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TEMAS (TELL-ME-A-STORY)

Giuseppe Costantino, Robert G. Malgady, and Lloyd H. Rogler. Los Angeles, California: Western Psychological Services.

Introduction

The Tell-Me-A-Story test (TEMAS; Costantino, Malgady, & Rogler, 1988) is a thematic apperceptive technique designed for children and adolescents that follows in the tradition of the Thematic Apperception Test (TAT; Murray, 1971) and the Children's Apperception Test (CAT; Bellak & Bellak, 1980). The TEMAS (meaning "themes" in Spanish) differentiates itself from other apperception tests through its suitability for both minority (i.e., Hispanic, black) and nonminority populations, while respecting psychometric demands (e.g., reliability, validity, and standardization).

The first author, Giuseppe Costantino, Ph.D., has been clinical director at the Sunset Park Mental Health Center of the Lutheran Medical Center in Brooklyn, New York, since 1985, and Research Associate at the Hispanic Research Center of Fordham University in The Bronx since 1978. The second author, Robert G. Malgady, Ph.D., has been a Research Associate at the Hispanic Research Center since 1981 as well as a professor in the department of mathematics, science, and statistics at New York University. The third author, Lloyd H. Rogler, Ph.D., director of the Hispanic Research Center since 1977, has received many prestigious honors as well as city and national government appointments.

The TEMAS developed out of the first author's experiences while working in Harlem during the early 1970s. During that time, he became aware of the lack of responsiveness of both Hispanic and black children to traditional projective instruments. This lack of responsiveness and the unavailability of apperception tests with adequate psychometric properties led him to begin work in 1977, with the help of artist Phil Jacobs, on the TEMAS cards. Dr. Costantino brought the TEMAS with him to the Hispanic Research Center, where he and the other two authors have worked on its development. The nonminority version of the test was developed in 1980, at the advice of David Lachar, Ph.D., of Western Psychological Services. The TEMAS stimulus cards eventually were published by Western Psychological Services in 1986, with the manual following in 1988.

The TEMAS is based on a dynamic-cognitive model, encompassing aspects of ego psychology, interpersonal psychology, social-cognitive learning theory, and cognitive psychology. The core of the TEMAS is its nine personality functions, which were developed greatly from the contributions of ego psychology (Bellak, Hurvich, & Gediman, 1973). These personality functions are related to the contributions of ego psychology by redefining ego functions as personality constructs. Ego psychologists, specifically Bellak and his associates (1973), defined a number of ego functions that assist the individual in meeting the demands of the environment (e.g., reality testing, thought processes, etc.). These ego functions are seen by ego psychologists as internal modulators of behavior. From the perspective of interpersonal psychology, Sullivan (1953) posited that the various ego or personality functions resulted from the child's interactions with significant others. Thus, both the ego's internal and interpersonal aspects are defined through the theories of ego and interpersonal psychology.

Bandura (1977), from the viewpoint of social-cognitive psychology, developed a modeling theory consisting of four basic processes: attention, retention, motoric reproduction, and reinforcement. These processes are further complemented by three effects of modeling that facilitate learning: (a) imitation, (b) disinhibition, and (c) elicitation. The influence of social-cognitive theory on the TEMAS is reflected through the use of familiar, colored stimulus situations to enhance the child's attention and to elicit responses through disinhibition. The purpose of these features is to facilitate projection of intra- and interpersonal material.

Finally, the cognitive theories of Piaget and Inhelder (1969, 1971) also are reflected in the dynamic-cognitive framework of the TEMAS. With the rise of symbolic thinking, the child is able to symbolize experiences through imagery and words. Costantino, Malgady, and Rogler (1988), extrapolating from the research of Piaget and Inhelder, point out that "the memory image elicited by a pictorial representation of the TEMAS becomes a symbol which integrates the percept, the emotional state, and the elicited past learning experience of the subject" (p. 12).

The stimulus cards were developed out of research regarding stimulus ambiguity, the use of color, and the contrasting nature (or bipolarity) of personality functions. Although the traditional assumption has been that an ambiguous stimulus facilitates greater projection than a structured one (Murray, 1943), the TEMAS was constructed with unambiguous stimuli. This decision to use unambiguous stimuli was based on research that unambiguous stimuli activate specific drives and provide more easily interpreted responses, due to the elicitation of responses from a stimulus of known significance (Epstein, 1966). Thus, the historically poor reliability of projective instruments is likely related to the greater difficulty in quantifying results derived from ambiguous stimuli. The use of color was based on findings that colored stimuli increase verbal fluency and encourage expression of emotions (Brackbill, 1951; Thompson & Bachrach, 1951).

