) were selected, and divided into high- and low-anxiety groups, the high-anxiety group would show greater change over the course of therapy. This was not confirmed. Finally, it was hypothesized that intrapersonal and interpersonal measures would correlate both before and over the course of therapy. The former prediction was not confirmed while the latter was partially confirmed.

To Helen Hendrickson,
who planted the seed that
sprouted a career in the
field of psychology

To the memory of
Noel Morrell, M.D.,
who shared his last
months with me

and

to Marolyn for her love

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Of course there would have been no study without the participation of the clients and therapists at the M.S.U. Psychological Clinic.

Drs. William Mueller, Albert Aniskiewicz, Joanne Hamachek, and Imogen Bowers of the M.S.U. Counseling Center helped me develop my ideas about therapy by helping me to develop myself professionally and personally over the course of two years of internship.

Dr. Gershen Kaufman was a constant source of support. His persistant challenge to the state of the art in metapsychological theory galvanized me to question my own assumptions and to examine alternatives seriously.

I am eternally indebted to my parents for their years of effort, struggle, and sacrifice.

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INTRODUCTION

From Freud's instinctual orientation to Skinner's behaviorism, psychotherapists have interpreted anxiety in a multitude of fashions. Regardless of one's theoretical orientation, anxiety is clearly an aversive experience relevant to us all. Our colloquial parlance brims with phrases describing situations, people, and internal states that are anxiety-provoking. We struggle with our experience of anxiety to understand, manage, alleviate, and/or "break through" it by introspecting, meditating, relaxing, talking, or "primally" screaming it out.

Among psychotherapists, approaches to the discomfort of anxiety are as numerous as schools of thought on the topic. Certainly it is a phenomenon all psychotherapists must experience and address as professionals. When clients present a problem to a psychotherapist, the experience of anxiety is nearly always confronted as a concomitant of the problem, if not the main source of discomfort. In this study, anxiety was viewed from a number of perspectives and some hypotheses proposed regarding the symptoms that are or are not accompanied by anxiety. It is of interest whether, and to what extent, the presence of anxiety is conducive to change in psychotherapy, i.e., whether anxiety serves a motivational or a debilitating function. Ultimately, it would be of interest to psychotherapists to be able to demonstrate empirically that the presence of anxiety is of predicitive value with regard to the course of therapy and of prognostic value with regard to outcome.

REVIEW OF THE LITERATURE

The Existential Perspective of May and Tillich

In an attempt to stimulate further inquiry on the topic, and to propose a definition of anxiety as "the experience of Being affirming itself against Nonbeing" (p. xxi), May (1979) examined interpretations of anxiety by (among others) psychologists and psychotherapists and reviewed the prescientific underpinnings of these interpretations in the field of philosophy. He observed that philosophical creativity bloomed when Western culture emerged from the Dark Ages with the advent of the Renaissance because religious absolutism gave way to more diverse viewpoints of culture. In the 17th century, the ideas of philosophers such as Descartes, Spinoza, and Pascal had a tremendous impact on their societies. Their postulates are still important today because they are implicitly embedded throughout modern psychological theory.

May wrote that Descartes' introduction of the idea that the mind and the body are seperate was an important step in relieving Western culture of religious tyranny. It is ironic that today this idea is popularly decried as a major source of identity confusion. The notion that the soul could not influence the body was influential in bringing to an end the practice of witch burning (May, 1979). As a reaction to the prerenaissance idea of supernaturally motivated causation and motivation, philosophers began thinking in terms of autonomous or mathematical reasonsing.

Spinoza invested so much faith in reason as to believe that emotions could be defused of their potency through mathematical reasoning. He gave a twist to Descartes' formulation of the mind/body question by postulating that the two processes function in parallel. For him, emotions were mental products and could be controlled through careful thinking. Spinoza avoided confronting the problem of anxiety by relying on courage to overcome such mental "weaknesses" as fear and hope. He viewed hope and fear as mutually dependent, and regarded both as a function of doubt. Doubt was to be overcome by the use of reason, so fear had no place in the minds of healthy people. In the 17th century, only Pascal rejected the doctrine of mathematical rationalism. He expressed his attitude poetically in the famous phrase, "The heart has reasons which the reason knows not of" (May, 1979, p. 27). Pascal avoided assigning sovereignty to the intellect, but only tentatively confronted anxiety as a genuine problem in life.

The philosophical climate was very different in the 19th century. Kierkegaard confronted the problem of anxiety directly. The belief in autonomous or mathematical reasoning was no longer adequate to explain culture and human behavior. Existentialists such as Nietzsche, Feuerbach, Schopenhauer, and Kierkegaard decried the abstraction of life by the rationalists. They argued that much of reality was denied by cutting off the passionate and irrational aspects of the human being; that rationalistic systems are artificially objective. The existentialists sought to assimilate actions and commitment into their view of reality. Hegelian dialectics was rejected by Kierkegaard as mere trickery (May, 1979). The Cartesian mind/body split, which helped lead culture out of the Middle Ages, was rejected by the existential thinkers

as a denial of man's true nature. This split was blamed for draining man of his vital energies and for rendering life meaningless.

Tillich (1944) summarized the common thread of existential philosophy contextually and temporally,

> What all philosophers of Existence oppose is the "rational" system of thought and life developed by Western industrial society and its philosophical representitives. During the last hundred years the implications of this system have become increasingly clear: a logical or naturalistic mechanism which seemed to destroy individual freedom, personal decision and organic community; an analytic rationalism which saps the vital forces of life and transforms everything, including man himself, into an object of calculation and control; a secularized humanism which cuts man and the world off from the creative Source and the ultimate mystery of existance....[They achieved] fundamental insights into the sociological structure of modern society and the psychological dynamics of modern man. (p. 66)

Regarding the temporal perspective, Tillich (1944) observed,

> Historically speaking, the Existential philosophy attempts to return to a pre-Cartesian attitude...in which the sharp gulf between the subjective and the objective "realms" had not yet been created, and the essence of objectivity could be found in the depth of subjectivity. (p. 67)

By the end of the 19th century, the stage was set for the introduction of a system of thought whose major feature could be the reassimilation of the irrational features of human experience that the age of reason had argued away. Tillich (1944) strove to integrate philosophy and psychology with the existential perspective,

> All the Existential philosophers and their predecessors have developed ontology in psychological terms....We find the belief that the innermost center of Nature lies in the heart of man....An especially important example of this ontological use of a psychological term is the conception of "Will" as the untimate principle of Being....We find this in...the "Unconscious" of Hartmann and Freud. (pp. 58-59)

By couching his theories in *scientific* terms, Freud brought the irrational back into the study of human affairs without resorting to the supernatural hocus pocus and religious absolutism of medieval times.

Classical Psychoanalysis: A Theory of Biological Drive Impulses

Freud's first theory of anxiety postulated that anxiety evolved from a damming up of libido in the psyche. He posited that this was due to either an internal or external blocking of discharge (Freud, 1895/1962). Anxiety was distinguished from fear by the presence or absence of an external threat. Thus, anxiety was considered to be transformed drive energy.

Freud reformulated his notions about anxiety and introduced a second theory of anxiety (Freud, 1926/1959). Abandoning the notion that anxiety was a transformation of drive energy, this new theory of anxiety relied on what became known as the structural model for its foundation.

The structural model provided a consolidation of many psychoanalytic concepts that had been reformulated from paper to paper as Freud struggled to understand the organization of the human mind. In 1900, Freud (1953) hypothesized a relationship between mental functions that repress and those that are repressed. The mental systems associated with these functions were called conscious (ego) and unconscious, respectively. The concept of the unconscious was clarified further (Freud, 1912/1958, 1915/1957) into its descriptive usage -- referring to the quality of a mental state -- and its systematic or dynamic usage -- referring to the function of that mental state. This model was called topographical because specific modes of mental functioning were ascribed to the conscious and unconscious portions of the mind, and located spatially with respect to surface and depth. Freud asserted that the unconscious is governed by what was called the primary process which would seek immediate discharge of impulses and gratification of wishes. He described the conscious portion of the mind

as that part that would obey the secondary (ego) processes, which seek to set limits on the rate of discharge of impulses and delay gratification of wishes. Soon the concept of ego was disassociated from any parameters with respect to depth (Freud, 1920/1955) and the structural model was born (Freud, 1923/1959).

The structural model refers to the three functional agencies of the mind -- ego, id, and superego -- and displaced the predominance in psychoanalytic thought of the topographical model. The topographical point of view remained relevant, e.g., id and superego functions were still said to generate impulses that originate unconsciously, but the ego was described as functioning at the conscious (perceptual), preconscious (ideas and motives available to awareness), and unconscious levels (ideas, affects, and motives unavailable to awareness except through displaced and condensed derivatives).

The first theory of anxiety became the model for the actual (as opposed to the psycho-) neuroses (Fenichel, 1945). In the second theory of anxiety, the prototypic situation in which anxiety would develop is one that is either a traumatic or a danger situation (Freud, 1926/1959). The traumatic situation was associated with primary anxiety and was hypothesized to result from overstimulation of the psyche while the danger situation was hypothesized to lead to signal anxiety and the preparation for activity that would avoid primary anxiety. Anxiety was theorized to be generated from the id in primary anxiety and from the ego in signal anxiety. The typical danger situations, in chronological order from first experience, would be: loss of or abandonment by the loved object, e.g., mother; loss of the object's love, i.e., rejection or exclusion; castration, i.e., loss of potency; and guilt, or

disapproval and punishment of the superego (Freud, 1926/1959). These unconscious dangers were theorized to gain salience at different stages of development, with the last beginning to have impact after the fifth year of life. When any of these danger stiuations was perceived unconsciously, the ego would generate anxiety as a signal to ward off the instinctual impulses that would lead to one of the dangerous events mentioned above. This manifestation of anxiety was described as nonpathological. Indeed, the inability to generate signal anxiety was seen as a major hurdle to be overcome in the treatment of primitive mental states. The most advanced form of signal anxiety, resulting from moral anxiety, was theorized to persist throughout life (Freud, 1926/1959).

Traumatic situations, on the other hand, would arise out of the sexual and aggressive drives and be experienced by ego functions. The prototypic traumatic situation would be birth. The infant, having little or no ego developed, would be unable to discharge or master the overwhelming stimulation. Another example of an overwhelming amount of external stimuli would be the shell shock experienced during battles (Freud, 1919/1955). An example of an overwhelming influx of internal stimuli was typified by the buildup of sexual drive that remains undischarged due to external hinderences (Fenichel, 1945).

Object-Relations Theory: Interpersonal Need as Motivation

One viewpoint regarding the scientific principles underlying Freud's assumption that psychic structures were distinct from psychic energy (libido), was that he followed the Helmholtzian conception in physics that was current in his day (Fairbairn, 1952). In paralleling

the wave/particle theory of Einsteinian physics, Fairbairn also modeled his psychological theory on the current theoretical conceptions in physics and adopted the principle of dynamic structures (Fairbairn, 1952). In this psychology, structures were not divorced from the energy (libido) associated with them. The infant was assumed to be adaptable to its environment from birth, seeking satisfaction -- relief of tensions -- through object seeking. The ego was considered to be active from birth (not differentiated out of an id) and was itself considered the source of impulse-tension. According to Fairbairn (1952) this tension is,

> Inherently oriented toward outward reality...it is only insofar as conditions of adaptation becomes too difficult for the child that the reality principle gives place to the pleasure principle as a secondary, and deteriorative principle of behavior calculated to relieve tension and provide compensatory satisfaction. (p. 157)

The point is that from either the point of view of either object-seeking or instinct-satisfaction, in this theory libido would seek other objects, not simply nondirectional discharge, i.e., the relief of its own tensions (Fairbairn, 1952).

One consequence of this position was that anxiety was no longer associated only with ego structure, since the ego "structure" was not divorced from libidinal strivings. Anxiety was afforded the same position as in Freud's first theory of anxiety, viz., a transformation of excess libidinal energy into anxiety by means of aggression. The difference is that the "libidinal affect" strives for discharge with or into another person, not simply in general.

This divergence from the classical psychoanalytic position has profound implications for the psychotherapeutic situation. For if the

therapist adopts Fairbairn's position, a relationship would be offered to the client that is highly attuded to the reciprocal impact of the two participants upon each other in the experiential realm. Wolstein (1967) proposed a model of shared experience that takes into account the fact that the therapist "has no claim to special status as one who can simply erase his operant being from the awareness of others (p. 2). Others have gone so far as to call for a "holding environment" (Winnicot, 1965) or "interpersonal bridging" (Kaufmann, 1980) in the therapeutic situation.

Interpersonal Theory: Anxiety as a Threat to Self-Esteem

The Sullivanian conception of anxiety was directly an outgrowth of Freud's (1926) second theory of anxiety. For Sullivan also, anxiety was a signal of danger. The warning, according to Sullivan (1954) is "of impending disadvantage, and immediately calls out suspicions and various 'righting movements'" (p. 233). Rather than focusing on loss of love or the penis, Sullivan conceptualized the danger situation in terms of self-esteem (or euphoria, in children). The impending disadvantage Sullivan refered to is the loss of self-esteem. It is generally related to interpersonal situations in infancy and childhood in which one empathically, i.e., directly through affective contagion, experienced the approbation and disapproval of the most involved parent.

A "self-system" was said to arise, which is responsible for minutely focusing on the behavior of the child, with the aim of learning which patterns of behavior lead to approbation -- and so to increases in euphoria -- and which patterns lead to disapproval and concomitant decreases in euphoria. These patterns of behavior, as well as the

self-system itself, were called dynamisms by Sullivan (1954). He defined dynamism as "the relatively enduring pattern of energy transformations which recurrently characterize the organism in its duration as a living organism" (p. 103). An infant or child was theorized to respond to approbation because it leads to actual physical satisfaction in the form of decreased tension and the accompanying feeling of euphoria -- which is the precursor of what was labeled self-esteem in the adult. Obversely, Sullivan theorized that disapproval by the primary caretaker of the infant or child directly attenuates euphoria. Thus, the self-system would avoid anxiety producing situations by following the path of least anxiety (or greatest euphoria). The self-system, in its focusing capacity, would reduce one's awareness to include only those possibilities of activity that wouldn't produce one's awareness of decreased self-esteem -- anxiety. Thus, anxiety would set the limits or boundaries of the self-system. The adult would engage in behaviors that were approved of in childhood and actively avoids those situations which were actively disapproved of. Sullivan (1953b, p. 161) described these unconscious activities as personifications labeled "good me" and "bad me." They symbolized modes of interpersonal cooperation based on reward and punishment. Those dynamic interpersonal integrations which would lead to decreased tensions and increased euphoria would constitute the repertoire of propensities to activity that we experience when we say, "I." Besides "good me" and "bad me", a third personification, "not me," was posited to dilineate the role of anxiety in education. "Not me" represented the experience of the "uncanny" emotions, viz., awe, horror, loathing, and dread, which would be experienced outside of awareness.

When experiences in childhood are met by intense forbidding gestures on the part of a parent, Sullivan stated that intense anxiety would result. Since intense anxiety is hardly conducive to self-reflection or insightful analysis, one wouldn't learn much from such an experience. That is, cause and effect associations would not usually be formed. Thus, those attempted modes of interpersonal cooperation which provoked intensely forbidding gestures on the part of a parent would be simply dissociated from awareness. Eventually such interpersonal modes would arouse some combination of the uncanny feelings mentioned above. These uncanny feelings are one more elaboration of the Sullivanian conception of anxiety.

Affect Theory: Anxiety as Amplification of Experience

From the point of view of affect theorists (Tomkins, 1962; Izard & Tomkins, 1966; Izard, 1972) anxiety is defined as a combination of basic negative,and positive emotions, viz., fear, shame, distress, anger, and interest (Izard, 1972, p. 60). As such, anxiety is not only intrapersonally relevant as an indication that all is not well; it also is very relevant to the interpersonal realm. Indeed, Tomkins (1962) attempted to dissect the physiological basis of the interpersonal characteristics of affects, i.e., in terms of density of facial neural firing rates and inter-ocular responses between individuals.

Regarding psychotherapy, this is directly relevant to this study because of the nature of motivation in the therapy situation. Tomkins illustrated the independent-of-drives nature of excitement by noting that one can have excitement without sexual potency, but not the reverse. The point is that it is the affects that amplify the drives.

Since one component of anxiety is the affect of interest-excitement, perhaps individuals with more anxiety available to them would be more motivated than those without. Thus, in the therapy situation they might be more attuned to both their internal and external environments, and more available to the therapist and themselves.

Psychotherapy Process: Anxiety as Motivation

At the molar level, anxiety can be understood as the grist for the mill in psychotherapy. From one point of view insight is built on the experiential foundation of affect, not on a cognitive or an intellectual foundation. Ortmeyer (1978) noted that if the desirability of the anxiety concomitant to the emergence into awareness of character patterns is not analysed, the patient may prematurely terminate. Kernberg (1975) points out that "limited anxiety tolerance is a prognostically unfavorable indicator" (p. 131).

In writing about the process of psychotherapy, Mueller (1973) described the continual recycling of anxiety, insight, and integration. He regarded the experience of anxiety in a client prognostically favorable, suggesting that it means that conflicts are still alive. Moreover, the fact that an anxious client came for help might indicate that they are approaching persons and situations that are ambivalently experienced instead of avoiding their conflicts. As well as a signal,

> Anxiety is the vehicle for rechanneling energy and strengthening ego functions (p. 6). It acts as the carrier wave for motivation. If a modicum of anxiety is experienced, it facilitates change. If anxiety abates, motivation diminishes....If anxiety becomes diffuse, it is likely to inhibit the process of change....The client experiences a sense of impending danger, fears disorganization, and loss of identity. (pp. 58-59)

In addition to these clinical impressions, research studys (Luborsky, 1962; Burstein, Coyne, Kernberg, & Voth, 1969) have suggested that the presence of anxiety is prognostically favorable, probably by acting as a motivator in therapy. Thus, both the experience of clinicians and the empirical findings of research have strongly suggested that anxiety is an integral part of the psychotherapeutic endeavor; that it is a necessary (though insufficient) component of therapy; that it has motivational properties; and that it can lead to negative as well as positive results in therapy.

Activation Theory: Motivation as a Function of Arousal

Brown (1961) traced the history in experimental psychology of motivational interpretations back to Freud's libido, McDougall's social instincts, and Woodwoorth's drives. Hebb (1955) distinguished between the energizing function of the reticular formation and the S-R or cognitive functions that use the energy. In his review of the anatomical, physiological, and theoretical experimental studies on emotion, Lindsley (1951) eschewed the James-Lange and the thalamic theories of emotion, and posited an explanatory conception for emotional behavior as well as "sleep-wakefulness, EEG manifestations of cortical activity, and certain types of abnormal behavior revealed in neurologic and psychiatric syndromes" (p. 504). This activation theory -- whose underpinnings are grounded in experimental evidence -- positively correlates emotion and arousal. Hebb (1972) extended the theory to the realm of motivation by including in his explanation the inverted-U curve (see Figure 1) that relates cue function -- "the effectiveness with which stimuli guide behavior" (p. 199) -- to arousal function -- "the

general excitatory effect of sensory stimulation" (p. 294). The meaning of the curve is that "the capacity of sensory stimulation to guide behavior is poor when sensory arousal is very low or very high" (p. 198). If motivation is defined as "a tendency of the whole organism to produce organized, effective behavior" (p. 171), then the inverted-U curve becomes a mapping of motivation, which is a function of cue function and arousal. With regard to sensory messages, Hebb noted that an organism is unresponsive at low arousal and undiscriminative in responsiveness at high arousal. Thus, it would seem that a client in therapy would be most responsive to learning changes in self-regulation at some theoretically optimal level of arousal. Hebb admits that the inverted-U curve would vary in shape with different habits. Perhaps in the therapy situation there is a distinct shape for mapping the optimal level of emotional arousal and receding gradients thereof of effectiveness in the therapy situation.

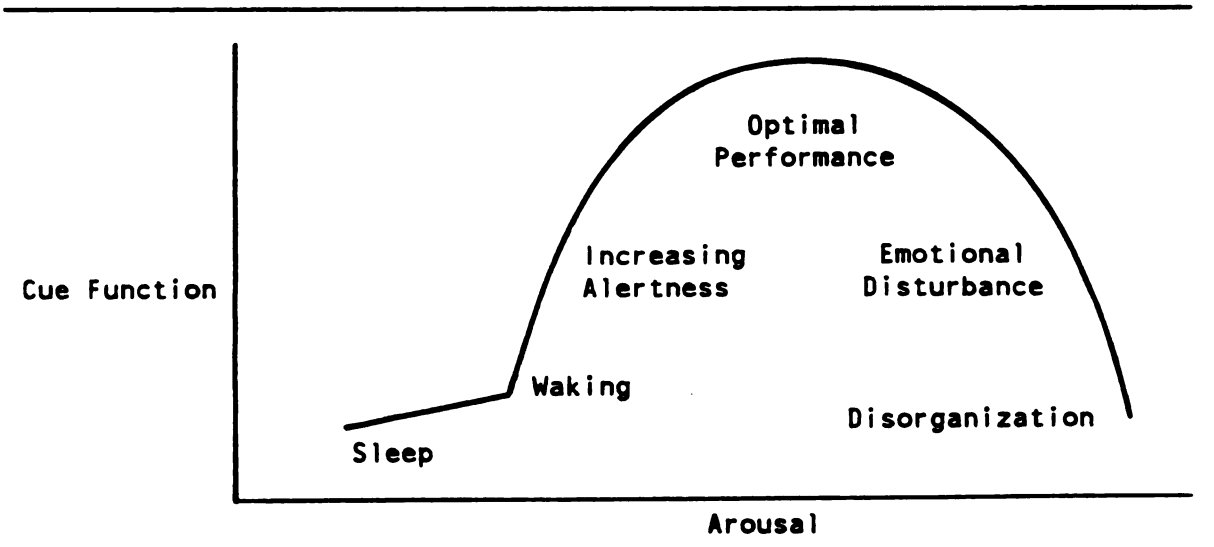


Figure 1. *Motivation (inverted-U) Curve*

Empirical Approaches to Anxiety

Trait anxiety and state anxiety. Spielberger (1966) suggested that it is meaningful to distinguish between anxiety as a transitory state and as a relatively stable personality trait. In a later volume (1972), he defined them explicitly,

> State anxiety may be conceptualized as a transitory emotional state or condition of the human organism that varies in intensity and fluctuates over time. This condition is characterized by subjective, consciously perceived feelings of tension and apprehension, and activation of the autonomic nervous system.
>
> Trait anxiety refers to relatively stable individual differences in anxiety-proneness, that is, to differences in the disposition to perceive a wide range of stimulus situations as dangerous or threatening, and in the tendency to respond to such threats with A-state reactions. (p. 39)

The argument for this distinction was that personality states and traits are somewhat analogous to the concepts of kinetic and potential energy in physics. Personality states were likened to kinetic energy because they are concrete processes that one can actually experience at a given time. Personality traits were likened to potential energy because they represent "latent dispositions to respond in the form of psychological states" (p. 32). Thus, the situations that are perceived as threatening would represent latent anxiety states that would become manifested when we confront them in a current situation.

Taylor's Manifest Anxiety Scale. One of the first instruments to attempt to measure anxiety empirically was the Manifest Anxiety Scale (MAS) (Taylor, 1953). Since its introduction the MAS has been employed in volumes of research that focused on anxiety as a personality variable. Ironically, the original developers of the scale had no such intention in mind. The scale's original purpose was to select subjects

for experimental procedures to test variations in drive level in an eyelid conditioning experiment (Taylor, 1951). It was assumed that drive level could be increased using conditioned, anxiety-provoking stimuli and that conditioned and unconditioned experimentally acquired fear was similar to "many of the symptoms exhibited or reported by individuals diagnosed clinically as suffering from anxiety reactions" (Spence & Spence, 1966, p. 294). Descriptions of manifest anxiety were adapted from Cameron (1947). Using these descriptions, five clinicians picked out 65 appropriate MMPI items. These were pared down to 50, with some items being rewritten for simplicity of diction. The authors sought to validate the MAS for clinical studies only as an afterthought. In an article concerning the instrument itself, Taylor (1953) noted a significant difference between mean scores of a college population (sophomores) and a psychiatric population (in- and out-patients). In a later article (Taylor, 1956), many studies were cited that suggested a significant relationship between the MAS and "more common clinical definitions" (p. 316).

The MAS attempts to isolate subjects at the extreme ends of the dimension of anxiousness. It was noted above that the first of the two assumptions underlying the MAS (Taylor, 1953) was that variation in drive level was related to the level of internal anxiety or emotionality. Thus, it was presumed that people differ in their level of anxiety as a function of personality differences. Therefore, the MAS attempted to measure anxiety level as an enduring trait of a given individual. Not until years later (Spence, 1964) was it uncovered that what was being differentiated was a reaction to stress. Thus, individual differences in trait anxiety reflect anxiety-proneness

(Spielberger, 1966), not an enduring attibute of an individual that is temporally stable and consistent across situations. An individual scoring high on the MAS would ordinarily be no more anxious or emotional than an individual scoring low until the two individuals were stressed. Individual differences would then generate different levels of anxiety in response to the same anxiety-provoking stimuli.

The assumption underlying this approach that persons have a dispositional core of personality has been vigorously attacked in recent years by social learning theorists (Mischel, 1968, 1969, 1973, 1979; Bandura, 1977; Bem & Allen, 1974; Bem & Funder, 1978). They have argued for a cognitive approach to understanding human behavior based on a person/situation interaction. For example, the genotype/phenotype distinction employed by Spielberger to distinguish trait and state anxiety was described by Mischel (1969, p. 1015) as "a conceptual trap,"

> I am referring, of course, to the unjustified belief that seemingly diverse personality problems must constitute symptoms of an underlying generalized core disorder rather than being relatively discrete problems often under the control of relatively independent causes and maintaining conditions. (p. 1015)

Since the nomothetic approach is currently controversial, it might seem cavalier to employ it in attempting to asses individual differences in research. Perhaps inferences about core dispositions need to be built up from idiographic measurements.

Thorne (1966) postulated that for tests and measurements to have clinical significance, they must have existential (personal) and/or situational (social) relevance. He argued that the basic units of behavior to the clinician are psychological states and that subjective mental life can be objectified only by reverting to the concept of

psychological states. Thus, in order to measure psychologically meaningful material, an attempt ought to be made to measure the psychological moments in an individual's life. The MAS does not do this. As noted above, it is a personality measure. Using Spielberger's terminology, it measures the trait of anxiety.

Regardless of one's theoretical stance, it seems intuitive that one source for the empirical evidence that is invoked to support a position ought to come from microscopic measures of personality. A measure like the MAS that attempts to measure a personality trait is an inference from many observations across time and situations. If the personality trait of anxiety is defined by the instrument, it cannot do otherwise than generate data commensurate with the trait theory implicit in the instrument.

Tryon (1979) labeled this practice of confounding descriptive meanings with the veridicality of a label the trait-test fallacy. He argued that the connection between the truth of the descriptive meanings and the truth of the inferential meanings of the descriptions cannot simply be assumed. This assumption would be tantamount to the reification of a test score. This sort of confusion of observation and definition was elaborated by Leary (1957) in his examination of basic assumptions of personality theory.

Leary's Interpersonal Diagnosis of Personality. Leary (1957) discussed the empirical and formal procedure of scientific inquiry introduced by Russel and the Logical Positivists. The distinction was made between the synthetic operational language (semantic) of science and the formal analytic procedures (syntactic). Observations and empirical methodology by which signs are related to objects would constitute the

semantic functions of science, while the language of relationships between signs and objects would define the synthetic operational language of science. The relationships between signs and other signs involves the use of logic, syntax, and mathematics. Such relationships were described as syntactic because, as formal analytic procedures, they organize the signs in relation to each other and not in relation to the actual empirical observations. In psychological testing we invoke these procedures when we organize our empirical observations.

The third function Leary discussed was the pragmatics of scientific endeavor. This level of discussion relates the signs or symbols with the users of signs. In psychological testing we operate at this level when we use our empirical observations to make predictions about behavior and/or to understand the personal meaning of an individual's behavior. When employing an instrument to measure a personality state or trait, it ought to be grounded in the semantics of empirical observation and internally logical with respect to its use of terms.

As noted above, the MAS was found to be an indicator of anxiety-proneness. As such, it would not measure the state of anxiety within a selected frame of time, nor would it measure a consistent level of anxiety across situations. It is not really a measure either of state or trait anxiety. It seems that most clinical instruments we use -- MMPI, Rorschach, TAT -- do measure a psychological state that varies across administrations. So, in choosing an instrument to measure anxiety, one was selected that measures anxiety in a specific and delimited frame of time. An instrument was needed that also compared anxiety with other common psychological syndromes, e.g., hysteria, obsessionalism, etc. The SCL-90 satisifes these requirements.

Purpose of the Study

This study investigates the relationship between reported anxiety and change in psychotherapy. From the point of view of the id psychologies in psychoanalytic thought, understanding the meaning of anxiety as a motive for various behaviors is certainly an integral part of therapy (Fenichel, 1945; Segal, 1974). Ego psychologists and interpersonal theorists also focus on anxiety to understand the vicissitudes of resistance whether described as character armor (Reich, 1933/1972), defense mechanisms (Freud, 1937/1966), or security operations (Sullivan, 1954). From the current psychiatric point of view (American Psychiatric Association, 1981), the anxiety disorder is a syndrome in which anxiety may be the predominant disturbance. The behaviorist uses the reports of inner experience for clues to past, current, and future behavior, and the conditions affecting them (Skinner, 1974, p. 31). Although the psychodynamicist locates the source of the stimulus underlying anxiety inside the individual (perception of danger) and the behaviorist locates the source without (aversive contingencies), they both include the experience of anxiety as a working concept in their metapsychologies. Thus, anxiety serves as a meaningful barometer in nearly all psychological treatments.

Specifically, this study investigates the relationship between the level of anxiety before therapy and pre- and post-therapy symptoms and interpersonal attributes as reported by clients in therapy through the medium of self-report. The measures administered were the SCL-90 (R-[Revised] version) (Derogatis, 1977) and the Interpersonal Check List (ICL). The SCL-90 was administered in its original form, while the ICL was adapted from LaForge and Suczek (1955).

STATEMENT OF HYPOTHESES

Hypothesis 1

When the entire range of anxiety scores is plotted with respect to change in reported symptoms and change in the average intensity of interpersonal reflexes for all *Ss*, some smooth curve will be generated that will show a significant difference among varying levels of anxiety.

Rationale. A theoretical link is being postulated between the motivation curve (Hebb, 1972, p. 199) and change in reported symptoms and interpersonal reflexes. It has been suggested that one component of psychotherapeutic motivation is anxiety, and that anxiety is comprised of positive and negative fundamental emotions. Following Lindsley's activation theory (1951), arousal is positively correlated with emotion and motivation increases with "cue function" or the ability to use stimuli to guide behavior. This cue function might be more experientially conceptualized as an individual's ability to become attuned to their own self-regulatory functions. Perhaps with varying levels of anxiety there is a regularity in any given population in the ability to learn to become attuned to experience previously excluded from awareness; thence to learn, through the repetitive and persistant observations and interpretations of a therapist to alter one's style of self-regulation. Such a regularity will be pursued by plotting scatterplots of the level of anxiety with respect to change over therapy in intrapersonal symptoms and interpersonal reflexes.

Hypothesis 2

When *Ss* are divided into a high- and a low-anxiety group where the high-anxiety *Ss* report at least one elevated dimension (on the SCL-90) besides anxiety, and the low-anxiety *Ss* report at least one elevated dimension, it is predicted that the high-anxiety group will manifest a greater decrease in reported symptoms on the SCL-90, and change in the average intensity of interpersonal reflexes on the ICL than the low-anxiety group.

Rationale. When defining the high- and low-anxiety groups, *Ss* will be sampled if they report at least one elevated dimension on the SCL-90 besides anxiety as the dependent variable since it might be argued that even if the high-anxiety *Ss* change more than the low-anxiety *Ss*, the change could be attributed to the alleviation of the affect-symptom of anxiety. The independent variable (anxiety) will be grouped because the preceding stipulation reduces the number of qualifying *Ss* considerably.

Hypothesis 3

Using the grouped *Ss* independent variable, the high-anxiety group will generate significantly greater intensity scores on the ICL before therapy than the low-anxiety group.

Rationale. To the extent that these instruments measure progressive degrees of dysfunction, maladaptation, psychopathology, etc., the intrapersonal measure (SCL-90) and the interpersonal measure (ICL) should both reflect the distress reported by clients before therapy. It is assumed that the intrapersonal and interpersonal spheres are obverse experiential realms. Thus, those individuals that experience more psychological distress in the form of symptoms should also experience

their conflicts in the form of interpersonal conflict. Following this line of reasoning one step further, those individuals that find themselves experiencing more distress in the form of the affect symptom of anxiety should also experience a higher degree of interpersonal conflict.

Hypothesis 4

As a corollary to Hypothesis 3, a comparison of change in therapy as measured by the SCL-90 and the ICL (AIN) should correlate positively.

Rationale. When clients in therapy take the risk of opening their personalities up for change, any change that occurs should be manifested in both the intrapersonal as well as the interpersonal sphere.

Statistics

Following are the statistics that were proposed for the analysis of the data before commencing the study:

Hypothesis 1 will be tested by means of the Pearson product-moment correlation (r), and the correlation ratio eta^2 (Glass & Stanley, 1970, p. 150; Nunnally, 1978). Nunnally (1978) supports the use of *eta*, describing it as,

> a "Universal" measure of relationship because (1) it can be applied regardless of the form of the relationship, (2) either it can be applied to a predicted curve of relationship or the best-fitting curve can be sought after the data are in hand, and (3) it applies equally well when independent variables are continuous measures and when they are only categorical in nature. (p. 147)

Contrasting *eta* with the F ratio, Nunnally noted that,

> *Eta* can be applied in any study where the *dependent* measure is continuous, or at least relatively so....*eta* indicates *how strong* the relationship is. *Eta* measures the *explanatory*

> *power* of an independent variable. The statistical significance of the *F* ratio depends on the number of subjects, but *eta* is independent of the number of *Ss*. (p. 149)

In this study, the independent variable is a continuous measure derived from ratio-level data with a potential minimum of zero and a potential maximum of 4.0. The dependent measures of change in SCL-90 and ICL scores is likewise continuous and derived from at least interval-level data; thus *eta* is an entirely appropriate statistic. Scatterplots of the data will be plotted to determine whether the relationship conforms to a second degree (quadratic) polynomial; and if so, appropriate regression equations will be generated.

For Hypothesis 2, a directional *t*-test will be applied to evaluate the significance of the difference, if any, between the mean change scores on the SCL-90 and the ICL of the two groups. Since it is unknown whether the two groups have the same variance, an *F* test will be calculated. If the probability associated with *F* is greater than *alpha* = .05, the *t*-test will be based on pooled variance, otherwise seperate estimates of population variance will be used.

For Hypotheses 3 and 4, a directional *t*-test will be applied to the grouped data, while a Pearson product-moment correlation will be applied to the continuous data.

METHOD

Subjects

The *Ss* for this study were all clients in psychotherapy at the Psychological Clinic at Michigan State University. The Clinic serves as a training and research center for the Department of Psychology. The adult clientele is comprised mostly of 25- to 40-year-old middle- and working-class individuals. The psychotherapists were advanced graduate students in clinical psychology.

Clients in this study were all adults who had agreed to participate in the Clinic's psychotherapy research program. All had signed prior consent forms and had completed the SCL-90 and the ICL prior to and following therapy. All of the *Ss* knew that they were going to be seen for psychotherapy. *Ss* who chose not to enter therapy, who were referred elsewhere, or who did not begin therapy were not included in this study. Since the Clinic does not keep a waiting list, most of the clients were participants in the study.

Procedure

Clients entering treatment at the clinic received a formal request by letter to participate in an evaluation of the services offered by the Clinic. Those who participated filled out the self-report measures being employed in this study -- the SCL-90 and the ICL (Level 2C) -- before psychotherapy commenced, but after they were accepted by a

therapist for therapy. Various tests and assessments were also completed by the therapists that are irrelevant to this study. Audio tapes of certain sessions were retained and various questionnaires were administered periodically throughout the course of therapy. As mentioned earlier, the SCL-90 and the ICL were administered once again at termination.

Independent Variable

The predictor variable is the level of anxiety. *Ss* were measured on a continuous scale or divided into two groups (on the basis of their scores on the SCL-90). For the dichotimized groups, cases with a score greater than or equal to 2.0, 2.25, and 2.5 on the Anxiety dimension, and a similar score on at least one other scale were placed in the high-anxiety group in three independent samples. Those with scores less than 2.5, 2.25, and 2.0 on the Anxiety scale, and greater than or equal to 2.5, 2.25, and 2.0 on at least one other scale were classified as low-anxiety *Ss* in their respective samples. Scores greater than or equal to 2.0 represent reports of distress in the the "quite a bit," "extremely," and in upper half of the "moderately" range. Scores less than 2.0 represent reports of distress in the "not at all," "a little bit," and the lower half of the "moderately" range of the SCL-90 dimensions.

Dependent Variables

The variables examined to assess change over therapy were the difference between the pre- and post-therapy scores of the symptom dimensions on the SCL-90 and the pre- and post-therapy difference of the

no reference

AIN variable on the ICL (LaForge, 1963, 1973). AIN "can be calculated by computing, for the items checked by *Ss*, the average of the intensities assigned" (LaForge, 1963, p. 13). For *Ss* who were administered the SCL-90 and ICL measures more than once after commencing therapy, the last administration was selected for the post-therapy measure. Following was the priority of selection: (a) follow-up, (b) immediately post-therapy, (c) 46^{th} session, (d) 18^{th} session.

Instruments

The hypotheses mentioned earlier were tested by examining the results of the pre-therapy administration of the ICL; and the results of the post-therapy administration of both the SCL-90 and the ICL.

SCL-90. The SCL-90 employs the self-report inventory mode of measurement. The assumption underlying this mode of measurement is the premise that a client can and will describe his or her relevant symptoms and behaviors.

According to Derogatis (1977), the main distorting influence that this mode of measurement is vulnerable to is that of social desirability. Other response styles, e.g., extremity, have not been shown to critically affect clinical self-report scales.

The SCL-90 measures psychological functioning with an intrapersonal orientation. The scales were generated from two kinds of procedures; a clinical-rational approach (Russel's semantic and predictive functions) and a factor-analytic approach (Russel's syntactic function) (Derogatis, 1977, p. 81). Its purpose was to generate a descriptive profile of an individual patient that would be useful to a clinician. Although Derogatis (1977) expressed satisfaction with the reliability and

validity of the predecessor of the SCL-90, the Hopkins Symptom Check List (HSCL) (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974), the problem with it was that it was primarily a research instrument. An adaptation for assessing the psychopathology of individual psychiatric and medical patients was introduced (Derogatis, Lipman, & Covi, 1973), then revised, and validation was begun (Derogatis, Rickels, & Rock, 1976). In current use is the "R" (Revised) form. Derogatis claims the SCL-90 to be a measure of current psychological functioning at a given time. It is not presumed to be a measure of personality traits. The 90-item scale is presented to a client as an inventory of problems and complaints that are to be rated with respect to their functioning over the course of seven days, including the day of administration. There are nine scales: (a) Somatization, (b) Obsessive-Compulsiveness, (c) Interpersonal Sensitivity, (d) Depression, (e) Anxiety, (f) Hostility, (g) Phobic Anxiety, (h) Paranoid Ideation, and (i) Psychoticism. All items are assessed on a 5-point scale of distress ranging from "not at all" to "extremely."

SCL-90 reliability. Reliability studies on the SCL-90 have focused on two types of reliability. Internal consistancy was assessed using the measure of coefficient alpha, while temporal stability was measured by the retest method with administrations one week apart (Derogatis, 1977). "Internal consistancy" really refers to one component of the size of the reliability coefficient; the other is the number of items (Nunnally, 1978, p. 229). The sources of error variance in interitem (internal) consistancy were further dissected by Anastasi (1976, p. 116) into "(a) content sampling and (b) heterogeneity of the behavior domain sampled." According to Nunnally, "Coefficient alpha provides a good

estimate of reliability in most situations since the major source of measurement error is because of sampling of content" (p. 230). Regarding heterogeneity of the behavior domain sampled, Anastasi noted that interitem consistancy is a function of the homogeneity of the domain sampled. She also noted that "unless the items are highly homogeneous, the Kuder-Richardson coefficient will be lower than the split-half reliability. That the lowest coefficient alpha attained by Derogatis (1977, p. 15) was .77 and that the retest correlations were highly similar -- sometimes identitical -- with the coefficient alpha measure, speaks well for the internal consistancy of the instrument and of the homogeneity of the domain of behavior sampled. Also, that the greatest number of items on any dimension (Depression) is 13 (mean: 9) bolsters the meaning of the reliability coefficient since this value can be increased by simply adding items to a dimension. These reliability measures indicate that the dimensions of the SCL-90 are homogenous, i.e., the items in any dimension assess the same attribute. In this case, we are assessing psychological syndromes, with any item in a dimension representing one facet of that dimension.

In addition to these traditional measures of reliability, Derogatis has also assessed the generalizability of some of those SCL-90 dimensions that constituted the HSCL across the parameters of social class and psychiatric diagnosis (Derogatis, Lipman, Covi, & Rickels, 1971, 1972); and Derogatis and Cleary (1977) have demonstrated invariance with respect to sex across all nine symptom dimensions of the SCL-90. These studys are really also validation studys since content validity for personality studys is, at worst, "usually inappropriate and may, in fact, be misleading" (Anastasi, 1976, p. 138); while at best,

Nunnally (1978) offers various statistical methods for generating circumstantial evidence of content validity, e.g., "at least a moderate level of internal consistancy among the items within a test would be expected" (p. 93). The Kuder-Richardson alpha coefficient data and the factorial invariance studys have shown this adequately.

SCL-90 validity. The validity of an instrument has meaning only with respect to the use or function of that instrument (Anastasi, 1976; Nunnally, 1978). Furthermore, the validation process is unending and not an all-or-nothing property (Nunnally, 1978). Since the use of the SCL-90 is mostly in the realm of diagnosis, rather than prediction, the validation techniques that appear mnost relevant are those of concurrent criterion-related validity and, or course, construct validity.

Concurrent criterion-related validity was assessed with respect to MMPI scales, including the Wiggins content scales and the Tryon cluster scales (Derogatis, 1977). Derogatis found,

> Each dimension has its highest correlation with a like construct, except in the case of [Obsessive-Compulsiveness], for which there is no directly comparable MMPI scale. Results of the study reflected a high degree of convergent validity for the SCL-90 which represents a very important step in the validation program (p. 18).

Discriminative criterion-related validity -- the effectiveness of the instrument in sensitively distinguishing between populations -- was assessed by Craig and Abeloff (1974) in a study that found a comparison between cancer patients and psychiatric emergency patients. Abeloff and Derogatis (1977) showed that breast cancer patients generate a unique profile, even with respect to other female cancer patients; Salzman, VanderKolk, and Shader (1976) found that the SCL-90 discriminated between depressed and non-depressed groups. This is just a sample of

some of the findings in the literature on the SCL-90 that suggest that it is a useful instrument in distinguishing clinical from non-clinical populations, and even among clinical populations, both psychological and medical.

Establishing construct validity means that one attempts to show that the instrument actually measures the trait or theoretical construct that it purports to measure (Anastasi, 1976). One of the means by which we assess the construct validity of an instrument is by examining the concurrent criterion-related validity studys (Anastasi, p. 153). If the correlations are moderately high, but not near unity, this speaks well for the construct validity (and the uniqueness) of the instrument. In fact, this is what Derogatis (1977) reported. Another important methodological step is the use of confirmatory factor analysis. Derogatis and Cleary (1977) reported a study that intercorrelated the data from 1002 psychiatric outpatients,

> The structures of the rotated factors were then compared with the hypothesized structures of the SCL-90; the structures matched quite well...on just about all dimensions. (Derogatis, 1977, p. 22)

Together with the studys on concurrent and discriminative criterion-related validity, this study shows that use of this instrument is generating a satisfactory evidence in the literature.

Interpersonal Check List. The ICL consists of 128 items descriptive of interpersonal attitudes and behaviors that encompass all 16 variables on the Dominance-Submission, Love-Hate circumplex (LaForge & Suczek, 1955). Like the SCL-90, the ICL relies on the "inventory premise" that clients can and will report their symptoms and behaviors. Of interest in this study is the measure of intensity (AIN) implicit in

this instrument. All of the items are rated with respect to intensity on a 4-point scale. The four points represent: (a) "a mild or necessary amount of the trait," (b) "a moderate or appropriate amount of the trait," (c) "a marked or inappropriate amount of the trait," or (d) "an extreme amount of the trait" (LaForge & Suczek, 1955, p. 101). Although the word "trait" is used in the syntactic description, in actual use the client or subject is asked to rate him- or herself with respect to current attitudes and behaviors. As mentioned above, the level of intensity is measured implicitly. In actual use, a subject checks off only words or phrases that are currently descriptive of that individual, much as in the administration of a Q-sort.

The four forms of the instrument were developed over a period of four years (LaForge & Suczek, 1955). Revising procedures focused on definitional problems as assessed by the general public; the relative frequency of endorsements of intensities and between categories, especially of the tendency to endorse adjectives of higher intensity on the affiliative side of the Love-Hate dimension more readily than on the disaffiliative side; and on the intercorrelations between items with respect to distance (number of sixteenths or octants) from each other. The most frequent method or level of assessment was the conscious description of the self, Level 2. In current usage is Form 4.

ICL reliability. LaForge and Suczek (1955) reported test-retest reliability coefficients averaging .78 (Form 3A) for octants (AP, BC, etc.) and .73 for sixteenths on a sample of 77 obese women administered the ICL two weeks apart.

More importance was attributed by LaForge and Suczek to interitem correlations. Data was organized by octants and sixteenths for Forms 2,

3, and 3A. In five samples with a minimum *N* of 76 *Ss*, there was simple monotonic decrease in correlation as a function of interitem distance, e.g., items that were six sixteenths apart scored progressively lower correlations than items that were five, four, three, two, and one sixteenth apart. These correlations provided evidence attesting to the internal consistancy of the instrument, especially with regard to the homogeneity of the behavior domain sampled. Regarding the other component of interitem consistancy (Anastasi, 1976), the content sampling procedures for this instrument were especially rigorous. The various forms were assessed for (LaForge & Suczek, 1955),

> The frequencies with which the individual words in each octant, sixteenth, and intensity were being checked by the various samples in the several situations, the average test scores for each sample, the tally of words which the patients had marked as ones not understood, together with a summary of their verbal complaints, the octant intercorrelations, and for Form 3B, the item intercorrelations. To these data were added the five psychologists' ratings of each word with respect to interpersonal category and intensity. Psychologists' opinions as to the understandability and over-all desirability of each word were also recorded. Each word was then considered by a conference of from four to six psychologists. Changes in the list were of several types: the discarding of a word or phrase, assignment of a new intensity or sixteenth designation, or a modification in wording. The remaining list of satisfactory or modified words was used as a core for the new form of the check list. To this were added new words or phrases as required. thesauri, as well as the individual and collective inspiration of the staff, were used as sources of words which would be meaningful to all patients in the exact sense desired.
>
> Experimental forms were now drawn up and administered to patients for two or three weeks of normal clinic intake. During this time, interviews about the test items were conducted. Patients who had just taken the test were asked to point out words which seemed unclear, ambiguous, or in any way bothersome. They were also asked to define specific words about which we had some uncertainties. finally, a general evaluation of and reaction to the test was requested. On the basis of the data gathered with the experimental form a revision was given definitive form. (pp. 104-105)

In addition, LaForge (1963) found that the principle components analysis yielded communalities on the sixteenth scores ranging from .51 to .86, and on the summary scores (DOM, LOV, AIN, NIC) greater than .90.

In summary, Anastasi's (1976) components of interitem error variance of heterogeneity of domain and sampling of content were both addressed; and Nunnally's (1978) comment that the size of the reliability coefficient is a function of the number of items raises no questions since each sixteenth totals eight items -- even less than most of the SCL-90 dimensions.

ICL validity. As mentioned earlier, the validity of an instrument is determined by the ongoing process of assessing the usefulness of that instrument (Nunnally, 1978). The ICL was the only instrument used by Leary (1956) to assess a person's private self-description and their conscious description of father, mother, and/or spouse; as well as their conscious ideal (ego ideal).

As noted in the Reliability section, content validity was assessed and reassessed empirically in the revision of all forms, until Form 4 was considered the final revision.

Regarding construct validity, the main evidence comes from the extent to which the instrument was used in the Kaiser Foundation Research Project (Leary, 1966). LaForge (1973, p. 16) found "numerous significant correlations" between ICL and MMPI scores: "The general finding was that pathology and anxiety on the MMPI was positively correlated with lower left ICL scores and negatively correlated with upper right ICL scores."

In an attempt to objectify measures of repression, LaForge, Leary, Naboisek, Coffey, and Freedman (1954) found the ICL at least as

effective as the MMPI in distinguishing between patients suffering from hypertension, ulcer, colitis, and asthma/neurosis. In their first sample, they found significance levels on *F* and *t* tests ranging from .10 to .01.

LaForge (1963, p. 23) found "a slightly different pattern" between a sample of U. S. Air Force survival instructor trainees and four samples of undergraduates from psychology classes. Finally, LaForge (1973) noted that, "In an unpublished doctoral dissertation, Naboisek (1953) showed many relations between diagnosis based on MMPI profiles and ICL descriptions of patients in group psychotherapy by the other patients in the group" (p. 16).

*RESULTS**

Gender Differences

The mean values for the nine SCL-90 measures and the Average Intensity (AIN) measure on the Interpersonal Check List (hereafter referred to as the major variables) were examined to assess for gender differences. Of 30 independent-sample *t*-tests (Table A1), none yielded a result that even suggested significant differences between male and female subjects. Therefore, the data of males and females was pooled (Table A1) yielding a sample of 63 subjects; males, *N* = 19; females, *N* = 44. One case was descarded for analyses involving change in the average intensity of interpersonal reflexes because the post-therapy ICL was not completed. Thus, for such analyses, 62 cases were examined.

General Findings

A general assumption underlying this study was that reported client distress would decrease over the course of psychotherapy. Therefore, correlated (dependent-sample) *t*-tests were performed to asses this expectation. The results are displayed in Table A2. The intercorrelations of *Ss* self-paired for the pre- vs. post-therapy measures

*All statistical analyses, except those of Table A1, derive from computer software subprograms originally published in SPSS (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975), then adapted for use on the C.D.C. Cyber 750 and published as Release 8.0 and 8.3 of SPSS-6000 by the Vogelback Computer Center, Northwestern University.

yielded highly significant values, justifying the propriety of the correlated *t*-test. This form of *t*-test which pairs each *S's* pre- and post-therapy scores, has the advantage of reducing sampling error in measuring a variable by eliminating subject-to-subject variability. The resulting *t* values indicate highly significant differences in predicted direction for all the major variables. Thus, the expectation of less reported client distress after therapy was confirmed.

Hypothesis 1

> It was hypothesized that *Ss* who reported experiencing the high and low extremes of pre-therapy Anxiety (SCL-90), would change less than those who reported a moderate level.

The data were examined by two methods to determine if generating quadratic equations was justified. First, the independent (predictor) variable, pre-therapy Anxiety (SCL-90), was plotted with respect to change in therapy difference values of the major variables to assess the strength of the linear relationship, and the proportion of variance in the difference values explained by the pre-therapy Anxiety value. The results, shown in Table A3, indicate a generally significant relationship between the difference values for seven of eight of the SCL-90 measures (Anxiety excluded as a dependent variable). The correlations ranged from .17 to .35, all significant; $.001 \leq p \leq .05$. The remaining SCL-90 measure yielded a result that was suggestive of a significant intercorrelation with pre-therapy Anxiety; Hostility: $r = .12$, $p < .1$. The ICL change measure, AIN, yielded a non-significant intercorrelation with pre-therapy Anxiety; $r = .01$, ns. An examination was also undertaken of the non-linear source of variance.

To this end, the pre-therapy Anxiety measure was arbitrarily categorized into four groups in order to perform an analysis of variance and a test of linearity. A comparison across the four groups indicated a statistically significant degree of change on nearly all dimensions (see Table A4). (Two measures yielded non-significant results: Hostility and AIN.) The nature of that change was further clarified by comparing linear and non-linear change, which showed that the proportion of non-linear variance accounted for was significant and is greater than the proportion of linear variance accounted for by the pre-therapy Anxiety measure. This means that the trend in the data was more curvilinear than linear. Therefore, polynomial regression equations were generated in order to examine the quadratic terms.

The standardized quadratic regression equations for all the major variables are reproduced in Table A5. Six of the nine equations are significant, $p < .01$; and seven, $p < .05$ (Anxiety excluded). Hostility yielded a quadratic equation with a negative quadratic term, but the equation as a whole and its components were non-significant. AIN yielded a non-significant quadratic term with a positive coefficient, $p > .85$. Significance of the F test on the individual coefficients (Betas) varied considerably, unlike for the regression equations as a whole.

The following description excludes Hostility and AIN, for which the outcome was non-significant for both equations overall, and for both the linear and quadratic terms, $p > .35$ on all F; and Anxiety, which was used for the independent variable. The overall equations of the remaining major variables yielded a moderate adjusted R^2 (a more conservative measure than Multiple R because the measure is adjusted for

the influence of sample size), showing that the equations account for less than 20% of the variation between the dependent and independent variables. However, increasing the number of terms in the polynomial (to higher powers of the independent variable) yielded little improvement in explanatory power. Regarding the linear terms of these equations, all were significant; $p < .05$, four at $p < .005$; all linear terms positive. The very interesting finding with regard to the SCL-90 measures -- including even non-significant Hostility -- was that the quadratic terms were all negative, as predicted. This means that *Ss* reporting moderate levels of anxiety before therapy showed more change over the course of therapy than *Ss* at the extremes of pre-therapy reported Anxiety. Only the ICL measure, AIN, yielded a positive and non-significant quadratic term. This one measure representing the only abberation from the pattern, Hypothesis 1 was confirmed.

Hypothesis 2

> It was hypothesized that *Ss* reporting high levels of anxiety before therapy would show more change over the course of therapy than those *Ss* reporting low levels of anxiety.

As shown in Table A6, cases were divided into High- and Low-Anxiety groups at pre-therapy Anxiety cut-off values of 2.0 (High-Anxiety, $N = 20$; Low-Anxiety, $N = 23$), 2.25 (High-Anxiety, $N = 13$; Low-Anxiety, $N = 23$) and 2.5 (High-Anxiety, $N = 9$; Low-Anxiety, $N = 18$). Most of the comparisons of the High- and Low-Anxiety means were examined by means of a *t*-test with a pooled variance estimate, deemed appropriate if the comparison (*F*) between the sample variance of the two groups yielded nonsignificance. Those *F* tests that yielded $p \leq .05$ were assumed not to share a common variance so a seperate estimate of variance was used for

the two groups, yielding an approximation to Student's *t* (Nie, et al, 1975). Those *t*s so generated are labeled. Most tests yielded non-significant results, the highest *t* values deriving from the pre-therapy Anxiety group for which the cut-off value was 2.0. In this group the only significant measure was Obsessive-Compulsiveness. Since each group contained ten *t*-tests, yielding a total of 30 *t*-tests overall, one or two significant results would be expected by chance alone. Thus, Hypothesis 2 was not confirmed.

Hypothesis 3

> It was hypothesized that *Ss* who reported a high level of anxiety before therapy would also report a significantly higher intensity of maladaptive interpersonal reflexes (ICL) before therapy than *Ss* who reported a lower level of anxiety before therapy.

Table A6 shows that the comparison of pre-therapy SCL-90 Anxiety (intrapersonal measure) divided into high- and low-Anxiety with pre-therapy ICL Average Intensity (interpersonal measure) were all based on seperate variance estimates and that the approximated *t* values for the three groups were all non-significant -- excluding SCL-90 Anxiety, the predictor variable. Only the comparison using a cut-off SCL-90 Anxiety value of 2.25 *suggested* significance, $p < .1$.

Examination by analysis of variance of pre-therapy Anxiety divided into the four groups mentioned earlier (Table A4) yielded a similar result; $F(3, 59) = .71$, *ns*. On the other hand, the intercorrelation between the non-grouped (continuous) measure of pre-therapy Anxiety ($N = 62$) and pre-therapy AIN (Table A3) suggested significance; $r = .18$, $p = .08$. In light of these equivocal findings, Hypothesis 3 was not confirmed.

Hypothesis 4

> It was hypothesized that *Ss* would manifest parallel change over the course of therapy as reflected by the intrapersonal (SCL-90) and interpersonal (ICL) measures.

An examination of the intercorrelations between the intrapersonal and the interpersonal measures yielded mixed results. The intercorrelations between the change in AIN measure and the nine SCL-90 change measures (Table A3) yielded a range of intercorrelations (predicted to be positive). Of these, three SCL-90 measures indicated a significant intercorrelation with change in AIN; Somatization, Obsessive-Compulsiveness, and Paranoia. A suggestion of significance was yielded by two others; Interpersonal Sensitivity and Psychoticism.

An examination of the component dimensions of the ICL was undertaken in an attempt to explain the suggestion (but not the indication) of significant findings. The rationale for an ad-hoc analysis invoked the exploratory nature of this study. The two components of the ICL examined were change in therapy in Dominance-Submission (DOM) and Love-Hate (LOV). These measures were expressed as the absolute value of the change in therapy difference values. The original prediction was followed regarding a positive correlation between change scores on the SCL-90 and the ICL.

Contrary to predictions, change in LOV yielded mostly negative and insignificant intercorrelations for eight of the nine SCL-90 measures. However, change in Hostility exhibited a significant correlation with LOV, $r = -.33$, $p = .046$, showing that as change in the interpersonal or intrapersonal sphere measure decreased, so did change in the other sphere increase.

The change in DOM measure, on the other hand, yielded a range of positive intercorrelations that either indicated or suggested significance for seven of the nine SCL-90 measures from .16 to .31; .007 $\leq p \leq$ .10. Interestingly, the Hostility measure that intercorrelated so significantly with LOV, yielded r = .03, p = .42 with DOM, suggesting no significant association between the two measures. Six of the nine DOM intercorrelations yielded significant intercorrelations, $p <$ .05. This, in itself might have been sufficient to confirm the hypothesis if DOM had been the original criterion variable. However, taking into account the disconfirmatory data provided by the LOV measure and the ambiguous data provided by the AIN measure, it was concluded that the data *suggested* the association theorized in the hypothesis, but did not confirm it.

DISCUSSION

This study was undertaken to attempt to explain some of the variation in outcome in psychotherapy as a function of reported anxiety.

As a prerequisite the data were examined to assess whether there was, in fact, any change over therapy to be explained. The general finding indicated a highly significant decrease in reported distress (SCL-90) and in the average intensity of interpersonal reflexes on virtually every measure. Interestingly, there was a large difference in the strength of the statistical association between the SCL-90 and ICL measures. While the SCL-90 measures accounted for 21% to 35% of the decrease in reported distress over the course of therapy, the ICL measure (AIN) accounted for only 3% of the variation.

This difference is interesting because it defines a difference not only between individual scales, but between the two classes of measure adopted for this study, the intrapersonal and interpersonal instruments.

One substantive explanation assumes that one outcome of psychotherapy is that participants will exhibit more assertiveness after therapy. This was borne out by the highly significant change in DOM (Dominance-Submission) ($t = -4.01$, $p < .001$). It is notable that the t value is negative, meaning that *Ss* reported higher levels of dominant interpersonal reflexes after therapy than before. It is important to note that the developers of the ICL (LaForge, 1963) were aware that AIN carried many conceptual representations. In this study, it was used as

a measure of distress, parallel to the use of the SCL-90 measures. However, it can also be representative of a *Ss* "willingness to criticize the figure being described" (LaForge, 1963, p. 15).

In this case, the figure is the self. Hopefully, part of the assertiveness that *Ss* embrace after therapy includes the ability to evaluate oneself critically without denial and rationalization. If so, this might mitigate any reflection of decrease in distress in the AIN measure of the ICL. *Ss* might very well be feeling better about themselves as manifested by the SCL-90, as a result of consciously experiencing previously disowned attitudes that aren't socially appropriate. Perhaps the controlled environment of the psychotherapeutic dyadic relationship provided a forum for clients to experience strong needs, attitudes, and feelings, and a method by which to master them and integrate them into the self. For example, learning that one can experience intense aggressive or helpless feelings without having to act on or wallow in them can be a powerful vehicle to self-acceptance. What may have been previously experienced as a conversion symptom or a hypochondriacal fear may have dissipated when the internal attitude or feeling it represented became conscious. For example, a masochistic individual may have garnered the strength to realize how shame ridden they feel, or a psychosomatic individual may have come to realize how compulsively generous or hypernormal they strive to be. Thus, there may very well be a trade-off between the SCL-90 symptoms and owning more intense ICL interpersonal attitudes. Anecdotally, this may correspond to contradictory observations of very gentle, quiet people who became assaultive when impulse control broke down. The point is that what individuals experience of themselves and what becomes represented consciously may be highly discrepant.

It may also be that the ICL taps conflicting information about individuals. Perhaps it serves simultaneously as a barometer of distress and of health. Some *Ss* may have registered a decrease in ICL intensity because they worked through the need to respond socially with maladaptive reflexes, while others may have registered an increase because what was previously unconscious became conscious in therapy. In either case, a decrease in SCL-90 symptomatology may have been a concomitant, i.e., either way *Ss* may have felt, for example, less alienated and so experienced the statements constituting the Psychoticism dimension on the SCL-90 with less intensity.

These substantive explanations assume that the difference in variance accounted for by the two instruments is valid, but the methodological dilemma of defining an individual's problem may be of paramount importance. The way in which an individual is asked about problems may generate very different responses, depending on the level of abstraction one adopts. Sullivan (1953) distinguished between the prototaxic -- directly felt -- mode of experience and the syntaxic -- symbolized in concensually validated symbols. Perhaps *Ss* at the outset of therapy were more able to experience their problems than to communicate them. This is not to suggest that they couldn't verbalize them, but that they didn't have sufficient understanding of the ***meaning*** of their experience to represent it to themselves or others as a personal attitude. This phenomenon was recognized by Fairbairn (1954) when he observed,

> Hysterical conversion is, of course, a defensive technique -- one designed to prevent the conscious emergence of emotional conflicts involving object-relationships. Its essential and distinctive feature ***is the substitution of a bodily state for a personal problem;*** and this substitution enables the personal problem to be ignored. (p. 117)

Generalizing from this observation on conversion, many clients at the outset of therapy may find it difficult to articulate the interpersonal problems that underlie their presenting problem. Consequently, they may communicate information about their problems "not as agents, but as bodies" (Szasz, 1974, p. 112). Szasz called this protolanguage, analagous to Sullivan's prototaxic experience, and warned that we need to translate such communication of information into ordinary language "both for a common-sense understanding of these phenomenon and even more for any kind of 'rational' psychotherapy..." (p. 113). Taking this into account might lead to a different kind of reconciliation of the trade-off between the SCL-90 symptoms and the ICL attributions than was discussed earlier. Horowitz (1979) divided the problems that bring people into psychotherapy into three categories; symptoms, disturbing cognitions about the self, and specific interpersonal behavioral difficulties. The advantage of asking individuals to report symptoms, e.g., my stomach hurts, is that they are readily forthcoming, while the advantage of asking for cognitions about the self, e.g., I am self-punishing, is that they allow the therapist to generalize about the individual. Applying this distinction to the two instruments employed in this study, we might note that Derogatis (1977) described the SCL-90 as a measure of "psychological symptom status" (p. 5). The ICL is not so easily subsumed under these rubrics. It is a personality inventory that asks *Ss* to endorse applicable interpersonal attributes, but the interpersonal descriptions are more adjectival and general, e.g., I am very anxious to be approved of, than specifically behavioral, e.g., I find myself joking and clowning around too much to get other people to like me. It may be that describing general attributes of the self

requires much more psychological sophistication and insight than reporting symptoms and specific behaviors. Szasz (1974) noted that the relationship between the use of protolanguage and the sender's conscious knowledge of the message he communicates is an inverse one,

> While it is evidently impossible to speak about something one does not know, it is possible to express, by means of protolanguage, something which is not clearly understood, explicitly known, or socially acknowledged. (p. 133)

Thus, *Ss* may have been quite willing and able to endorse items on the SCL-90 that described their symptoms, while they may have found it difficult to endorse ICL attributes of the self -- the very attributes that constituted the core conflict that impelled them to seek psychological services in the first place! These sorts of problems would have been *displayed* in the intake and subsequent treatment interviews, but would not have been verbalized until *Ss knowledge* of their problems metamorphisized into an understanding of the *meaning* of those problems.

An even more basic methodological confound stems from the very nature of the administration of the SCL-90 and the ICL. Whereas the administration of the ICL requires *Ss* to either endorse or ignore an item, that of the SCL-90 requires *Ss* to respond to each item on a scale of classificatory intensity from 0 to 4. Thus, intensity is assessed explicitly by the SCL-90 and implicitly by the ICL. The clearer change in therapy differences derived from the SCL-90 may simply be a reflection of the demand characteristics of the instruments. The SCL-90 sets a pattern for *Ss* such that they respond to each item, while the ICL asks *Ss* merely to *consider* all items and to respond to those that are apropos. This might subtly encourage *Ss* to get it over with quickly by endorsing a few items and then moving on to the next instrument. The

writer suspects that both substantive and methodological factors affect the change in therapy differences derived from the SCL-90 and the ICL, but this issue will have to await future investigation.

Hypothesis 1

> It was hypothesized that *Ss* presenting moderate levels of anxiety before therapy (as assessed by the Anxiety dimension on the SCL-90) would report more change after therapy (as assessed by both the SCL-90 and the ICL) than those *Ss* reporting extreme levels of Anxiety before therapy.

In order to minimize the number of statistical tests performed, it was necessary to determine whether the data justified assessing the presence of curvilinear relationship. Visual examination of the scatterplots of change in therapy of the major variables with respect to pre-therapy Anxiety yielded an ambiguous picture. Even with 63 *Ss*, it was difficult to discern whether the relationships were predominantly linear or curvilinear. Also, the measure of the strength of linear association (Pearson *r*) yielded a modest result, accounting for less than 13% of the variance. By contrast, the measure of the strength of total variance accounted for (eta^2) yielded a more substantial result. This comparison showed that along the continuum of change in therapy Anxiety scores, *Ss* did not yield change in therapy scores that corresponded with linear regularity. That is, *Ss* with greater pre-therapy Anxiety scores did not show proportionately greater differences in change in therapy change. Rather it showed that there was some regularity, but that it wasn't primarily linear.

Examination of the multiple regression equations focused especially on the quadratic terms to discern whether there was a regularity following Hebb's (1955) extension of Lindsley's (1951) Activation

Theory, i.e., whether the *Ss* reporting extreme levels of anxiety manifested less change than those reporting moderate amounts.

The point is that the shape of the activation curve is described by a negative quadratic equation of the form $Y = -X^2$, in the ideal.

This study questioned whether *Ss* behave in a way describable by this equation. This was assessed by examining the quadratic (X^2) term in the regression equations. Of particular interest are those seven equations for which the general equation was significant. Of these seven, three (Psychoticism, Paranoia, and Interpersonal Sensitivity) yielded a negative quadratic term significantly different from zero and two others (Somatization and Phobic Anxiety) yielded negative quadratic terms that suggested significance ($p \leq .1$). The remaining two scales were Depression and Obssessive-Compulsiveness.

This pattern is interesting when examined in light of the general finding of change in therapy differences. Of the nine scales examined, those that reflected the least change, Hostility and AIN, and those that reflected the greatest change, Depression and Obsessive-Compulsiveness, constituted the bottom of the order of significance of quadratic terms. That is, those scales that reflected the greatest and the least change in *Ss* over the course of therapy also displayed the least sensitivity to the hypothesis that moderate levels of reported Anxiety would predict greater change in therapy. Apparantly the measures of Hostility and AIN served as weaker barometers of change than the others; enough so that *Ss* pre-therapy level of reported Anxiety was not predictive of therapy outcome. On the other hand, the scales of Depression and Obsessive-Compulsiveness were *so* sensitive as barometers of change in therapy that *Ss* pre-therapy level of reported Anxiety served as only a gross

predictor of change. Thus, while the linear terms of the regression equations displayed significant predictive value, the quadratic term did not, though the *p* values are included for the reader's inspection; (*p* = .13 & .14). Perhaps these scales were so responsive to change in therapy that the subtle effect of low, medium, and high levels of anxiety was overwhelmed. This pattern also explains the two scales that approached significance, Somatization and Phobic Anxiety. Their sensitivity as a barometer of change in therapy was greater than for Hostility and AIN -- which served as non-predictors of therapy outcome -- and less than for Psychoticism, Paranoia, and Interpersonal Sensitivity -- which served as sensitive, but subtle predictors of change in therapy.

In summary, this comparison of the regression on pre-therapy Anxiety and change in therapy outcome showed that the scales that were grossly sensitive to change in therapy outcome, Depression and Obsessive-Compulsiveness, overwhelmed the subtle prediction of moderate pre-therapy reported Anxiety as a predictor. The scales that were slightly less sensitive to change in therapy outcome, Psychoticism, Paranoia, and Interpersonal Sensitivity, registered the subtle effect of moderate pre-therapy reported Anxiety. The scales that were moderately sensitive to change in therapy only *approached* significance in registering the subtle effect of moderate pre-therapy reported Anxiety. Finally, the scales that were the least sensitive to change in therapy, Hostility and AIN, did not at all register the (apparently) subtle effect of moderate pre-therapy reported Anxiety.

An alternative explanation is that the quadratic equation is too simple to reflect the underlying pattern in the data. It might be that

pre-therapy reported Anxiety would generate a robust measure with a more complex regression equation. This statistical hypothesis, however, was outside the scope of this study and so was not addressed.

In this author's opinion, the data substantiate the hypothesis that a moderate degree of experienced anxiety serves as a better vehicle for eventual change than the extremes of high or low degrees of anxiety.

Hypothesis 2

> It was hypothesized that when *Ss* are divided into high- and low-Anxiety groups, the high-Anxiety group would manifest a greater decrease in reported symptoms on the SCL-90 and change in the average intensity of interpersonal reflexes (AIN) on the ICL.

In light of the significant results -- excepting the variables Hostility and AIN -- in the test of linearity on the major variables, it is surprising that this hypothesis was not confirmed. This may be due to substantive reasons or methodological artifacts.

One methodological issue presents itself immediately, namely, the hypothesis was evaluated by means of *t*-tests on independent groups. As noted in the Results section, there was a substantial intercorrelation between the pre- and post-therapy data, so the premise of independence, itself, was unfounded. Glass and Stanley (1970) detailed the spurious outcome of hypothesis testing under these conditions. By treating the groups as independent, when in fact they are not, one greatly overestimates the standard error and "significant differences between the two means will be branded 'nonsignificant'"... (p. 300)

If the results are not an artifact of the methodology, one explanation is that there is not a significant difference in change in therapy among *Ss* at different levels of pre-therapy Anxiety. However,

this conclusion is easily contradicted by the one-way analyses of variance and tests of linearity. These suggest that there is a significant difference in change in therapy Anxiety scores and that there is a significant component of linear trend in the data. These categories comprise *Ss* with pre-therapy Anxiety mean scores up to 1, between 1 and 2, between 2 and 3, and greater than 3. So, the grouping of high- and low-Anxiety *Ss* should have reflected a significant difference in change in therapy mean change scores, irregardless of the value at which the groups were split into high- and low-Anxiety.

It is curious that of 36 *t*-tests, one reflected a significant change in therapy mean change, namely, Obsessive-Compulsiveness with *Ss* divided into groups at pre-therapy Anxiety mean values of 2.0. Of 36 *t*-tests one would naturally expect one or two to indicate a significant result merely out of chance. However, this one seems to reflect the same criterion regarding standard error mentioned earlier. The standard error value for the dimension Obsessive-Compulsiveness is lower than most of the other dimensions, and as low as almost any. The other with a comparably low standard error of the mean is Paranoia, which suggested but did not indicate a significant result.

Hypothesis 3

> It was hypothesized that there would be an increase in the intensity of maladaptive interpersonal reflexes as a function of pre-therapy Anxiety scores across *Ss*.

The methodological confound inherent in independent-group *t*-tests discussed in the previous section is once again relevant. However, even if these results are ignored, the overall results merely suggested one significant finding. This finding might serve to bolster a strongly

significant result, but there was no increase or decrease in reporting of maladaptive interpersonal reflexes as a function of pre-therapy Anxiety across the four groups of *Ss* in the analysis of variance. Thus, Hypothesis 3 was not confirmed.

Hypothesis 4

> It was hypothesized that *Ss* would manifest parallel change over the course of therapy in the intrapersonal (SCL-90) and interpersonal (ICL) measures.

The methodological confounds discussed earlier with respect to the ICL are once again relevant and need to be acknowledged in regard to this hypothesis as well as the first.

Despite the methodological reservations, the data indicate significant findings on some variables and suggest them on others. This might be a reflection of differential change in the two spheres. It has long been an axiom of both psychodynamic and behavioral theories that change resulting from psychotherapy is not instantaneous.

Sullivan (1953a) asserted that one is as mentally healthy as one is aware of one's interpersonal relations, and that the successfully treated patient will know one's self as others know him or her. One of his students (Fromm-Reichmann, 1950) elaborated on this dictum, focusing on the termination of intensive psychotherapy,

> Patient and therapist should be satisfied with the results of their psychotherapeutic collaboration if and when the patient has gained a sufficient degree of lasting insight into his interpersonal operations and their dynamics to enable him, in principle, to handle them adequately. (p. 188)

However, a caveat was added,

> Patients are not expected to reach all these ultimate psychotherapeutic goals during treatment....It may be presupposed

> that the road is open for the possible eventual post-therapeutic fulfilment of the all-comprehensive goals of treatment... (p. 192)

Representing modern cognitive-behaviorism, Mahoney (1974) encouraged individuals to become personal scientists with "broad and effective coping skills (p. 273)" and described therapy as "an apprenticeship in problem solving (p. 274)."

Both the psychodynamic and the behavioral therapists strive to equip individuals with the necessary tools to pursue satisfaction in life outside of therapy. To claim that therapy engenders satisfaction in its participants would be analogous to saying that a carpenter's tools provides him or her with a building. In the realm of interpersonal functioning, there may be a considerable latency between the achievement of insight and the consolidation of skills. Thus, while the intrapersonal measures may have reflected a change in *Ss* internal processes and experience, the ICL may have reflected the struggle in the external world yet to be confronted. In this light, it is not surprising that change was reflected to a greater degree in the intrapersonal sphere than in the interpersonal sphere.

The ad-hoc examination of the components of the ICL yielded most interesting results. Change in the DOM and LOV dimensions can yield negative results if the change is from a higher level on a dimension to a lower level of domination or affiliation, so these measures were expressed as absolute values to reflect change over the course of therapy, regardless of the direction.

With regard to the affiliation (LOV) dimension, it is logically consistant that change in affiliation negatively intercorrelated with change in Hostility. What makes this finding so interesting is that the

two scales derive from different instruments, ostensibly oriented to different realms of experience, the *intra*personal and the *inter*personal.

While the affiliation dimension shed no light on this hypothesis, the Dominance-Submission (DOM) dimension intercorrelated significantly with the SCL-90 dimensions. This is counter-intuitive to the author's understanding of the process of change in psychotherapy. Horowitz, Sampson, Siegelman, Weiss, and Goodfriend (1978) chronicled the alternating changes (in a patient unable to experience sexual intimacy) between the increased ability to assert and distance and the ability to offer intimacy to another as the individual progressed through a psychoanalysis. The theory invoked to explain this outcome was that one doesn't feel comfortable being intimate with another until one one learns the ability to control the degree of intimacy with another. In this study, control corresponds to the Dominance-Submission dimension on the ICL and intimacy naturally corresponds to to the Love-Hate dimension. It would be expected that change in both dimensions would occur concomitantly with the other.

However, initimacy has been regarded as the interpersonal experience about which people suffer the most conflict. It was empirically shown (Horowitz, 1979) that a dimension labeled The Degree of Psychological Involvement was the primary of three dimensions in a cluster analysis of problems individuals presented in intake interviews. Perhaps a change in patterns of affiliation are the slowest to change. Thus, the duration of the therapy experiences studied may have been insufficient to enable the *Ss* to feel that their relationships with others had changed appreciably. Alternatively, perhaps *Ss* were sampled too soon after therapy for any resulting change to be reflected.

In light of the discrepant results, the validity of Hypothesis 4 was suggested, but not confirmed.

Limitations of the Study

It became apparent during analysis of the data that some of the statistical procedures were incorrectly applied, and that there were methodological improprieties present in the study. Some of these have been detailed throughout the analysis of the results, but defecits heretofore unadressed will be presented as well.

One conceptual problem implicit in the comparison of intrapersonal and interpersonal measures was that there were eight intrapersonal dimensions on the SCL-90 (excluding the predictor dimension of Anxiety) and only one interpersonal dimension on the ICL. A conceptually more equitable comparison could have been made between, e.g., the Global Severity Index (GSI), the Positive Symptom Distress Index (PSDI), or the Positive Symptom Total (PST), on the SCL-90, and the AIN measure of the ICL. Obversely, the eight symptom dimensions could have been compared with the octant or sixteenth dimensions on the ICL, if a large number of measures was deemed desirable. As a consequence of not doing so, there was little opportunity for valid comparisons between the intrapersonal and interpersonal measures. This is not to downplay the criticisms of the ICL, or the substantive explanations presented in the Discussion. On the contrary, these points could have been made more convincingly with more data to support them. No rationale is presented for this ommision.

Another major weakness of the study became apparent in the analysis of Hypothesis 2. It was planned before analyzing the data that

independent groups *t*-tests would be performed. Unfortunately, it was not realized that testing the same *Ss* before and after a treatment nearly always yields correlated data. Taking this into account would have allowed the use of more powerful statistical techniques.

Although single-case designs have been vigorously attacked on methodological and interpretive grounds (Campbell & Stanley, 1963; Kazdin, 1978), it is undeniable that one advantage of them is that the data of one case can be so thoroughly examined that little is lost. In this study, no examination was undertaken, e.g., to assess for differences in cases where the post-therapy questionnaire was completed immediately following termination of the therapy relationship and when it was completed six months hence. Other examples of the limitations of group-case studies are; the variance in the duration of treatment, variation in therapists due to theoretical conviction, years of experience, and most simply, individual differences in effectiveness. This raises much deeper issues than will be addressed here, but it should suffice to note that many questions remain unanswered due to the loss of data in the grouping of psychotherapy cases.

Summary and Conclusions

This exploratory study investigated the relationship between the level of reported anxiety of clients before psychotherapy and change in reported symptoms and the average intensity of interpersonal reflexes over the course of therapy. Sixty-three male and female adult clients completed intrapersonally and interpersonally oriented self-report inventories before therapy commenced, during the course of therapy, and after termination.

The theoretical inverted-U motivation curve derived from Activation Theory was adopted as a model of client motivation in psychotherapy. In this model, optimal effectiveness of behavior obtains for moderate levels of arousal because cue function, the ability to effectively organize, is optimized. Thus, this is the state in which the individual is most able to learn new processes.

