March 7, 1974

To the Graduate Council:

I am submitting herewith a thesis written by Marsha Dallaire Williams entitled "Metaphor Use in High and Low Anxiety Subjects." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts, with a major in Psychology.

Howard R. Pollio, Major Professor

We have read this thesis
and recommend its acceptance:

Accepted for the Council:

Vice Chancellor
Graduate Studies and Research

5

METAPHOR USE IN HIGH AND LOW ANXIETY SUBJECTS

A Thesis

Presented for the

Master of Arts

Degree

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Marsha Dallaire Williams

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ABSTRACT

To determine if there is a relationship between metaphor production and anxiety, differences in metaphor use by 28 subjects were investigated. Subjects were undergraduate psychology students at the University of Tennessee, and were selected for high or low anxiety level. They were asked for written compositions on two topics, one dealing with the self, and the other with a neutral subject.

Results showed the high anxiety group produced significantly more figures of speech altogether than the low anxiety group did; also the high anxiety group produced more novel figures of speech on the self-revelation topic than on the neutral topic. There was also a highly significant preponderance of frozen over novel tropes.

These results were interpreted to mean the high-anxiety group was perhaps less defensive and more creative than the low anxiety group, since a similar study by Lockwood (1974) demonstrated that subjects with extremely rigid defenses tend not to produce novel metaphors, and also tend not to feel anxious.

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Chapter I

Introduction and Review of the Literature

Beulah Parker (1962) has written a book about the therapy of one borderline or pre-schizophrenic boy she calls David. David spent the first year or so of therapy in being obscure: that is, he expressed himself only by telling stories or using fanciful images rather than by talking about himself in a direct, literal, way. Treating his stories as symbolic in the way dreams are symbolic, Parker managed to understand David and to reply to him, often responding in the same symbolic mode. In effect, she knew that her patient used his stories and figurative language in an attempt to be obscure and misunderstood. He said as much himself; David hid inside his private language. As the therapeutic relationship grew and David lost some of his resistance to the world, he could and did abandon his "code" for literal speech. Once it had been dropped, he returned to it only in a period of unusual stress.

Parker's study illustrates two widely held ideas concerning figurative language and symbolization: that both come from and reveal the content of an unconscious process, and that both can be used equally well to hide behind and defend the self and can be used in an open and creative way.

Freud taught that symbols arose from the unconscious and expressed the anal-erotic interests of the libido in disguised fashion (Jones, 1923). The dream-symbol, for example, is a highly condensed and displaced representation of a libidinal wish or complex of wishes. In this

same way, linguistic metaphor (as in creative poetry, jokes, or slips of the tongue) is a displaced and "disguised" representation. The literal words of respectable content are a kind of decoy, drawing attention away from the unrespectable contents of the id (Freud, 1938; Jones, 1923).

Some experimental work has been done using metaphor to elicit unconscious attitudes and beliefs. Craddick and Miller (1970), for example, had subjects represent their "Selves" using concentric circles and animal metaphors, and concluded that this procedure gave quantifiable results. They planned to use it next to see if Jung's archetypes could be reproduced experimentally; i.e., males should characterize the outer circles with "masculine" animals and inner circles with "feminine," while females should do the opposite in representing the animus and anima. Knapp (1960) had his subjects check off preferred metaphors in each of six categories and then intercorrelated them to discover that metaphors about time and death do not fit with attitudes about self, love, life, etc. However, he could not decide whether he had uncovered a wishful or realistic attitude in his subjects, since the correlated grouping was highly optimistic in tone. The fact that he felt he could use metaphors to understand the unconscious is what concerns us most here.

Other analytic therapists in addition to Parker have noted the hiding or defensive function of metaphor. Alexandrowicz (1960) opens his study on interpreting patients' figurative language with an epigram produced by a patient: "I tell stories, but I'm talking about my life." Ekstein (1961) reports on an adolescent girl who had a few

schizophrenic episodes and who used imagery to talk about her central problem which she could not talk about directly, because it caused her so much anxiety. Pollio (1972), in commenting on a paper by Fine, Pollio, and Simpkinson (1973), makes the observation that patients often use metaphors as a shield, particularly in terms of the case reported by Fine et al.

If metaphor and imagery serve to protect the patient, the question might be: from what? Defense mechanisms in the Freudian system are posited to bind anxiety, and metaphor and imagery are construed to be products of the defense mechanisms of sublimation and repression. The dream-symbol allows the patient to view the contents of his id without the anxiety attendant upon direct, bald, revelation (Jones, 1923). Metaphor and figurative language in general can even serve the same function in the very regressed personality to whom a word may be identical to an act. A schizophrenic, for example, might find the "myth of Oedipus" less anxiety-provoking than the word "murder" because he would equate both the words with actions, and the action in the second word would apply directly to him. The first is only a story.

When a patient uses a metaphor, it often behooves the therapist to reply with a similar figure: this is the technique of "interpreting within the metaphor" advocated by Ekstein and Wallerstein (1957). By doing so, the therapist preserves the patient from the anxiety of too close an emotional relationship with the therapist while demonstrating that he understands what the patient is trying to say. Again, Wallach and Greenberg (1960) note that highly anxious social introverts used much more sexual imagery in written responses to arousing music than

extraverts or nonanxious introverts. The nonanxious introverts were thought to be fairly happy with their isolation while the anxious introverts had made a much less satisfactory social adjustment and used imagery to sublimate for the feared direct contact with people.