Each stimulus situation consists of bipolar personality functions requiring the resolution of psychological conflicts, similar to Kohlberg's moral dilemma situations (Kohlberg, 1976). For example, if the personality function of delay of gratification is depicted in a scene, then so is its opposite, the inability to delay gratification. The stimulus situations require the resolution of psychological conflicts, which are judged according to their adaptiveness or maladaptiveness. For example, Card

10G depicts a girl holding a coin over her piggy bank as she considers either buying an ice cream or saving her money to buy a bicycle. This card pulls for delay of gratification. The resolution of this conflict will fall on a continuum, from highly adaptive to highly maladaptive. An example of an adaptive response would be the girl's saving her money to buy the bicycle; a maladaptive response would entail stealing money to buy the ice cream and bicycle.

The development of the TEMAS began in September of 1977 with the creation of the first stimulus pictures (Costantino, 1978). Originally, 100 stimulus cards were constructed to portray (a) scenes with which children could identify, (b) scenes that were interesting to children, and (c) scenes that were in color to enhance realism. A pilot study was conducted in which a group of eight children, ages 6 to 12, were asked to tell a story about each picture and answer four questions concerning the action, characters, relationships, and setting portrayed in the pictures (Costantino, 1978; Costantino, Malgady, & Rogler, 1988). Those pictures on which the children reached a .80 level of interrater agreement for all four questions were retained, while the rest were either discarded or redrawn. Fifty-three pictures were selected in this manner. Through clinical research, some pictures were found to be clinically insignificant and were discarded. By 1980, 47 cards were developed. Further studies (not specified in the manual) on the psychometric properties of this set resulted in the final set of 23 pictures, which was ready by early 1983.

The TEMAS was standardized on a sample of 642 children who ranged in age from 5 to 13 years. The standardization group included 281 males and 361 females selected from New York City area public schools. However, the TEMAS manual (Costantino, Malgady, & Rogler, 1988) does not describe the criteria for selection. Subjects, generally from lower and lower middle income families, represented four different ethnic/racial groups: whites, blacks, Puerto Ricans, and Other Hispanics. Due to significant correlations between age and many of the TEMAS scores, the standardization sample was broken down into three age levels: 5–7, 8–10, and 11–13.

Tables for converting raw scores into T-scores allow the examiner to compare each subject to the standardization group by age and ethnic/racial group. Seven ethnic/racial groups are broken down into three age levels: whites, blacks, Puerto Rican, Other Hispanic, Combined Hispanic, Minority, and Total Sample. These numerous choices allow the examiner to choose the group that best reflects the ethnic/racial identification of the subject while providing larger, more statistically stable comparison groups. For example, the Other Hispanic, 5- to 7-year-old sample contains only 19 subjects (8 females and 11 males), far too small to provide for statistically reliable results. A minimum for such subgroups would be around 300 subjects (Kline, 1986). However, the test authors attempt to minimize this problem by combining the Puerto Rican and Other Hispanic subgroups into a Combined Hispanic group, thus yielding a larger subgroup of 67 subjects (35 females and 32 males).

In addition to the small subgroups, another problem with the normative sample is the failure to employ a stratified sampling procedure during the standardization of the TEMAS. Because of the unstratified nature of the standardization sample, the test authors warn that the TEMAS normative data should be regarded as preliminary estimates and should be used with caution.

The TEMAS Short Form (comprising 9 cards) was standardized by extracting scores from the Long Form protocols of the general standardization sample. Because they were extracted from Long Form protocols, these norms should also be used with caution. Whether or not subjects might have responded differently to a shorter administration of TEMAS cards remains uncertain.

The TEMAS kit consists of the manual, stimulus cards (individual sets of minority and nonminority versions), administration instruction card, and packages of 25 record booklets. The manual covers the test's theoretical framework, administration and scoring, interpretation of results, three case studies, development and standardization information, and a consideration of the test's psychometric properties (i.e., reliability and validity data).