It was hypothesized that a moderate level of reported anxiety before therapy would be predictive of greater change over the course of therapy than lower or higher levels of reported anxiety. This hypothesis was confirmed. It was also hypothesized that when *Ss* were divided into high- and low-Anxiety groups, such that all *Ss* reported at least one elevated scale of distress besides Anxiety, the high-Anxiety group would show greater change over the course of therapy. This was not confirmed. Finally, it was hypothesized that intrapersonal and interpersonal measures would correlate both before and over the course

of therapy. The former prediction was not confirmed while the latter was partially confirmed.

APPENDICES

APPENDIX A

Tables

Table A1
Differences Between Males and Females on SCL-90 and ICL Variables

	Females[a]		Males[b]		Males & Females		
Measure	$\bar{X}$	*s.d.*	$\bar{X}$	*s.d.*	$\bar{X}$	*s.d.*	*t*
SCL-90 Variables							
Somatization							
Pre-Test	.82	.61	.60	.72	.76	.65	1.24
Post-Test	.50	.46	.50	.72	.50	.54	.05
Difference	.32	.64	.11	.42	.26	.59	1.31
Obs.-Compulsiveness							
Pre-Test	1.64	.79	1.56	.80	1.61	.79	.36
Post-Test	.96	.78	.88	.61	.94	.73	.42
Difference	.67	.79	.68	.73	.68	.77	-.03
Inter. Sensitivity							
Pre-Test	1.75	.76	1.59	1.05	1.70	.85	.69
Post-Test	1.10	.79	1.12	.78	1.10	.78	-.10
Difference	.66	.79	.47	.87	.60	.81	.82
Depression							
Pre-Test	2.14	.75	1.88	1.00	2.06	.84	1.11
Post-Test	1.30	.90	1.15	.75	1.25	.85	.64
Difference	.84	.83	.74	.97	.81	.87	.42
Anxiety							
Pre-Test	1.56	.80	1.42	.98	1.52	.85	.61
Post-Test	.90	.73	.95	.78	.91	.74	-.25
Difference	.66	.81	.47	.87	.60	.82	.86
Hostility							
Pre-Test	1.25	.89	.90	.71	1.15	.85	1.52
Post-Test	.94	1.08	.71	.74	.87	.99	.85
Difference	.31	1.06	.19	.47	.28	.92	.47

Table A1 (cont'd.)

Measure	Females[a] $\bar{X}$	Females[a] *s.d.*	Males[b] $\bar{X}$	Males[b] *s.d.*	Males & Females $\bar{X}$	Males & Females *s.d.*	Males & Females *t*
Phobic Anxiety							
Pre-Test	.70	.70	.56	.73	.66	.70	.75
Post-Test	.39	.58	.35	.50	.38	.56	.24
Difference	.31	.72	.20	.54	.28	.67	.59
Paranoia							
Pre-Test	1.30	.78	1.01	.89	1.21	.82	1.28
Post-Test	.80	.73	.76	.79	.79	.74	.18
Difference	.50	.72	.25	.65	.42	.71	1.30
Psychoticism							
Pre-Test	1.03	.63	.93	.73	1.00	.66	.56
Post-Test	.57	.64	.55	.78	.56	.68	.09
Difference	.46	.59	.38	.74	.44	.63	.49
ICL Variable							
AIN							
Pre-Test	2.11	.20	2.02	.28	2.08	.23	1.38
Post-Test	2.02	.23	1.95	.22	2.00	.23	1.13
Difference	.09	.31	.07	.27	.09	.30	.23

Note. $N = 63$, unless specified otherwise

[a] $N = 44$ (43 on ICL Post-test & Difference)

[b] $N = 19$

* $p \leq .10$ (2-sided) [none qualified as significant]

Table A2
Pre-Therapy vs. Post-Therapy Comparisons of SCL-90 and ICL Variables

Measure	*r*	*t*
SCL-90 Variables		
Somatization	.528***	3.48***
Obsessive-Compulsiveness	.495***	7.00***
Interpersonal Sensitivity	.512***	5.89***
Depression	.470***	7.38***
Anxiety	.472***	5.82**
Hostility	.511***	2.39***
Phobic Anxiety	.458***	3.32***
Paranoia	.594***	4.73***
Psychoticism	.554***	5.51***
ICL Variables		
AIN[a]	.163**	2.27**
DOM	.285***	-4.01***
LOV	.452***	3.90***

Note. *N* = 63 for each variable, *df* = 62, unless specified otherwise

Note. All tests are 1-sided except DOM & LOV *t*-tests, which are 2-sided (non-directional)

[a] *N* = 62, *df* = 61

* $p \leq .05$

** $p \leq .01$

*** $p \leq .001$

Table A3
Comparisons of Changes in SCL-90 and ICL Variables Over Therapy

Measure	Correlate: Pre-Therapy Anxiety	Change in AIN	Change in DOM	Change in LOV
SCL-90 Variables				
Somatization	.324***	.222**	.308***	-.061
Obs.-Compulsiveness	.336***	.243**	.208**	-.142
Interper. Sensitivity	.246**	.183*	.224**	.027
Depression	.280***	.114	.218**	-.031
Anxiety	.609***	.048	.228**	-.074***
Hostility	.166*	.158	.026**	-.326***
Phobic Anxiety	.352***	.056***	.284**	-.143
Paranoia	.209**	.350***	.146*	-.137
Psychoticism	.222**	.205*	.163*	-.001
ICL Variables				
Change in AIN	.009	(ID)	-.071	.049
Change in DOM	.002*	-.071	(ID)	.047
Change in LOV	-.168*	.049***	.047	(ID)
Pre-Therapy AIN	.178*	.656***	-.068	.128
Post-Therapy AIN	.162*	-.638***	.019**	.063**
Pre-Therapy DOM	-.200*	.129***	-.431**	-.228**
Post-Therapy DOM	-.006***	.305**	.052**	-.032***
Pre-Therapy LOV	-.290*	.012	.250**	.478***
Post-Therapy LOV	-.206*	.207	.271**	-.119

Note. All correlations are 1-sided; $N = 63$, (except Post-Therapy AIN and Change in AIN, $N = 62$)

*$p \leq .10$

**$p \leq .05$

***$p \leq .01$

Table A4
Comparison of Linear and Nonlinear Variance Using Grouped Data

Change Measure	ANOVA F^a	ANOVA eta^2	Test of Linearity F^b	Test of Linearity r^2	Proportion Non-Linear Variance $eta^2 - r^2$
SCL-90 Variables[c]					
Somatization	4.82**	.197	3.84*	.092	.104
Obs.-Compulsiveness	8.19**	.294	7.74**	.109	.185
Inter. Sensitivity	6.11**	.237	6.62**	.066	.171
Depression	5.52**	.219	5.64*	.070	.149
Hostility	1.10	.053	1.05	.019	.034
Phobic Anxiety	5.51**	.219	4.65*	.096	.123
Paranoia	8.50**	.302	10.99**	.042	.260
Psychoticism	7.56**	.278	9.25**	.051	.226
ICL Variables					
Change in AIN	.85[d]	.042	1.28	.001	.042
Pre-Therapy AIN	.71	.035	.56	.016	.018
Post-Therapy AIN	.98[d]	.048	1.12	.011	.037

Note. Independent variable was grouped SCL-90 pre-therapy Anxiety

[a] $df = 3,59$ (except where noted)

[b] $df = 1,2$

[c] These measures reflect the *difference* between pre- and post-therapy

[d] $df = 3,58$

* $p < .05$

** $p < .01$

Table A5
Regression Equations (Standardized) for SCL-90 and ICL Variables:

$Y = B_1X + B_2X^2$

Measure	X term		X^2 term		Equation Overall	
	B_1	F	B_2	F	Adj. R^2	F^a
SCL-90 Variables						
Somatization	1.22	5.8**	-.92	3.3*	.124	5.3***
Obs.-Compulsiveness	1.09	4.6**	-.78	2.3	.118	5.1***
Int. Sensitivity	1.49	8.6***	-1.28	6.4***	.123	5.3**
Depression	1.07	4.3**	-.81	2.4**	.085	3.8****
Anxiety	1.47	12.1****	-.88	4.4**	.395	20.9****
Hostility	.50	.9	-.35	.4	.002	1.0
Phobic Anxiety	1.18	5.5****	-.85	2.9***	.136	5.8***
Paranoia	1.72	11.8****	-1.55	9.6****	.150	6.4****
Psychoticism	1.87	14.6****	-1.70	12.0****	.183	7.8****
ICL Variable						
AIN	-.17	.1	.19	.2	(0)	.1

Note. All measures reflect the *difference* between pre- and post-therapy

Note. Although Anxiety is included for inspection, it is not a *dependent* variable because pre-therapy SCL-90 Anxiety is the *predictor* (independent) variable

[a] $df = 2,59$

* $p < .1$

** $p < .05$

*** $p \leq .01$

**** $p \leq .001$

Table A6

Change Over the Course of Therapy as Related to Pre-Therapy Anxiety (SCL-90) Cut-Off Points for High-Anxiety Group Selection

Measure	t^a	t^b	t^c
	SCL-90 Variables[d]		
Somatization	1.61*	1.40*	.51
Obsessive-Compulsiveness	1.84**	1.01	.40
Interpersonal Sensitivity	.09	-.19	-.71
Depression	.71	.02	.30
Anxiety	4.00***	2.18**	1.64*
Hostility[e]	.99	.55	.34
Phobic Anxiety	.79	.65	-.28
Paranoia	.76	.51	-.56
Psychoticism	1.06	-.24	-.79
	ICL Variables		
Change in AIN[e]	.82	1.67**	.66
Pre-Therapy AIN[e]	.94	1.58*	.65
Post-Therapy AIN[e]	-.13	-.42	-.07

Note. Cases for High-Anxiety were selected from those with a mean pre-therapy SCL-90 Anxiety score greater than or equal to the cut-off value

Note. All *t*-tests are 1-sided (directional)

[a] $N = 43$, cut-off value of 2.0

[b] $N = 36$, cut-off value of 2.25

[c] $N = 27$, cut-off value of 2.5

[d] These variables reflect the *difference* between pre- and post-therapy

[e] A separate variance estimate was used (instead of pooled) for *t*

* $p < .1$

** $p < .05$

*** $p < .01$

APPENDIX B

Letter of Consent for Participating Subjects

Dear Client:

The clinic is conducting an evaluation to assess the helpfulness of the services offered here in meeting the needs of our clients. We expect that through this evaluation we will be able to find ways to better serve you.

In order to carry out this evaluation, we request your assistance. We will ask you to fill out one or two questionnaries during your initial intake interview, after your last therapy session and sometime after your therapy has ended. In addition, we would like to tape record occasional therapy sessions. These questionnaires and tapes will help us understand your reasons for coming to the clinic and how useful therapy has been for you. All questionnaires and tapes will be held in strict confidence and you will remain completely anonymous. Your right to therapy will not be affected by your decision on whether or not to participate in the evaluation. You also have the right to drop out of the evaluation at any time.

If you are willing to participate in this research, please sign the statement below.

Sincerely yours,

The Staff of the Psychological Clinic

****

I hereby agree to take part in this evaluation research and grant permission for some of my/my child's therapy sessions to be tape recorded. I grant this permission with the understanding that names, questionnaries and recorded materials will be held in strict confidence.

_____

APPENDIX C

The Interpersonal Check List

Name_____ Age___ Sex_____ Date_____ Testing #_____

Address_____ City_____ Phone_____ Education_____

Occupation_____ Marital Status_____ Referred by_____

Group_____ Other_____

DIRECTIONS: This booklet contains a list of descriptive words and phrases which you will use in describing yourself and members of your family or members of your group. The test administrator will indicate which persons you are to describe. Write their names in the spaces prepared at the top of the inside pages. In front of each item are columns of answer spaces. The first column is for yourself, and there is another column for each of the persons you will describe.

Read the items quickly and fill in the first circle in front of each item you consider to be generally descriptive of yourself at the present time. Leave the answer space blank when an item does not describe you. In the example below, the subject (Column 1) has indicated that item A is true and and item B is false as applied to him.

		Item
	1 2 3 4 5 6 7 8	
A	●○○○○○○○	well-behaved
	1 2 3 4 5 6 7 8	
B	○○○○○○○○	suspicious

After you have gone through the list marking those items which apply to you, return to the beginning and consider the next person you have been asked to describe, marking the second column of answer spaces for every item you consider to be descriptive of him (or her). Proceed in the same way to describe the other persons indicated by the test administrator. Always complete your description of one person before starting the next.

Your first impression is generally the best so work quickly and don't be concerned about duplications, contradictions, or being exact. If you feel much doubt whether an item applies, leave it blank.

This booklet has been prepared by Timothy Leary, Ph.D., and published by the Psychological Consultation Service, 1230 Queens Road, Berkeley 8, California. The Interpersonal Check List was developed by Rolfe LaForge, Ph.D., and Robert Suczek, Ph.D., and other staff members of the Kaiser Foundation Research Project in Psychology.

Column 1 _____ Col. 2 _____ Col. 4 _____ Col. 6 _____ Col. 8 _____

SUBJECT'S NAME

Col. 3 _____ Col. 5 _____ Col. 7 _____ Date _____

SAMPLE:
1 2 3 4 5 6 7 8 G
A ● ○ ● ○ ● ● ○ ○ well-behaved

P	1 well thought of	33 often admired	65 always giving advice	97 twice as be too successful	P
P	2 makes a good impression	34 respected by others	66 acts important	98 expects everyone to admire him	P
A	3 able to give orders	35 good leader	67 bossy	99 manages others	A
A	4 forceful	36 likes responsibility	68 dominating	100 dictatorial	A
B	5 self-respecting	37 self-confident	69 boastful	101 somewhat snobbish	B
B	6 independent	38 self-reliant and assertive	70 proud and self-satisfied	102 egotistical and conceited	B
C	7 able to take care of self	39 businesslike	71 thinks only of himself	103 selfish	C
C	8 can be indifferent to others	40 likes to compete with others	72 shrewd and calculating	104 cold and unfeeling	C
D	9 can be strict if necessary	41 hard-boiled when necessary	73 impatient with others' mistakes	105 sarcastic	D
D	10 firm but just	42 stern but fair	74 self-seeking	106 cruel and unkind	D
E	11 can be frank and honest	43 irritable	75 outspoken	107 frequently angry	E
E	12 critical of others	44 straightforward and direct	76 often unfriendly	108 hard-hearted	E
F	13 can complain if necessary	45 resents being bossed	77 bitter	109 resentful	F
F	14 often gloomy	46 skeptical	78 complaining	110 rebels against everything	F
G	15 able to doubt others	47 hard to impress	79 jealous	111 stubborn	G
G	16 frequently disappointed	48 touchy and easily hurt	80 slow to forgive a wrong	112 distrusts everybody	G
H	17 able to criticize self	49 easily embarrassed	81 self-punishing	113 timid	H
H	18 apologetic	50 lacks self-confidence	82 shy	114 always ashamed of self	H
I	19 can be obedient	51 easily led	83 passive and unaggressive	115 obeys too willingly	I
I	20 usually gives in	52 modest	84 meek	116 spineless	I
J	21 grateful	53 often helped by others	85 dependent	117 hardly ever talks back	J
J	22 admires and imitates others	54 very respectful to authority	86 wants to be led	118 clinging vine	J
K	23 appreciative	55 accepts advice readily	87 lets others make decisions	119 likes to be taken care of	K
K	24 very anxious to be approved of	56 trusting and eager to please	88 easily fooled	120 will believe anyone	K
L	25 cooperative	57 always pleasant and agreeable	89 too easily influenced by friends	121 wants everyone's love	L
L	26 eager to get along with others	58 wants everyone to like him	90 will confide in anyone	122 agrees with everyone	L
M	27 friendly	59 sociable and neighborly	91 fond of everyone	123 friendly all the time	M
M	28 affectionate and understanding	60 warm	92 likes everybody	124 loves everyone	M
M	29 considerate	61 kind and reassuring	93 forgives anything	125 too lenient with others	M
M	30 encourages others	62 tender and soft-hearted	94 oversympathetic	126 tries to comfort everyone	M
O	31 helpful	63 enjoys taking care of others	95 generous to a fault	127 too willing to give to others	O
O	32 big-hearted and unselfish	64 gives freely of self	96 overprotective of others	128 spoils people with kindness	O

APPENDIX D

Scattergrams of SCL-90 and ICL Variables

Note: Figure captions represent ***Ordinate*** variable BY ***Abscissa*** variable

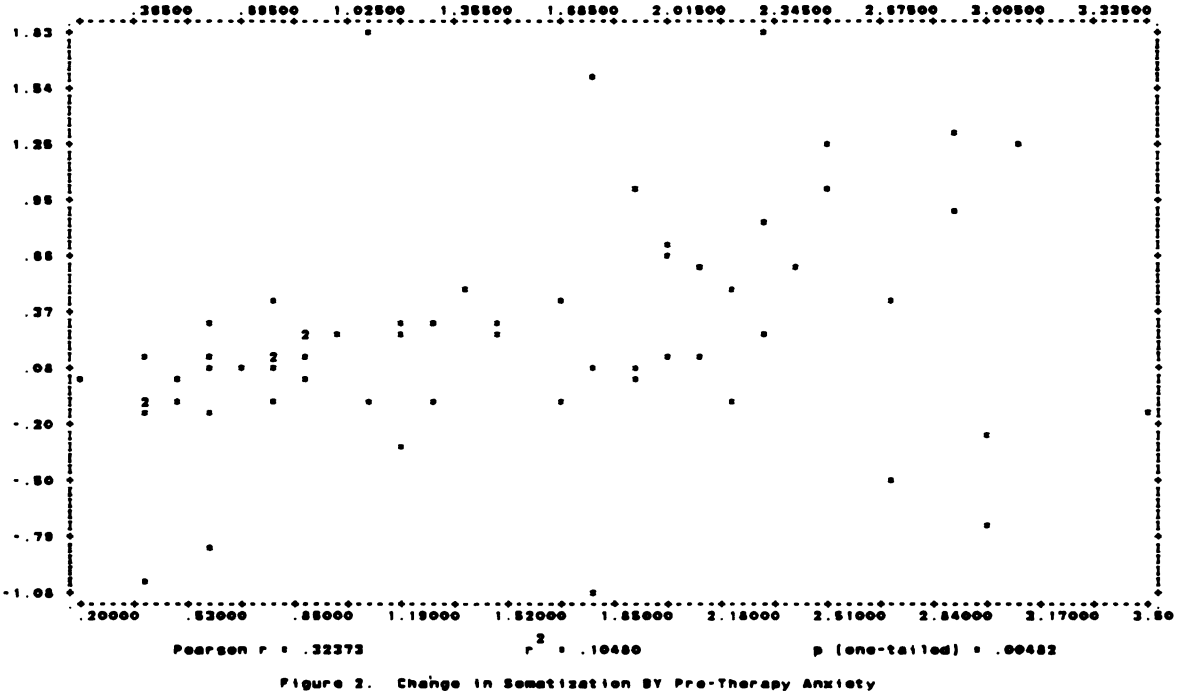


Figure 2. Change in Somatization BY Pre-Therapy Anxiety

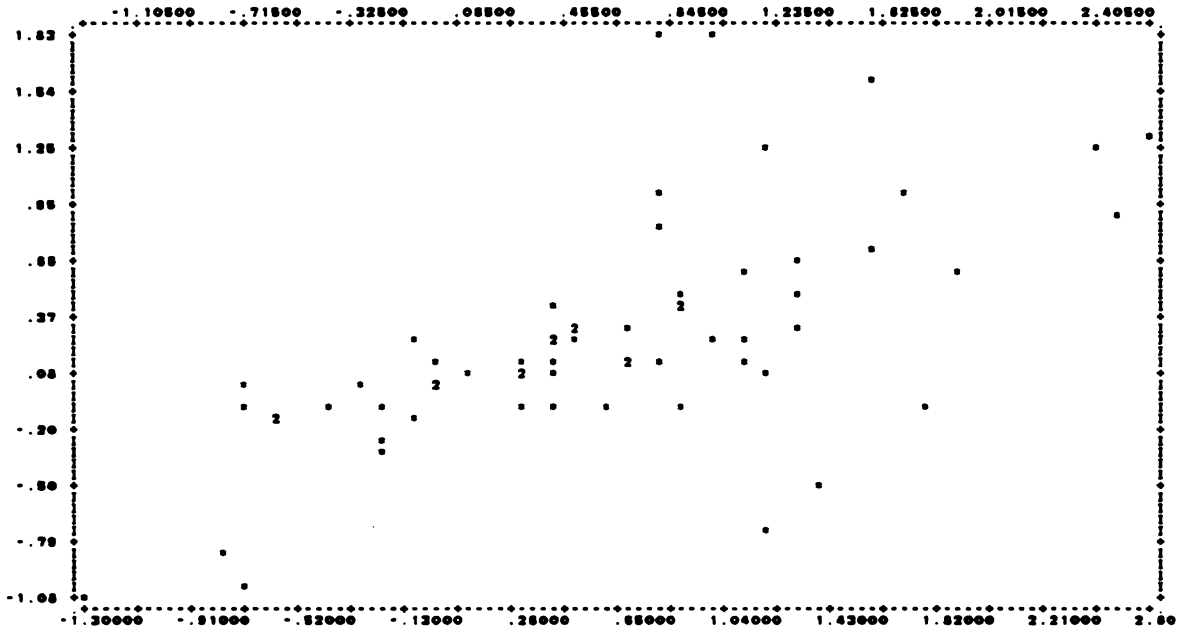


Figure 3. Change in Somatization BY Change in Anxiety

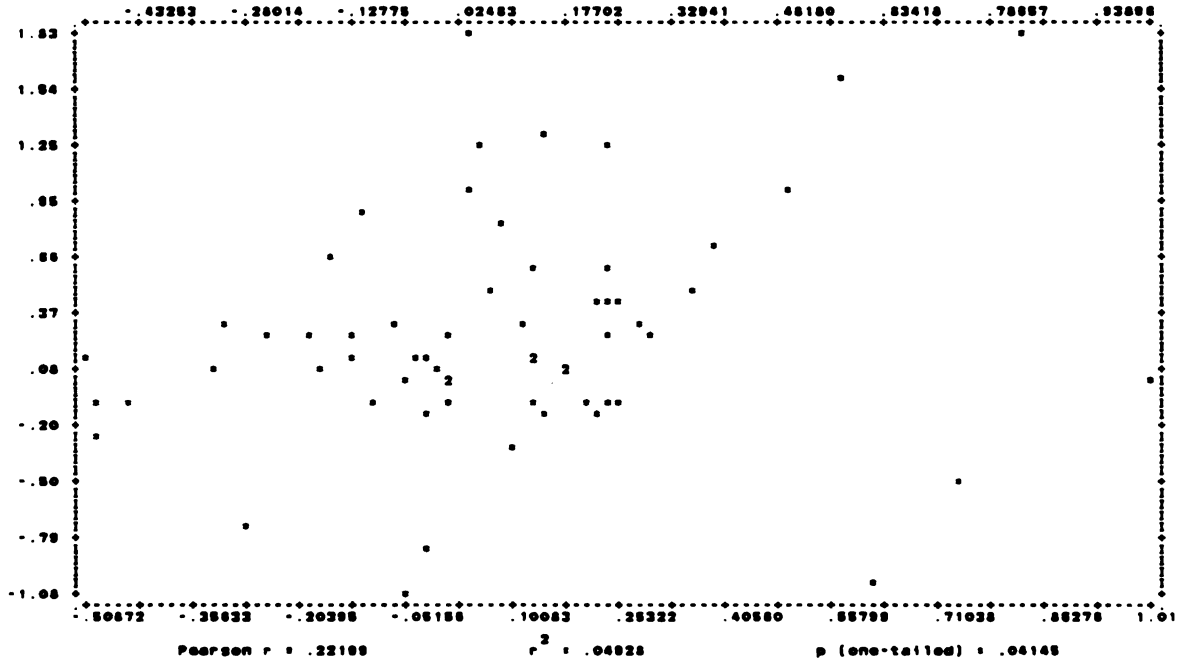


Figure 4. Change in Somatization BY Change in AIM

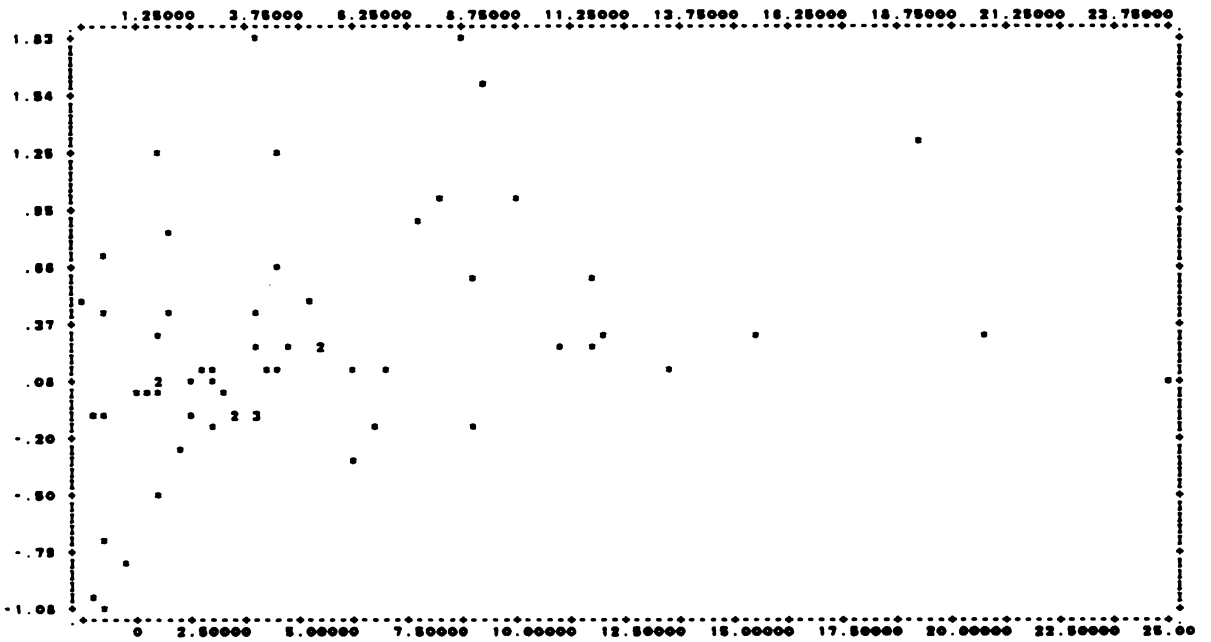


Figure 5. Change in Somatization BY Change in BDM

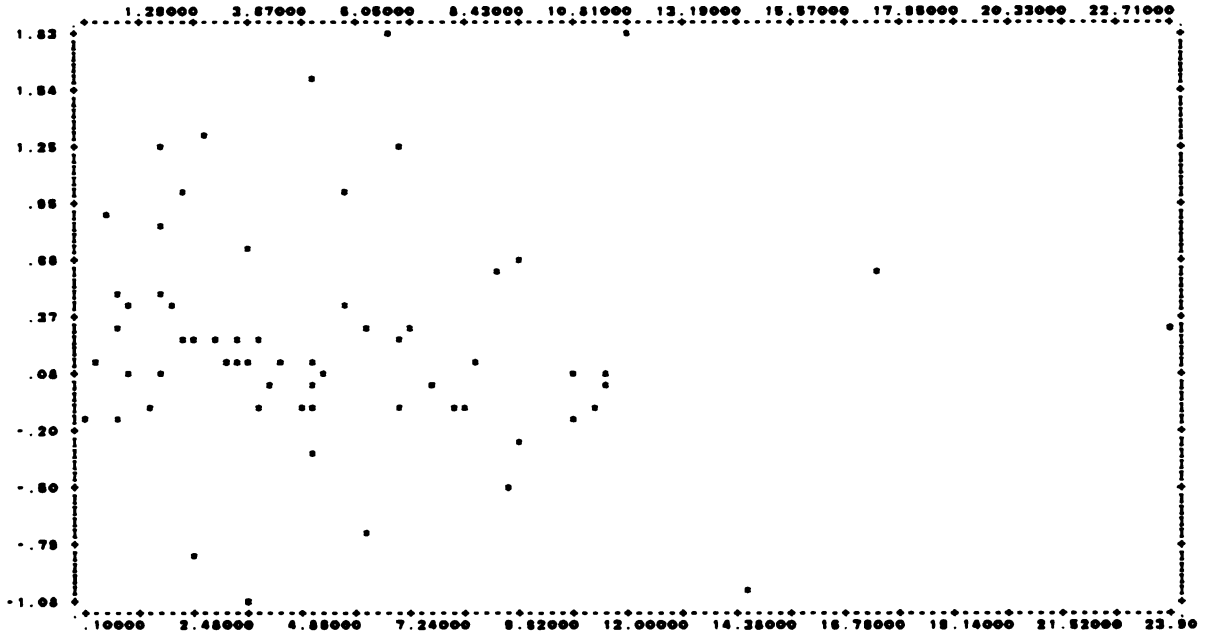


Figure 6. Change in Somatization BY Change in LOV

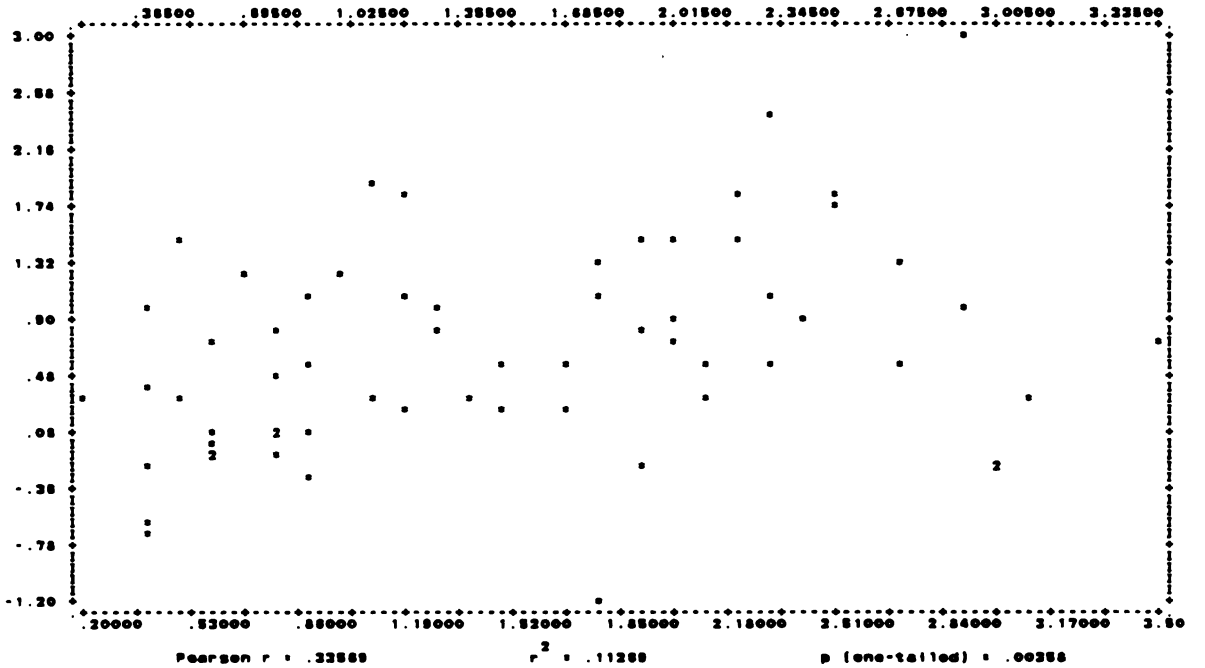


Figure 7. Change in Obsessive-Compulsiveness BY Pre-Therapy Anxiety

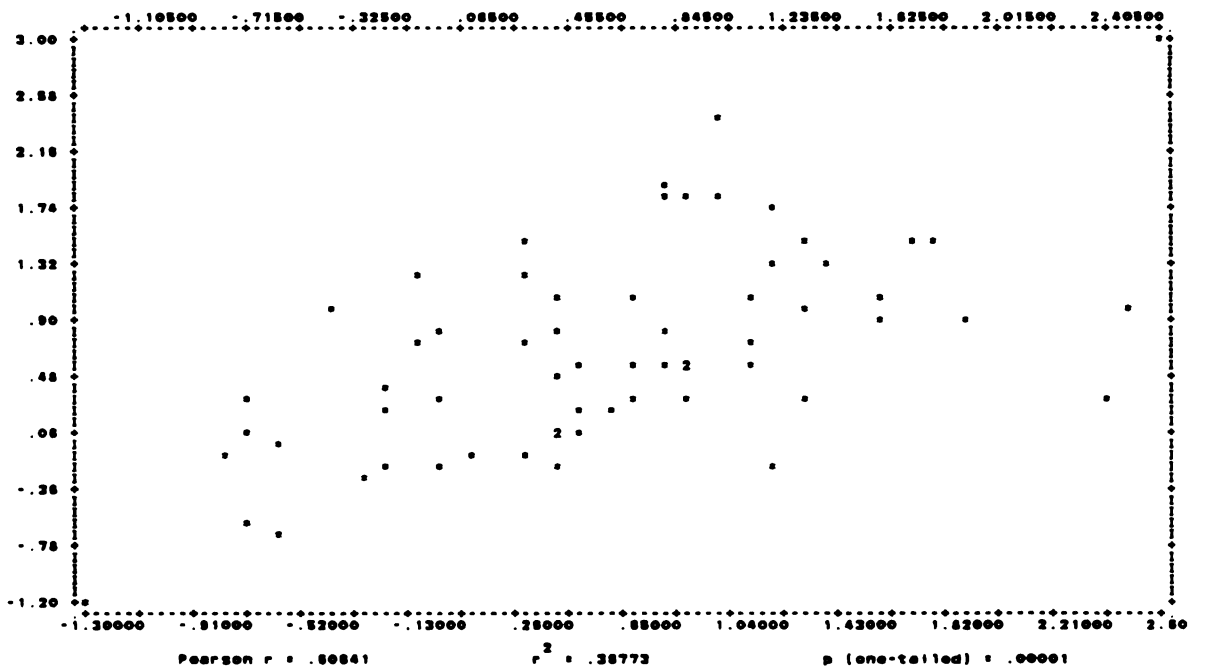


Figure 8. Change in Obsessive-Compulsiveness BY Change in Anxiety

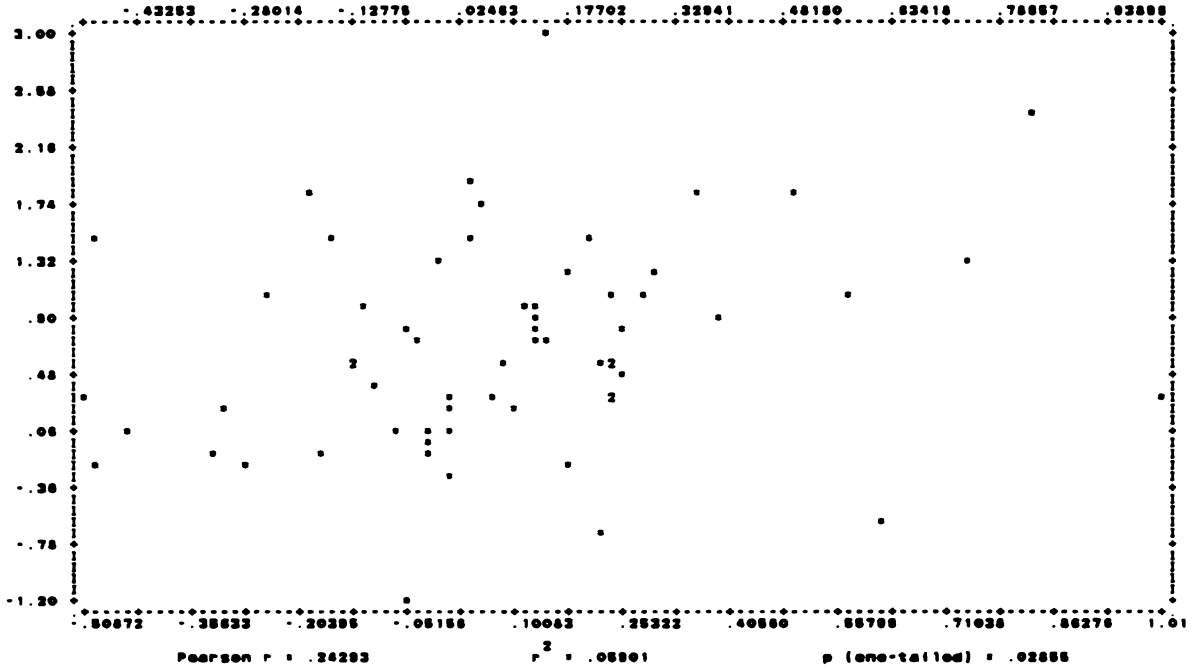


Figure 9. Change in Obsessive-Compulsiveness BY Change in AIM

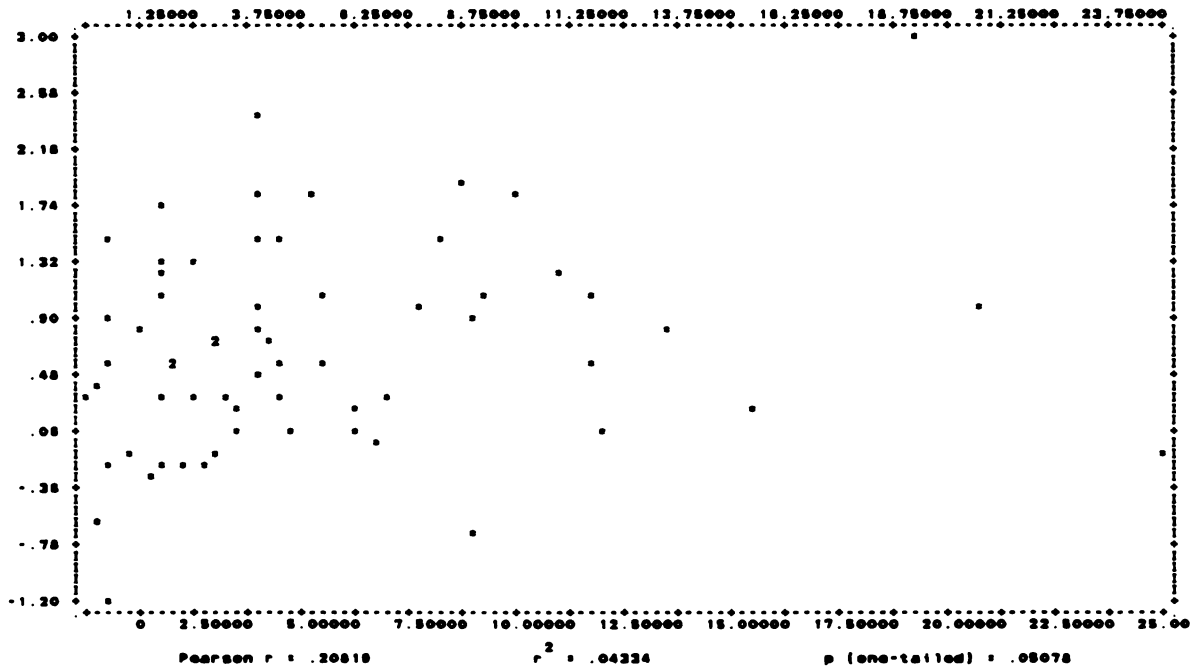


Figure 10. Change in Obsessive-Compulsiveness BY Change in BSM

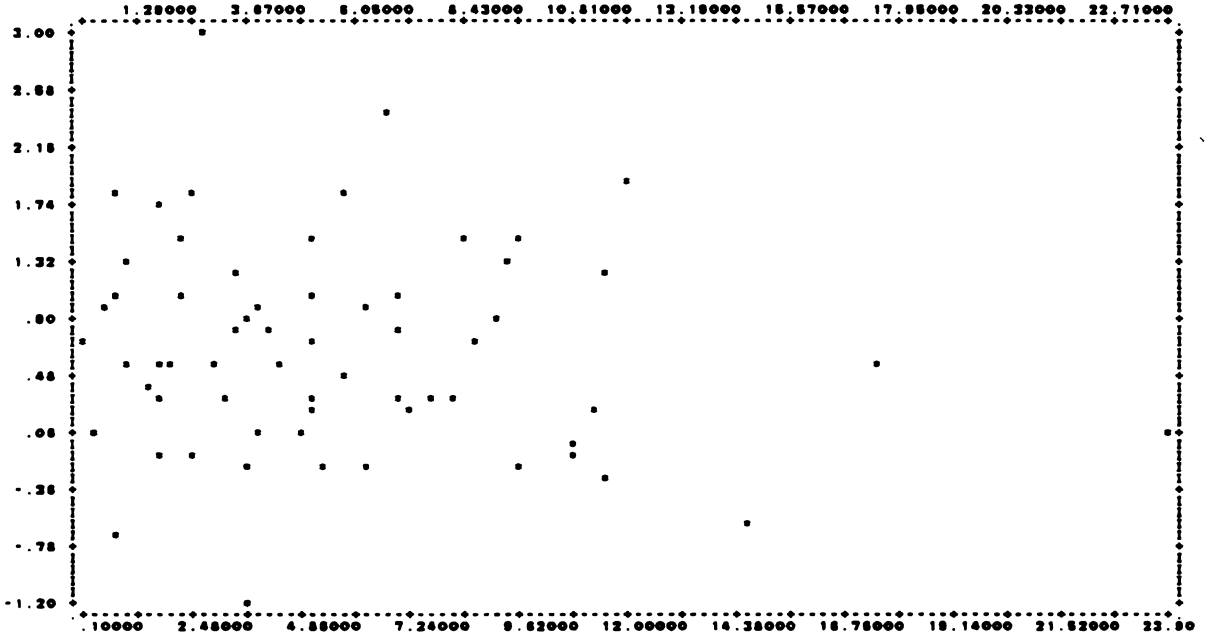


Figure 11. Change in Obsessive-Compulsiveness BY Change in LOV

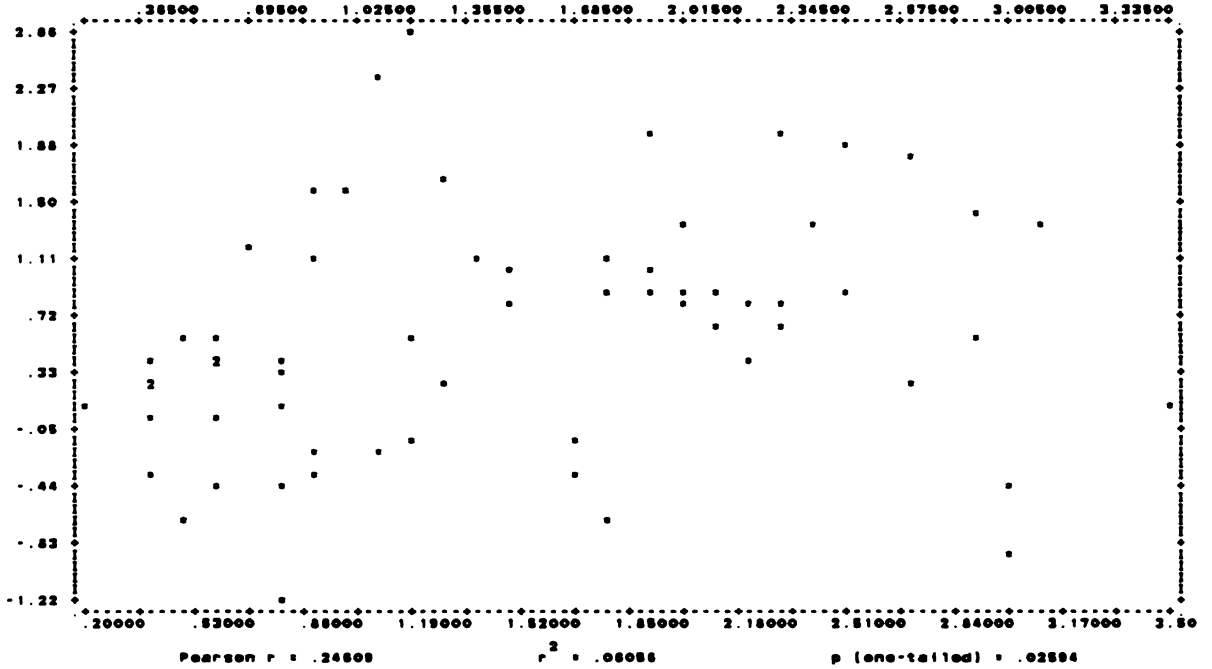


Figure 12. Change in Interpersonal Sensitivity BY Pre-Therapy Anxiety

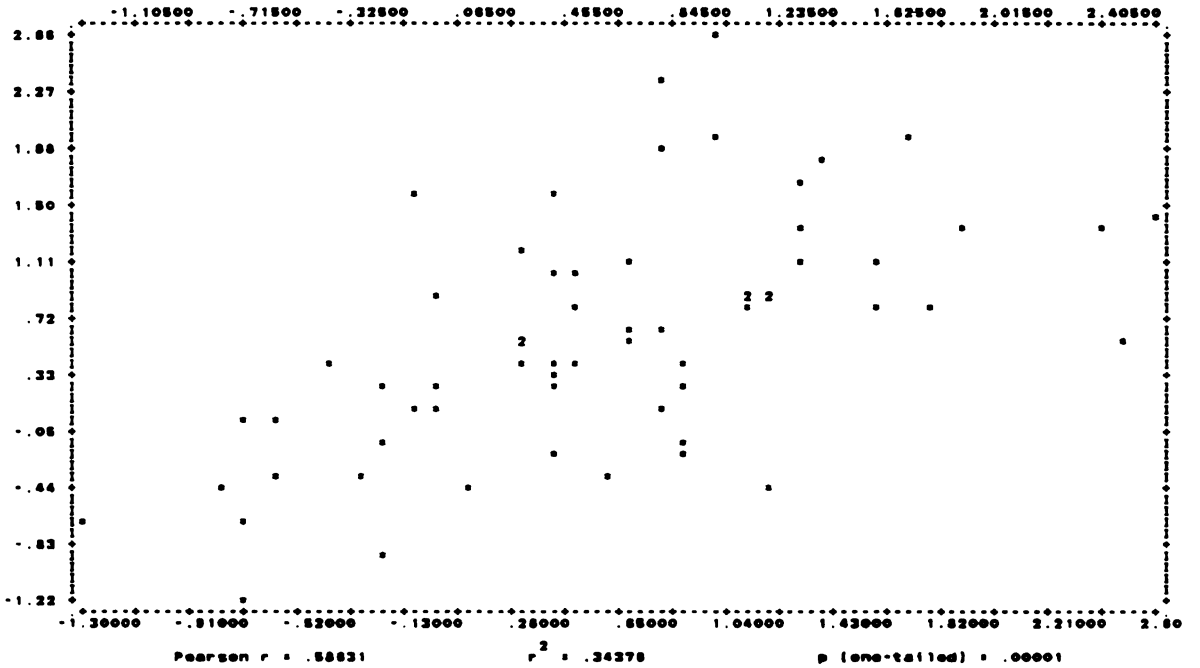


Figure 13. Change in Interpersonal Sensitivity BY Change in AIN

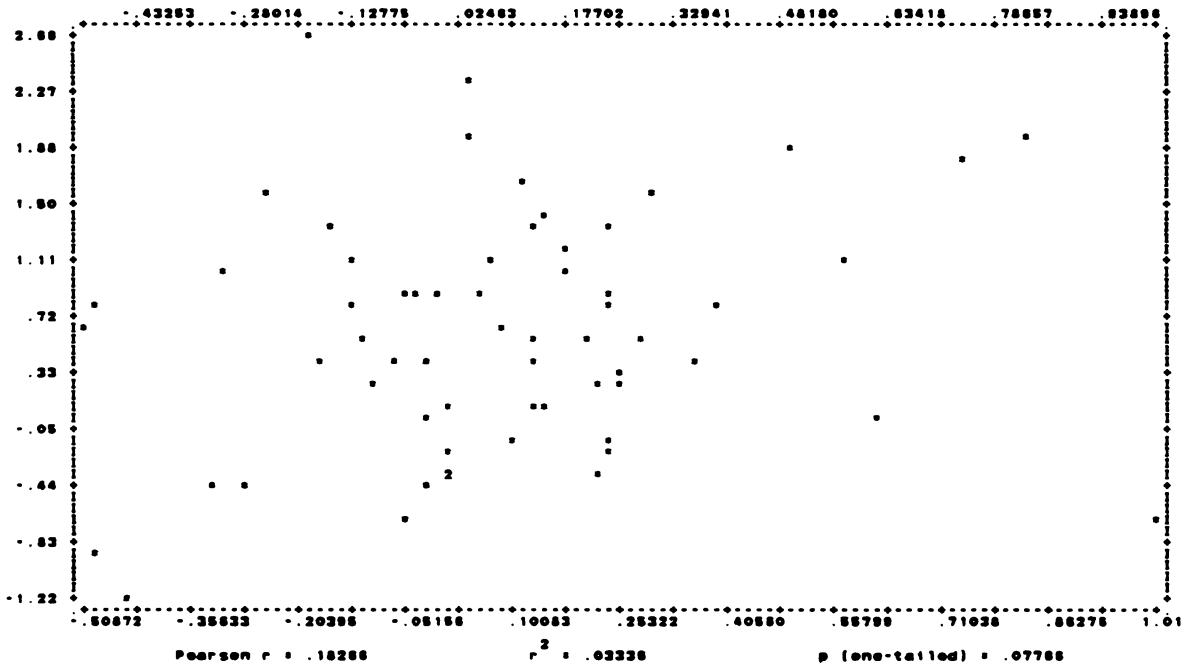


Figure 14. Change in Interpersonal Sensitivity BY Change in AIN

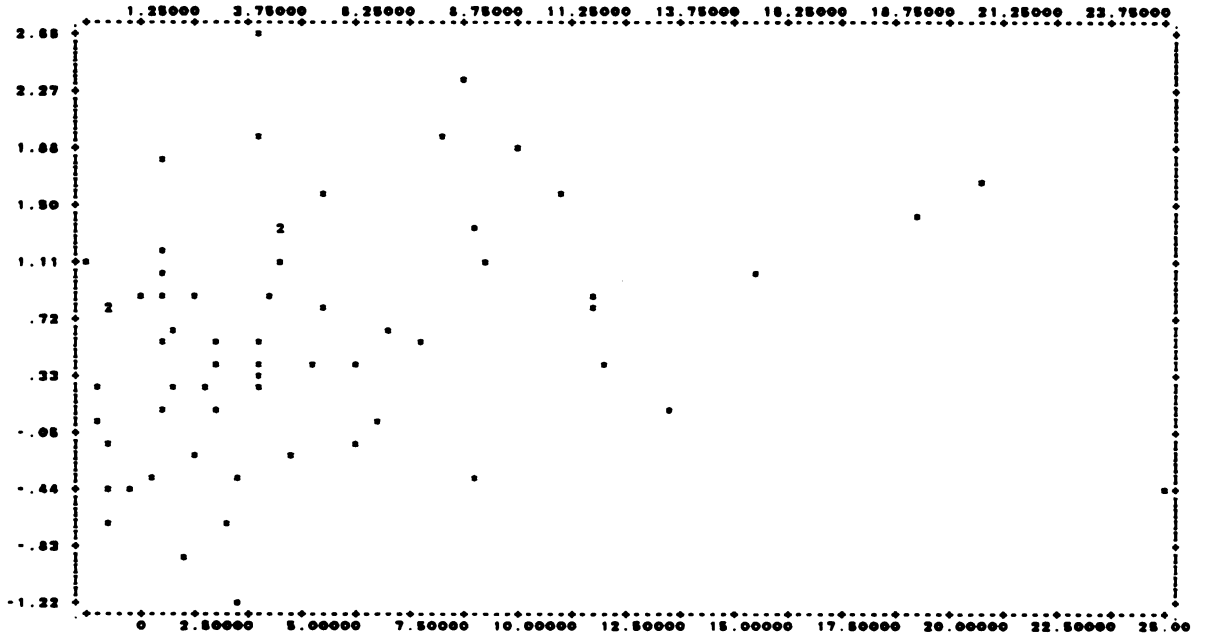


Figure 15. Change in Interpersonal Sensitivity BY Change in DSM

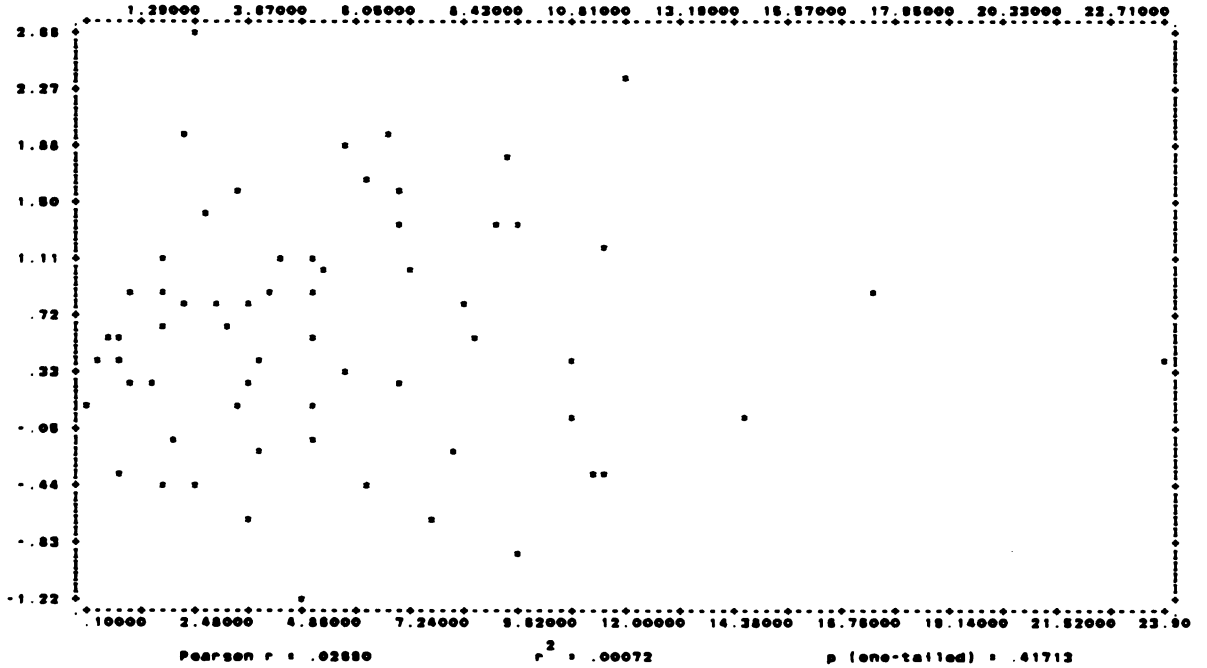


Figure 16. Change in Interpersonal Sensitivity BY Change in LSV

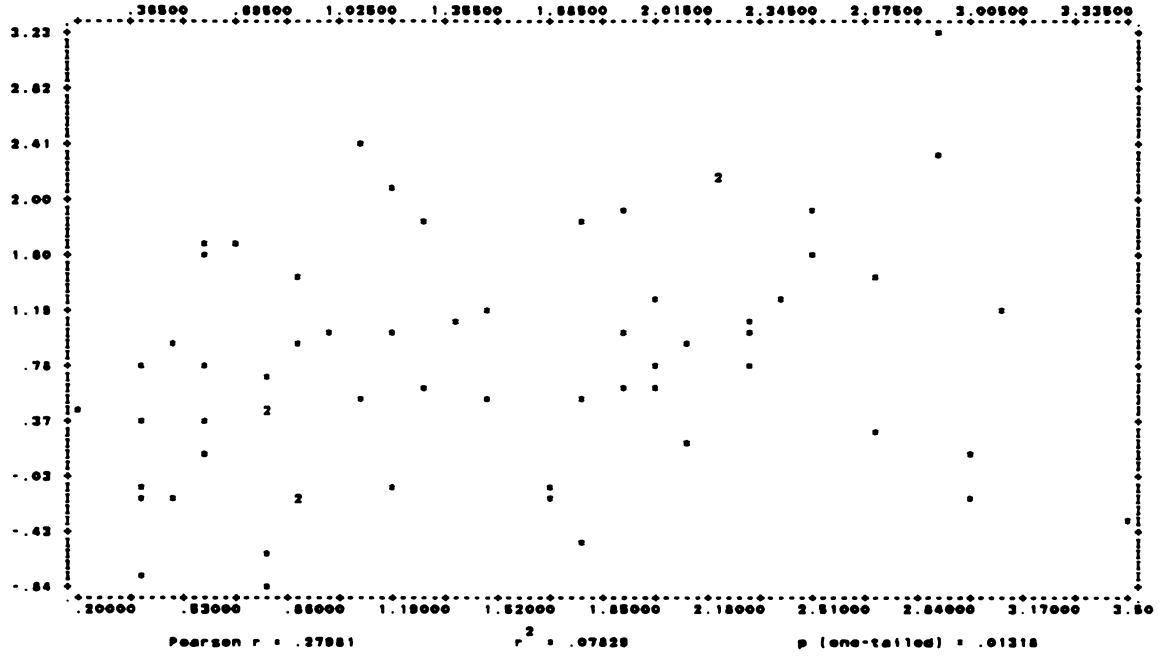


Figure 17. Change in Depression BY Pre-Therapy Anxiety

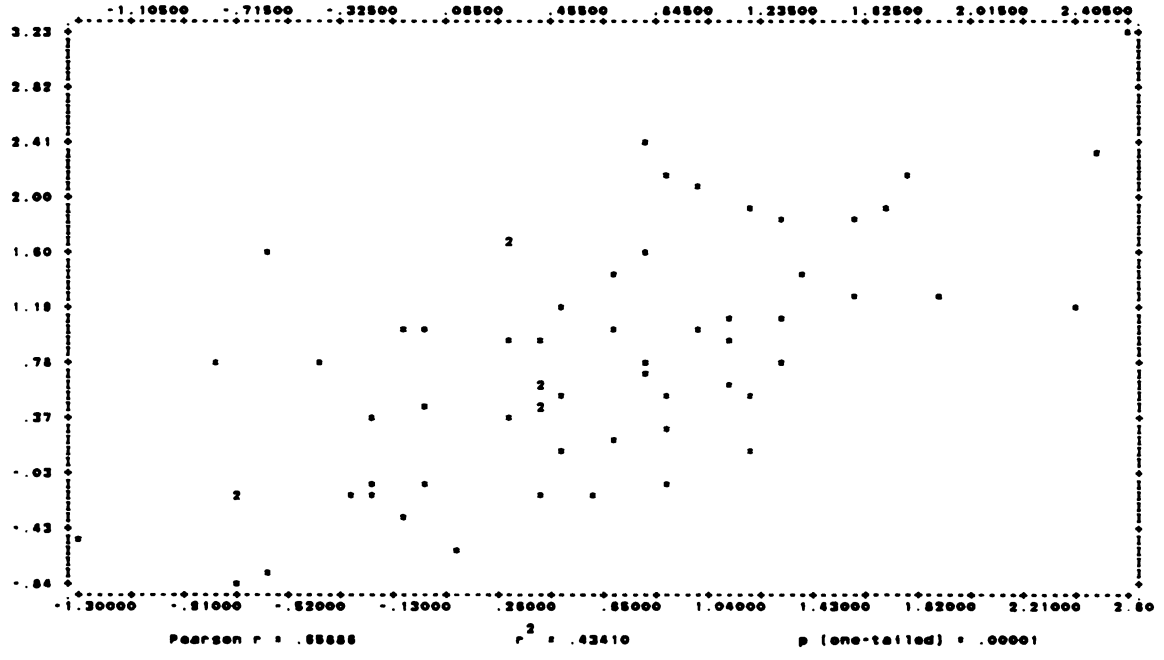


Figure 18. Change in Depression BY Change in Anxiety

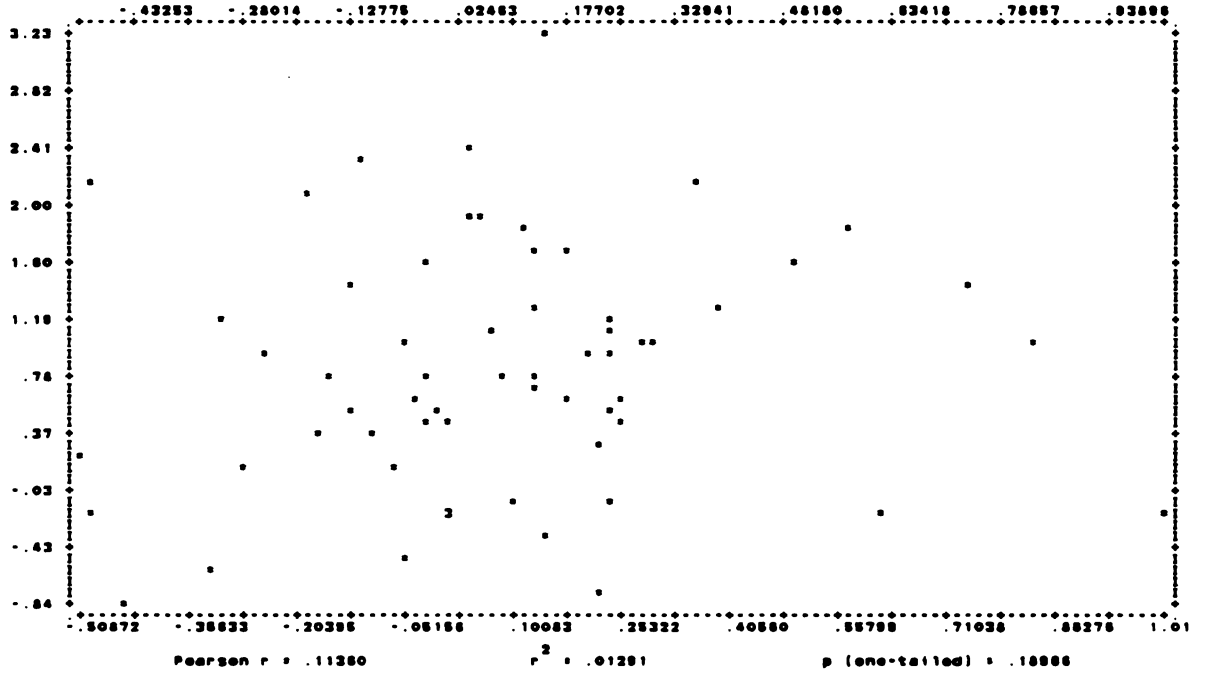


Figure 19. Change in Depression BY Change in AIM

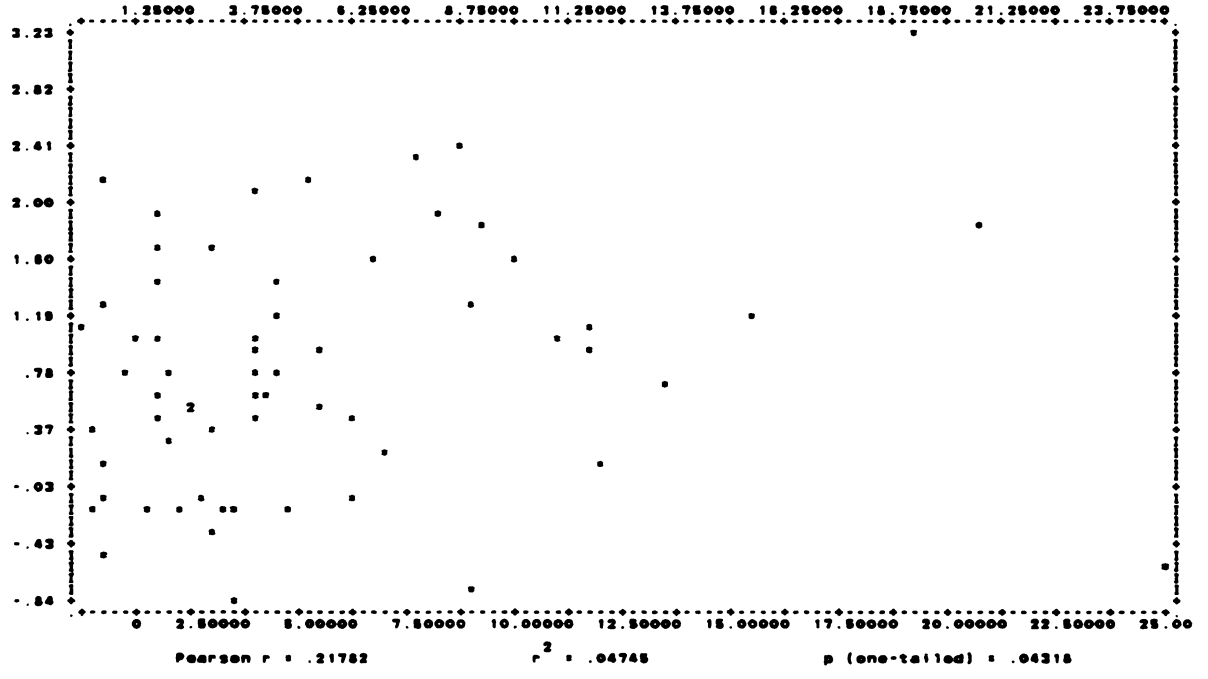


Figure 20. Change in Depression BY Change in DDM

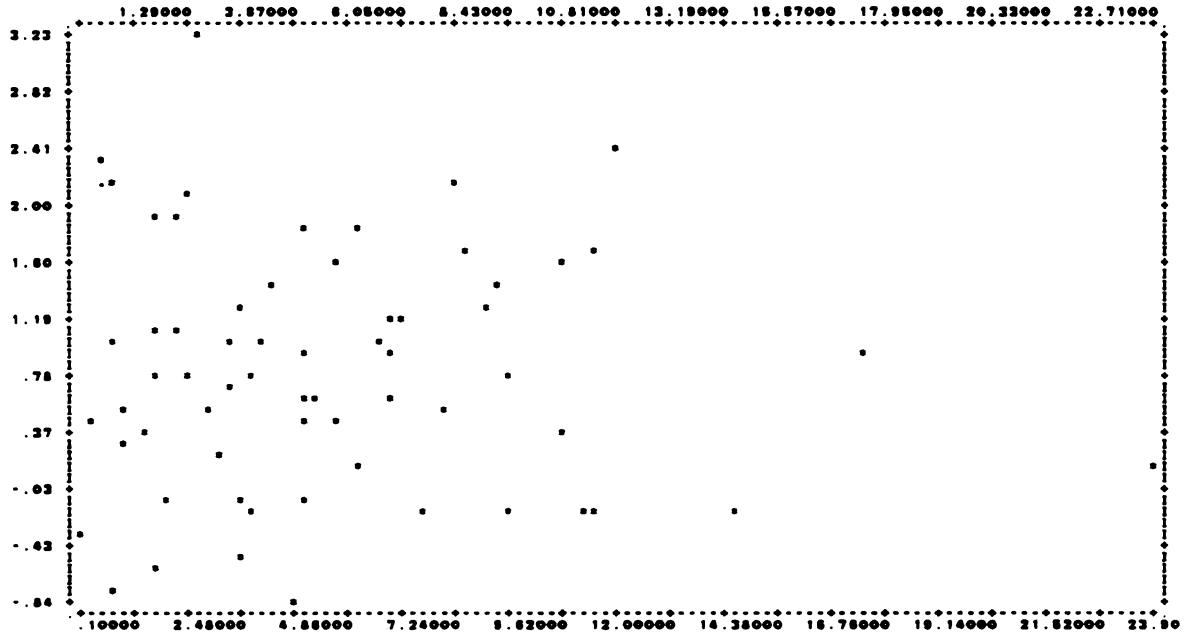


Figure 21. Change in Depression BY Change in LOV

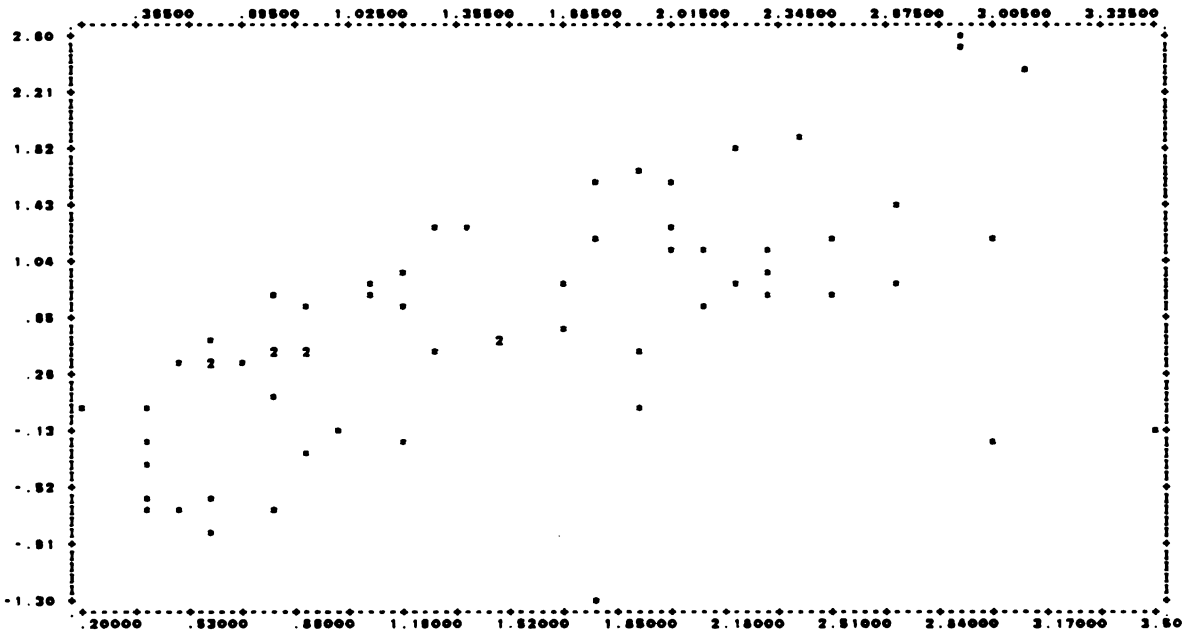


Figure 22. Change in Anxiety BY Pre-Therapy Anxiety

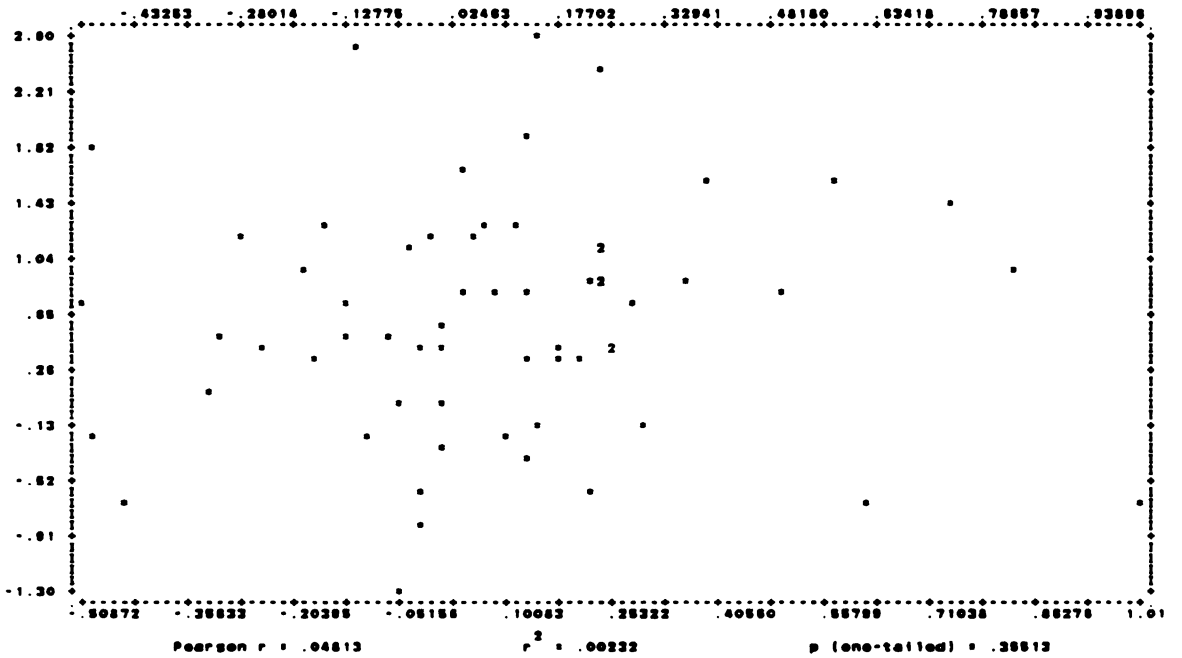


Figure 23. Change in Anxiety BY Change in AIH

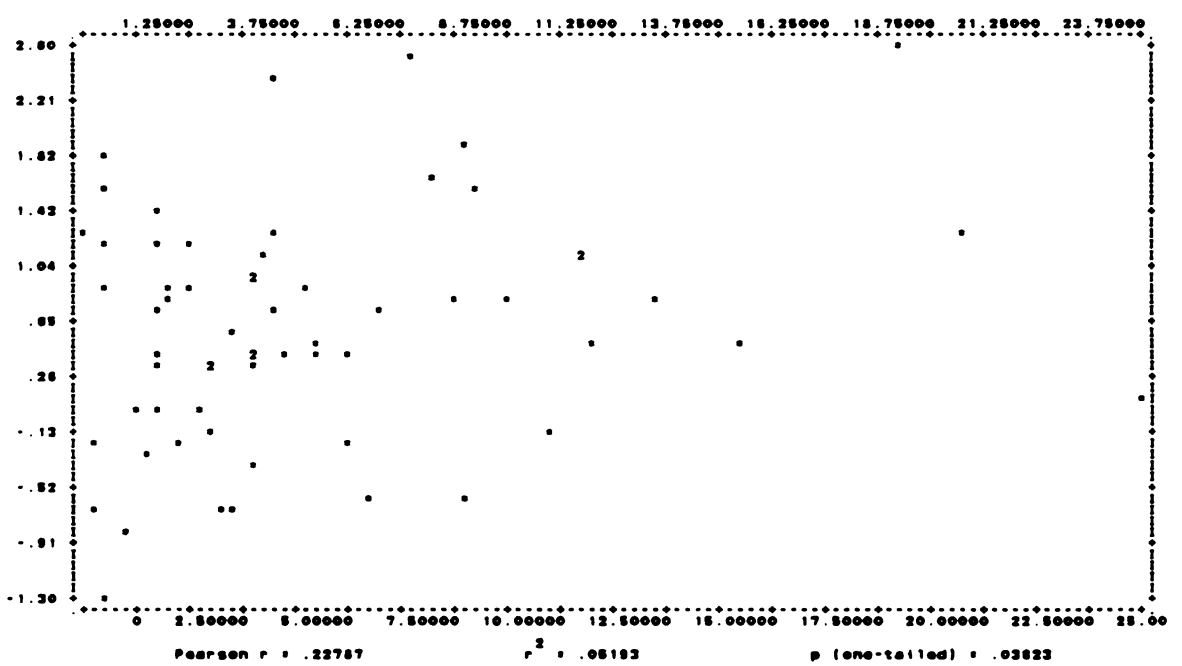


Figure 24. Change in Anxiety BY Change in DOM

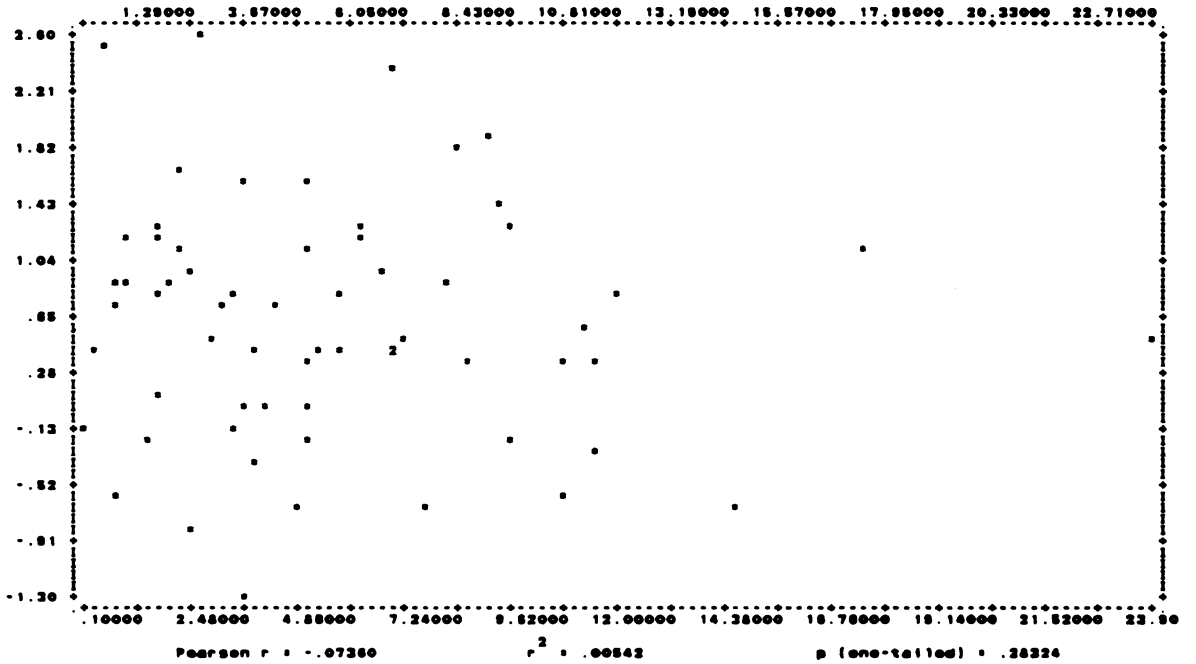


Figure 25. Change in Anxiety BY Change in LSV

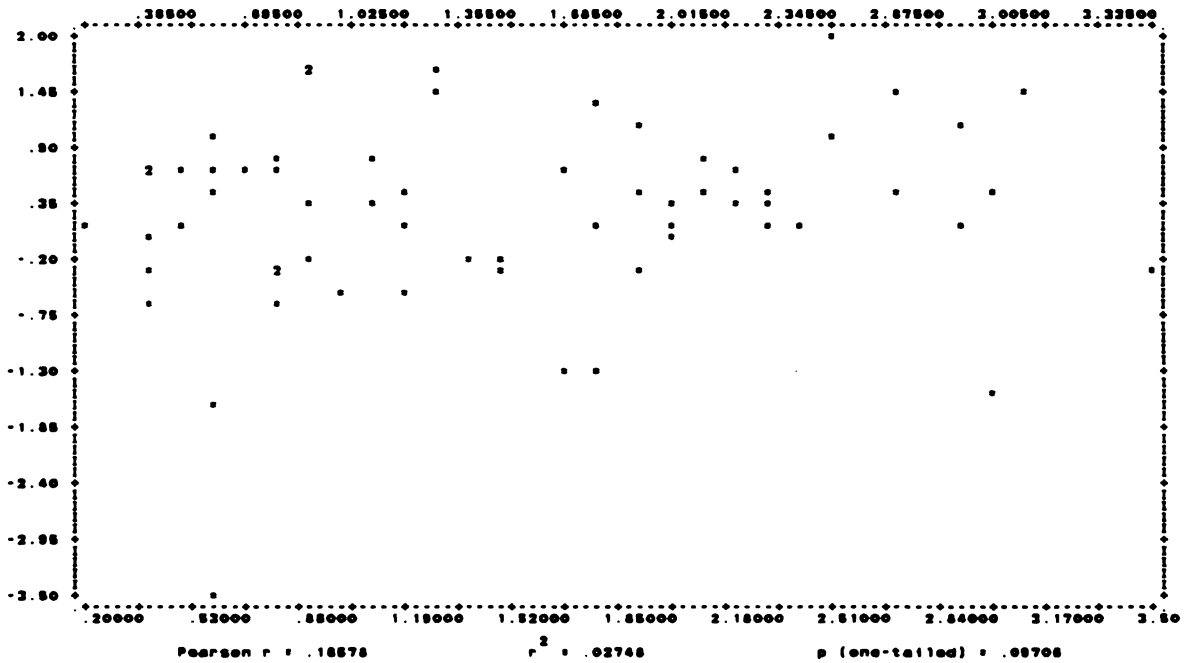


Figure 26. Change in Hostility BY Change in Pre-Therapy Anxiety

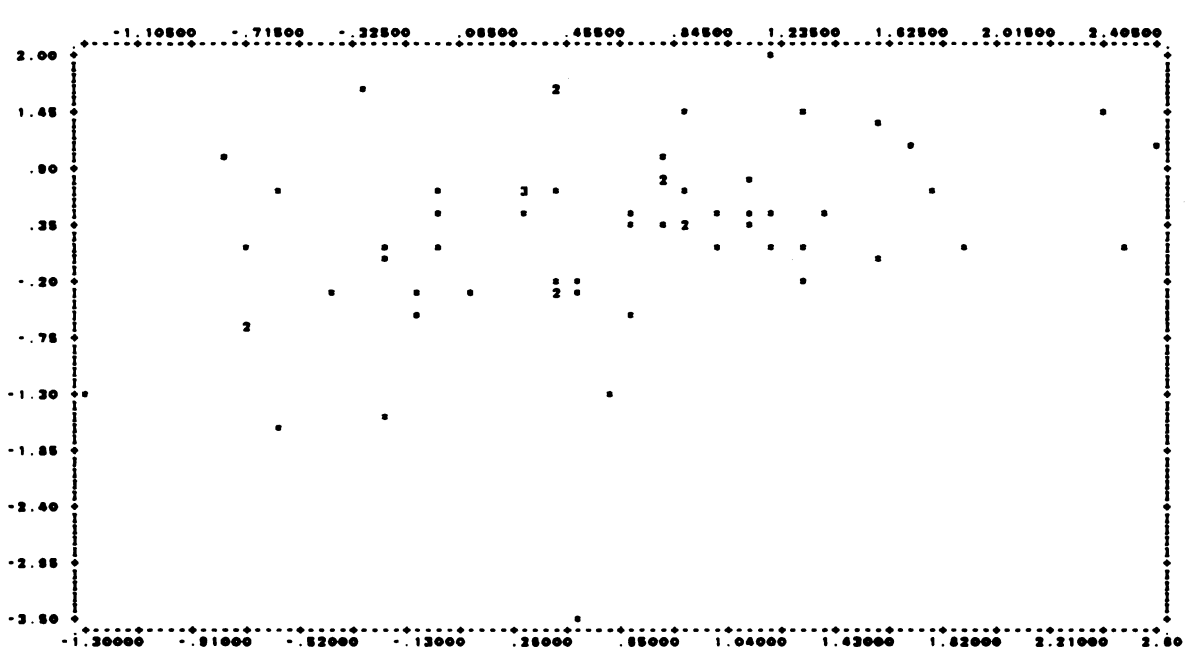


Figure 27. Change in Hostility BY Change in Anxiety

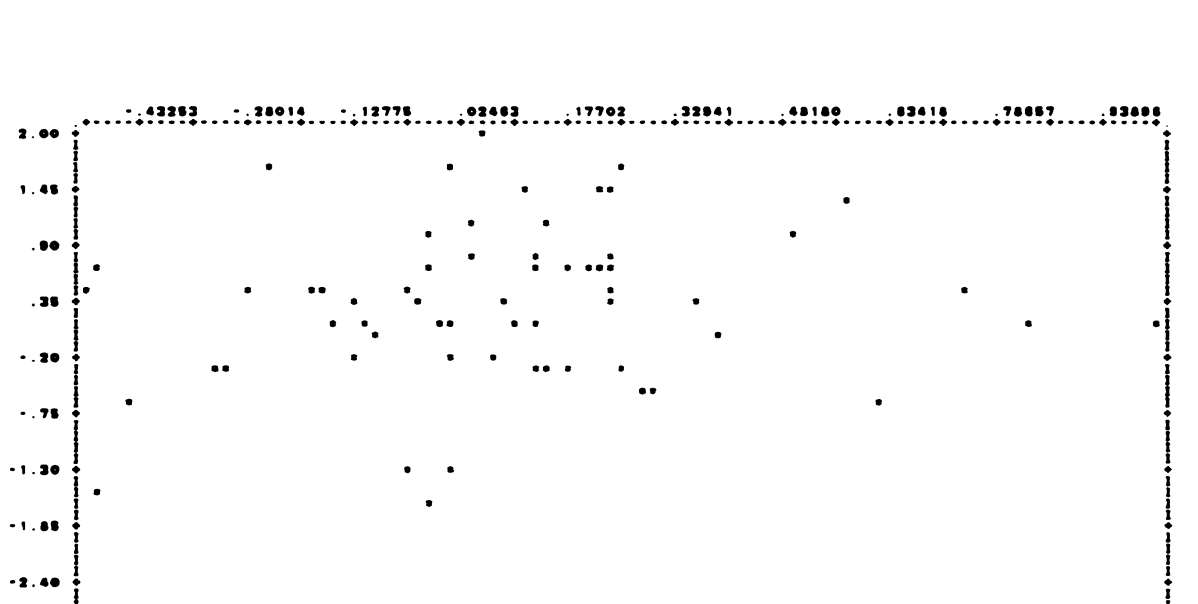


Figure 28. Change in Hostility BY Change in AIM

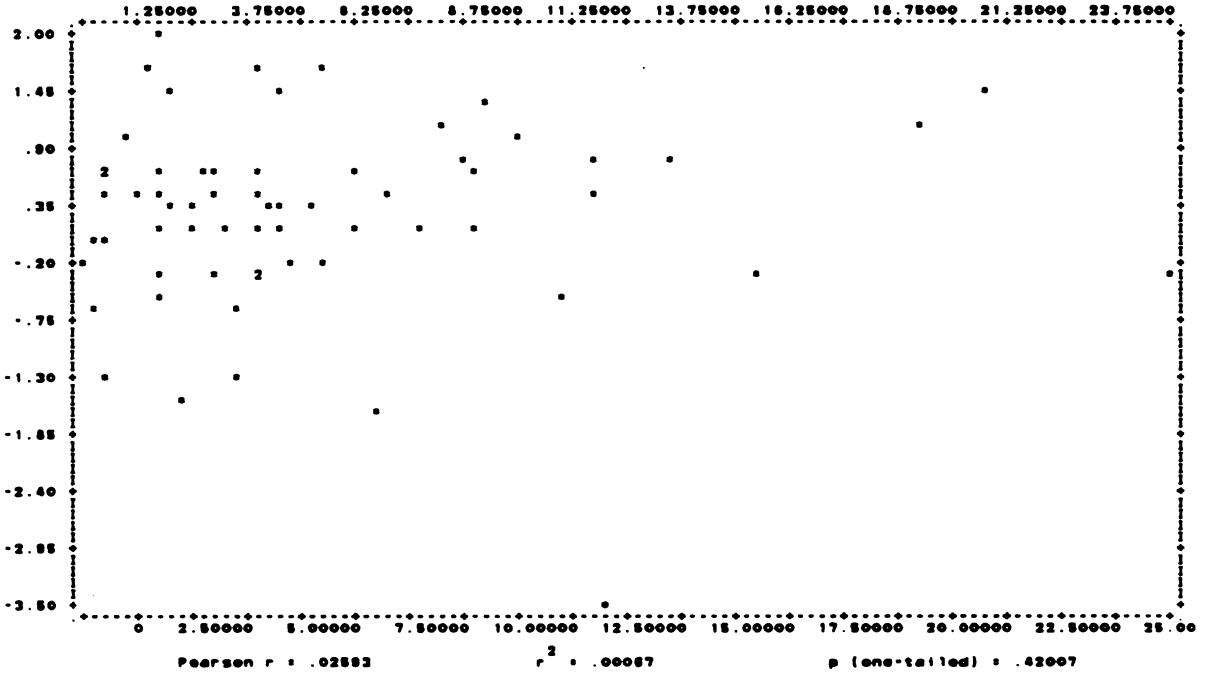


Figure 28. Change in Hostility BY Change in DOM

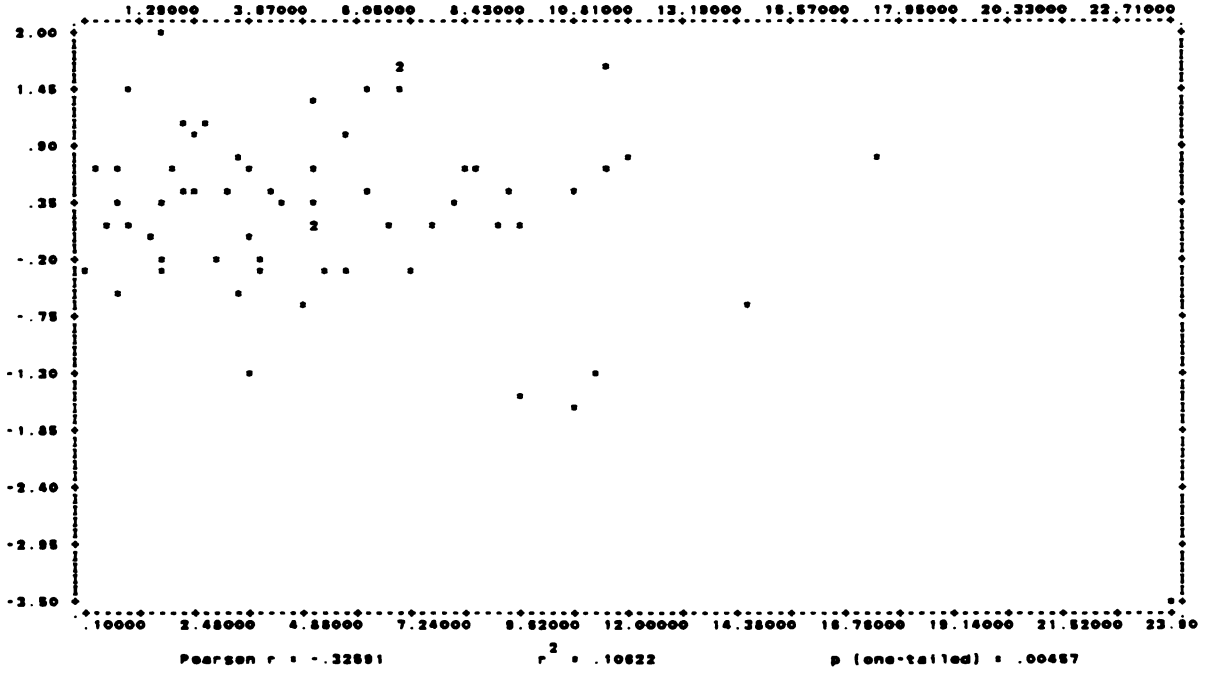
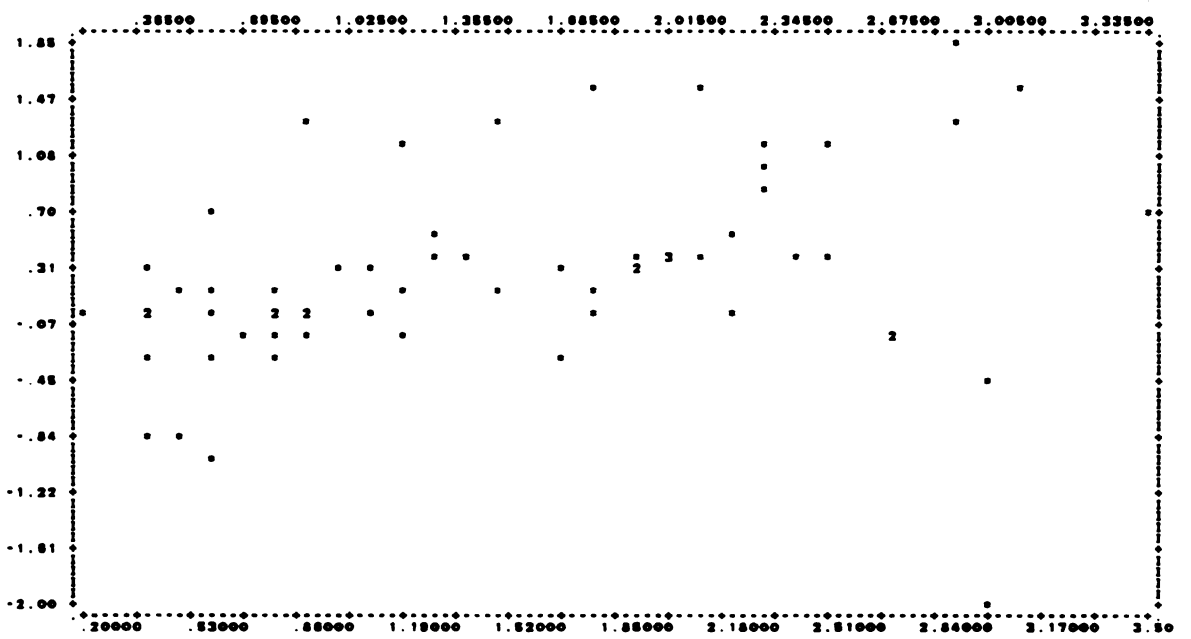
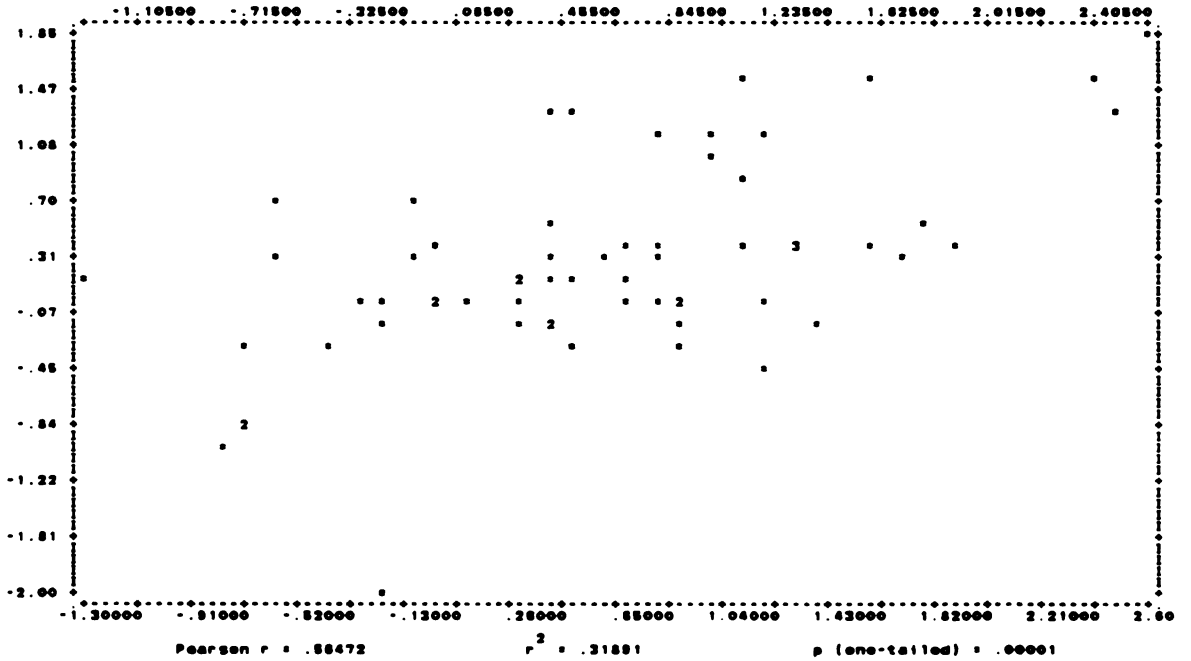


Figure 30. Change in Hostility BY Change in LOV



Pearson r = .35186 r^2 = .12388 p (one-tailed) = .00233

Figure 31. Change in Phobic Anxiety BY Change in Pre-Therapy Anxiety



Pearson r = .56472 r^2 = .31891 p (one-tailed) = .00001

Figure 32. Change in Phobic Anxiety BY Change in Anxiety

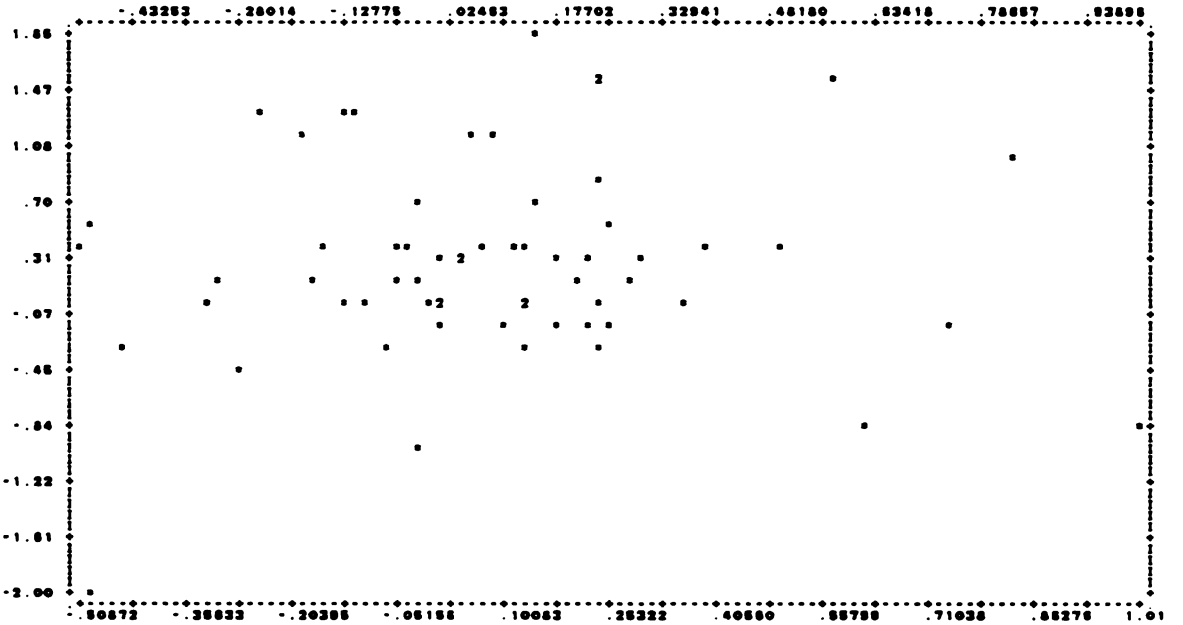


Figure 33. Change in Phobic Anxiety BY Change in AIS

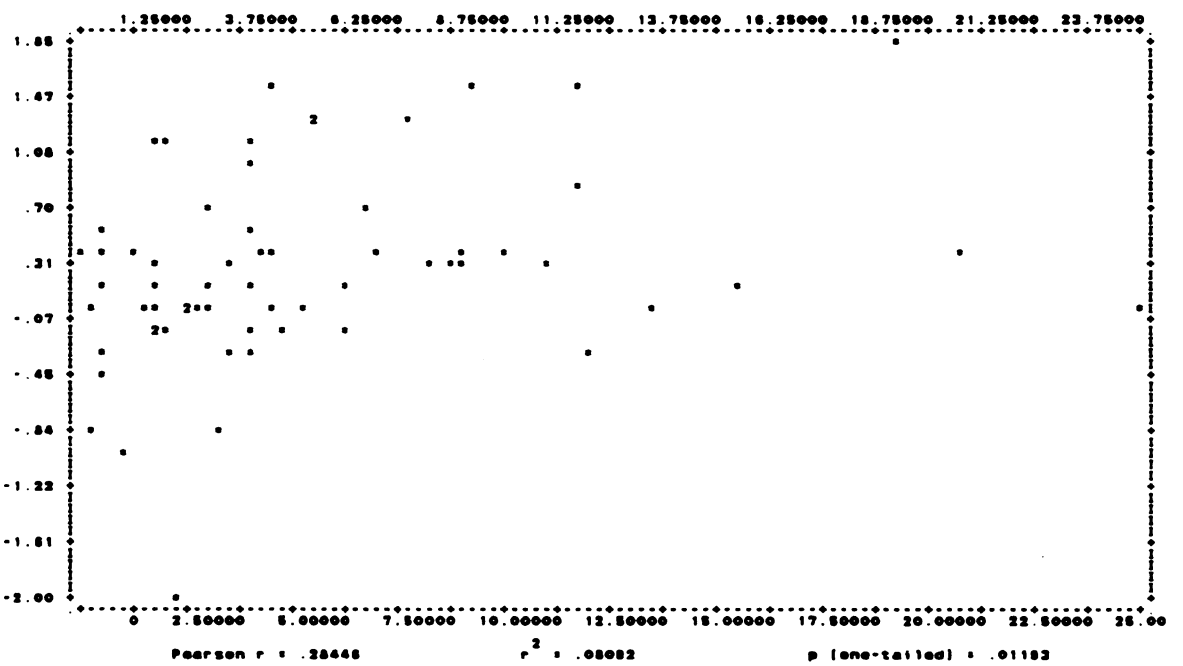


Figure 34. Change in Phobic Anxiety BY Change in DSM

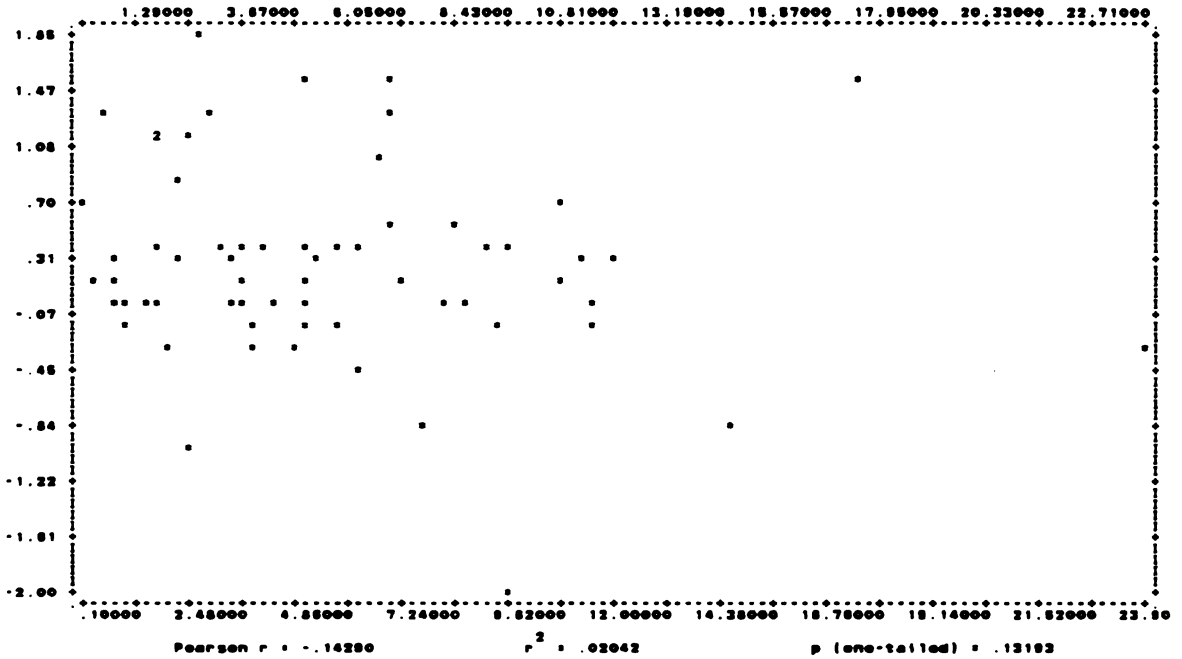


Figure 35. Change in Phobic Anxiety BY Change in LSV

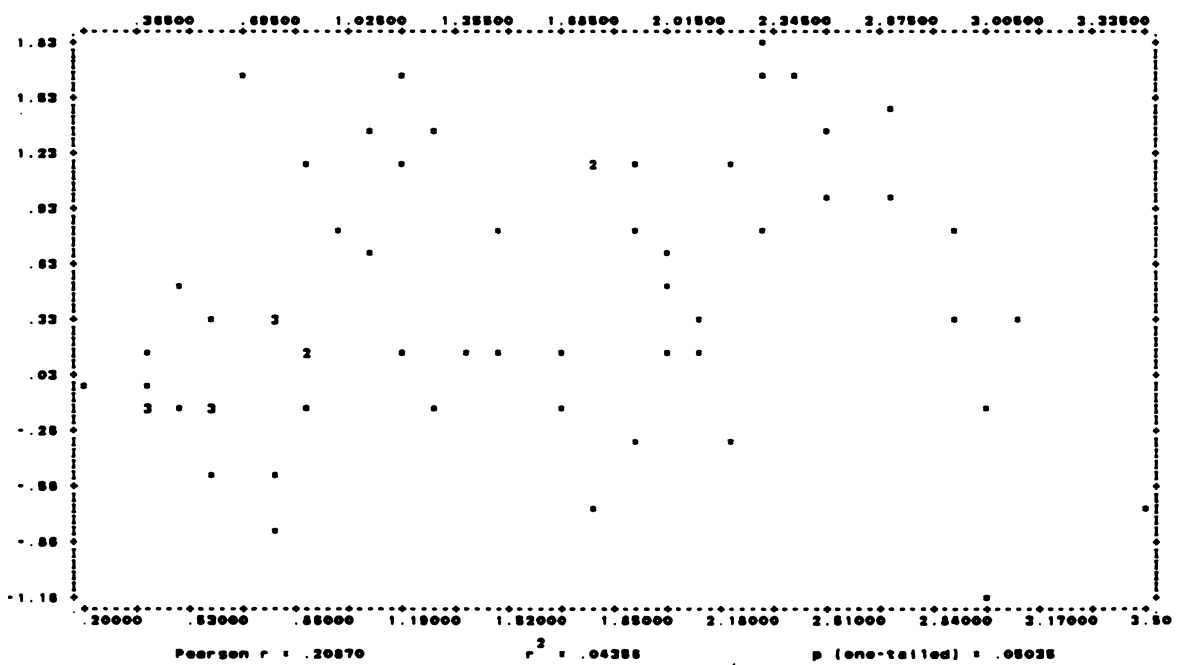


Figure 36. Change in Paranoia BY Change in Pre-Therapy Anxiety

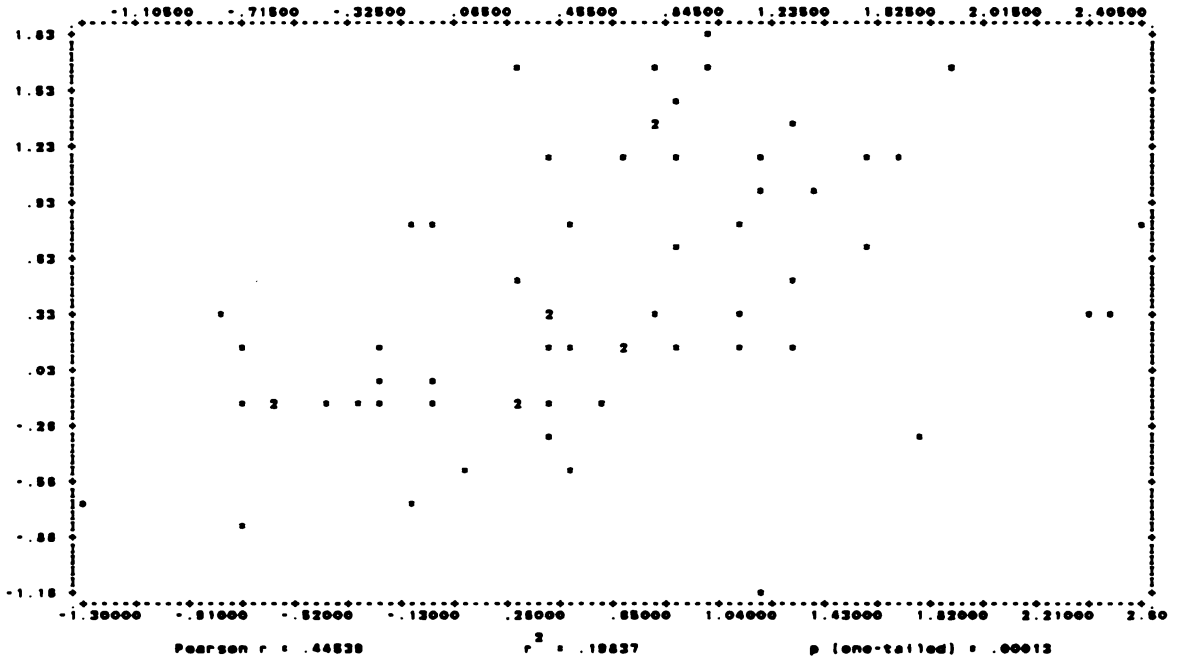


Figure 37. Change in Paranoia BY Change in Anxiety.

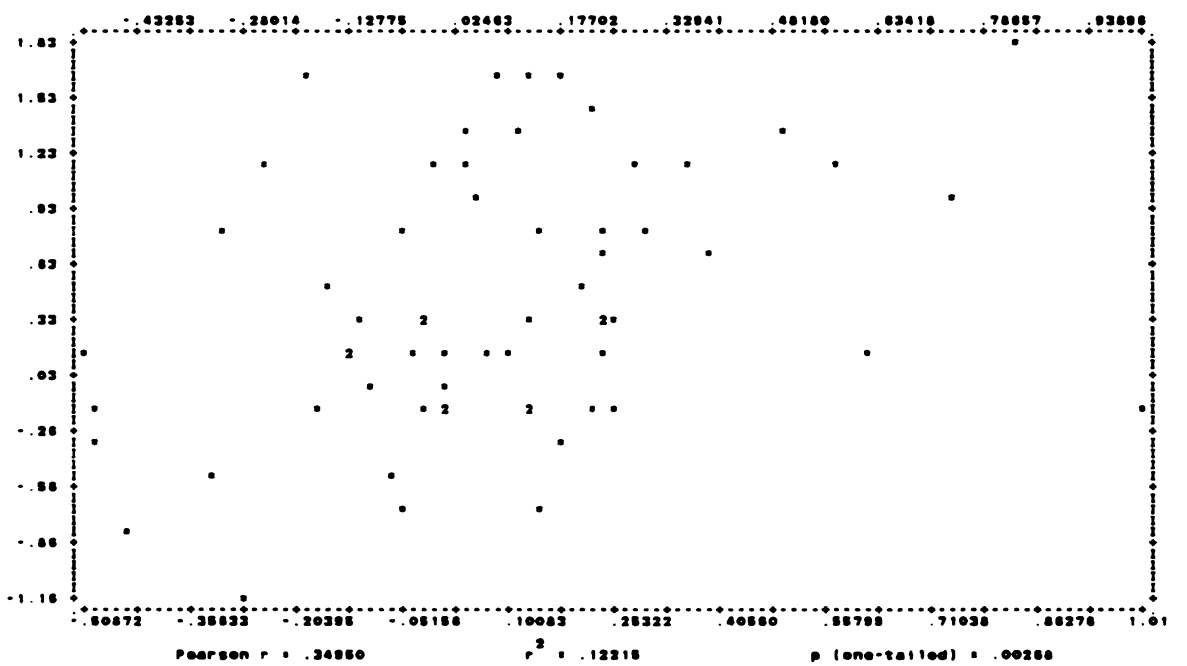


Figure 38. Change in Paranoia BY Change in AIN

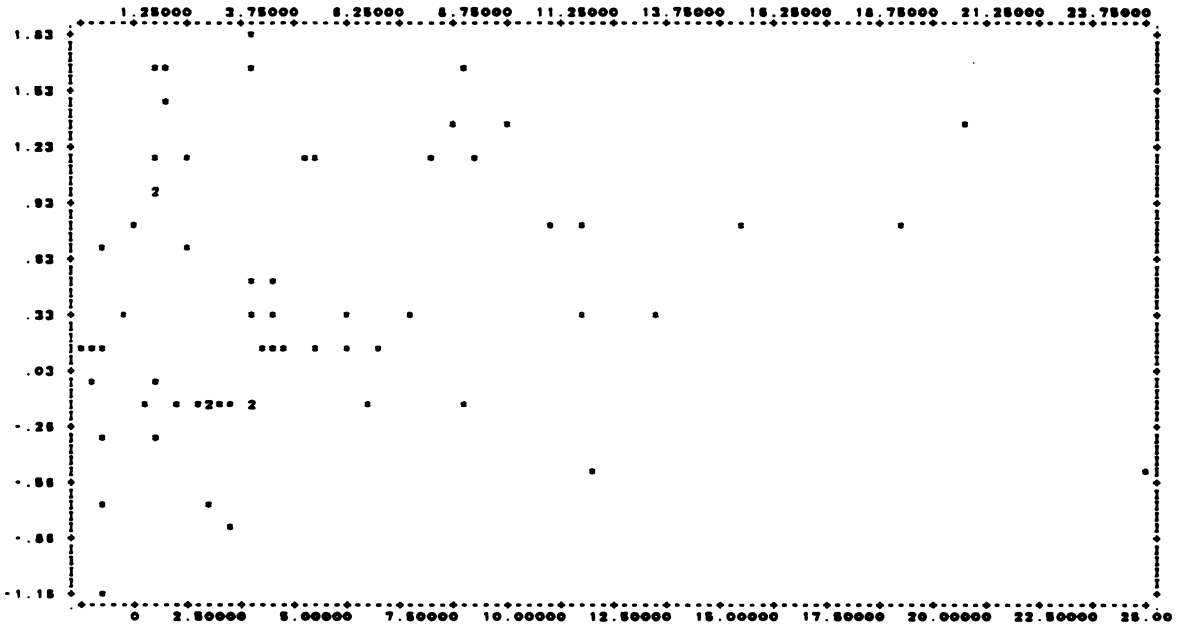


Figure 38. Change in Paranoia BY Change in DOM

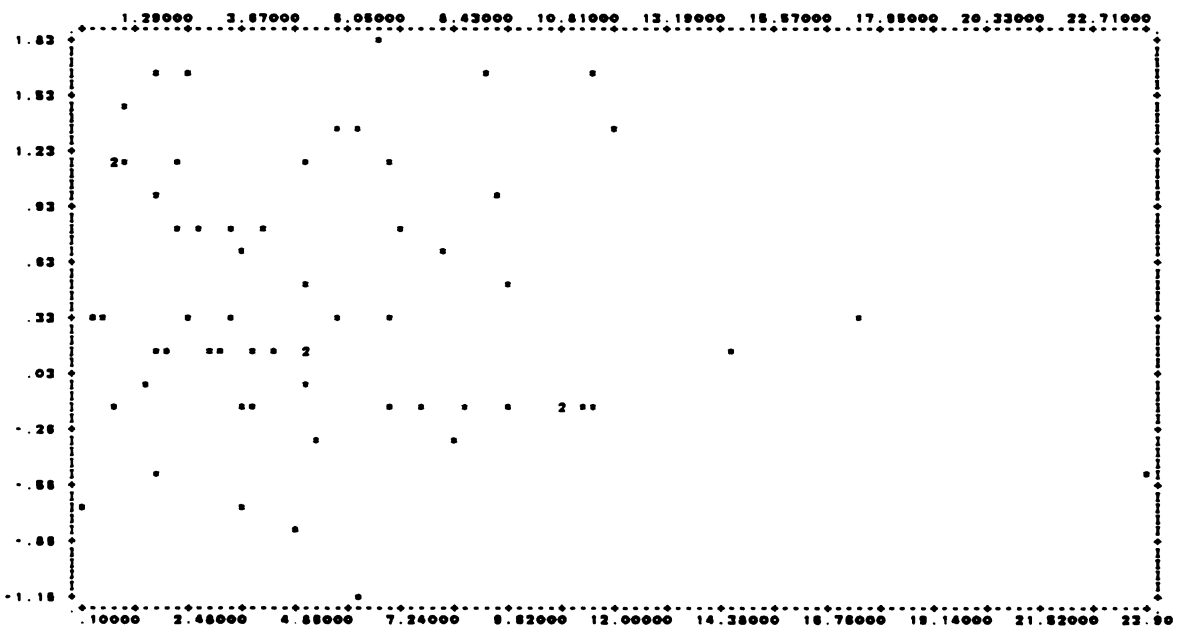


Figure 40. Change in Paranoia BY Change in LOV

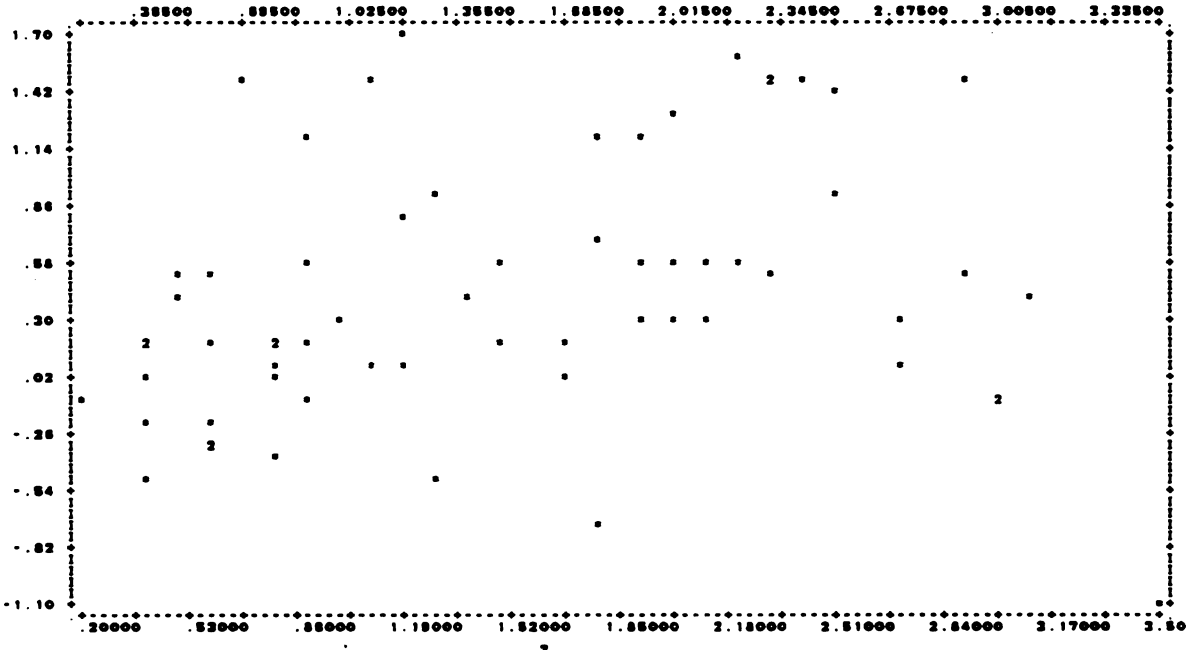


Figure 41. Change in Psychoticism BY Change in Pre-Therapy Anxiety

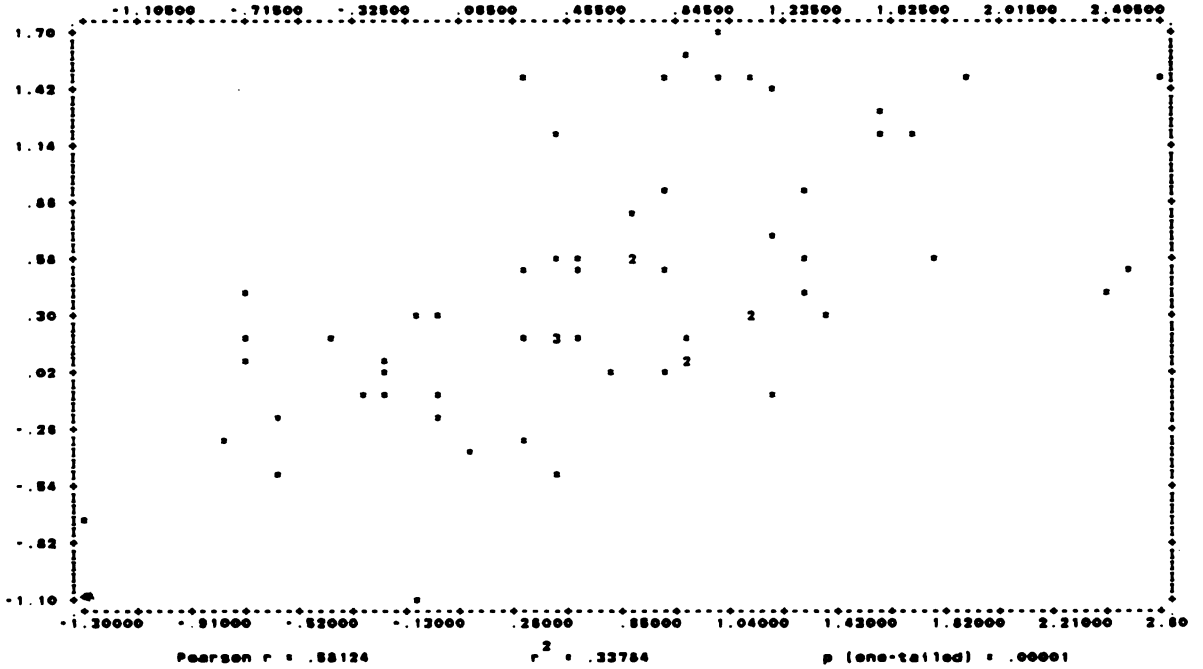


Figure 42. Change in Psychoticism BY Change in Anxiety

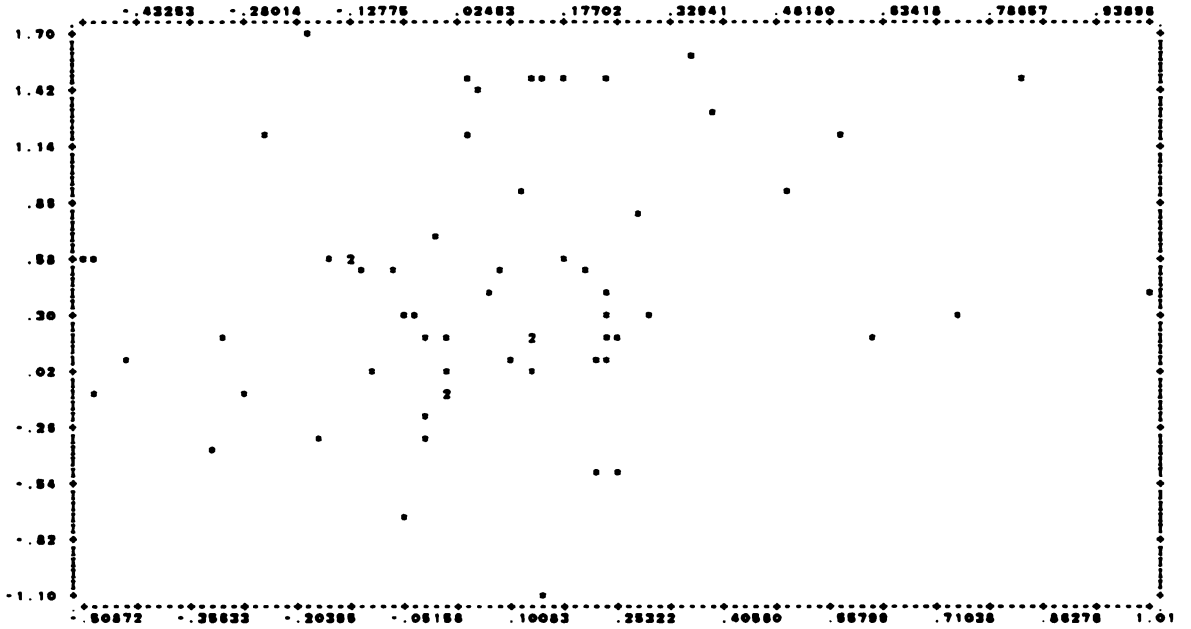


Figure 43. Change in Psychoticism BY Change in AIM

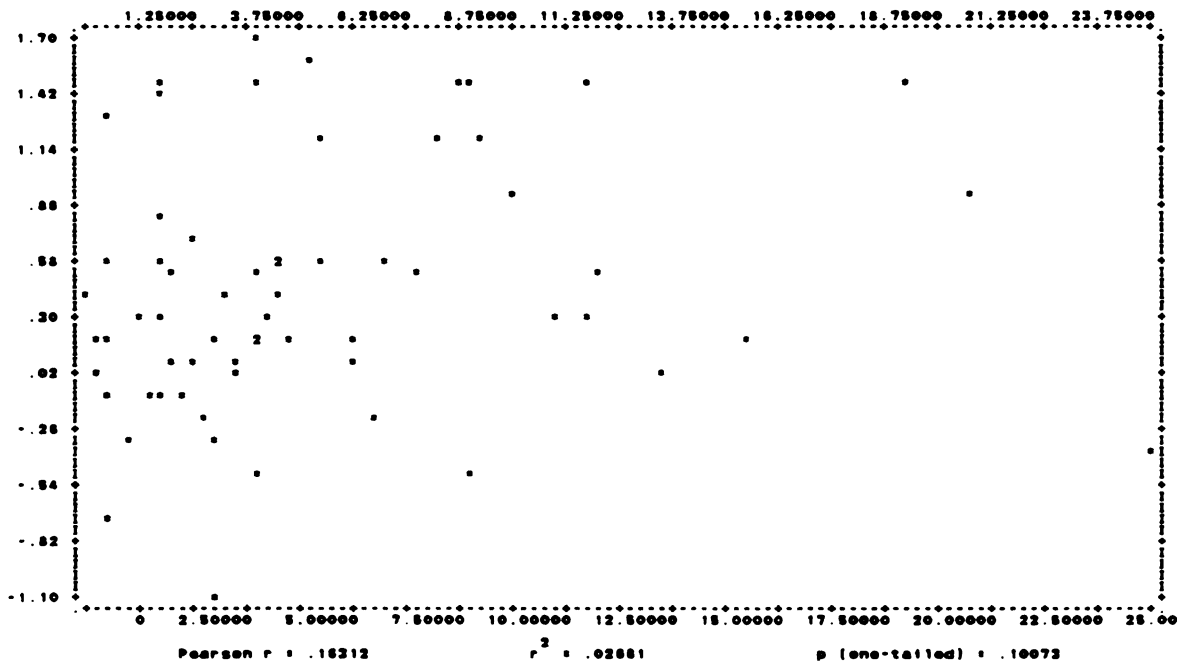


Figure 44. Change in Psychoticism BY Change in BSM

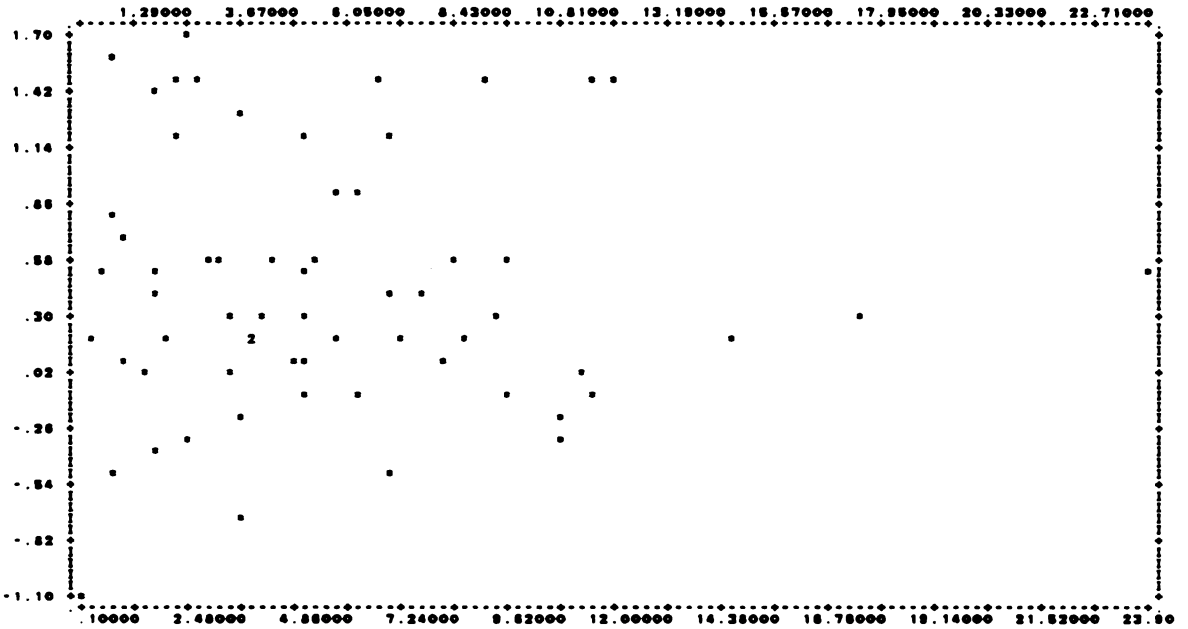


Figure 46. Change in Psychoticism BY Change in LOV

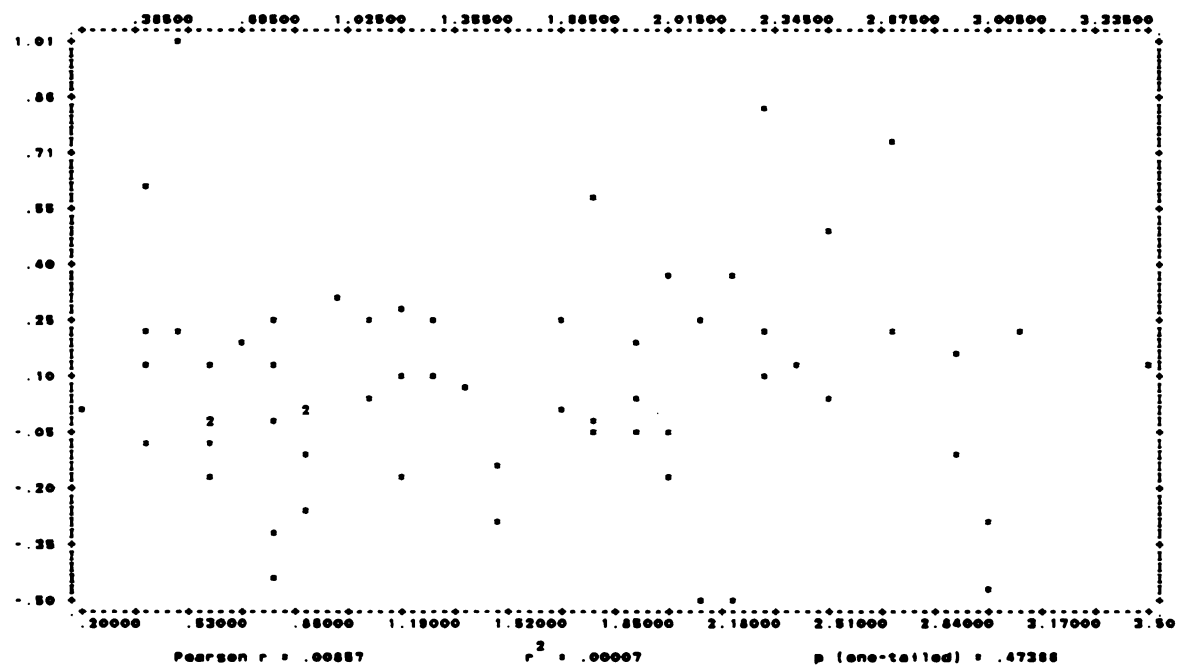


Figure 48. Change in AIN ry Pre-Therapy Anxiety

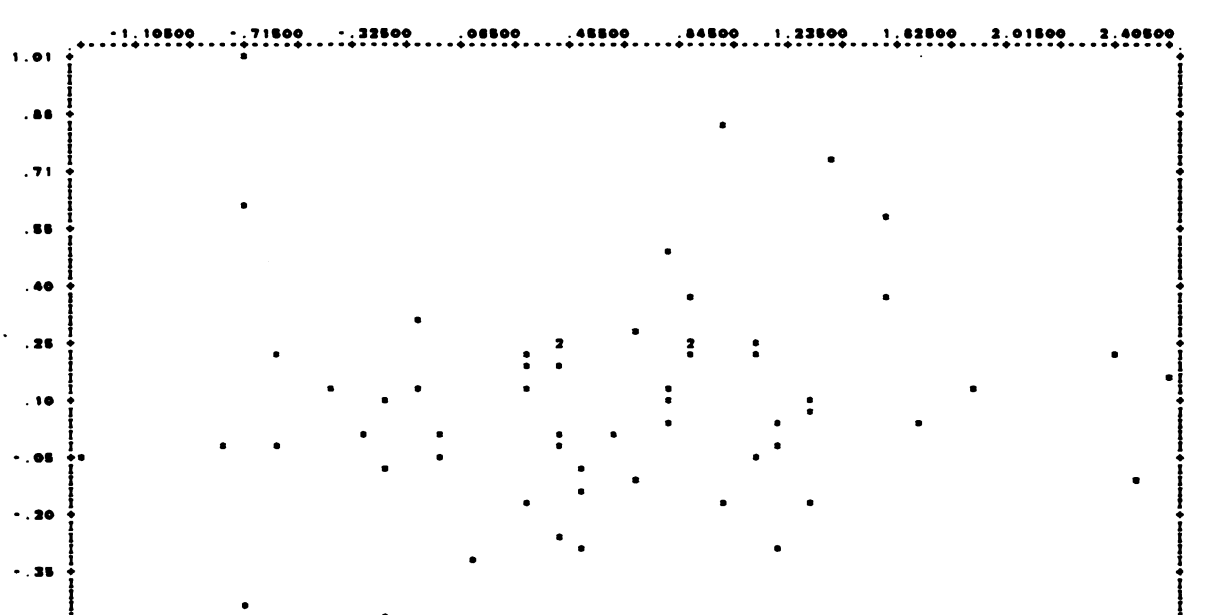


Figure 47. Change in AIM BY Change in Anxiety

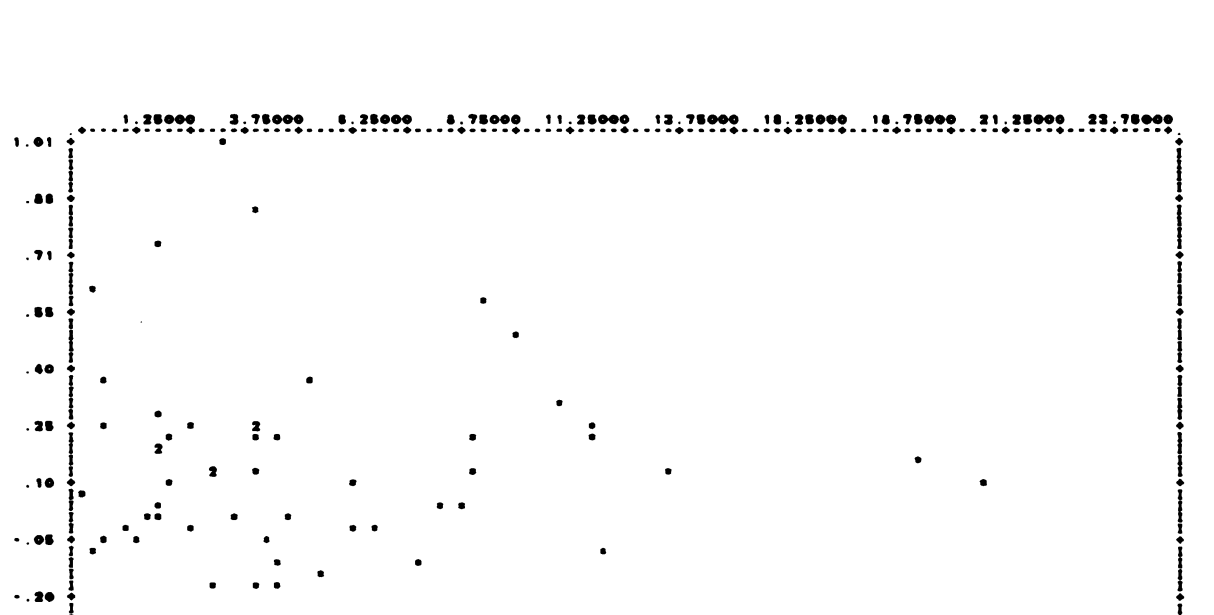


Figure 48. Change in AIM BY Change in DSM

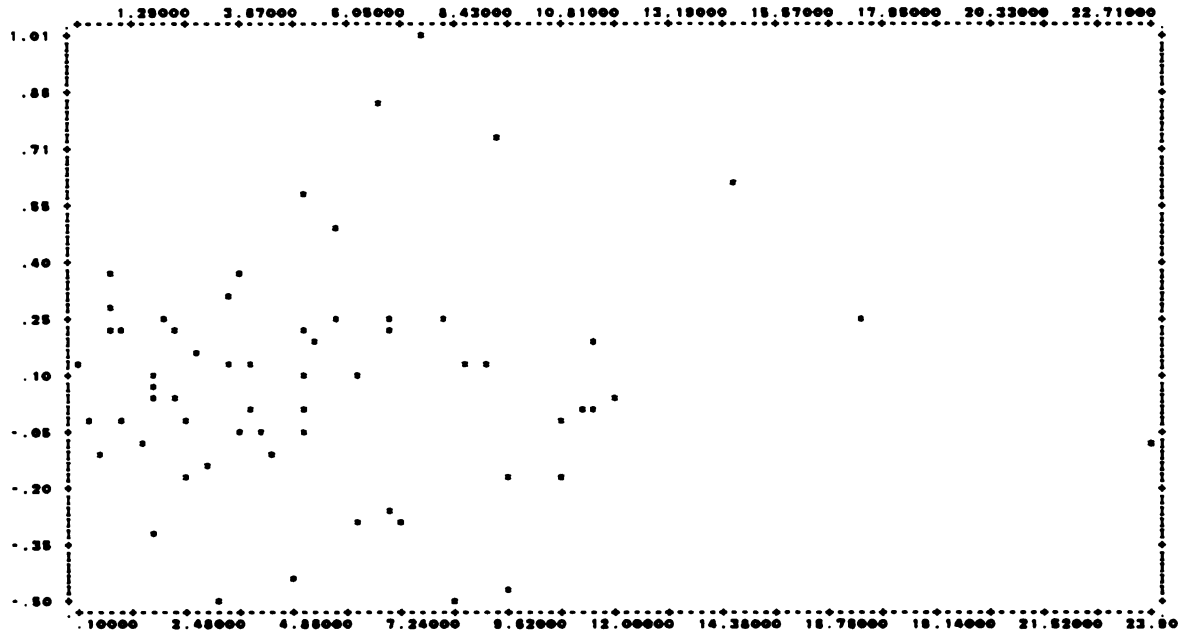


Figure 49. Change in AIN BY Change in LOV

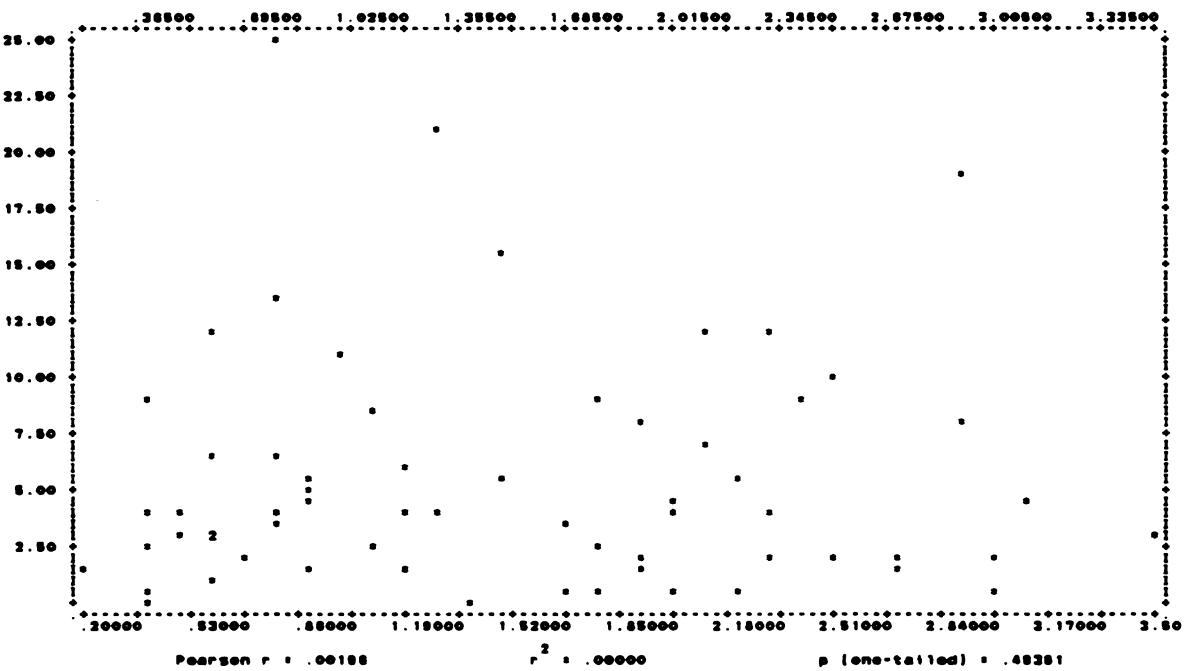


Figure 50. Change in DOM BY Change in Pre-Therapy Anxiety

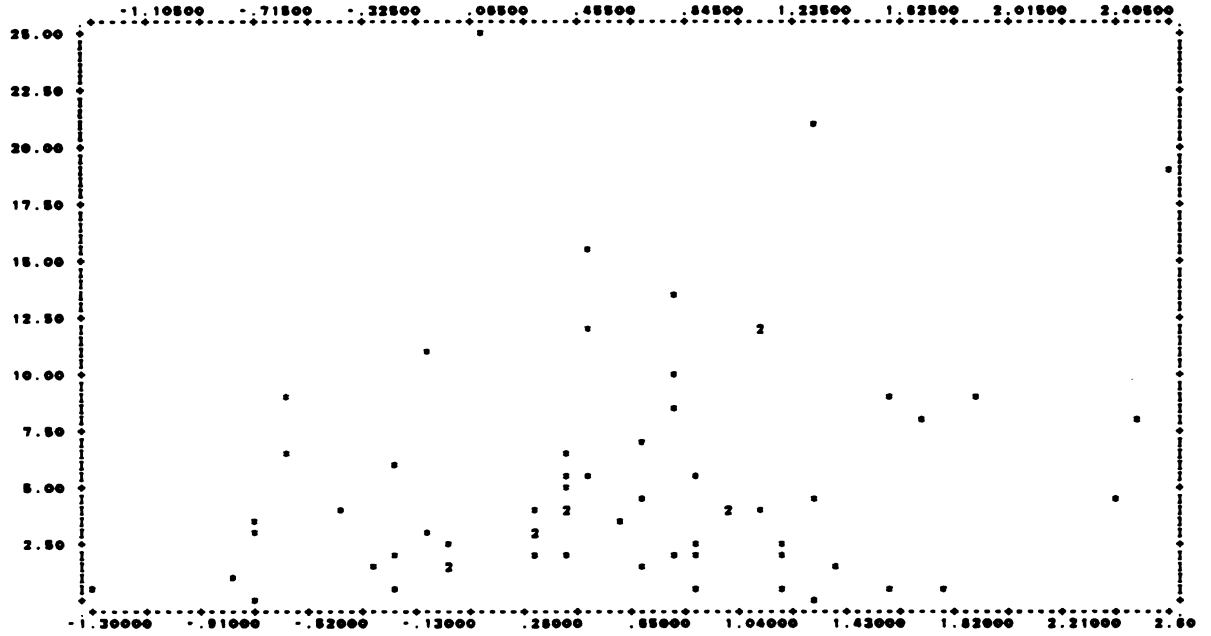


Figure 51. Change in DOM BY Change in Anxiety

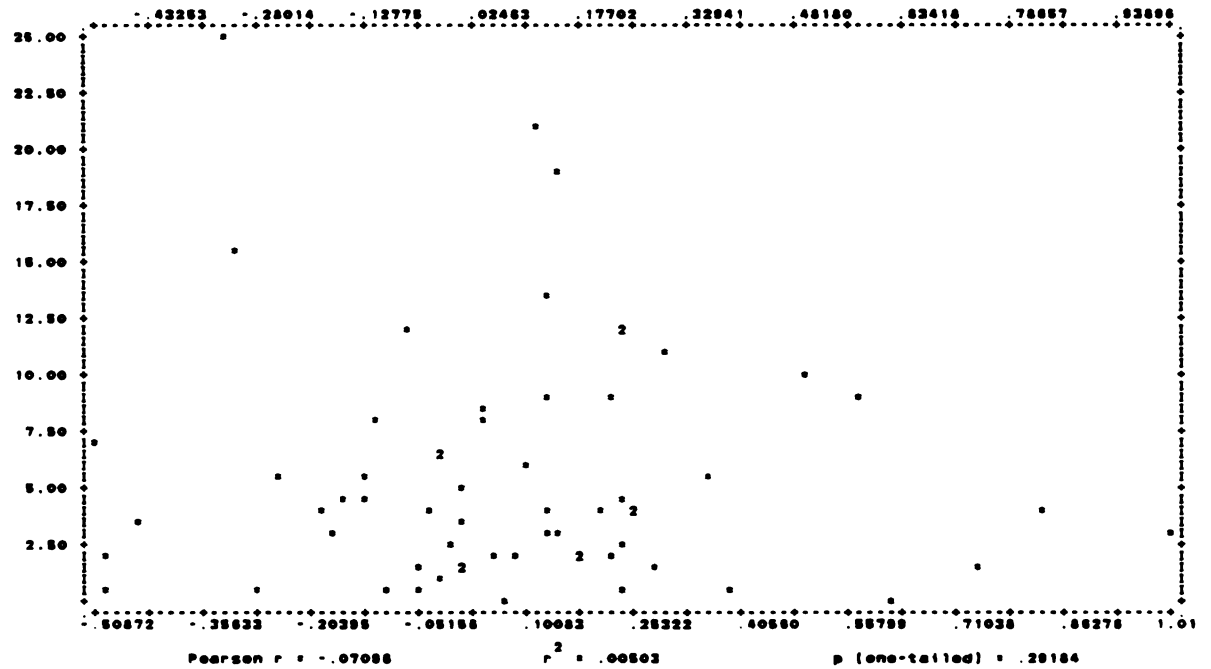


Figure 52. Change in DOM by Change in AIN

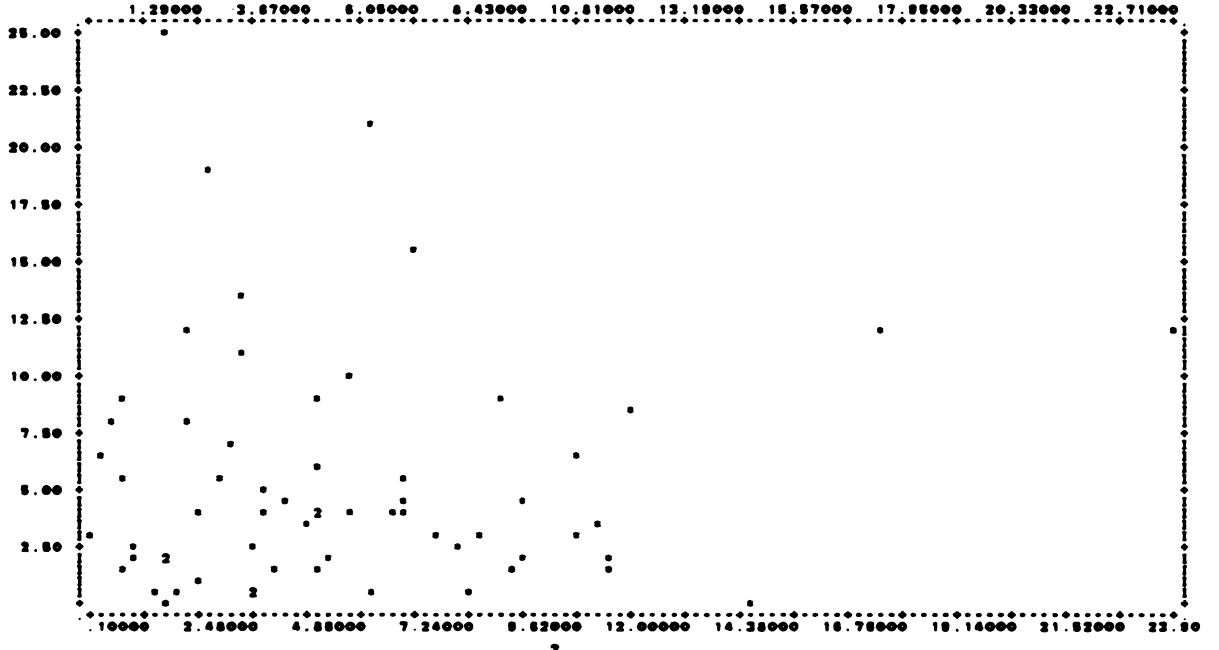


Figure 83. Change in BDM BY Change in LOV

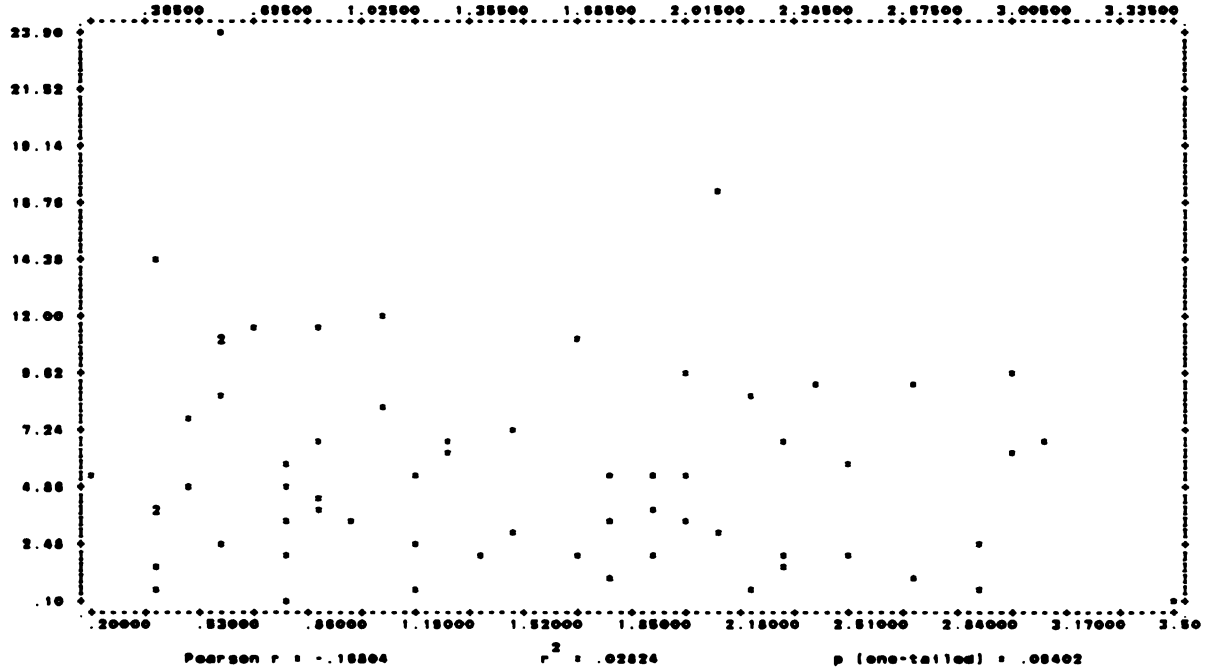


Figure 84. Change in LOV BY Pre-Therapy Anxiety

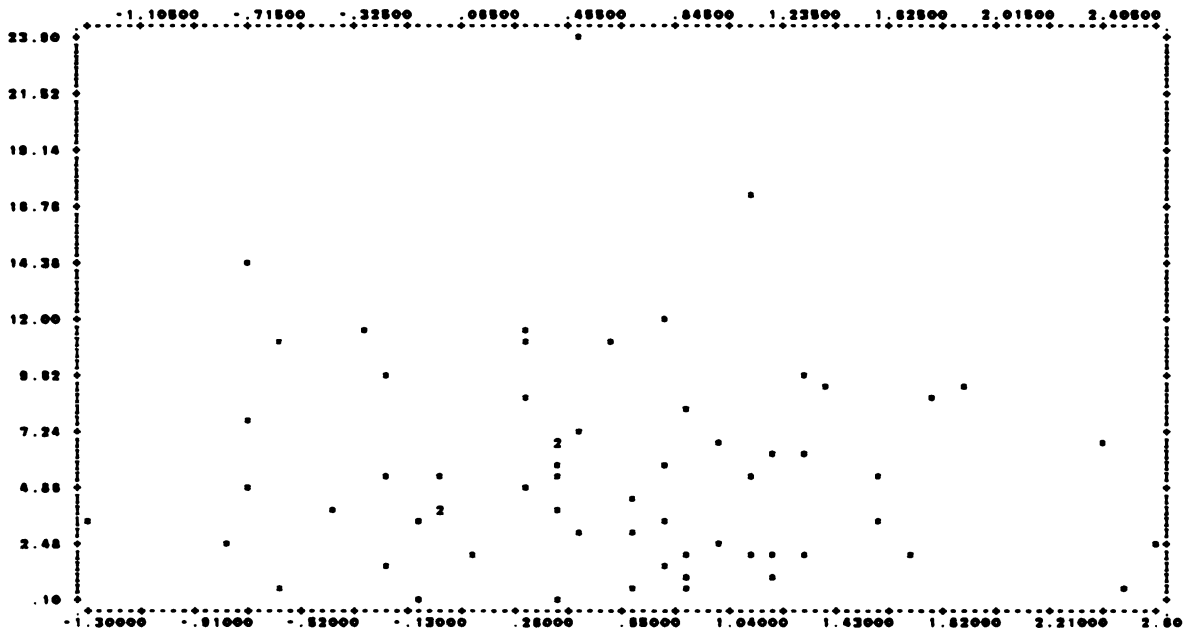


Figure 55. Change in LOV BY Change in Anxiety

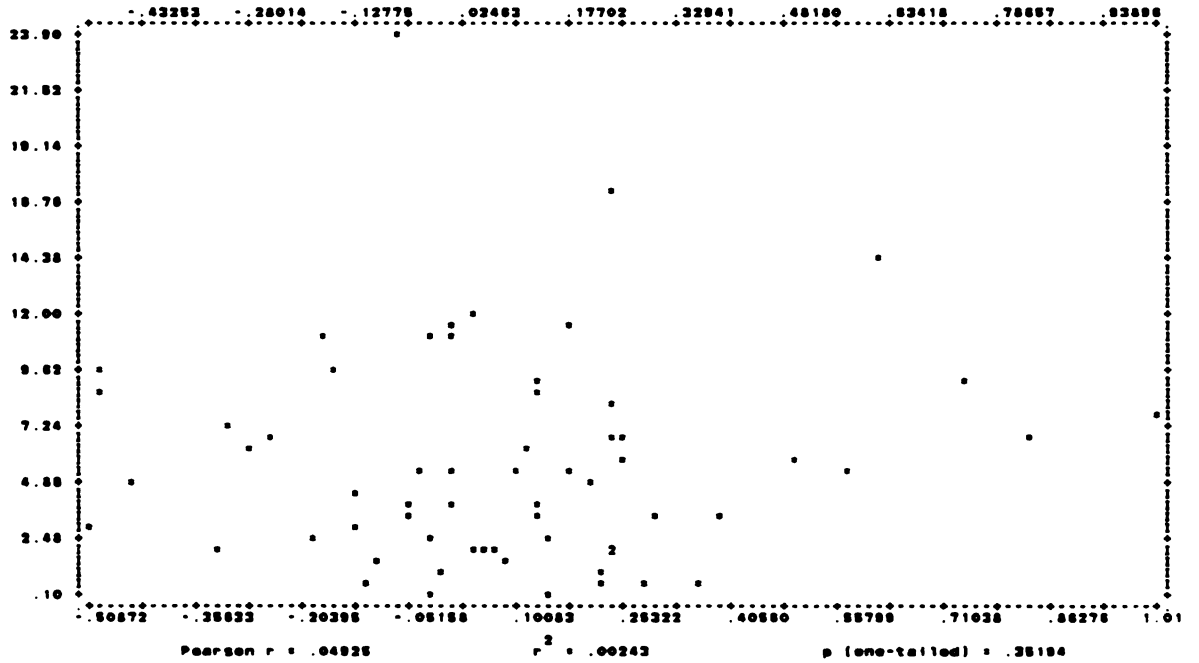


Figure 56. Change in LOV BY Change in AIH

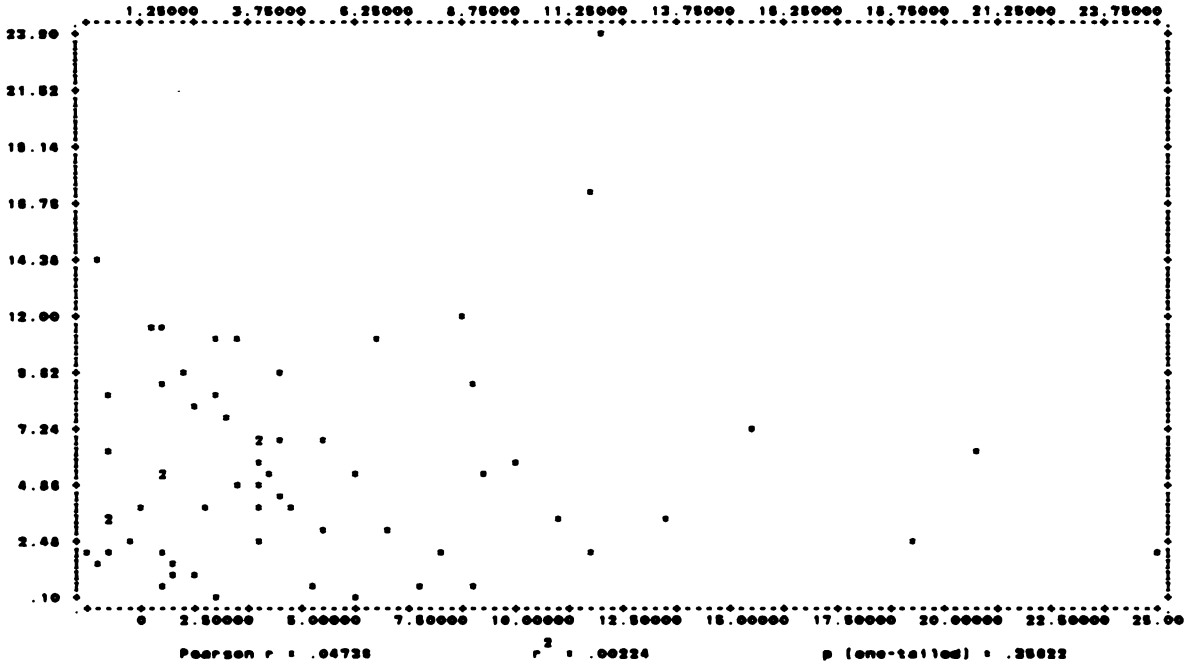


Figure 57. Change in LOV BY Change in BDM

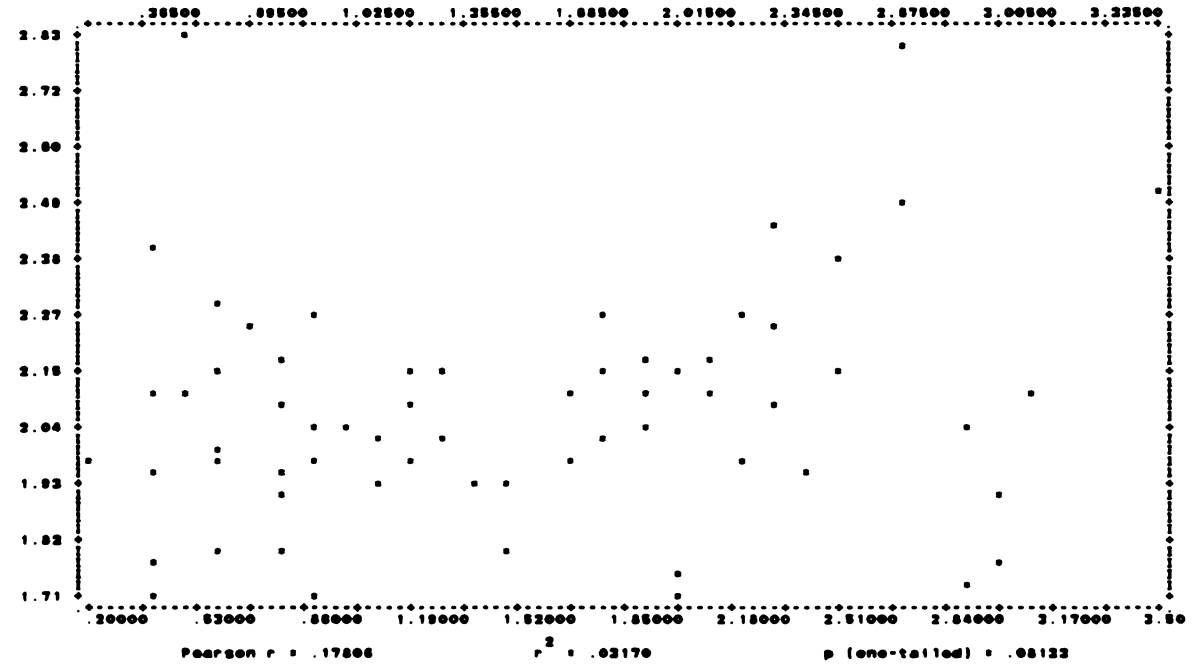


Figure 58. Pre-Therapy AIN BY Pre-Therapy Anxiety

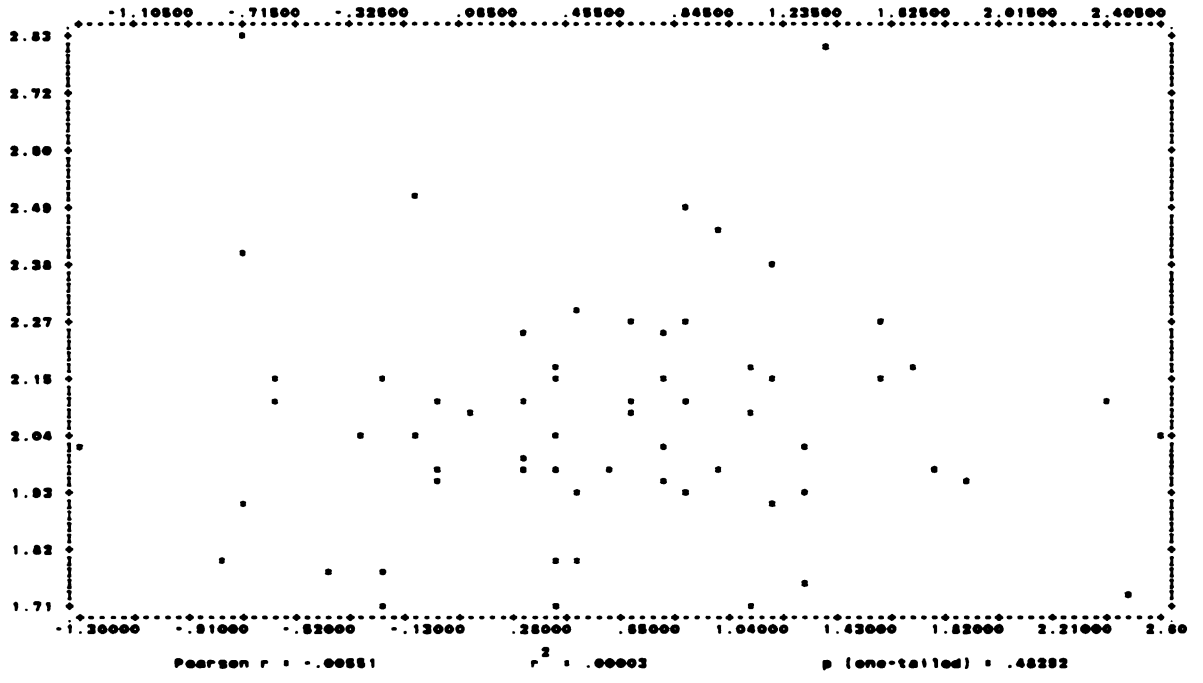


Figure 59. Pre-Therapy AIN BY Change in Anxiety

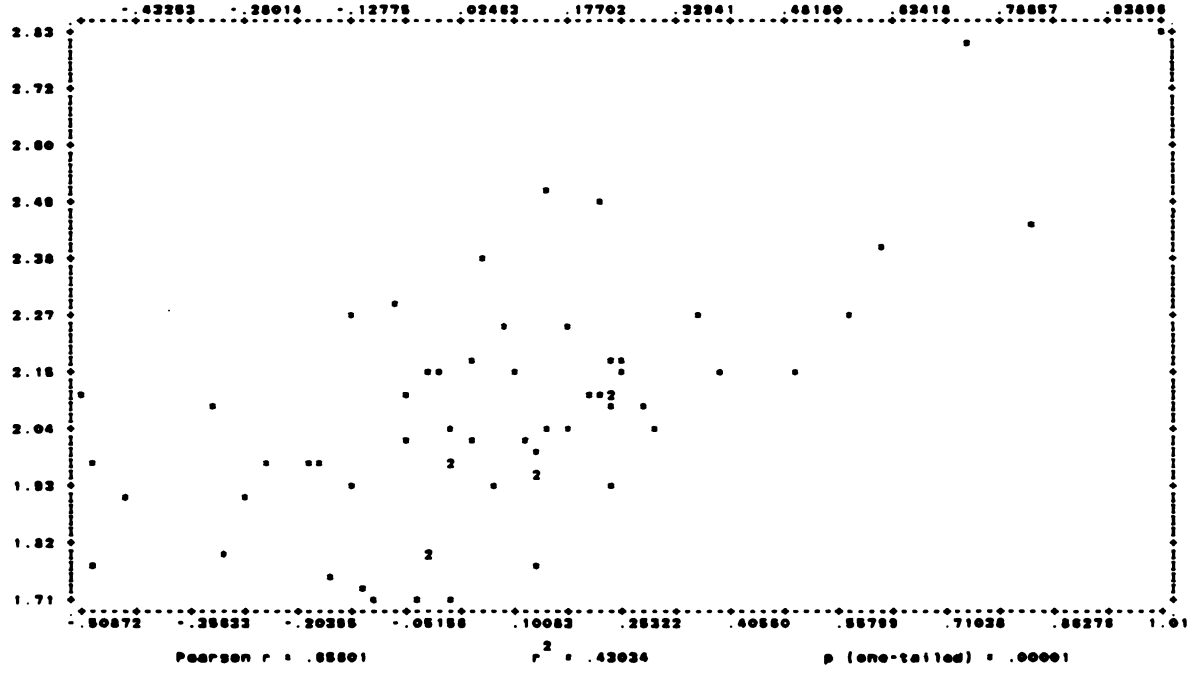


Figure 60. Pre-Therapy AIN BY Change in AIN

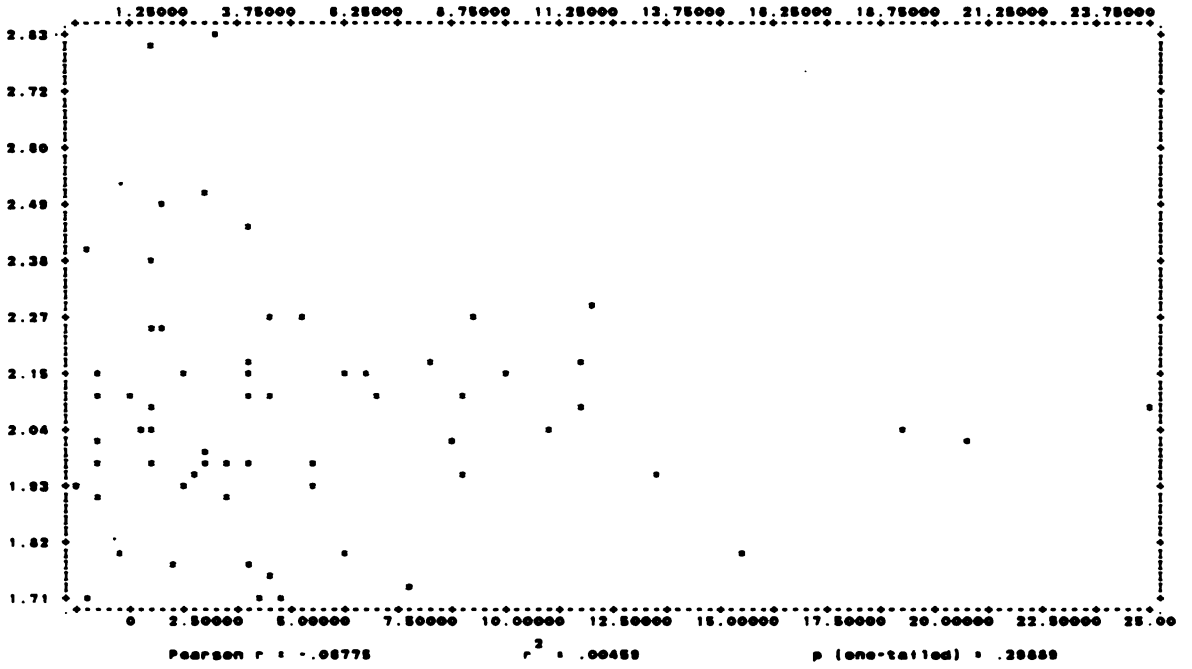


Figure 61. Pre-Therapy AIN BY Change in DBM

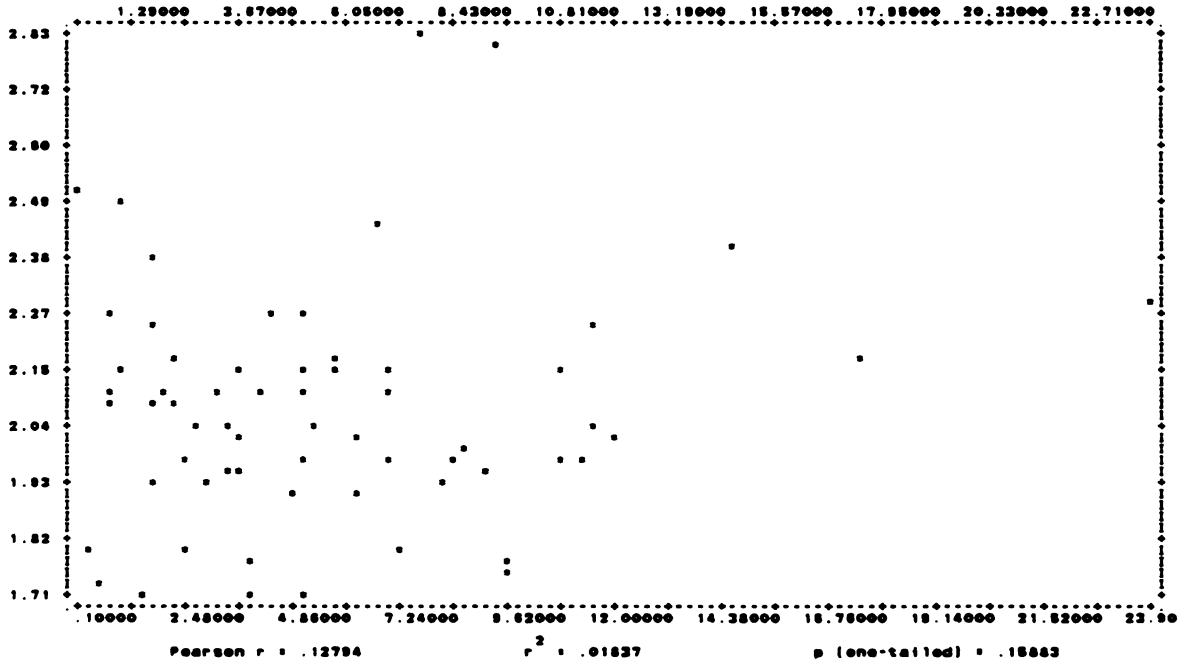


Figure 62. Pre-Therapy AIN BY Change in LBV

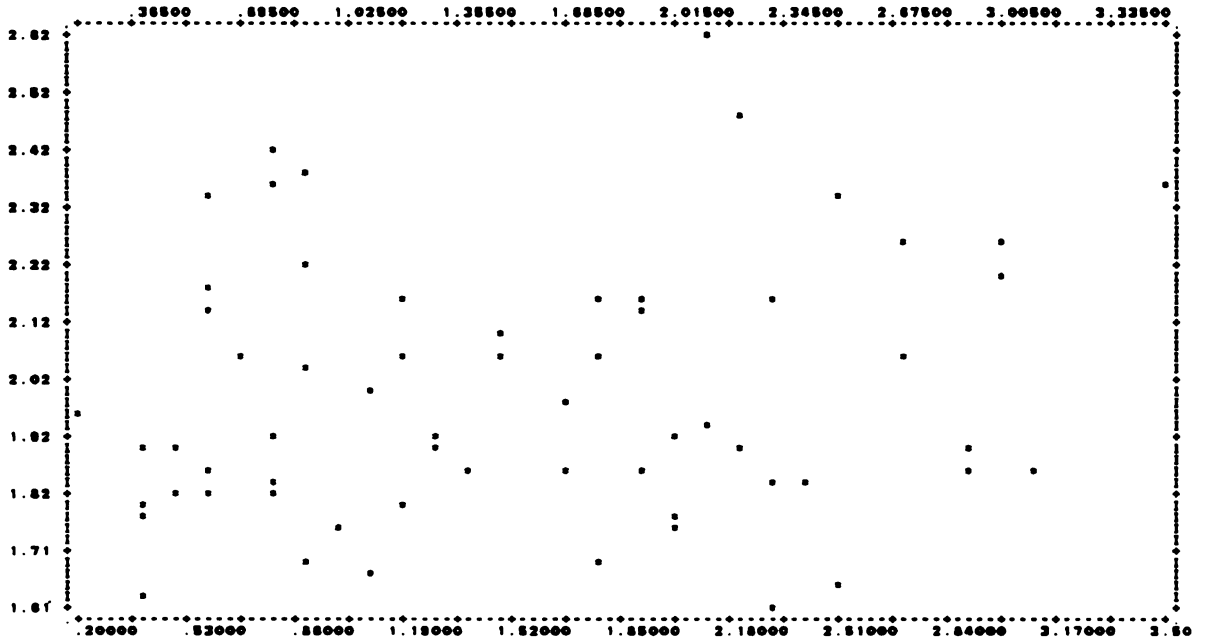


Figure 83. Post-Therapy AIM BY Pre-Therapy Anxiety

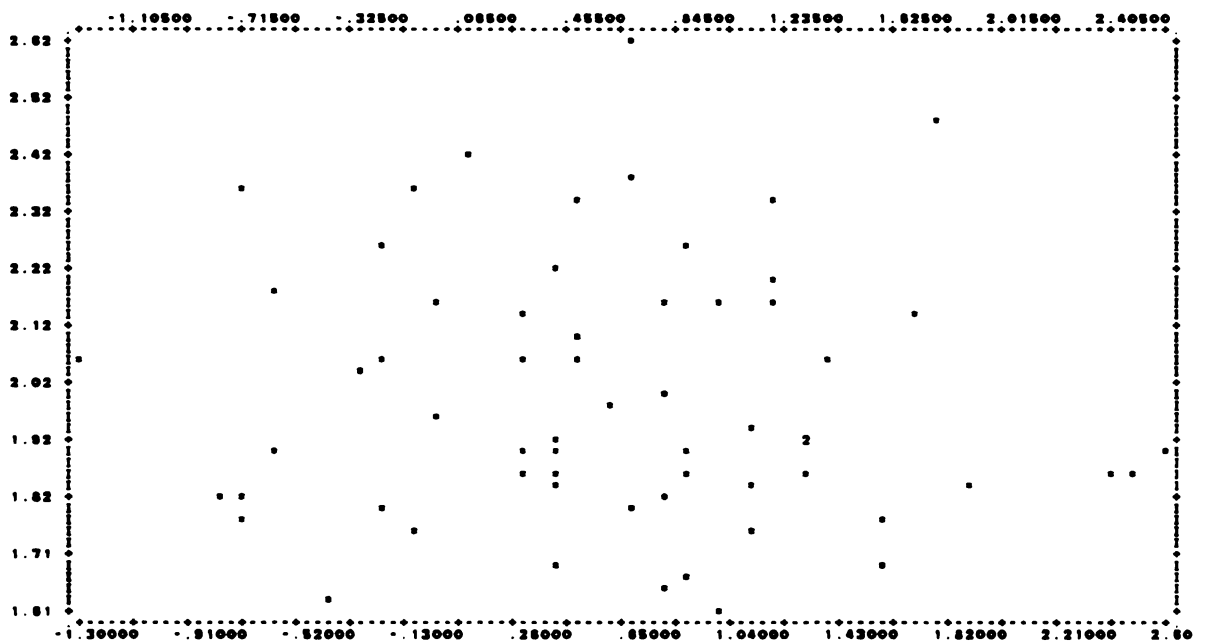


Figure 84. Post-Therapy AIM BY Change in Anxiety

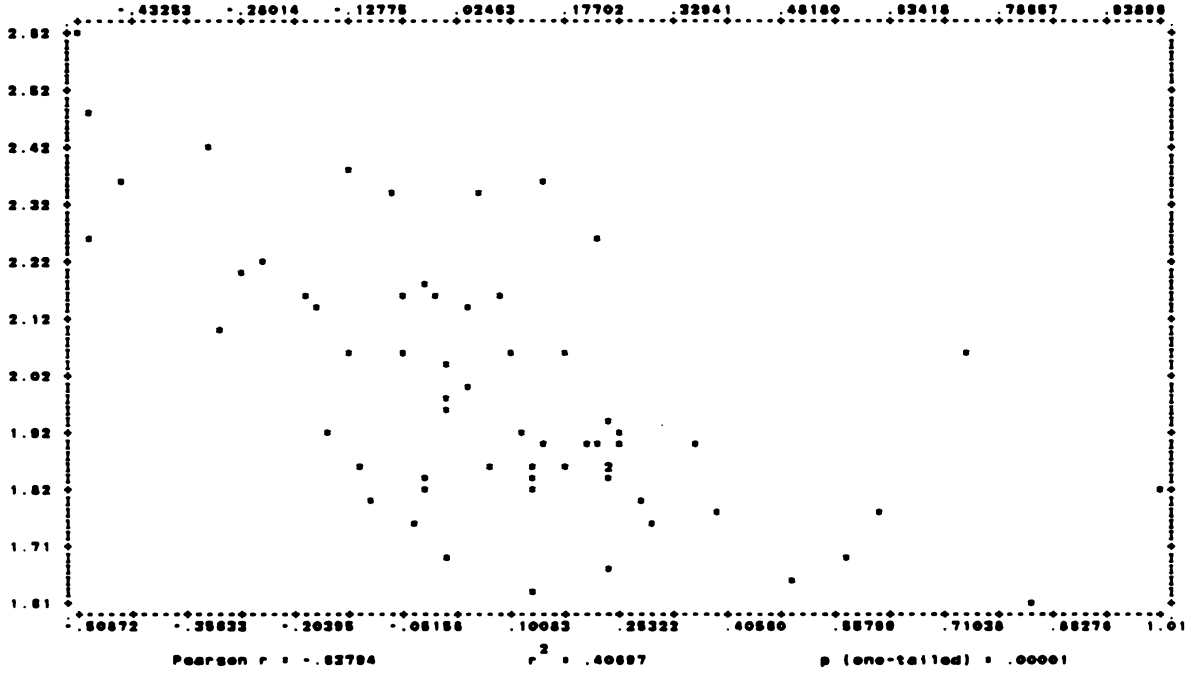


Figure 85. Post-Therapy AIN BY Change in AIN

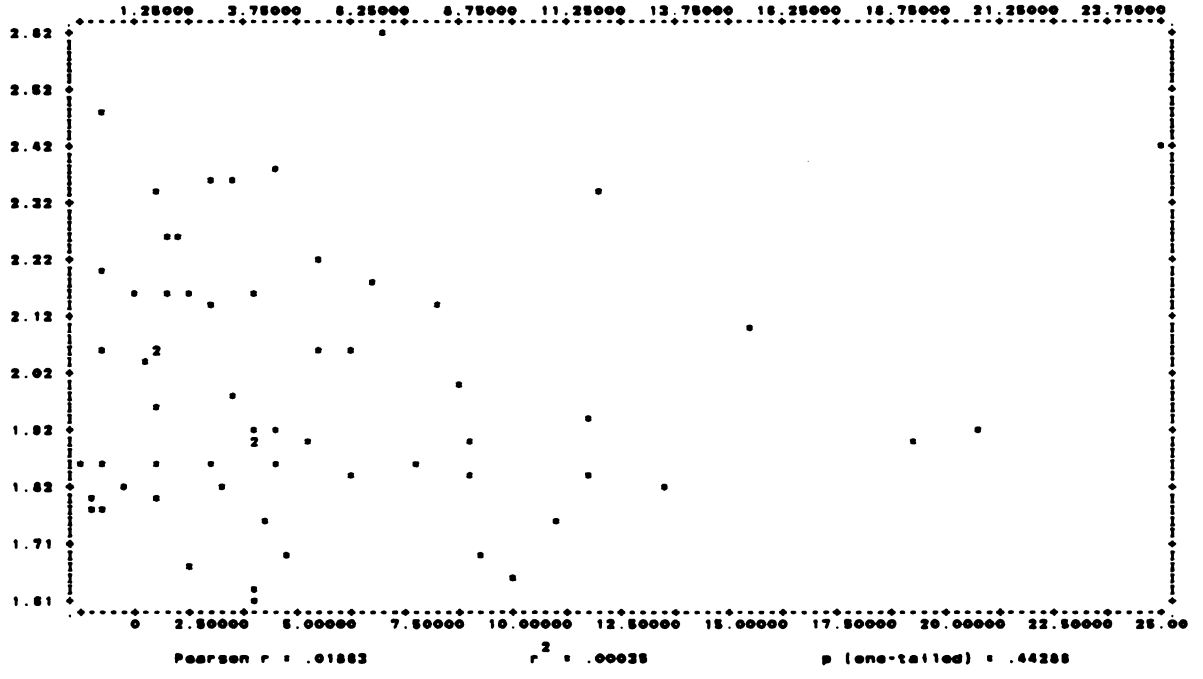


Figure 86. Post-Therapy AIN BY Change in DOM

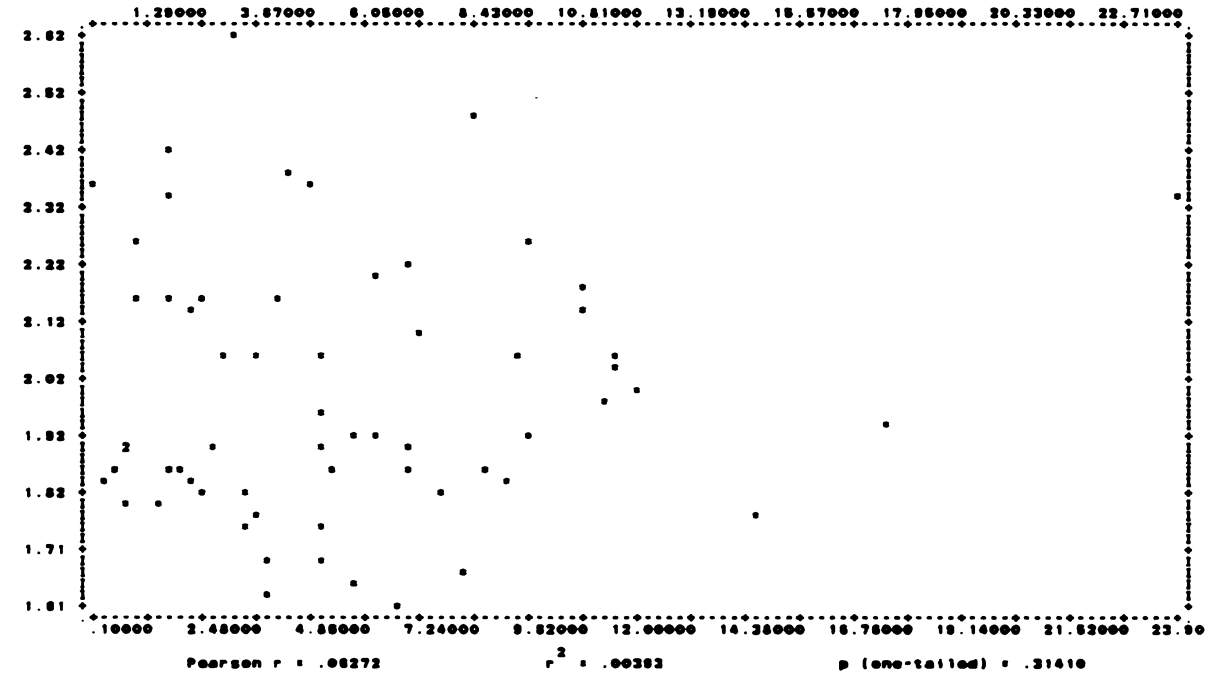


Figure 67. Post-Therapy AIM BY Change in LSV

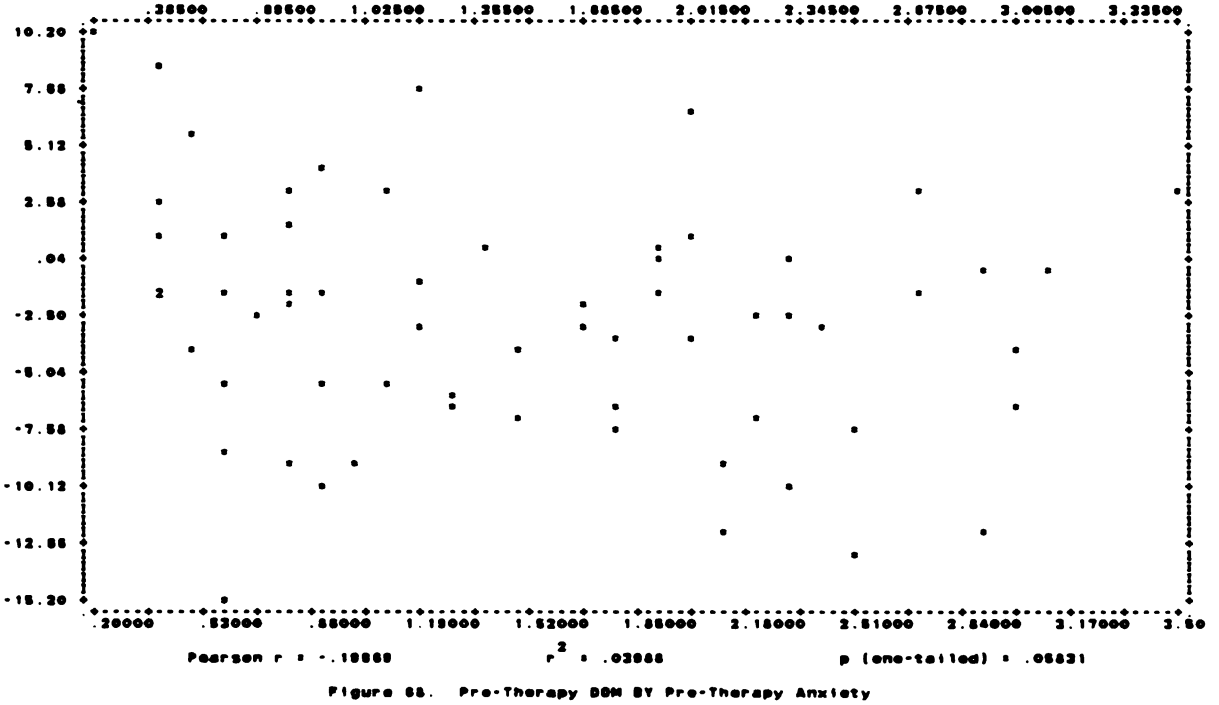


Figure 68. Pre-Therapy BDM BY Pre-Therapy Anxiety

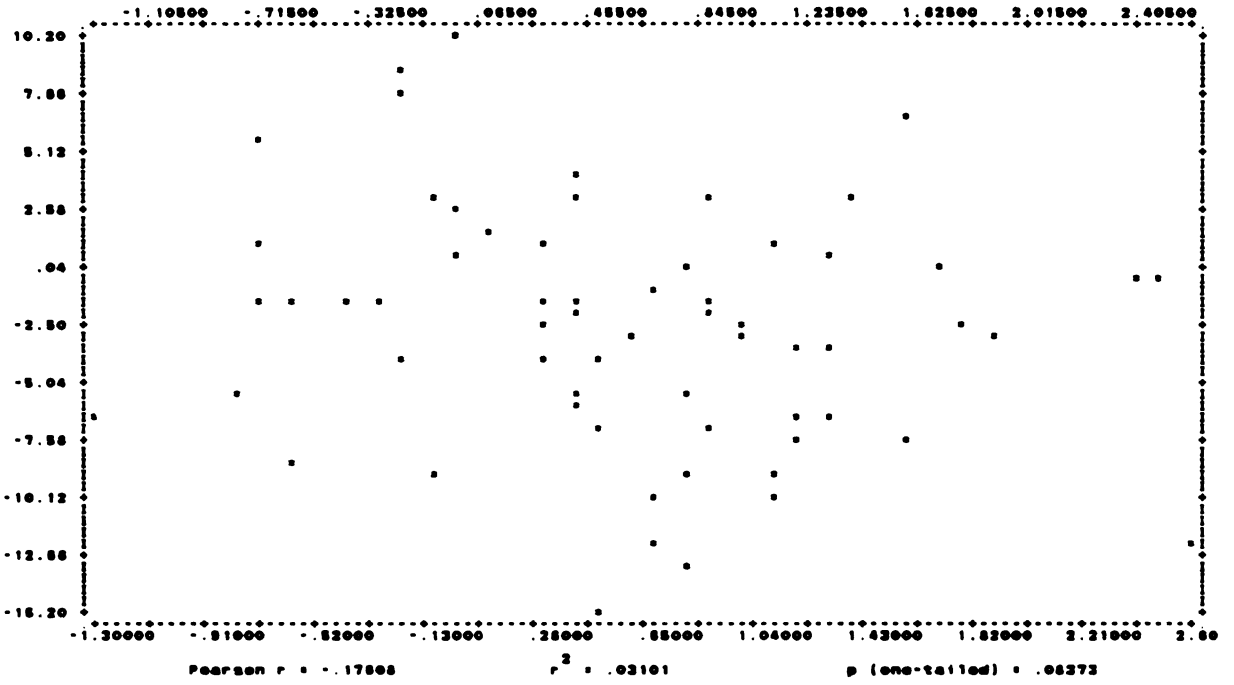


Figure 68. Pre-Therapy BDM BY Change in Anxiety

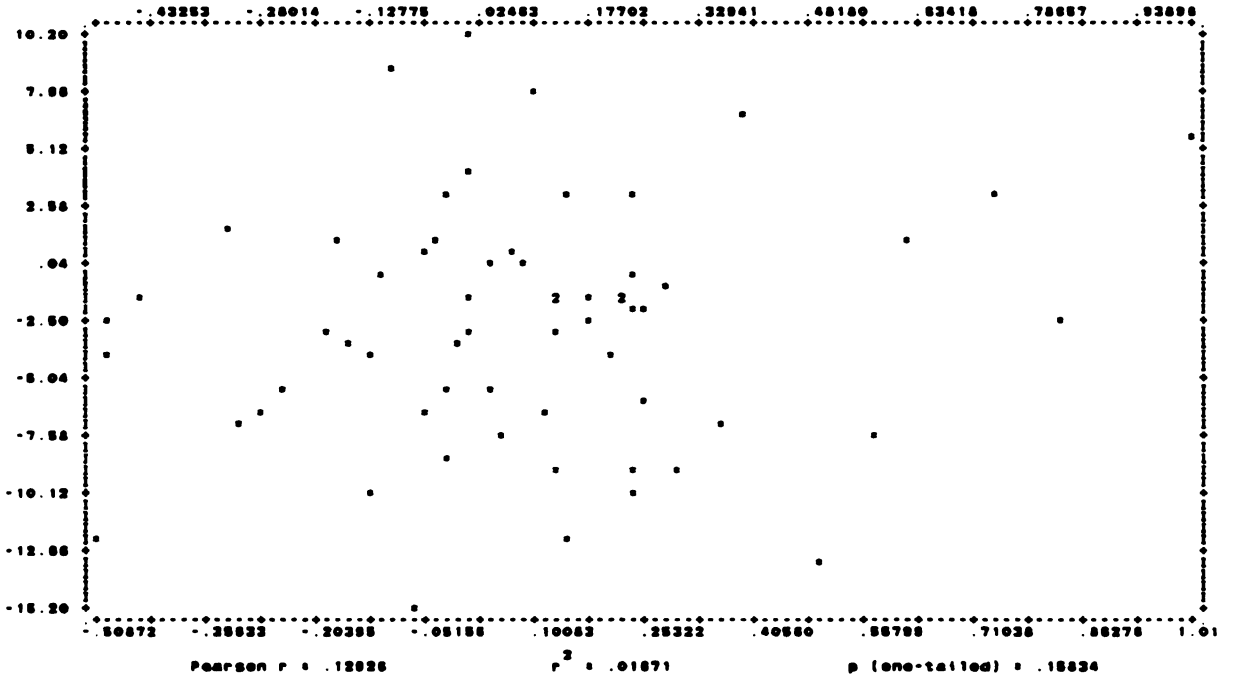


Figure 70. Pre-Therapy BDM BY Change in AIN

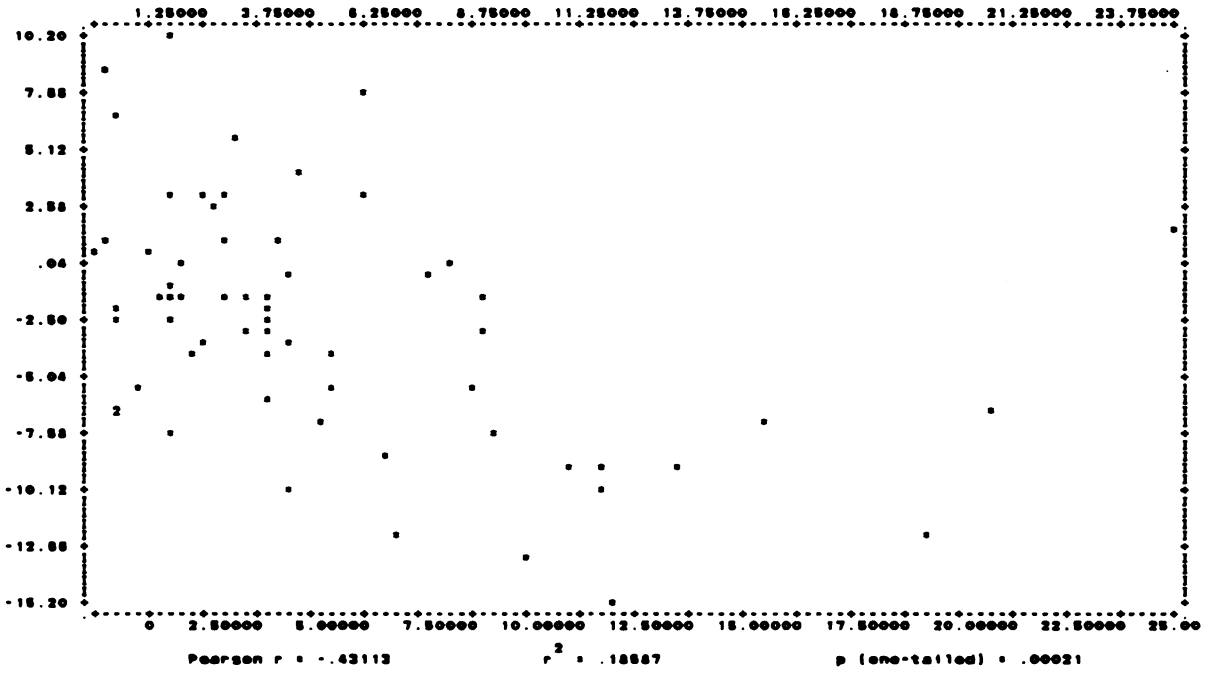


Figure 71. Pre-Therapy DOM BY Change in DOM

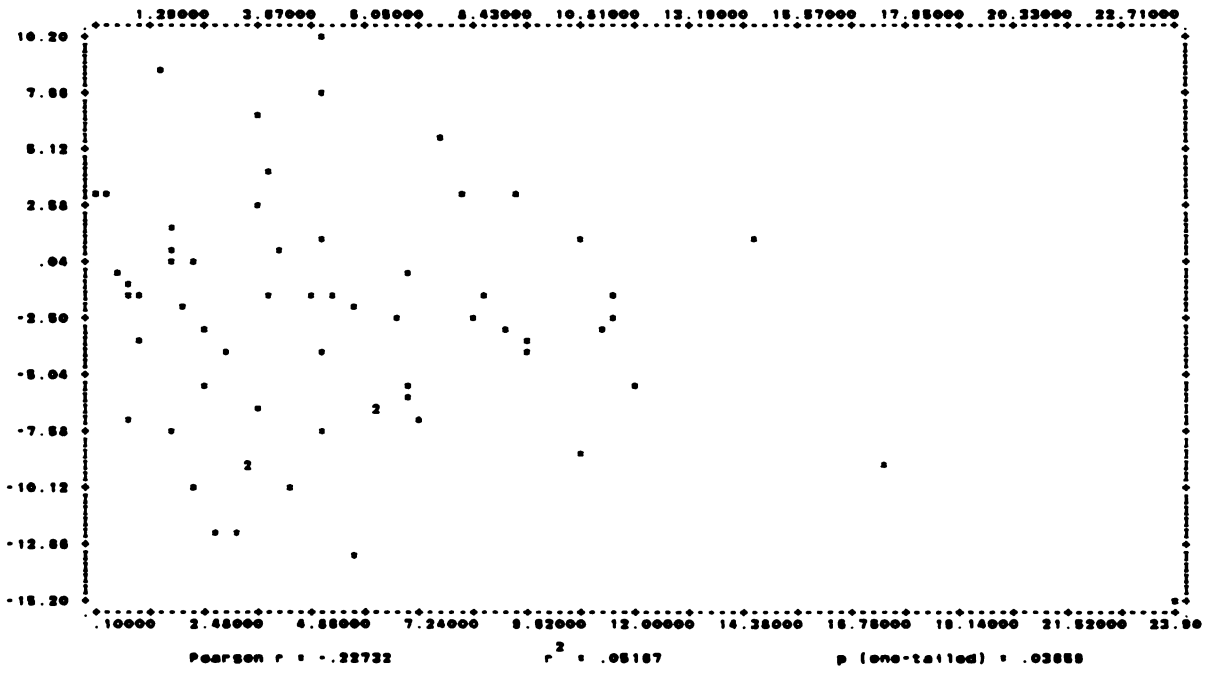


Figure 72. Pre-Therapy DOM BY Change in LOV

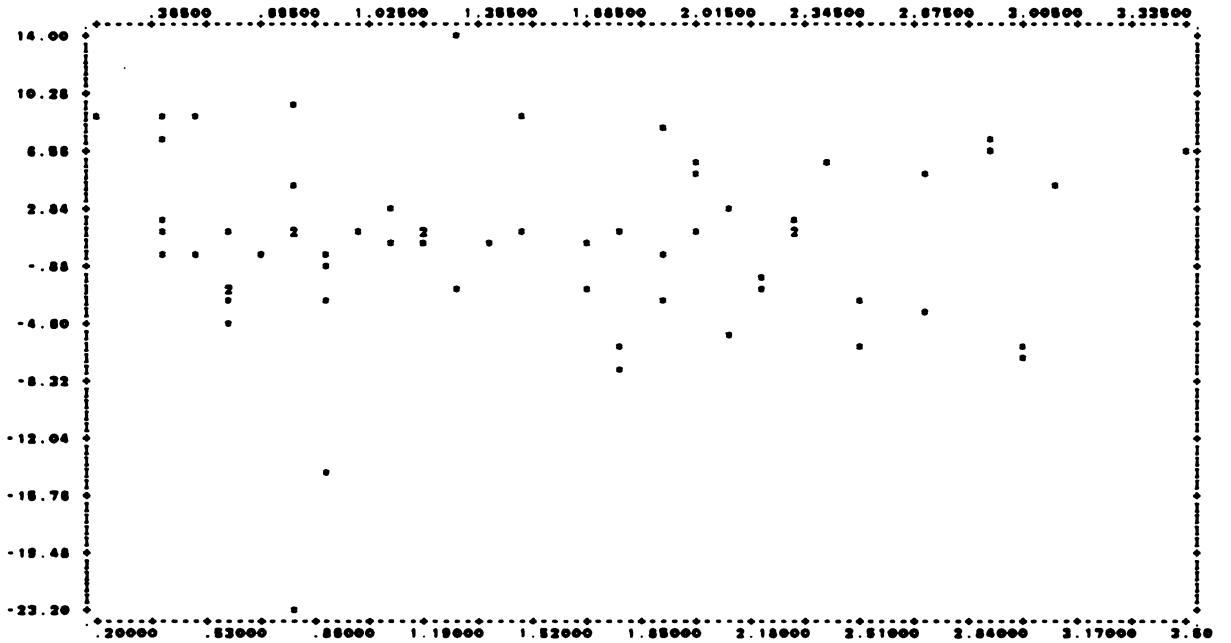


Figure 73. Post-Therapy BDM BY Pre-Therapy Anxiety

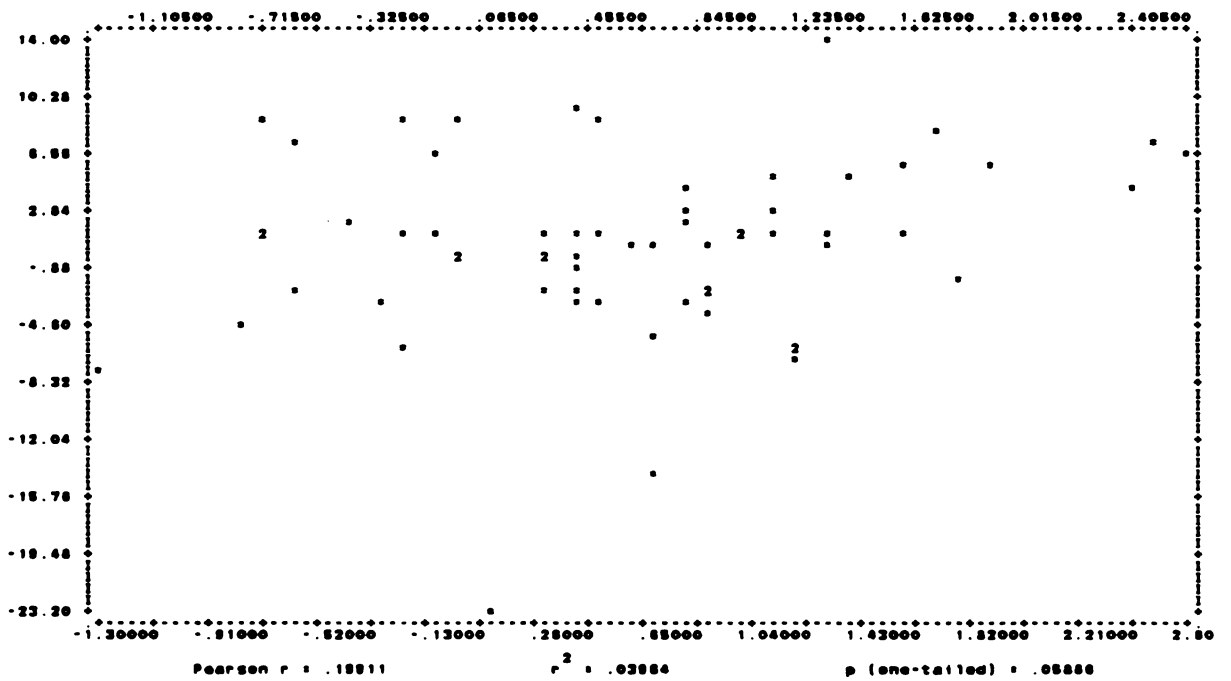


Figure 74. Post-Therapy BDM BY Change in Anxiety

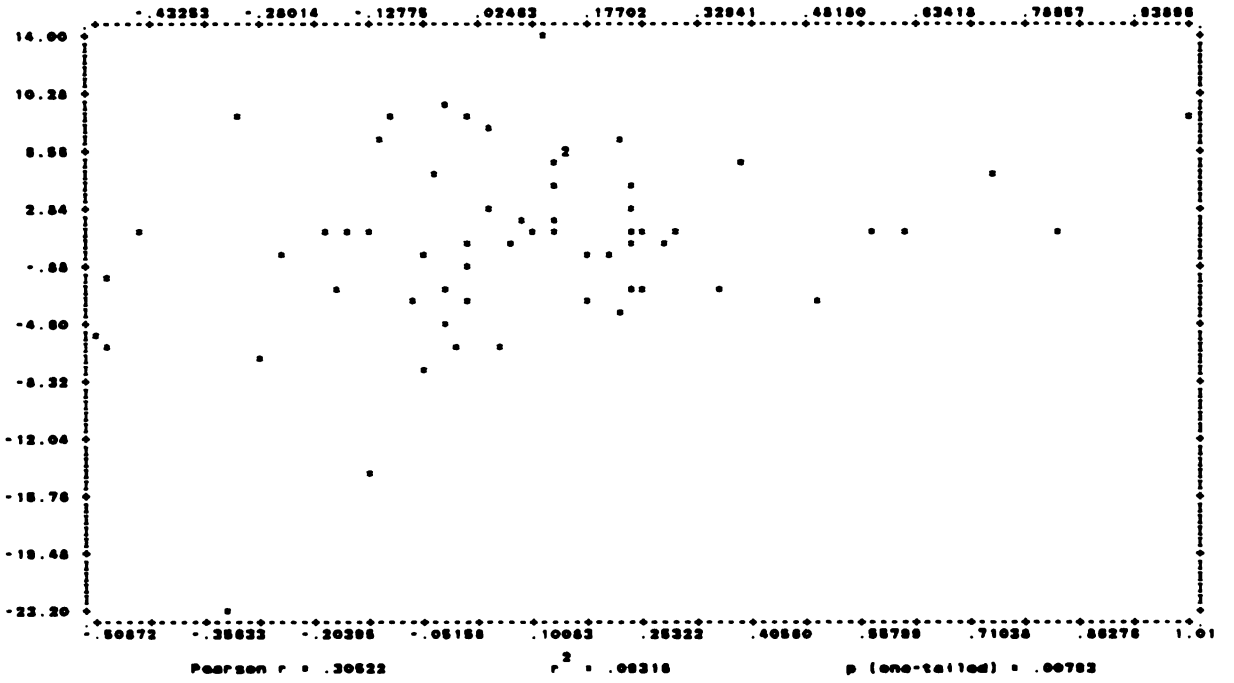


Figure 75. Post-Therapy BDM BY Change in AIM

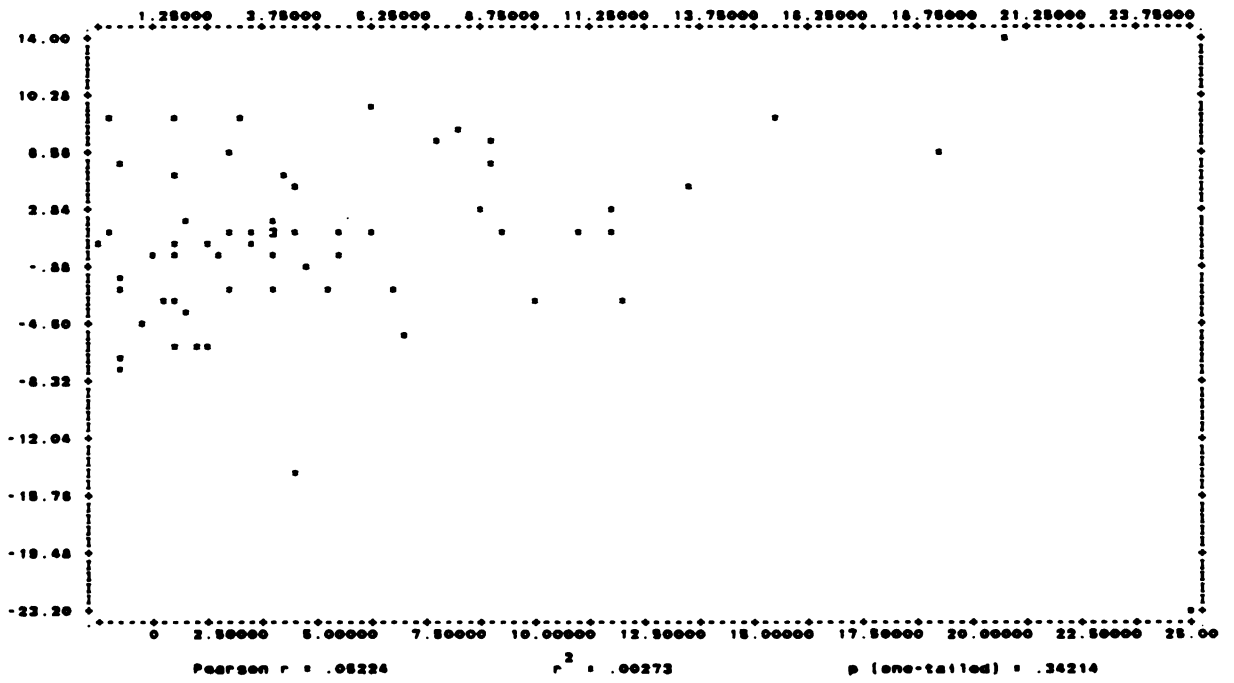


Figure 76. Post-Therapy BDM BY Change in BDM

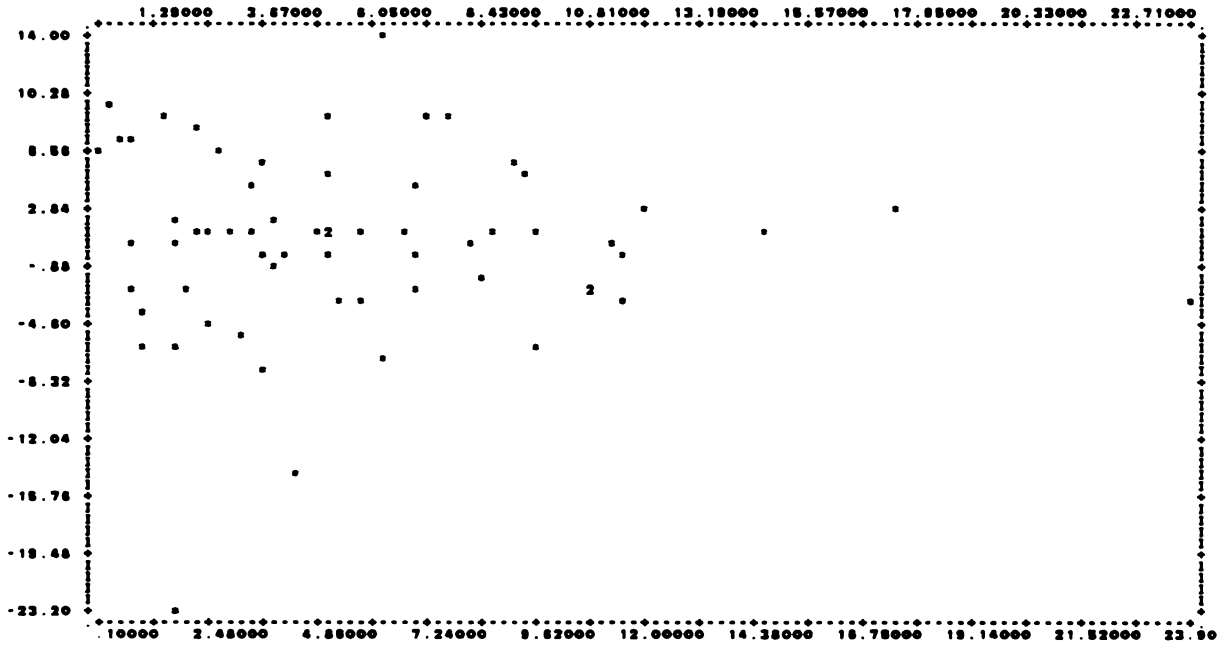


Figure 77. Post-Therapy BDM BY Change in LOV

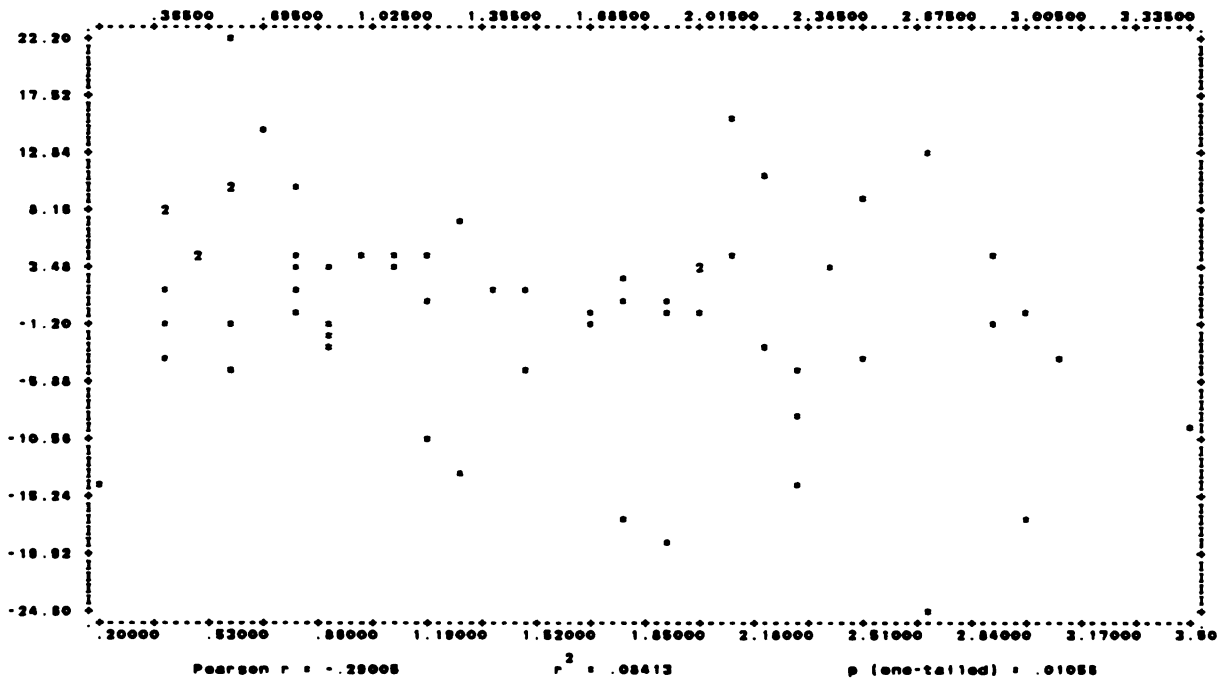


Figure 78. Pre-Therapy LOV BY Pre-Therapy Anxiety

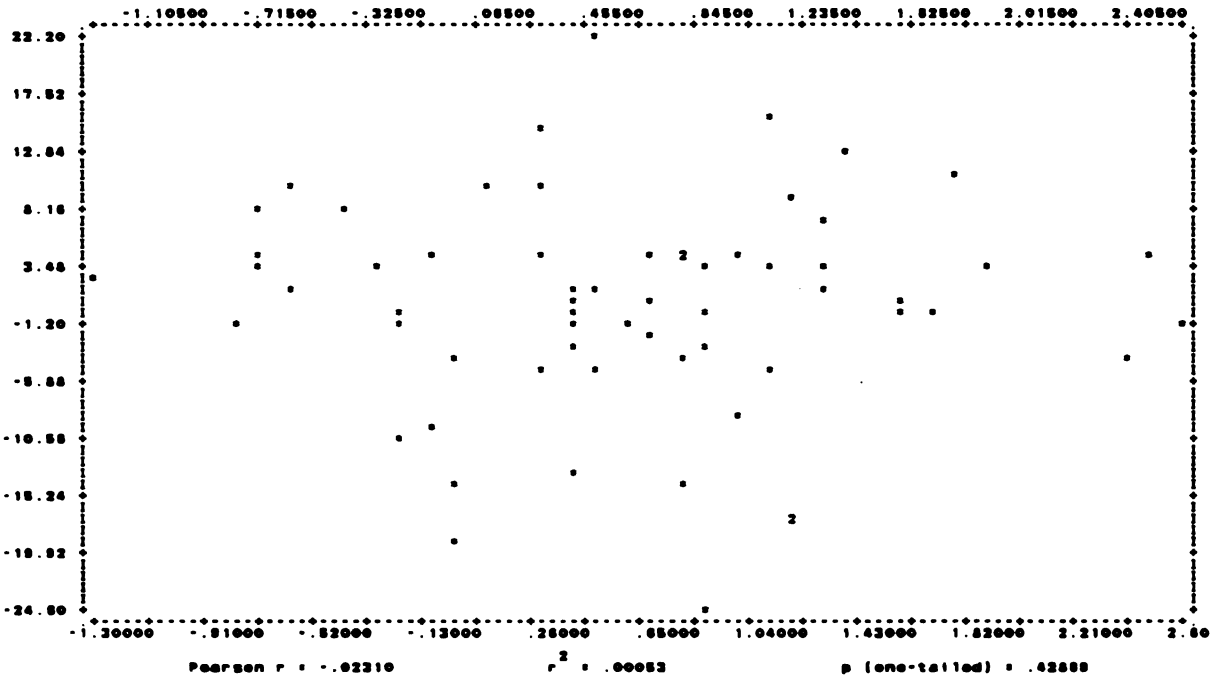


Figure 78. Pre-Therapy LSV BY Change in Anxiety

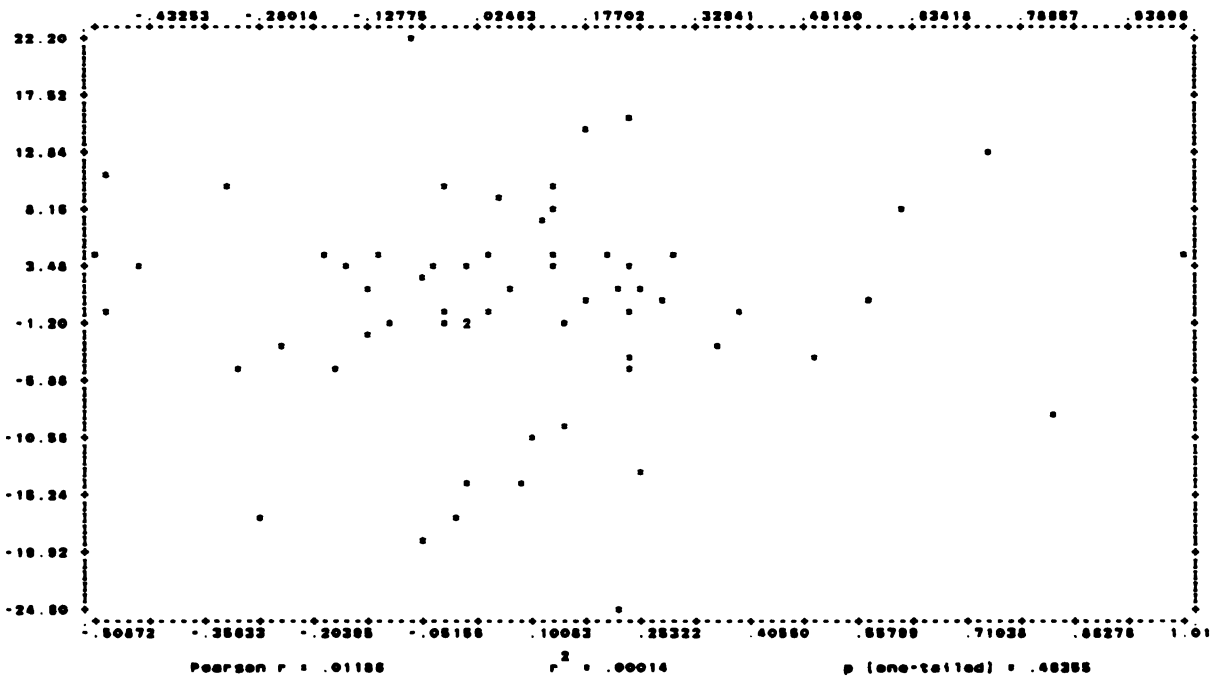


Figure 80. Pre-Therapy LSV BY Change in AIN

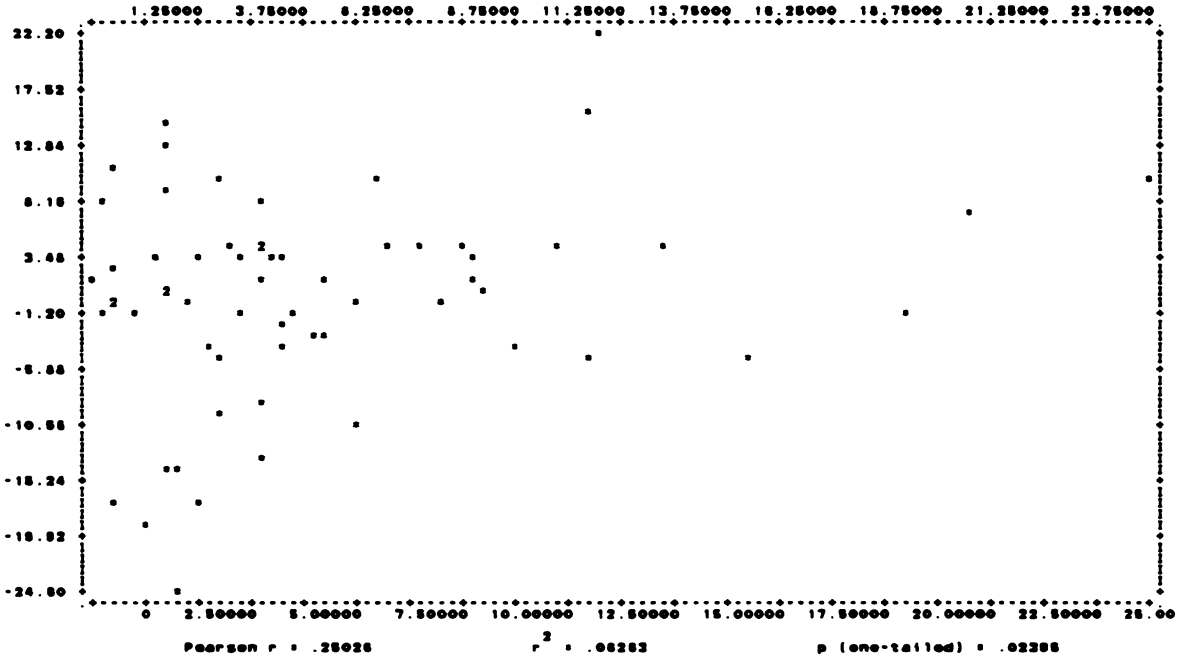


Figure 81. Pre-Therapy LOV BY Change in DOM

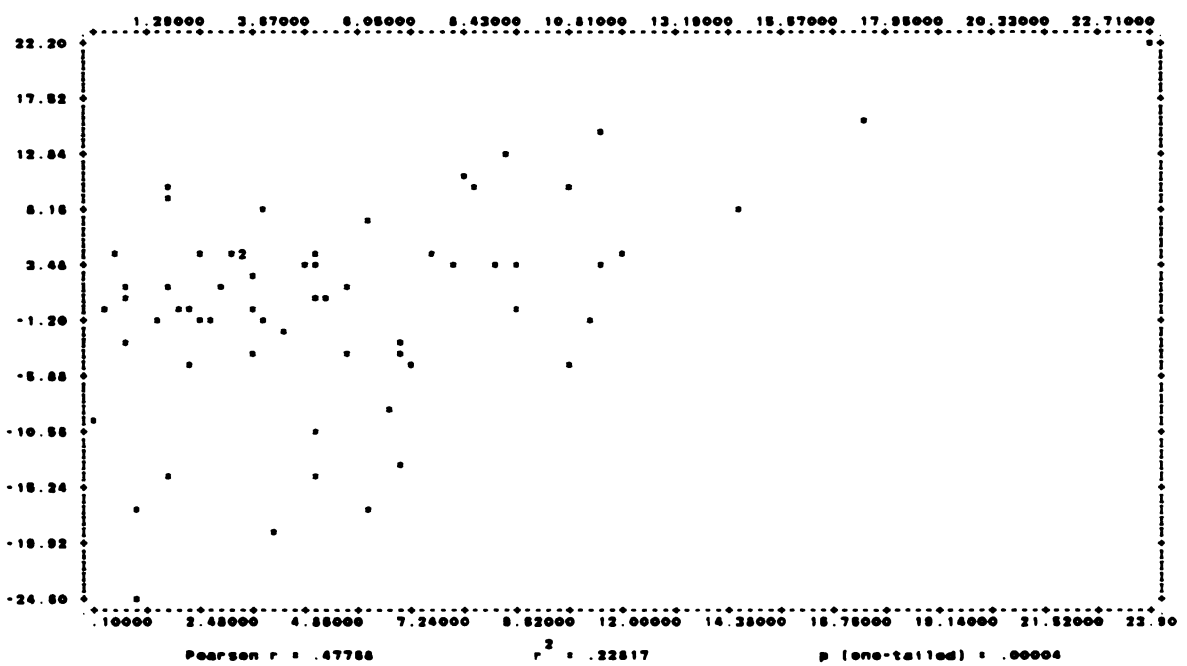


Figure 82. Pre-Therapy LOV BY Change in LOV

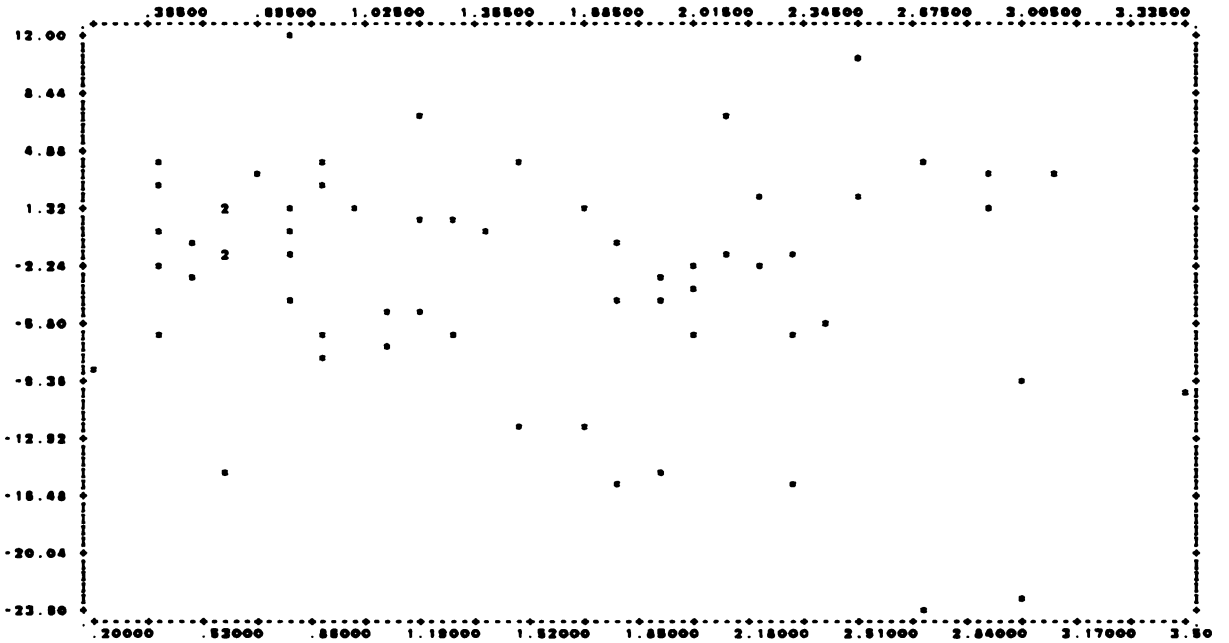


Figure 83. Post-Therapy LOV BY Pre-Therapy Anxiety

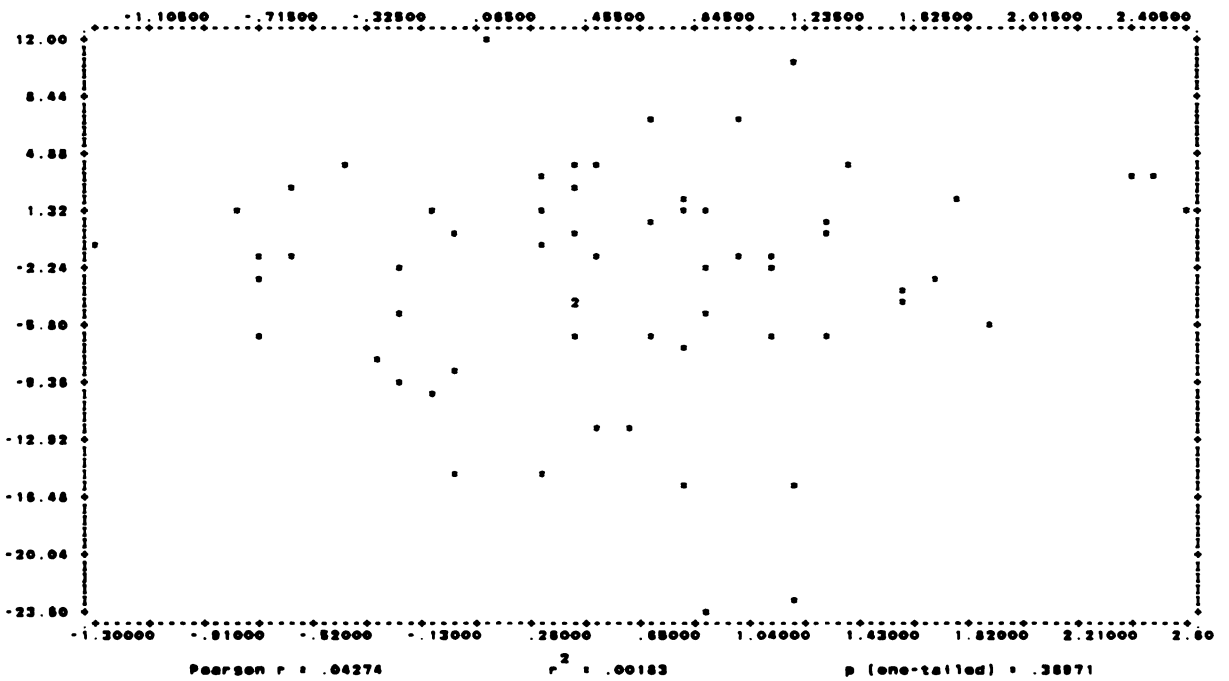


Figure 84. Post-Therapy LOV BY Change in Anxiety

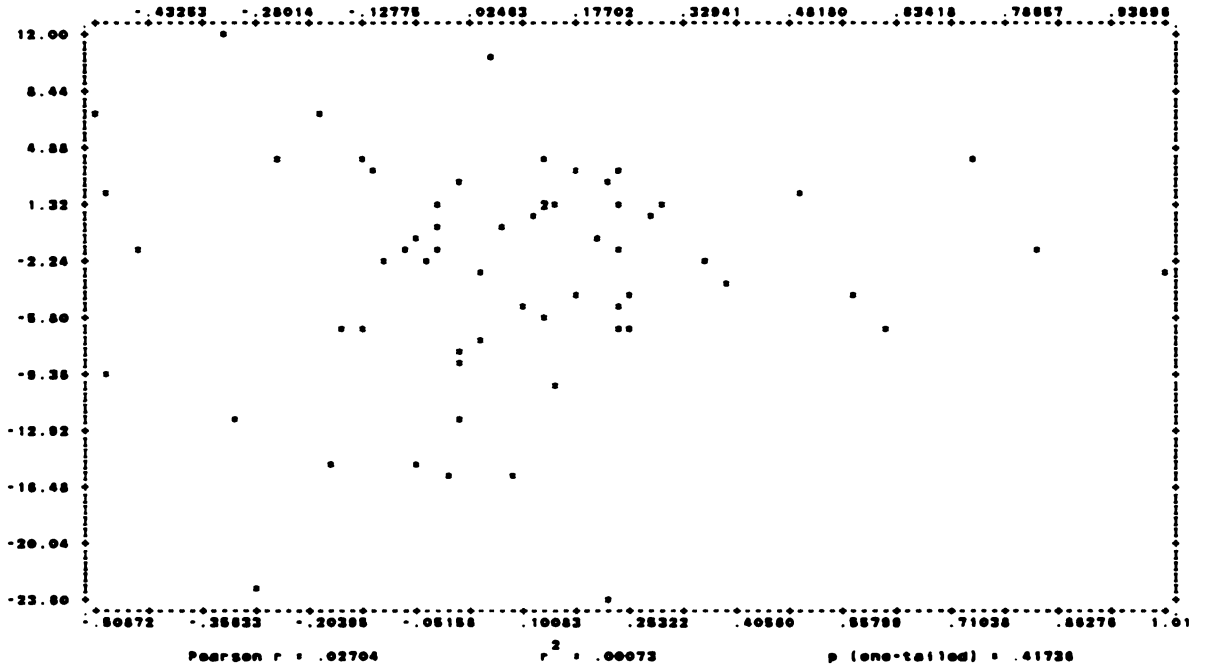


Figure 85. Post-Therapy LSV BY Change in AIM

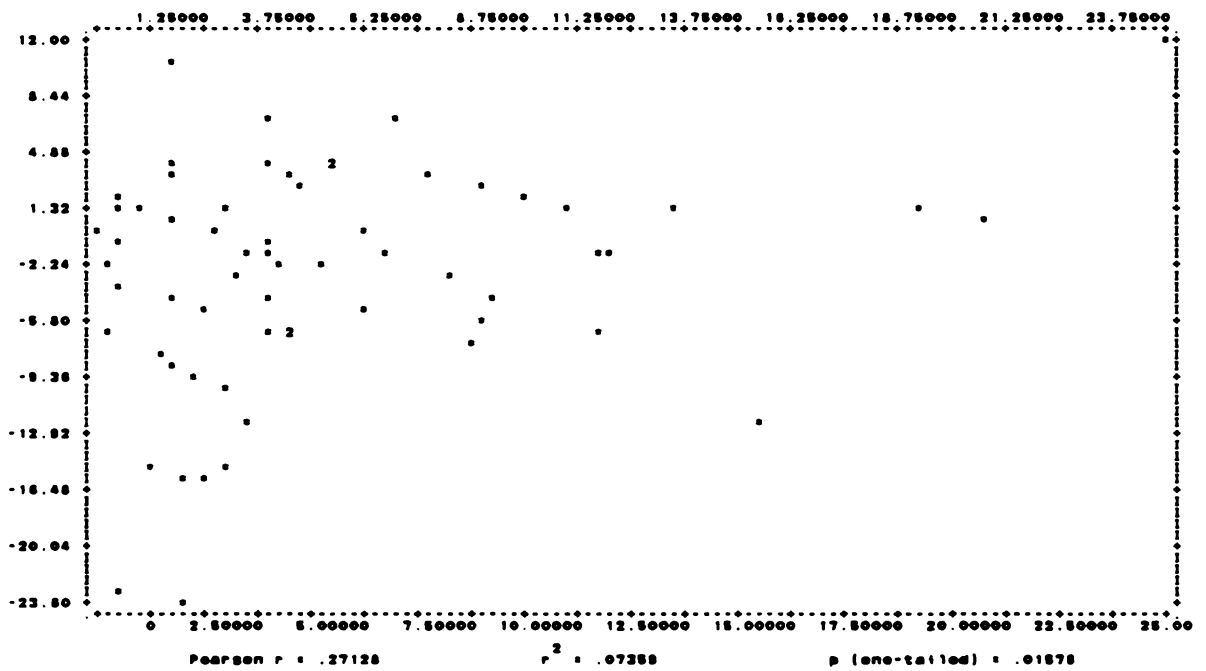


Figure 86. Post-Therapy LSV BY Change in DOM

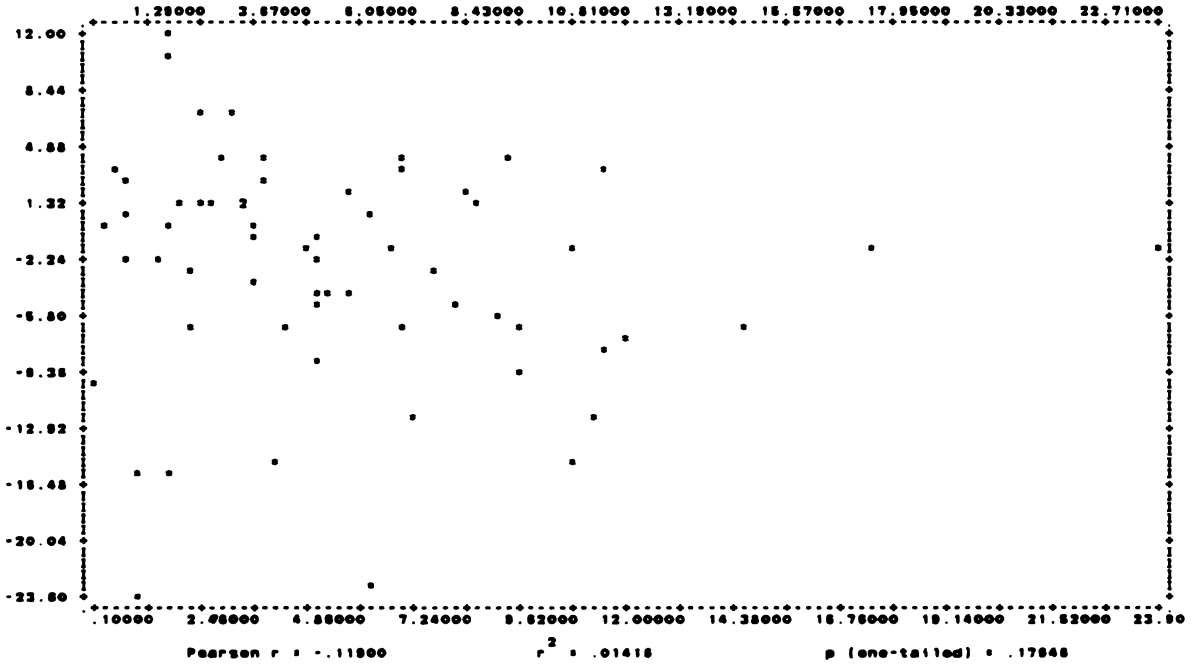


Figure 87. Post-Therapy LOV BY Change in LOV

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