Even in the field of creativity, the metaphor is seen by the Freudian as essentially defensive in function. Freud thought the artist used his medium to work through neurotic conflicts, expressing them in sublimated form. A work is art is construed to be an expression of, and the fulfillment of, a libidinal wish even though the artist has hidden the work's libidinal source. In jokes, the libidinal wish is often pretty obvious and the metaphoric disguise rather thin (Freud, *Jokes*, 1938).

To sum up the analytic position on metaphor: it indicates and arises from the unconscious mind with the primary purpose of expressing or fulfilling a libidinal wish, while at the same time disguising it. In this way the figure, like the image, acts as a defense to protect the user against anxiety; and in the classic Freudian position, this is *all* the figurative act does.

Downey (1929) dissents. While she is willing to admit that the metaphor comes from an unconscious source, she assigns a different motivation to poetic than to pathological figures of speech. Where the neurotic seeks to cloak the impulses of the id, the poet uses metaphor for the delight which comes from expressing feelings or subtle concepts in a novel way. Downey also points out that

> The substitution occurring in dreams is often cryptic in nature. The underlying meaning can at times be penetrated only after the most far-reaching analysis, an analysis of the intimate life of the dreamer. Literary or poetic symbolism must be more obvious in nature else the poet's song may be sung for his ear alone.

> Yet, too, the allegories, the metaphors in which he delights must for the most part, well spontaneously from his spirit and he must trust to their appealing to those among his readers whose life of instinct and emotion is similar to his own (Downey, 1929, p. 104).

Downey has suggested two motives for using metaphor: defense, and delight. As we will explore below, there are two distinct attitudes that one can take toward the use of figurative language: (1) that it serves a defensive purpose, as above, and/or (2) that it augments and directs the creative process, thereby leading to successful problem solving.

Sechrist (1913), in a very early but thorough study of what he calls "unconventional" language, lists five motivations for using figures of speech: "the play impulse, the desire for secrecy, for economy of effort, for accuracy, and for reality." The poet and punster play with words. "The desire for secrecy" Sechrist relates to deliberate argot used by thieves, etc., as well as to the kind of metaphoric obscurity previously mentioned elsewhere. He asserts figurative language is "expressive but not communicative" by which he means unconventional language is emotional and expresses difficult or vague ideas and feelings accurately and economically--but not in the cut-and-dried form of conventional, strictly literal, language. Finally, Sechrist believes those people who have a secure perception of reality will be unafraid to express what they see in unconventional terms.

Later psychological investigators might well compile a similar list. Fine, Pollio and Simpkinson (1973) for example suggest two simple and direct motivations for metaphor: (1) the metaphorizer

may not have the vocabulary to express the idea he wants to convey, so he must use novel language; or (2) he does not have a very clear idea of the thing he wants to say, so he must express it approximately--again, using nonliteral language. In Sechrist's terms, both are motives for economy and accuracy.

We have been using the terms "metaphor," "figure of speech," "image," and "symbol" as though they were completely synonymous. They are not, though they do have common elements, one of which is "the relating of two things of unlike nature that have something in common" (Corbett, 1965). Knapp (1960) feels that symbolism and metaphorizing are both primary process functions, for while the reality-oriented secondary process relates things on the basis of *substantial* likeness, the primary process identifies two things even if they have only certain salient features in common. The comparison may be emotional instead of being simply restricted to material or conceptual likeness.

In the present research we will not limit ourselves to the metaphor proper. Rather, we will be concerned with all figures of speech, all play with words, all not-strictly-literal uses of language. For the purposes of this study, we will use the terms "figure of speech," "metaphor," and "trope" synonymously. All refer to expressive but nonliteral uses of language.

Other authors have used this convention as well. Gordon (1961), for example, has spent several years developing a method of creative problem-solving which he calls Synectics, which works very well in developing elegant and quick solutions to difficult problems, and which principally involves the playful use of all kinds of figurative language.

The Synectics process has two parts: "making the strange familiar; and making the familiar strange." The first part helps the Synectors identify the exact nature of the problem while the second allows them to look at commonplace things in an unusual way effectively to produce an elegant solution. The Synector makes the familiar strange by describing it in terms of figures and then follows the figure further. Gordon's principal figurative devices are the Direct, Personal, Fantasy, and Symbolic Analogy, all of which contain aspects of many different kinds of figurative language.

Following a similar logic, Dreistadt (1968) presents a long compilation of how creative scientists have used analogy to find solutions. He points out that metaphor not only gives a manageable representation of a problem, but that it also points to the direction and kind of solution requested. Further, he attempts to correlate class of analogy (he has two classes to Gordon's four: personal, and objective) with personality types. He finds the more introverted scientists is likely to use the personal analogy in an attempt to identify the problem with himself, while the more extraverted scientist may use either kind of analogy. An example of the former type is Archimedes, who in attempting to find out the real composition of the king's gold crown, solved his problem by using the spilling over of water as a reaction to his own body as analogous to what would happen if he immersed the crown. Thus he discovered specific gravity.