Both minority and nonminority versions consist of thirty-six 8½" × 11" full color stimulus picture cards. The minority version presents Hispanic and black characters in an urban setting. The nonminority version consists of nonminority characters in an urban setting. Most stimulus pictures portray unambiguous scenes from urban life and fantasy scenes that require the resolution of a conflictual situation. For example, Card 1B portrays a scene in which a boy is outside with a group of peers, one of whom is holding a basketball. A man and a woman are looking at the boy through an open window, with the woman holding a piece of paper in her hand. This particular picture is designed to elicit themes concerning interpersonal relationships and delay of gratification. The dilemma inherent in this picture is between the boy's playing basketball with his friends or obeying the command of his parents. The Long Form encompasses 23 cards for use with each subject (12 cards are used with both sexes, 11 are used with either males or females). The Short Form encompasses 9 cards for use with each subject (4 cards for both sexes, 5 that are sex-specific).

The administration instruction card is intended to assist the examiner with the test instructions in order to ensure standardized administration procedures. The first page of the TEMAS Record Booklet consists of sections for recording demographic information (e.g., the subject's name, age, dominant language, language used during administration, ethnic/racial background, and form administered—long or short, etc.), behavioral observations, and normative group employed (e.g., white, black, Puerto Rican, etc.). The second and third pages are devoted to scoring the Quantitative Scales and the Qualitative Indicators, respectively. Finally, the last page is devoted to profiling the Quantitative Scales.

The TEMAS addresses 18 Cognitive Functions, 9 Personality Functions, and 7 Affective Functions. The 18 Cognitive Functions are described as follows:

1. *Reaction Time:* the time elapsed from moment of presentation of stimulus card to verbalization of response by examinee.
2. *Total Time:* the total amount of time required for the examinee's response to the card, including responses to all inquiries.
3. *Fluency:* the total word count for each response.
4. *Total Omissions:* the total number of characters, events, and settings that are present in the stimulus situations but not mentioned in the subject's response.
5. *Main Character Omissions:* omissions of main characters from the stimulus situations in the subject's response.

6. *Secondary Character Omissions:* omissions of characters, other than main characters, from the subject's response.

7. *Event Omissions:* refers to the examinee's failure to identify what is happening in the picture.

8. *Setting Omissions:* refers to the examinee's failure to identify where the story is taking place.

9. *Total Transformations:* the total number of perceptual distortions of characters, events, and settings in the subject's response.

10. *Main Character Transformations:* incorrectly identified main characters in the subject's response.

11. *Secondary Character Transformations:* incorrectly identified characters, other than main characters, in the subject's response.

12. *Event Transformations:* incorrectly identified events in the examinee's response.

13. *Setting Transformations:* incorrectly identified locations in the examinee's response.

14. *Conflict:* recognition of the conflict portrayed by the individual stimulus card (e.g., the conflict of delay of gratification with Card 14, in which the main character may choose to dance or study).

15. *Sequencing:* refers to the ability of the subject to relate the events in the response to past, present, and future.

16. *Imagination:* refers to material that goes beyond mere description of the stimulus and reflects the personality of the subject (e.g., projection of personal material).

17. *Relationships:* refers to identification of characters and how they relate to each other.

18. *Inquiries:* refers to questions asked regarding the clarification of material or omitted information.

The nine Personality Functions are described as follows:

1. *Interpersonal Relations:* the degree and quality of the relationships expressed in the subject's responses.

2. *Aggression:* either the verbal or physical expression of harm to self, others, or property.

3. *Anxiety/Depression:* irrational fears, worries, or unhappiness (these two are combined due to their oftentimes combined presence in children, and they are scored as a Personality Function due to their nature as defense mechanisms and coping styles).

4. *Achievement Motivation:* the desire to achieve a goal or excel on some task.

5. *Delay of Gratification:* the ability to relinquish immediate pleasure in order to acquire a greater future reward.

6. *Self-Concept:* the realistic perception of one's abilities and mastery over one's environment.

7. *Sexual Identity:* the realistic perception of one's sex roles.

8. *Moral Judgment:* the ability to distinguish between right and wrong, to act responsibly, and to experience appropriate guilt for wrongdoing.

9. *Reality Testing:* the ability to distinguish between fantasy and reality and to anticipate consequences of one's behavior.

Finally, the seven Affective Functions are described as follows:

1. *Happy:* contentment over the resolution of conflict.
2. *Sad:* discontentment over the resolution of conflict.
3. *Angry:* strong displeasure over the resolution of conflict.
4. *Fearful:* feeling of impending danger over the resolution of conflict.
5. *Neutral:* emotional indifference to the resolution of conflict.
6. *Ambivalent:* emotional indecision over the resolution of conflict.
7. *Inappropriate Affect:* incongruence between the feelings and behaviors of the main character(s) in the story over the resolution of conflict.

The first four Cognitive Functions (Reaction Time, Total Time, Fluency, and Total Omissions), the entire set of nine Personality Functions, and the first four Affective Functions (Happy, Sad, Angry, and Fearful) compose the Quantitative Scales. These scales consist of raw scores that are converted into normalized T-scores, thereby allowing a comparison of a subject's scores with children from the standardization sample. The rest of the Cognitive and Affective Functions, a total of 17 functions, compose the Qualitative Indicators. These functions did not have the same psychometric properties as the other scales due to the more limited variability of scores for each during the standardization of the TEMAS. Instead of converting raw scores to T-scores, critical cutoff points were calculated to indicate which scores were at or above the 90th percentile for the normative sample.

Practical Applications/Uses

The TEMAS is most appropriate for school and clinical psychologists in the evaluation of both minority and nonminority children and young adolescents regarding emotional/adjustment problems. The TEMAS manual states that the three major uses for the test are to "(a) gain better understanding of both strengths and deficits in cognitive, affective, and intrapersonal and interpersonal functioning of the individual; (b) give problem-specific information in order to develop a more accurate treatment plan; and (c) assess therapeutic progress and outcome" (Costantino, Malgady, & Rogler, 1988, p. 2). For example, a clinical psychologist might use the TEMAS in evaluating an urban boy referred by his school for depression. The results would help the clinician assess strengths and weaknesses and develop a treatment plan, and then the test could be employed again 1 year later, following psychotherapeutic intervention, to measure treatment progress.

The test authors state that the TEMAS is intended to be used in conjunction with other evaluation measures to corroborate information as part of a personality assessment. However, if used as part of a test battery for the purpose of diagnostic assessment, it is important to note that thematic apperception tests have been shown to reduce the diagnostic validity of more psychometrically robust measures, like the MMPI or the Personality Inventory for Children (Wildman & Wildman, 1975; Butkus, 1984). Although the TEMAS may prove to complement the other personality tests of an assessment arsenal, the point is questionable until established by research.

The manual states that the TEMAS is suitable for use with black, Hispanic, and white children and adolescents, ages 5 to 18. However, at present no normative data are available for ages 14 to 18. Despite the fact that the manual clearly states

that the TEMAS may not be used normatively with these adolescents, even a subjective analysis may lead to inaccurate interpretation of test data: In this way, the chances increase of the examiner projecting onto test material as much as the test subject (Killian, 1984). Further, due to the makeup of the normative sample, the TEMAS is only appropriate for use with urban populations. Neither suburban nor rural children were included in the standardization sample. Finally, the test requires that subjects have basic comprehension and verbal skills to understand directions and communicate a story, motivation to cooperate with the instructions of the test, and no acute sensory and intellectual deficits.

Prior to administration of the TEMAS, the examiner first decides whether to administer the minority or nonminority version, according to which best reflects the ethnic/racial identification of the test subject. Due to findings that suggest a lack of verbal fluency on projective tests calls their validity into question (Anderson & Anderson, 1955), it was important for the TEMAS to encourage the verbal fluency of minority subjects by presenting culturally relevant stimuli. Research has demonstrated the increased verbal fluency of black and Hispanic subjects when using the minority version of the TEMAS compared to their performance on the TAT (Costantino, Malgady, & Vazquez, 1981; Costantino & Malgady, 1983). Also, the examiner decides whether to administer the Long Form (23 cards, 2 hours) or the Short Form (9 cards, 45 minutes to 1 hour).

The examiner must be thoroughly familiar with the administration and content of the TEMAS. Although it is preferable that the examiner be of the subject's ethnic or racial background, the test authors suggest that this is not necessary provided the examiner is familiar with the subject's cultural background (Malgady, Rogler, & Costantino, 1987). However, if the examinee is bilingual or lacks proficiency in English, the test must be administered by a bilingual examiner and allow the examinee to respond in his or her preferred language. Costantino et al. (1981) discovered that Hispanic children were more likely to respond in Spanish to the TEMAS than to the TAT. Ideally, it would seem necessary for the examiner to have training in projective testing on at least a master's degree level.

The TEMAS is administered individually in any quiet, well-lit room free from distractions. The manual states that responses should be recorded verbatim by hand. Though such a method undoubtedly saves time, recording by hand may interfere with the flow of responses and building of rapport should the examiner need to interrupt the examinee in order to clarify or repeat what the subject had said. Furthermore, this method is less efficient than audiotaping and may result in loss of information, as demonstrated by TAT research comparing machine recording with recording by hand (Baty & Dreger, 1975).

The examiner begins administration with a set of instructions similar to those given with the TAT. The test subject is handed each picture (apparently in any order) and asked to look at it and relate a story about it that has a beginning and an end. The examiner instructs the child to tell a complete story for each picture that answers the following three questions: What is happening in the picture now? What happened before? What will happen in the future? These instructions may be repeated, if necessary, for each picture—especially when testing young children or those with short attention spans. In addition, certain prescribed inquiries are conducted at the end of each response if clarification is needed. These ques-

tions are aimed at clarifying the relationship of characters, the setting, the sequence of action (present, past and future), and the thoughts and feelings of the main character. The examinee is encouraged to talk about each story for at least 2 minutes, with a maximum time limit of 5 minutes for each response.

Scoring the TEMAS involves the Quantitative Scales and the Qualitative Indicators. Cognitive Functions are each scored as to their presence or absence for each response. In the case of Fluency, the number of words for each response is totaled; Reaction Time and Total Time are converted into two-digit numbers and proportions of an hour (e.g., 6" = 06; 4'15" = 4.25). The raw scores are totaled and either checked against a critical cutoff score (90th percentile or above) for the Qualitative Indicators or converted into normalized T-scores for the Quantitative Scales. The decision to use each type of scoring system was based not on relative clinical value but on the psychometric properties for each type of score.

The Personality Functions are scored using a 4-point, Likert-type scale, with 1 indicating the greatest maladaptive functioning and 4 indicating the greatest adaptive functioning. For example, Card 9 depicts a scene in which a child is standing at the edge of a woods with one road diverging in two directions (adapted from Robert Frost's poem, "The Road Not Taken"). The child may either take the road to the right, where peers can be seen persuading the child to follow them, or take an empty road to the left. This picture pulls for themes concerning the Personality Functions of Achievement Motivation and Anxiety/Depression. An example of a 1-point response to this picture for Achievement Motivation, indicating highly maladaptive functioning, would be deciding to take the road to the right in order to steal the other children's money. A 2-point response for Achievement Motivation, indicating moderately maladaptive functioning, would be taking the road to the right in order to avoid doing homework. A 3-point response for Achievement Motivation, indicating partially adaptive functioning, would be avoiding work by going down the road to the left but then returning to the other road to finish a school project with classmates. Finally, a 4-point response for Achievement Motivation, indicating the highest adaptive functioning, would be taking the road to the left in order to run an errand for one's parents, though preferring to have joined friends to play. Responses that fail to relate themes intended to be elicited by a particular stimulus card are marked "N," for "Personality Function Not Pulled."

The scores for each function are summed and then divided by the number of responses containing like themes to derive a mean score. This mean score is then converted into a normalized T-score by referring to the norm tables in the back of the manual. Norm tables are listed by age range (5–7, 8–10 and 11–13 years of age) and by ethnic/racial group (e.g., black, Hispanic, etc.). The "N" responses are totaled and checked against cutoff scores, marking performance at the 85th percentile. Such responses were rare in the standardization sample and are indicative of maladaptive "selective attention" (Hallahan & Reeve, 1980), reflecting deficits in the self-awareness necessary for proper personality growth.

Finally, the Affective Functions are scored for their presence (Happy, Sad, Angry, Fearful, Neutral, or Ambivalent) and congruence to story content (Inappropriate Affect). More than one affect may be marked at one time. As with the Cognitive Functions, the scores are summed into raw scores, which are either

compared to critical cutoff points (for the Qualitative Indicators) or converted to normalized T-scores (for the Quantitative Scales).

Overall, the TEMAS scoring system is straightforward and comprehensive. The use of such an objective scoring system facilitates comparison of scores within a subject's protocol as well as between subjects from the normative sample. The uniform 4-point, Likert-type scoring system for the Personality Functions and simple marking of discrete scores for the other functions simplifies and reduces the subjectivity of scoring. Although there may be some subjective judgment involved in scoring the Personality Functions (e.g., deciding whether to score a response as 2 points or 3 points), the manual's numerous, clear examples enhance the examiner's ability to learn accurate response scoring.

The major part of interpreting the TEMAS involves an examination of the Quantitative Scales and the Qualitative Indicators. Examination of the TEMAS Profile scores, consisting of the Quantitative Scales, entails looking for significant high and low scores. The TEMAS Profile scores are based on a T-distribution, a method for expressing a subject's relative position within a group, with a mean T-score of 50 and a standard deviation of 10. Therefore, significant scale scores are those that fall 1 standard deviation above or below the mean (outside the T-score range of 40 to 60). Each function is inspected as to the magnitude of its deviation from the mean. Examination of the Qualitative Indicators entails examining scores that exceed the cutoff points marking performance at the 90th percentile for each score. Each function is inspected to see which ones exceed the cutoff score.

The Cognitive Functions should be interpreted together, regardless of whether they are Quantitative or Qualitative Scales. For example, Total Omissions of the Quantitative Scales should be interpreted together with Omissions of Main Character, Secondary Character, Events, and Settings of the Qualitative Indicators. Likewise, the Affective Functions should also be interpreted together, regardless of whether they are Quantitative or Qualitative Scales. For example, Happy, Sad, Angry, and Fearful of the Quantitative Scales should be interpreted together with Neutral, Ambivalent, and Inappropriate of the Qualitative Indicators. Both Cognitive and Affective Functions are interpreted according to their deviation from the mean, for the Quantitative Scales, or exceeding cutoff points, for the Qualitative Indicators.

The Personality Functions are examined for the magnitude and direction of the T-scores. These functions are interpreted in groups and with other Cognitive and Affective Functions, as relevant. Sums of "N" scores for Personality Functions that were not pulled should be compared to critical cutoff points, marking that point at which 15% or fewer of the standardization subjects scored. Significant "N" scores should be interpreted in conjunction with omissions of Cognitive Functions due to their similar nature as indicators of selective attention.

The interpretation of the TEMAS should include an attempt to integrate the various functions together to enhance understanding of the test subject's overall functioning. For example, a significant high T-score on Aggression, together with significantly elevated scores on Conflict (a Qualitative Indicator signifying failure to verbalize the depicted conflict in the stimulus situations) and Happy (an Affective Function of the Quantitative Scales) likely signify denial and/or repression over aggressive impulses. Other unscored Qualitative Indicators (i.e., test behav-

ior, rejection of cards, and content analysis of stories) are also examined for their contribution to a comprehensive understanding of test results. In addition, the test authors intend to develop a Popularity Index to indicate which response themes are most popular (Costantino, Malgady, & Rogler, 1988); this index would be similar to the Popular Response on the Rorschach (Exner, 1986).

Interpretation of the TEMAS is moderately complex and requires an examiner skilled in the interpretation of psychological tests. A background in child development and psychopathology is required to interpret results adequately. The test examiner must also be cognizant of the limits of projective testing. For example, test results should not be overinterpreted but should be compared with data from other sources, such as clinical interviews and behavior rating scales.

Technical Aspects

As noted before, the TEMAS is one of the few apperception tests developed with any amount of psychometric rigor. The psychometric properties of any psychological test refer to its validity and reliability. The types of validity addressed with respect to the TEMAS are content (Costantino, Malgady, & Rogler, 1988), construct (Costantino, Malgady, Rogler, & Tsui, 1988; Costantino, Malgady, Bailey, & Colon-Malgady, 1989; Costantino, Colon, Malgady, & Perez, 1989), and criterion-related (Malgady, Costantino, & Rogler, 1984). The types of reliability addressed are internal consistency (coefficient alpha) (Costantino, Malgady, & Rogler, 1988; Costantino, Malgady, Casullo, & Castillo, 1989), test-retest (Costantino, Malgady, & Rogler, 1988; Costantino, Malgady, Rogler, & Tsui, 1987), and interrater (scorer) (Costantino, Malgady, & Rogler, 1988; Costantino, Malgady, Casullo, & Castillo, 1989).

Content validity was established by a study (Costantino, Malgady, & Rogler, 1988) in which 14 psychologists rated the stimulus cards according to personality function "pulled for." Examiners were presented the TEMAS cards in random order and asked which of the nine Personality Functions, if any, were exhibited in the picture. Results indicated high agreement (71–100%) among raters as to the thematic content of the TEMAS cards, thus lending support for content validity.

Evidence for construct validity is supported by recent studies demonstrating the utility of the TEMAS in distinguishing between clinical and nonclinical groups (Costantino, Malgady, Rogler, & