David E. Levit, Psy.D.
Psychology Resident for Private Practice, Pittsburgh, Pennsylvania.

Grant Aram Killian, Ph.D.
Associate Professor of Psychology, Nova University, Fort Lauderdale, Florida.

Alan D. Katell, Ph.D.
Associate Professor of Psychology, Nova University, Fort Lauderdale, Florida.

PAIN APPERCEPTION TEST

Donald V. Petrovich. Los Angeles, California: Western Psychological Services.

Introduction

The Pain Apperception Test (PAT; Petrovich, 1957, 1973) is a projective test similar to the many other apperception tests available today, except that its stimulus is designed specifically to assess attitudes and interpretations related to the experience of pain. The Thematic Apperception Test (TAT; Murray, 1943) generally is considered to be the prototypical apperception test—the one after which most others are modeled, most notably the Children's Apperception Test (CAT; Bellak, 1975), the Senior Apperception Test (SAT; Bellak, 1975), the Object Relations Technique (ORT; Phillipson, 1973), and the PAT. Unlike most apperceptive tests, however, the PAT does not require or allow the subject to provide free responses or tell a story in response to the stimulus presented. Rather, all subjects respond to the same two questions ("How does the man feel?" and "How long will it hurt him?") on a 7-point scale after viewing each picture (Petrovich, 1973). The PAT, therefore, is a projective test that utilizes an objective scoring system.

As with all apperception tests, the PAT is based on the theory of apperceptive distortion. Bellak (1950) made the distinction between projection, which he sees as a more pathological defense mechanism, and apperception, in order to minimize confusion with other methods of psychological and physiological research. He defines apperception "as an organism's (dynamically) meaningful interpretation of a perception" (pp. 11–12). The manner in which we organize and interpret (or misinterpret) pure perception is referred to as apperceptive distortion. The term *distortion* is used because the perceptions we allow ourselves to become aware of, and the meanings we attribute to these perceptions, are influenced in varying degrees by internal forces such as past experiences and present needs (Abt, 1950). Murray (1943) utilized a similar concept of apperception and apperceptive distortion in devising his interpretation method for the TAT. He believed that humans are motivated by needs and environmental press and that the conscious and unconscious needs and presses of the subject would be reflected in the stories obtained by the TAT. The clinician needs to identify the hero in each story and the

needs and presses of the hero to gain insight into the conscious and unconscious needs and presses of the subject. Perception, therefore, is a fusion of external (objective) and internal (subjective) stimulus. In order to gain a true understanding of any issue of perception related to human behavior, it is inadequate to focus solely on either objective or subjective stimulus.

Petrovich's conceptualization and construction of the PAT, which began in 1956 (Petrovich, 1973), was based on a doctoral dissertation submitted to the Department of Psychology of Washington University in St. Louis, Missouri, and researched at the Veterans Administration Hospital in Jefferson Barracks, Missouri (Petrovich, 1957, 1958a). The impetus for this research was the realization that pain is a complex concept and that the present methods of research focusing solely on physiological thresholds and tolerance levels were not producing a viable understanding of the experience of pain (Elton, Burrows, & Stanley, 1979; Petrovich, 1957, 1958a, 1960a; Reading, 1980). In order to understand why these research methods were not working, Reading (1980) asserted that pain has two main dimensions, sensory-discriminative and evaluative-emotional, and that current research methods failed to address the multidimensions of pain. Similarly, Petrovich (1960a) found that attempts to understand pain from a purely physical or neurological perspective were ineffective because they ignored the psychological context of the pain experience. That is, they focused purely on the sensory-discriminative dimension of pain and ignored the evaluative-emotional dimension. To gain a more complete understanding of pain, one had to account for or assess the psychological context (eg., prior experience, self-concept, attitudes, current needs, and current anxieties). It is these psychological dimensions that influence variable reactions to pain. The PAT was developed to initiate assessment of the psychological aspects of pain (Petrovich, 1960a) and to aid in the understanding of the intricate relationships involved in the pain experience (Petrovich, 1957).