Previously we have noted how metaphor in therapy can be used as a defense against anxiety and as a way around the defenses of the patient by the therapist. Metaphoric usage in psychotherapy, however,

is not limited to this defensive role. Lenrow (1966), in fact, lists a number of different ways in which figurative language can enhance communication and facilitate constructive behavior change in the patient. The therapist who uses metaphor, first, provides a model of willingness to try novel ways of looking at behavior. Next, the concrete referents of metaphor give communication a more intimate or personal quality than if abstract "psychological" language is used. Metaphors have a half-serious, half-playful, quality that lets the therapist interpret to the patient without appearing intrusive or otherwise raising the patient's defenses unnecessarily. For the patient, metaphor provides schemata for simplifying events or for highlighting new possible directions of change; it also points up emotional equivalence in apparently dissimilar events; thus the patient can see how he reacts to certain emotionally-charged situations. Finally, the habit of metaphorizing, with all its benefits, transfers readily to new situations.

The work of Pollio and Barlow (1974) and Barlow (1973) relates the use of metaphor to insight in psychotherapy. Barlow (1973), for example, noted that patients produce bursts of novel metaphor at points in therapy where something significant happens; these points were labeled "problem-setting" and "problem-solving." The bursts of novel patient metaphor often divide a therapy session into three parts: presenting of problems, discussion or production of trial solutions, and (perhaps temporary) successful solution. The metaphoric usage at points of change was particularly noticeable in an analysis of one session of Gestalt therapy (Pollio & Barlow, 1974) which school itself

makes much use of symbolic or figurative language. In addition, therapy sessions of other schools (client-centered, rational-emotive) also show the patient bursts and a similar division into episodes (Barlow, 1973).

Novel metaphors carry emotion. Alexandrowicz (1962) cautions therapists that they cannot expect to understand a patient's figures of speech using the intellect alone since metaphoric imagery represents highly charged contents. The therapist must allow himself to react emotionally to the image in order to comprehend it. Shibles (1972) points out a metaphoric comparison may be made on an emotional basis alone; one can say "The government is tobacco" solely on the basis of a dislike for both. Lockwood (1974), in summing up research connecting figurative language to emotion, describes how anxiety, for example, might motivate metaphor:

> People who have a feeling or an idea that is difficult to express, or people who feel a need to understand something that is confusing, may feel emotional arousal in the form of anxiety because of their inability to communicate or to understand. Out of frustration they may use metaphor (p. 19).

Metaphoric motivation, however, is not limited to negative affect. Sechrist (1913) ascribes the bulk of figurative production to playfulness, "The feeling of individual well-being and the joy of life" (p. 545). He uses as partial evidence an early study showing slang use increases after the age of nine or ten, peaks in later adolescence (about age 17) and decreases again after 21 or so. He attributes this use of unconventional language to youthful exuberance. Sechrist does not consider the possibility children might use slang as a response to emotional turmoil during the adolescent years, however. His only

mention of the defensive use of unconventional language says it occurs in such situations as thieves' or smuggler's argot; and there it is believed to be a half-deliberate construction. In other uses and situations, Sechrist sees figurative language, as Downey (1925) does, as reflecting delight.

Finally, let us not forget that much of the language of therapy itself, as the therapist teaches it to his patient and the patient uses it to understand the therapist and himself, is metaphoric. Freud's *id*, *ego*, *superego*, *Oedipus* and *Electra complexes*, etc., were all once upon a time fresh representations of complex entities posited in a hypothetical psyche. They have now been reified in the minds of many psychologically oriented people, as have the terms "mental illness," "schizophrenia," and "anxiety" (Sarbin, 1972). All of these terms are now dead, frozen metaphors; psychologically minded people have forgotten their nonliteral origins. In contrast, the language of Transactional Analysis borrows many of the concepts of classic analytic psychology but clothes them in lively new terms: Racket, Game, Payoff, Script, etc. (Harris, 1969).

Anderson (1964), in a more behaviorally-oriented synthesis, suggests that metaphoric products may be the result of some kind of aroused state in an organism. Organisms both seek "arousal jags" and the relief of an aroused state where continued arousal would be felt as a painful tension. The metaphor can fill both functions: its surprise or delight produces arousal jag; finding of making a metaphoric link in experience reduces the arousal. Anderson also notes that an organism can short-circuit metaphoric consciousness by immediately

discharging arousal in motor activity. For Anderson, the metaphor is a cortical discharge via a symbolic link.

One last theoretician, contrary to most of his Freudian brothers, sees anxiety as potentially creative and thus ties our whole discussion together. Dabrowski (1967) works from the viewpoint that personality disintegration is not always pathological; on the contrary, loosening of the personality structure, most probably accompanied by anxiety, is necessary for the achievement of a higher level of integration. Nothing new can appear without the death of the old. The most primitive level of integration, as Dabrowski describes it, is characterized by immediate impulse gratification most likely via motor discharge. Combining Dabrowski with Anderson above, we may see this most primitive level is perhaps unlikely to produce metaphor as well as being unlikely to be anxious, since organisms on it habitually short-circuit arousal. In other words, anxiety can signal growth and creativity as well as trauma and defense.

In summary, figurative language can be viewed as creative as well as defensive. It is part of a process which unites unlike elements by means of some salient similarity. It seems to be one method of reducing anxiety or arousal, or of solving problems. Metaphor production is motivated by affect, whether positive (playfulness, exuberance) or negative (pathological or normal anxiety, stress) and the "successful" metaphor carries with it a positive feeling that reduces tension associated with an aroused state. The summation points to some situations in which metaphorizing might be expected to occur. First, it must be a situation in which a linguistic rather than a motor

response is more appropriate (Anderson, 1964); and second, the metaphorizer must be in a state of arousal, whether positive or negative.

The specific purpose of the present study is to test one aspect of the assumption that arousal is required for the production of figurative language. More specifically, we assume that when they are asked to write compositions, highly anxious subjects (i.e., in a state of high negative arousal) will produce more figurative language than low-anxious subjects.

We also expect subjects to use more frozen than novel figures of speech. Previous research in figurative usage done at the University of Tennessee shows this pattern in all speech and composition, with the exception only of "recognized literature" (Barlow, Kerlin, & Pollio, 1971) and Gestalt therapy sessions (Pollio & Barlow, 1974). Pollio and Barlow believe that novel metaphor expresses creativity and these cases demonstrate exceptional creativity. Frozen metaphor, on the other hand, is a common part of the language and ought to be common in ordinary works. Our subjects will be selected from a pool of students in undergraduate psychology classes, and we simply do not expect to find much really exceptional creativity among them.

Finally, we assume that a patient who comes voluntarily to therapy will be rather anxious in general, and more specifically anxious about his personal adequacy in particular. As our literature survey has noted, many therapists believe patients in the early stages of therapy use figurative language to hide behind--to avoid revealing themselves to a comparative stranger in too direct a way and to avoid revealing their problems to themselves in too direct a way (Fine et al.,

1973; Ekstein et al., 1957, 1961; Alexandrowicz, 1960; Parker, 1962). Metaphor is used to help control such anxiety. This study will ask subjects to write about themselves with the expectation that asking them to do this will mimic the opening moments of therapy where the patient begins by talking about himself. We expect that subjects will use more metaphor when asked to write about themselves than on a neutral topic; and highly anxious subjects in particular will use more figurative language when asked to write about themselves than on a neutral topic. Low anxiety subjects may not show this pattern.

Chapter II

Experimental Method

Subject Selection

Two equal-sized groups of *S's* were used, one group selected for high anxiety level; the other for low. We chose our subjects out of a rather large pool of volunteers among undergraduate psychology classes at the University of Tennessee. About 80 of the subject pool were students in one class in Abnormal Psychology; the remainder came from various other psychology classes (about 40 more, for a total of 120 students). All students in the original subject pool were given two psychological tests, the *IPAT Anxiety Scale* and the *Otis IQ* test. The former test measures both hidden and manifest anxiety to give a combined total score; we used it to select high and low anxiety groups. The other was to ensure that all subjects were of at least average intelligence and to match the groups in mean intelligence. We eventually chose 30 subjects, of which 28 (14 in each group) appeared and were run on the next part of the task.

Subjects arranged themselves as follows on age and sex:

High Anxiety *S's*	4 male	10 female	Ages 19-23
Low Anxiety *S's*	6 male	8 female	Ages 18-29

The mean ages of both groups were similar, between 21 and 22 years at testing.

Informed Consent

We felt we could not tell our subjects anything more about the experiment without influencing the results other than that it related

personality types to writing styles. Within these restrictions, we informed the subject pool that the IPAT (which carries the name "Self-Analysis Form") would help us find people who fit into one or the other of the two personality types we wanted. We did not tell subjects they were taking an anxiety scale; neither did we tell them what they scored on the IQ test, as we feel IQ scores are subject to great misuse. We did inform any subject who asked what the general outline of the experiment was, after that subject's part of the writing was over--i.e., that the experiment related metaphor production to anxiety level. (Interestingly, 5 high-anxiety subjects directly asked what the experiment was all about, and only 1 low-anxiety *S* did so.)

Tests Used

Otis. The IQ measure we used was the Otis Quick-Scoring IQ Test, Form Gamma, For Hand-Scoring. This measure is rather old (1938), has a limited IQ range in adults (58-138 inclusive), and is only somewhat reliable. It has the advantages of being appropriate for group administration, easy to hand-score, and not very time-consuming (30 minutes maximum). Three high-anxiety subjects did not take the IQ test.

On the basis of the Otis, our *S's* arranged themselves as follows:

High Anxiety *S's*	Range 111-135	Mean 122.0
Low Anxiety *S's*	Range 103-136	Mean 122.6

These data indicate that our two groups are quite comparable in IQ scores. Though we were missing three scores, Porter (1969) has shown little correlation between IQ and metaphor production, so the IQ measure

is probably not crucial to our experiment. On this basis we decided to proceed despite the missing Otis scores.

IPAT. The IPAT anxiety scale is valid, reliable, and short (5-10 minutes). It measures free anxiety (not bound by a defense mechanism) that is both overt and covert. Numerically it provides an overall score of from 0 (lowest) to 80 (highest). Any score over 50 is in the 10th sten, indicating extreme anxiety. Scores for college students are normally distributed between 0 and 50 (*IPAT Handbook*, 1963).

Our subjects scored as follows on the IPAT:

Low Anxiety *S's*	Range 7-23	Stens 1-4	Mean 16.3
High Anxiety *S's*	Range 39-54	Stens 7-10	Mean 44.6

The overall mean for college students is 28.7, with a SD of 10.4 (*IPAT Handbook*, 1963).

Instructions to Subjects

A composition task was used to get samples of written language so as to evaluate the rate at which figures of speech were used by the two subject groups. All subjects were asked to write short themes on two topics which are listed below. Two pages were requested on each topic; *S's* were given up to one hour to write both. The subjects made appointments to do the writing, and were run in groups of up to six people at a time. The experimental room was a lounge set up in the Cognitive Studies Laboratory at the University of Tennessee. We supplied writing paper and pencils.

The specific topics *S's* were asked to write about are as follows:

A. Tell about a book, movie, play, or TV program which you remember. Include enough details so that it makes sense.

B. Describe yourself fully to another person. You want this person to understand and know you well.

Topic A was designed to be affectively neutral. In the tables, it will be designated as "Other." Topic B was designed to get information about the person and will be called "Self" in the tables which follow.

The experimenter tested, selected, and made appointments with members of the subject pool. An assistant, who had no knowledge of the anxiety level of the people he was directing, oversaw the writing task. On this blind basis he could not influence the compositions in any subtle manner. He also gave identical directions to all *S's*.

We attempted to control for order effect by randomly varying the order of topics across subjects. Half of the *S's* wrote first on Topic A, half on Topic B. The procedure was as follows: The numbers 1-28 were written on cards, one number to a card, then the cards were shuffled and the order assignments put on them. This was done by assigning the first card in the shuffled pile the order A-B, the next B-A, and so on alternately. As each subject came in to write, he or she was given whatever card was on top of the ordered pile and the number on it became his random subject number to be used on his compositions, which later he wrote in the order indicated on the card.

While this procedure randomly divided *all* subjects evenly, it did not split them up evenly within their specific groups. Instead we got the following grouping:

Composition Order	Subjects in groups	
	High Anx.	Low Anx.
Self-Other	5	9
Other-Self	9	5

Judgment of Metaphors

The final task was to select instances of figurative language from subject compositions. Barlow, Kerlin, and Pollio (1971) have developed a reliable procedure for doing this which is set out in their *Training Manual for Identifying Figurative Language*. The manual teaches judges to identify 15 categories of figurative language, from the well-known metaphor and simile to the more exotic oxymoron and anthimeria. It also offers suggestions for discriminating the novel from the frozen trope. As mentioned above, frozen tropes are "dead" and may range from dictionary entries (i.e., the *mouth* of a river or *head* of state) to cliches (i.e., "Every cloud has a silver lining!"). Novel metaphors are fresh, original, and "alive." For example, one girl wrote of her boyfriend, "He is my balance wheel" in reference to how his qualities both complemented and kept in check hers.

Two judges rated metaphors in each subject's pair of themes; then both met together to discuss their ratings and make final agreements. Two major changes were made in the procedures recommended by Barlow et al.: First, where the *Manual* suggests using three raters, we had only two people available for this task. Therefore we had also to adapt the scoring for two people. Our adapted scoring is as follows:

2+0 means both raters independently chose an instance of language as figurative.

1+1 means only one rater picked an instance of language as figurative, but the other rater agreed when it was shown to him.

1-1 signifies a rejection. One rater proposed an instance as figurative but the other rater, when it was shown to him, disagreed. Disagreements are final.

The second major departure from *Manual* recommendations came in the area of practice. Both raters practiced on the four selections in the *Manual* and achieved good agreement, but neither had prior opportunity to work on the specific kind of material represented by the student themes. We felt we did not have enough subjects to be able to afford to use any of our subject themes for practice alone.

Since all compositions were randomly identified by number only, neither rater knew the anxiety level of the person whose work was being judged for figurative language. Consequently, no effect of prior knowledge could account for the results we obtained.

Chapter III

Analysis of Results

Rater Reliability

Despite the handicap of only two raters and little previous practice, the judges achieved an 84% agreement on all figures judged. This is an acceptable reliability level and comparable to that obtained in other studies at the University of Tennessee which have used the *Manual*. (See, for example, Lockwood, 1974; Pollio & Barlow, 1974; Pollio & Pollio, 1974; and Barlow, 1973.) The total number of figures proposed was 893, of which 88 were judged novel, 658 frozen, and 147 were rejected by one or the other rater. Table 1 gives the rater reliability over all the themes.

Table 1

Pattern of Rater Agreements in Scoring Figurative Language

	Novel		Frozen		
	Instances	Percent	Instances	Percent	Total
Accepted					
2+0	57	65	359	55	416
1+1	31	35	299	45	330
Total	88		658		746
Rejected[a]					
1-1			147		893

[a]Rejected = 16% of total tropes.

Raters were more in agreement on novel metaphors than frozen ones, with novel tropes producing a higher percentage (65%) of 2+0 agreements. The other studies using the *Manual* (see above) have noted this trend too. Apparently the "aliveness" of the novel metaphor makes it stand out, while many frozen tropes are so familiar they often go unnoticed.

Variance in Composition Length

Before we could compare numbers of tropes produced by our two subject groups, we had to check to see if both groups wrote compositions of equal length. Table 2 shows mean number of words for each combination of conditions. There are some differences, but how significant they are is not immediately apparent. The means do show an interesting trend: *S's* in the High Anxiety group wrote more on Self, while Low Anxiety *S's* wrote more on whichever topic they were assigned first.

Table 2

Mean Number of Composition Words for All Groups, Topics, and Topic Orders

Anxiety Level	Topic: Self, Order: S-O	Topic: Self, Order: O-S	Topic: Other, Order: S-O	Topic: Other, Order: O-S
High	421.2	480.3	333.4	421.1
Low	369.3	344.8	317.0	421.0

Because of the divergent writing patterns of our two groups and the lopsidedness of the order assignments, we felt we needed a definite

test for order effect. Independent t-tests were used to check for order effect, comparing the four ordered pairs of means in the Anxiety groups by Topics array. All t's were very low or negative, indicating order was not a factor in the results.

Table 3 summarizes the means and standard deviations in composition lengths, with order pooled.

Table 3

Mean Words and Standard Deviations in Composition Lengths

Anxiety Level	Topic	
	Self	Other
High		
Mean	458.9	389.8
SD	130.7	120.6
Low		
Mean	360.6	354.1
SD	102.5	158.8

The overall mean number of words per theme was 390.9. Table 4 follows with the 2-way analysis of variance of composition lengths. As can be seen from the results presented in Table 4, there are no significant differences (at the .05 level) among composition lengths. Since compositions did not vary significantly, we may next compare raw numbers of frozen and novel metaphors produced in the various conditions of the experiment.

Numbers of Figures Produced

Tables 5 and 6 present, respectively, mean number of figures produced in each condition (as well as associated standard deviations)

Table 4

2-Way Analysis of Variances in Composition Lengths

Source	SS	df	MS	F
Between groups	734,089.1	27	62,779.1	2.43
A (Anx.)	62,779.1	1	25,816.92	
S wi/groups	671,240.0	26		
Within *S's*	234,224.0	28		
B (Topic)	19,950.9	1	19,950.9	3.76
AB	13,734.4	1	13,734.4	2.59
Bx*S* wi/groups	137,760.1	26	5,298.5	

Table 5

Means and Standard Deviations in Numbers of Tropes
For All Conditions

Anxiety Level	Topic			
	Self		Other	
	N	F	N	F
High				
$\bar{X}$	3.43	14.64	1.07	12.43
SD	4.88*	5.24	2.56*	7.49
Low				
$\bar{X}$	1.21	9.79	0.57	10.14
SD	3.14*	5.25	0.76	5.23

*A standard deviation greater than the mean implies many zero scores in the sample.

Table 6

3-Way Analysis of Variance in Number of Instances of Figurative Language For All Conditions

Source	SS	df	MS	F
Between *S's*	1022.11	26		
A (Anx.)	170.04	1	170.04	5.18*
S wi/groups	852.07	26	32.77	
Within *S's*	4491	84		
B (Topic)	41.29	1	41.29	3.40
AB	32.14	1	32.14	2.65
Bx*S* wi/groups	315.53	26	12.14	
C (Nov. or Frozen)	2900.90	1	2900.90	113.63**
AC	34.31	1	34.31	1.34
Cx*S's* wi/groups	663.79	26	25.53	
BC	2.28	1	2.28	0.18
ABC	1.29	1	1.29	0.08
BCx*S*	329.43	26	12.67	

*p<.05; **p<.001.

and the 3-way analysis of variance of these values. As can be seen, there is a significant difference between High and Low Anxiety groups in the numbers of figures produced, with the High Anxiety group producing significantly more (p<.05) figures of speech. (We are not differentiating here between novel and frozen.) Topic did not make a significant difference at the .05 level, but it was not much below that criterion. The greatest effect concerned the difference between novel and frozen metaphors (p .001) with frozen figures clearly predominating.

Variations in Trope Rates

Other studies of this kind done by The University of Tennessee Metaphor group (see Pollio et al., 1975, for a review of this work)

have converted their raw numbers of tropes into rates per hundred words. In order to compare our results directly with these other studies, we also converted our data to a rate/100 word measure. Tables 7 and 8 show mean and standard deviation values in trope rates; and the 3-way analysis of variance in trope rates, respectively. The results of this statistical comparison showed that differences between anxiety groups were now insignificant, although all differences were in the same direction as the analysis previously reported. The difference between novel and frozen tropes, on the other hand, had become even more overwhelming now that it was expressed in rates.

Comparisons Between Individual Means

Inspecting both rate and raw number means over all conditions shows varying patterns in the production of figurative language. The High Anxiety group, for example, produced 2.5 times the number of novel tropes on the Self topic than did the Low Anxiety group. The High group produced 3 times the number of novel tropes on the Self topic as on the Other topic. Highs also produced more *frozen* metaphors on the Self topic than did the Low group. The Self topic elicited more variation in response than the neutral topic did. To see if any of these differences had statistical significance, we made dependent or independent t-tests as appropriate on pairs of means for both the raw-number and rate trope data; and these results are summarized in Table 9.

Within the High Anxiety group, subjects produced significantly more novel metaphors when writing about themselves than about the neutral topic. This difference is significant at the .05 level when

Table 7

Means and Standard Deviations in Metaphor Rates Per Hundred Words For All Conditions

	Topic			
	Self		Other	
Group	Novel	Frozen	Novel	Frozen
High				
Mean	0.71	3.28	0.24	3.03
SD	0.90*	1.10	0.47*	1.59
Low				
Mean	0.40	2.72	0.18	2.83
SD	1.08*	1.61	0.24*	0.72

*A standard deviation greater than its mean reflects many zero scores in the sample.

Table 8

3-Way Analysis of Variations in Trope Rate Per Hundred Words For All Conditions

Source	SS	df	MS	F	p
Between *S's*	28.33	27			
A (Anx.)	2.25	1	2.25	2.25	.15
S wi/groups	26.08	26	1.00		
Within *S's*	282.91	84			
B (Topic)	1.91	1	1.19	0.92	ns
AB	0.68	1	0.68	0.53	ns
Bx*S* wi/groups	33.39	26	1.28		
C (N or F)	187.11	1	187.11	132.70	.01
AC	0.28	1	0.28	0.007	ns
Cx*S* wi/groups	36.76	26	1.41		
BC	0.51	1	0.51	0.57	
ABC	0.04	1	0.04		
BCx*S* wi/groups	22.95	26	0.88		

Table 9

Comparisons Between Individual Means In All Conditions For Raw Numbers and Metaphor Rates

Comparison	*t*-test	p
Trope raw numbers		
HNS v HNO	2.50 (ind.)	.05
HFS v HFO	1.13 (ind.)	ns
LNS v LNO	0.78 (ind.)	ns
LFS v LFO	-0.19 (ind.)	ns
HNS v LNS	1.43 (dep.)	ns
HFS v LFS	2.45 (dep.)	.05
HNO v LNO	0.70 (dep.)	ns
NFO v LFO	0.94 (dep.)	ns
Trope rates		
HNS v HNO	2.12 (ind.)	.06
HFS v HFO	0.50 (ind.)	ns
LNS v LNO	0.80 (ind.)	ns
LFS v LFO	-0.24 (ind.)	ns
HNS v LNS	0.82 (dep.)	ns
HFS v LFS	1.09 (dep.)	ns
HNO v LNO	0.38 (dep.)	ns
HFO v LFO	0.42 (dep.)	ns

considering raw numbers, and at the .06 for rates. The Low Anxiety group did not show this difference. The biggest variation between the High and Low groups was in frozen metaphor use: Highs used significantly more in writing about themselves than Lows did, particularly when raw numbers were considered. Although the rate values produced a similar trend, it failed to reach an acceptable level of significance.

Chapter IV

Discussion

Results of the present study show some differences in the production of figurative language between groups of people who are highly anxious and those who have less than average anxiety. The differences trend toward (1) a greater use of metaphor by high-anxiety than low-anxiety students; (2) a significantly greater use among high-anxiety subjects of novel metaphor when this group is asked to write about themselves than about a neutral topic; and (3) a markedly greater use of frozen than novel tropes by all subjects. High and Low Anxiety groups did not differ significantly in composition lengths although the High group did tend to write somewhat more.

The magnitude of frozen over novel tropes was a somewhat surprising result, even though we had hypothesized a difference in this direction based on the work of the Metaphor Research Group at The University of Tennessee. This previous work is summarized in Table 10, adapted from Pollio, Barlow, Fine and Pollio (1975). Where frozen figures lead in other studies reported in the table by a ratio of about 2:1 or 3:1 in their favor, our ratio was 8:1, with a mean frozen figure rate of 5.93 instances/hundred words as compared to a novel rate of 0.76. As Table 10 shows, the next highest frozen:novel ratio is 6:1 in the Kennedy-Nixon debate. In Lockwood's adult compositions, the ratio was only about 3:1.

The novel metaphor rate in our study is very low, comparable only to that of the fourth and fifth graders in the Pollio and Pollio (1974)

Table 10

Sample Figurative Rates for Various Spoken and Written Samples[a]

Situation	Total No. of Words Sampled	Rate/100 Words		Source of Sample
		Novel	Frozen	
A. Psychotherapy Interviews (Patient and Therapist)				
1. Psychoanalytic (5 sessions)	23,622	1.70	4.01	Barlow, 1972
2. Gestalt (1 session)	5,602	3.07	2.37	Pollio & Barlow, 1974
3. Student therapists (2 patients-(5 sessions each)	54,312	1.26	1.41	Simpkinson, 1972
B. Kennedy-Nixon Debates				
1. Prepared Statements (Kennedy)	4,681	1.40	4.79	Pollio & Francisco, 1974
2. Answers to Questions (Kennedy)	17,246	.56	3.06	Pollio & Francisco, 1974
1. Prepared Statements (Nixon)	3,896	1.52	4.61	Pollio & Francisco, 1974
2. Answers to Questions (Nixon)	16,294	1.20	3.64	Pollio & Francisco, 1974
		1.53	3.41	
C. Written Works				
1. Children Compositions				
Grade 3	5,247	1.31	1.69	Pollio, 1971
Grade 4	9,052	.82	1.20	Pollio, 1971
Grade 5	9,617	.72	1.44	Pollio, 1971
2. Adult Compositions	34,680	1.56	4.68	Lockwood, 1974
3. Recognized Literature	463	7.12	3.47	

[a]From Pollio, Barlow, Fine, and Pollio, "The Poetics of Growth," Chapter I, to be published 1975.

study. It is certainly much lower than that found by Lockwood (1974), who worked with the same kind of subject, college students. We may perhaps blame the low "stimulus" value of our topics for the lower novel rate. Lockwood used TAT cards to generate compositions and the TAT is designed to be ambiguous to elicit deep-lying feelings and needs--and possibly more novel tropes. However, Pollio and Pollio (1974) used interesting topics and still got low novel rates. They do, however, offer a simple explanation: apparently by the fourth grade, at least in the schools sampled, children have learned that teachers are more interested in proper grammar and syntax than in creative ideas expressed in novel form. Thus "compositions" tend to be proper but impoverished in creative content. Our study also called its task a "composition-task," while Lockwood's subjects underwent "psychological testing." Perhaps college students still retain a "proper grammar" orientation to writing and our task may unwittingly have stifled the use of innovative language. College teachers, no less than elementary teachers, more often prefer proper to enriched compositions.

The very high frozen usage might also be due in part to excessive scrupulousness in this study's rating team. To check this, the raters judged again the psychotherapy fragment in the *Training Manual* and found that while they were not more scrupulous in the overall number of tropes accepted, they were less inclined to accept an instance as novel than the original rating team had been. The original team accepted 22 tropes and rejected 1; of the accepted instances, 5 were judged novel and 17 frozen. Our team accepted 21 tropes and rejected 3,

and of the accepted instances, only 2 were judged novel, 19 frozen. The two teams had 21 instances, accepted or rejected, in common. The lower novel and high frozen trope values reported in the present study may be a consequence of this particular rating team. We can, however, probably trust the total accepted trope values as comparable to those found by other rating teams; thus we may trust the significant total trope use difference found between the High Anxiety group and the Low group.

Even with this rating team's conservativeness regarding the novelty of any particular instance, we did find high-anxiety subjects produced significantly more novel figurative language when writing about themselves than about a neutral topic. This result fits with the thesis that metaphor can be used defensively, to hide as well as to reveal the self, and that such use might help alleviate anxiety. It also fits with the idea that metaphor can be correlated to creativity even in anxious people, as Dabrowski (1966) has noted.

Correlating creativity to anxiety via metaphor is a complicated problem which can best be explicated by going backwards, starting with the high metaphorizer and perhaps ending with arousal, rather than by starting with anxiety and ending with the creative person.

In order to do this Lockwood's (1974) dissertation related cognitive style to metaphorizing. Lockwood found the low metaphorizer shows a clear pattern of strong defensiveness and rigidity. He or she is not very open to experience, either in the outside world or within himself; he seems to be closed and unaware of his own feelings; or he seems to hold quite unrealistic conceptions of the world, verging on

psychosis. The high metaphorizer's cognitive style is not quite so clear, since he or she showed a variety of different cognitive styles. What high metaphorizers have in common is a greater openness to both inner and outward experience with less rigidity and more maturity in defense mechanisms. The high metaphorizer tends to be more aware of his or her feelings, for example, and more willing to experience them. The low metaphorizer is often completely blocked.

Lockwood's picture of the high metaphorizer, while unclear, does not contradict any of the other studies dealing with the personality style of creative persons. Barron (1955) saw such a person as open to experience; so did Gordon (1961) and Anderson (1964). Anderson, in fact, listed two types of high metaphorizers: the open-to-experience and the normal under unusual stress.

The normal under stress is clearly in a state of strain or arousal, which we have previously linked to metaphorizing (Anderson, 1964). The open-to-experience person, on the other hand, may or may not be in a habitual state of stress; but if stress does occur, he is more likely to be aware of it than will the closed person. In this way the low metaphorizer who blocks off his feelings is very likely to be nonanxious. We cannot say the same for the high metaphorizer.

This study perhaps got its results by a sample, then, of a mostly-constricted Low group and a less-constricted High group. One exceptional Low with an extremely high novel trope rate (4.12 in the Self topic) provides the contrast that may prove the rule. The next highest novel figure rates (2.80, 1.85, and 1.83 on Self) all came from moderately High subjects.

Couch and Kenniston (1960) corroborate the awareness-of-feelings

relation to anxiety and metaphorizing in their finding that the yea-sayer correlates highly with 16-PF (an IPAT test) and MMPI Anxiety scales because he is willing to admit his anxiety; while the nay-sayer is nonanxious and looks "healthy" because he is not willing to admit his conflicts, even to himself. (Freudian theory would say he is so blocked that he cannot allow himself to feel freely; the nay-sayer is not deliberately withholding information.) The investigators in the study found subject's "true" feelings by clinical methods which, by the way, do not correlate very highly with the IPAT (Cattelle & Scheier, 1963).

One of our hypotheses was that highly-anxious people use more metaphor because they are defensive, hiding behind figurative language. While our results do not contradict this idea, neither do they support it exclusively. The production of a lot of figurative language can mean many things; one of them may have to do with anxiety, another with topic, a third with compositional set, etc. Our results chiefly related metaphor production to high anxiety, but Lockwood's findings say we may have confounded our results by not differentiating cognitive style as he does. A better study would also need to determine a subject's "openness-to-experience" as well as his state of arousal or stress.

We may also have to modify our ideas of anxiety as relating purely to defensiveness. Anxiety, as in a therapy situation, may be a sign of incipient creativity and of a general loosening of defensive structures. This idea certainly fits with Dabrowski's "positive disintegration" which makes the time of personality reorganization rather stressful but ultimately creative. Therapy, after all, is a

situation that allows a person to change, grow, and assume new ways of dealing with the world; no wonder it is marked by both anxiety and novel metaphor.

Summary

To determine if there is a relationship between metaphor production and anxiety, differences in metaphor use by 28 subjects were investigated. Subjects were undergraduate psychology students at the University of Tennessee, and were selected for high or low anxiety level. They were asked for written compositions on two topics, one dealing with the self, and the other with a neutral subject.

Results showed the high anxiety group produced significantly more figures of speech altogether than the low anxiety group did; also the high anxiety group produced more novel figures of speech on the self-revelation topic than on the neutral topic. There was also a highly significant preponderance of frozen over novel tropes.

These results were interpreted to mean the high-anxiety group was perhaps less defensive and more creative than the low-anxiety group, since a similar study by Lockwood (1974) demonstrated that subjects with extremely rigid defenses tend not to produce novel metaphors, and also tend not to feel anxious.

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