According to Petrovich (1973), two major premises underlie the PAT:

> 1. Each person is predisposed to perceive pain in others in a characteristic and relatively constant manner, stemming from his personal, idiosyncratic experiences with, and reactions to, pain.
> 2. This characteristic perceptual response can be elicited by pictures of persons in pain which require a subject to judge intensity and duration of pain experienced by the depicted persons. (p. 1)

The pain situations depicted in the PAT were selected on the basis of a pain survey conducted by Petrovich (1958b). Students in introductory psychology classes at Washington University, 50 males and 50 females ranging in age from 18 to 33, were asked to list 10 situations that they associated with pain. Subjects also were asked to indicate which of these situations they actually had experienced and then to rank order the situations from 1 (most painful) to 10 (least painful). Petrovich then categorized these 1,000 responses into three categories: physical pain, psychological pain, and those that blend the two. Final selection of situations was based on "frequency, approximate position on a 'painfulness' continuum, bodily focus, and suitability for pictorial presentation" (Petrovich, 1973, p. 1).

Petrovich's (1958a) first experiment with the PAT was an attempt to prove that the responses to the PAT are not unique. Rather they are reflective of more stable characteristics of the individual and related to traits found to be influential in the pain

experience by past psychological research and clinical observation. Specifically, 100 white male subjects from the medical and surgical wards of the V.A. Hospital in St. Louis were tested with the PAT, Eysenck's Medical Questionnaire (Eysenck, 1948) (to assess neuroticism), the Taylor Manifest Anxiety Scale (Taylor, 1953) (to assess manifest anxiety), and a pain experience questionnaire (to assess previous pain experiences). Significant positive correlations were found between the PAT and measures of neuroticism and manifest anxiety. Product-moment correlations, which were found to range from .31 to .43, were significant at the .01 and .001 confidence levels. No significant relationship was found between the PAT and measures of previous pain experiences. Split-half reliabilities ranged from .56 to .85 and were strong enough to suggest intrasubject consistency. Results of this experiment indicate that while the PAT does correlate positively with concepts considered influential in the pain experience—neuroticism and manifest anxiety—it does not correlate to actual pain experiences in the subjects tested. It seems that the PAT may assess the evaluative-emotional aspect of pain perception while ignoring the sensory-discriminative dimension. Moss and Waters (1960) also found the PAT to have a positive correlation to manifest anxiety (.30); however, due to small sample size, their correlation was not significant.

Examination of responses to individual cards in Petrovich's experiment resulted in the changing of three pictures and the interchanging of two pictures. These alterations were made because the pictures in question were not found to be discriminatory due to overly ambiguous situations depicted. For example, two pictures of a pricked finger, one in which the prick was inflicted by self and the other by another person, were replaced by pictures of two fly fisherman in which one fisherman was hooked in the neck, first by himself and then by the other man (Petrovich, 1958a). There have been no other revisions to the PAT.

No other forms of the PAT exist. However, due to problems that arose out of validity studies for the PAT, the Melbourne Pain Apperception Film was created as an alternative test (Elton, Quarry, Burrows, & Stanley, 1978). The Melbourne test was based directly on the PAT. It was felt by Elton et al. (1978) that the stimulus cards on the PAT were too ambiguous and contained too many extraneous cues. Therefore, the Melbourne Pain Apperception Film utilized a color film of a bare hand and forearm against a neutral background, depicting 10 situations of increasing painfulness. Responses were scored on the same two questions and with the same 7-point rating scale as that used on the PAT. The Melbourne Pain Apperception Film was found to correlate significantly to actual pain thresholds and tolerance levels while the PAT did not. Based on these results, the Melbourne test appears to be a more valuable tool than the PAT. However, further research needs to be conducted on the Melbourne test to see whether these results can be replicated.

Other methods of pain assessment that have gained more widespread use than the PAT involve either physiological thresholds and/or tolerance levels, rating scales, comparative performance on tasks to measure the effects of stimulation on the subject, and questionnaires. These methods are more widely used than the PAT because they have demonstrated valid and useful applications, whereas, the PAT has not.

Thresholds usually are tested by electrical stimulation of a finger. The point at which the stimulation first becomes painful is considered the threshold.

Tolerance levels are determined by continuing painful stimulation until the subject can not tolerate any more pain. The most popular form of this test, the Tourniquet Pain Test (Sternbach, Murphy, Timmermans, Greenhoot, & Akeson, 1974), uses a sphygmomanometer cuff (a device used to measure blood pressure) and hand exercise to induce ischemia pain (a blockage of the inflow of arterial blood) in the subject's nondominant hand.

Rating scales require the subject to rate stimuli or painful experiences on a fixed scale. These scales can assume various formats: 1) *numerical*, such as a 10-point scale (1–10) ranging from "no pain, to "can't stand pain" (Petrovich, 1973); 2) *continuums*, along which subjects mark their responses on a line that extends from "no pain" to "can't stand pain"; or 3) multiple-choice, where the subject selects the most appropriate descriptive word provided. The Pain Estimate, in which subjects rate their current pain levels on a scale of 1–100, is an example of this type of pain assessment technique.

Comparative performance tasks usually are carried out in a laboratory and are used to measure the effect of the stimulation provided on a particular task. The Kinesthetic After Effects Task (Petrie, 1967) is one such test. It requires the subject to select from a tapered block held in the left hand the spot that appropriately corresponds to the size of a standard block held in the right hand. This test indicates whether a subject augments or reduces incoming stimuli and then relates this information to the subject's ability to tolerate pain.

Along with physiological measures, questionnaires are the most popular method of assessing pain. The most popular questionnaire, based on a survey of the literature the most popular pain assessment tool, is the McGill Pain Questionnaire (MPQ; Melzack, 1975). The MPQ presents a number of word sets in which the subject is asked to select the most appropriate word. Although most of the word sets reflect sensory dimensions of pain, with less emphasis on affective and evaluative dimensions of pain, the MPQ does attempt to address the multidimensional aspects of pain. Research on the MPQ has shown the test to be reliable and valid when used correctly, which probably accounts for its wide spread use.

Three items make up the PAT packet: the PAT manual, the PAT protocol (answer form), and the PAT pictures. The PAT manual provides a description of the test, its development, and uses; normative data; reliability information; instructions for administration, scoring, and interpretation; and a brief discussion of validity. The PAT protocol consists of a brief demographic section that requests the test taker's name, age, sex, education level, occupation, marital status, and the date. This is followed by a listing of all PAT pictures by number (and letter where appropriate), and two multiple-choice questions for each picture. The examinee is asked the same two questions after viewing every picture, and for each picture, the two questions have the same seven possible responses from which the examinee may choose. The questions and their multiple-choice responses follow.

A. How does the man feel? (circle one)
   1. no pain
   2. hardly any pain

3. some pain
4. moderate amount of pain
5. much pain
6. very much pain
7. can't stand pain

B. How long will it hurt him? (circle one)
1. not at all
2. seconds
3. minutes
4. hours
5. days
6. weeks
7. months (Petrovich, 1973)

Spaces are provided on the protocol for totaling scores for intensity (How does the man feel?), duration (How long will it hurt him?), and pain sensitivity (intensity and duration combined). The seven multiple-choice responses for intensity were established empirically from Edwards's method of successive intervals (Edwards, 1952), and the seven choices for duration were based on a logical temporal continuum (Petrovich, 1973).

There are 25 pictures in the PAT, all depicting a man in his thirties. Each picture differs as to the man's facial and body characteristics in order to facilitate projection into various pain situations (Petrovich, 1957, 1973). The depicted man's dress and comportment vary from picture to picture, depending on the activity and painfulness portrayed in each picture. If other people are required in the picture, only parts of their body are shown, again to facilitate projection (Petrovich, 1973).

All pictures were drawn in detail by William Howard French, a St. Louis artist, and then photographed, some with overlays to produce counterpart pictures (Petrovich, 1957). Each picture card is approximately the size of a TAT card. The 6" × 7½" pictures are presented on 8½" × 11" pieces of cardboard.

The 25 PAT pictures can be divided into three groups. Petrovich (1973) describes these three groups as follows. Series 1 consists of nine pictures, numbered 1–9, portraying situations of felt pain sensations. Series 2 consists of eight pictures, four counterpart pairs, reflecting anticipated pain vs. felt pain sensations. These cards are labeled 10-A, 10, 11-A, 11, 12-A, 12, 13-A, and 13. Pictures labeled A reflect that painful situations are about to happen, or are anticipated. Those numbered without an A reflect the same situations as the pictures labeled A, except that the situation *is* happening, therefore reflecting felt sensation. Any differences in response to these counterpart pictures is attributed to the emotional response to time and proximity (anticipation) of the painful stimulus. Series 3 consists of eight pictures, four counterpart pairs, concerned with the origin of the painful stimulus: self-inflicted vs. other inflicted. These pictures are labeled 14, 14-0, 15, 15-0, 16, 16-0, 17, 17-0. Those labeled without an 0 depict self-inflicted pain situations. Those labeled with an 0 are the same pain situations (within corresponding numbers), but the pain is being inflicted by someone else. Differences in the ratings of these counterpart pictures are attributed to perceived differences in other vs. self-inflicted pain.

The examiner's participation in the testing process is usually minimal, but varies

should yield statements such as, "Diabetics' perception (or apperception) of pain is fundamentally different than normal subjects'," rather than, "Based on the PAT, this subject should experience less postsurgical pain than most people."

Three variables of the pain experience are assessed by the PAT, each in relation to the apperception of intensity, duration, and sensitivity to pain. These variables are reflected in the three series of cards: felt sensation, anticipation vs. felt sensation (where the effects of time and proximity are measured), and other vs. self-inflicted (where the effects of control and who inflicts the pain is measured). These three series of cards are designed to assess both the physical and psychological components of pain, although validity studies show no correlation between the PAT and actual pain experiences. Use of the PAT has raised questions as to other variables measured unintentionally. For example, in series 2, anticipated vs. felt sensation, the issue of avoidability of the pain may be influential in the apperception of the stimulus by different people (Petrovich, 1960b). Similarly, in series 3, other vs. self-inflicted pain, the issue of how beneficial the pain inflicted by others is going to be may influence subjects' responses (Petrovich, 1960b).

Petrovich (1973) states that the PAT was designed for research purposes in the psychological aspects of felt pain, anticipation of pain, and locus of control, which parallels the three series of cards in the PAT (felt sensation, anticipation vs. felt sensation, and self-inflicted vs. other-inflicted pain). However, he does suggest other applications that may be suitable. These other areas of possible investigation are perceptual defenses, pharmacology, amputation-prosthetics, sadism-masochism, attitudes and reactions to medical or dental situations, accident-proneness and prevention, and psychotherapy evaluation. Because the PAT has been correlated with measures of neuroticism and manifest anxiety, it has been used as a subtle measure of anxiety (Moss & Waters, 1960).

The PAT can be administered in any setting that affords the space, lighting, and lack of interfering stimuli necessary for the subject to see the cards, read the protocol sheet, and mark an answer (or hear the examiner read the questions and multiple-choice responses and verbalize an answer). Any well-lit, quiet room with a table and chair would be acceptable, whether it be an office, waiting room, or examining room. The PAT also can be given to the subject to take at home. No information is available on the effect of different settings on the PAT scores.

Because the PAT is designed for researching the pain experience, any profession researching pain could utilize the test, including psychology, psychiatry, medicine, dentistry, social work, the military, and sports. However, problems with validity have hampered the use of the PAT even within its designed application, and ideas and investigations into new applications of the PAT are at a virtual standstill.

The PAT can be readily administered to a wide range of subjects, both male and female (Petrovich, 1959). The relative ease of the task, the fact that reading and writing skills are not necessary, and that responses can be made by circling appropriate numbers or verbalized to an examiner are all factors allowing its administration to such a wide range of subjects. The only limiting factors for subjects would be blindness, a total inability to make sense of what one perceives, or an inability to respond to people or printed material. Other than blindness, the limiting factors for subjects reflect a person so regressed or retarded that testing of any kind would

a few minutes to calculate the raw scores on any protocol. Raw scores can be used as is to evaluate the protocol, or, as suggested by Petrovich (1973), raw scores can be converted to T-scores using the tables provided in the manual. Unfortunately, these tables are confusing in that some were printed incorrectly and supplemental tables were issued rather than reprinting the manual.

In spite of the suggestion to convert raw scores to T-scores, the interpretive scales presented in the manual are based on raw scores. Furthermore, they are only in reference to series 1 pictures (pictures 1–9). Interpretive scales are provided for intensity, duration, and overall pain sensitivity. Each scale is divided into very high, high, average, low, and very low, with separate raw score ranges for males and females provided for each division. Interpretations based on these scales seem rather useless, however, in that it is unknown how the categories obtained translate into human behavior. Interpretations can be made by comparing the subject's results, converted to T-scores, to several different populations whose norms are provided by tables in the manual. Normative data are provided for 100 male hospitalized veterans, 100 male chronic schizophrenics, 50 male hospital personnel, and 50 female hospital personnel. This type of interpretation would yield a general "fit" of a particular subject to one of the four normative groups cited. It seems, then, that a relatively low level of training is required to score the PAT and to interpret some of these scores based on the manual. However, because these interpretations are basically useless, it appears that a relatively high level of training is required to utilize the scores and interpretations in a meaningful fashion. Because a useful and valid system of interpretation does not exist for the PAT, it is left to the highly trained and creative researcher to develop a system for meaningful interpretation of the test results.

Technical Aspects

The test manual reports reliability scores for the four normative groups presented. These are in the form of split-half reliability scores. Test administration was divided into two parts, and the two sets of scores were correlated. These correlations, ranging from .56 to .89, indicate a reasonable level of intraindividual consistency. Unfortunately, the reliability data on the four normative groups were not obtained on the same cards, and none of the groups were administered the entire test. Moss and Waters (1960) administered the PAT to hospitalized juvenile patients four times over a 34-month period. They found the results of these four PAT administrations within the same individuals over time to be very consistent and the reliability correlations to be significant. It seems that whatever the PAT measures, it does so with an adequate degree of reliability.

The issue of validity for the PAT is not clear. Neither is it clear precisely what the PAT measures. Petrovich (1958a) alone reported significant positive correlations between the PAT and measures of neuroticism. However, Haase, Banks, and Lee (1975) and Moss and Waters (1960) were unable to replicate these findings.

Attempts at establishing concurrent validity (i.e., attempts to establish positive correlations between the PAT and other established measures of pain) have been unsuccessful. Several researchers have tried to correlate the PAT to physical tests of pain tolerance and pain thresholds (Blitz, Dinnerstein, &

Lowenthal, 1968; Elton, Quarry, Burrows, & Stanley, 1978; Ziesat, 1978). Subjects used were either pain patients or hospital staff, both male and female adults. None of these attempts yielded any significant correlations. Thus, it would seem that the PAT is not useful in predicting clinical pain or reactions to actual pain. Haase et al. (1975) attempted to find a correlation between the PAT and the Kinesthetic After Effects Task (KAE; Petrie, 1967), using both male and female students and staff of a university. The KAE measures whether the subject augments or reduces incoming stimulus. Augmentation-reduction has been demonstrated to relate significantly to pain tolerance. The PAT did not correlate significantly to the KAE. Ziesat's and Gentry's (1978) investigation into the PAT's concurrent validity was also unable to demonstrate the validity of the test. They administered the PAT, MMPI, the Health Index (Sternbach, Wolf, Murphy, & Akeson, 1973) (measures self-concept as an invalid, manifest depression, perceived impact of pain on daily activities, and the tendency to play pain games with medical personnel), Whitely Index (Pilowsky, 1967) (measures hypochondriasis), the Pain Estimate (self-report of actual current pain levels), and the Tourniquet Pain Test (Sternbach, Murphy, Timmermans, Greenhoot, & Akeson, 1974) (a test of actual pain tolerance) to patients on a pain ward of a VA hospital. Of the 528 correlations computed, between tests and subtests and subscales, only four significant correlations were found, about what would be expected by chance. Positive correlations were found between the PAT and the alcoholism and social introversion scales of the MMPI and the invalidism scale of the Health Index. A negative correlation was found between the PAT and the psychopathic deviate scale of the MMPI. The lack of positive correlations to established measures of pain beyond that expected by chance shows clearly that what the PAT measures is completely unknown. Until it is discovered precisely what it measures, other more established measures of pain should be used.

In the test manual, Petrovich (1973) states that the PAT reflects a high degree of face validity (i.e., that the pictures are obviously pictures of painful situations). However, the pictures are ambiguous enough to allow for many misinterpretations of the situations depicted, and some researchers argue that the PAT has no face validity (Haase et al., 1975). Petrovich also states in the test manual that questions regarding validity must wait until further research is conducted before being answered. The research available at the time of this review suggests that the PAT does not demonstrate any type of validity.

Critique

Because of its lack of validity and Petrovich's own assertion that it is a research tool to aid in the understanding of the pain experience, clinical application of the Pain Apperception Test is both unwise and unethical. the *Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 1985), clearly places on the clinician and not the test publisher the responsibility for selecting valid tests and using them only under the circumstances for which the test is designed and normed:

> When a test is to be used for a purpose for which it has not been previously validated, or for which there is no supported claim for validity, the user is responsible for providing evidence of validity. (APA, 1985, p. 42)

Because the PAT has failed to demonstrate any type of validity and exactly what construct it measures is unknown, no valid clinical inferences or interpretations can be made using it. Any clinician who chooses to use the PAT would be solely responsible for any negative consequences resulting from an invalid interpretation and could be held liable for such use. Some researchers go so far as to suggest a moratorium on the PAT (Silverstein, 1963; Spielberger, 1978). However, while the PAT is unsuited for clinical use, it does seem to measure *something* on a rather consistent basis. Unfortunately, it is unclear what this is. Further research may yield a better understanding of what the PAT measures, which then may lead to a valid clinical application of the PAT. While the projective approach, utilizing an objective scoring system, addresses reservations about the scorer's projection into the test's results (Killian, 1985), it may preclude the one avenue of clinical adaptation that is most apparent. That is, that the PAT could conceivably be used exactly like the TAT, requiring the subject to create a story based on the pictures, with its specific pull for issues involving pain perception. This approach has not been used or investigated in any of the available literature. This type of use would be subject to validity and reliability studies based on the new administration procedures. It is unlikely that the PAT will receive much further attention as there is little research being done on it, and the research that is being conducted is finding no validity. Probably one of the most striking examples of the PAT's inability to be recognized and to find its place in the field of pain research is its lack of inclusion in a 30-page overview of pain measurement offered by Chapman et al. (1985). It is evident that until researchers discover precisely what the PAT measures, it remains essentially unusable.

In spite of the lack of validity demonstrated by the PAT, it is readily available to clinicians through Western Psychological Services for $60.00 per kit. Clinicians should be cautioned, however, that the publisher's advertised claim that the PAT is a "valuable instrument for many settings where pain might be experienced or anticipated" (Western Psychological Services, 1988, p. 171) is unfounded and overstated. Correlations have not been found between PAT scores and actual experienced pain, and clinical use of the PAT in this manner may be unethical.

References

Abt, L.E. (1950). A theory of projective psychology. In L.E. Abt & L. Bellak (Eds.), *Projective psychology: Clinical approaches to the total personality* (p.3366). New York: Alfred A. Knopf.

American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (1985). *Standards for educational and psychological testing*. Washington, DC: American Psychological Association.

Bellak, L. (1950). On the problems of the concept of projection: A theory of apperceptive distortion. In L. E. Abt & L. Bellak (Eds.), *Projective psychology: Clinical approaches to the total personality* (pp. 7–32). New York: Alfred A. Knopf.

Bellak, L. (1975). *The T.A.T., C.A.T., and S.A.T. in clinical use* (3rd ed.). New York: Grune & Stratton.

Blitz, B., Dinnerstein, A.J., & Lowenthal, M. (1968). Performance on the pain apperception

test and tolerance for experimental pain: A lack of relationship. *Journal of Clinical Psychology, 24,* 73.

Chapman, C.R., Casey, K.L., Dubner, R., Foley, K.M., Gracely, R.H., & Reading, A.E. (1985). Pain measurement: An overview. *Pain, 22,* 1–31.

Edwards, A.L. (1952). The scaling of stimuli by the method of successive intervals. *Journal of Applied Psychology, 36,* 118–122.

Elton, D., Burrows, G.D., & Stanley, G.V. (1979). The relationship between psychophysical and perceptual variables and chronic pain. *British Journal of Social and Clinical Psychology, 18,* 425–430.

Elton, D., Quarry P.R., Burrows, G.D., & Stanley, G.V. (1978). A new test of pain reactivity. *Perceptual and Motor Skills, 47,* 125–126.

Esysenck, H.J. (1948). *Dimensions of personality.* London: Rutledge Kegan Paul Ltd.

Haase, R.F., Banks, D.L., & Lee, D.Y. (1975). A validity study of the Pain Apperception Test. *Journal of Clinical Psychology, 31,* 747–751.

Killian, G.A. (1984). House-Tree-Person Technique. In D.J. Keyser & R.C. Sweetland (Eds.), *Test critiques* (Vol. 1, p. 338–353). Kansas City, Mo: Test Corporation of America.

Melzack, R. (1975). The McGill Pain Questionnaire: Major properties and scoring methods. *Pain, 1,* 277–299.

Moss, C.S., & Waters, T.J. (1960). Intensive longitudinal investigation of anxiety in hospitalized juvenile patients. *Psychological Reports, 7,* 379–380.

Murray, H.A. (1943). *Thematic Apperception Test manual.* Cambridge: Harvard University.

Notermans, S.L.H., & Tophoff, M.M.W.A. (1967). Sex differences in pain tolerance and pain apperception. *Psychiatria, Neurologia, Neurochirurgia, 70,* 23–29.

Petrie, A. (1967). *Individuality in pain and suffering.* Chicago: University of Chicago Press.

Petrovich, D.V. (1957). The Pain Apperception Test: A preliminary report. *The Journal of Psychology, 44,* 339–346.

Petrovich, D.V. (1958a). The Pain Apperception Test: Psychological correlates of pain perception. *Journal of Clinical Psychology, 14,* 367–374.

Petrovich, D.V. (1958b). A survey of painfulness concepts. *Journal of Clinical Psychology, 14,* 288–291.

Petrovich, D.V. (1959). The Pain Apperception Test: An application to sex differences. *Journal of Clinical Psychology, 15,* 412–414.

Petrovich, D.V. (1960a). The apperceptive study of psychological aspects of pain. *Perceptual and Motor Skills, 11,* 57.

Petrovich, D.V. (1960b). Pain apperception in chronic schizophrenics. *Journal of Projective Techniques, 24,* 21–27.

Petrovich, D.V. (1973). *Pain Apperception Test manual.* Los Angeles: Western Psychological Services.

Phillipson, H. (1973). *A short introduction to the Object Relations Technique: A projective method for the study of interpersonal relations.* Windsor, England: NFER-Nelson.

Pilowsky, I. (1967). Dimensions of hypochondriasis. *British Journal of Psychiatry, 113, 80–93.*

Reading, A.E. (1980). A comparison of pain rating scales. Journal of Psychosomatic Research, 24, 119–124.

Silverstein, A.B. (1963). Age differences in pain apperception. *Perceptual and Motor Skills, 16,* 169–170.

Silverstein, A.B., & Owens, E.P. (1961). Pain apperception in the mentally retarded. *Journal of Projective Techniques, 25,* 352–355.

Spielberger, C.D. (1978). Pain apperception test. In O. K. Buros (Ed.), *The eighth mental measurements yearbook* (pp. 990–991). Highland Park, NJ: Gryphon Press.

Sternbach, R.A., Murphy, R.W., Timmermans, G., Greenhoot, J.H., & Akeson, W.H. (1974).

Measuring the severity of clinical pain. In J.J. Bonica (Ed.), *Advances in Neurology* (Vol. 4, pp. 281–288).

Sternbach, R.A., Wolf, S.R., Murphy, R.W., & Akeson, W.H. (1973). Aspects of chronic low back pain. *Psychosomatics, 14*, 53–56.

Taylor, J.A. (1953). A personality scale of manifest anxiety. *Journal of Abnormal and Social Psychology, 48*, 285–290.

Western Psychological Services. (1988). *Western Psychological Services Catalog 1988–1989*. Los Angeles, CA: Author.

Ziesat, H.A., Jr. (1978). Correlates of the tourniquet ischemia pain ratio. *Perceptual and Motor Skills, 47*, 147–150.

Ziesat, H.A., Jr., & Gentry, W.D. (1978). The Pain Apperception Test: An investigation of concurrent validity. *Journal of Clinical Psychology, 34*, 786–789.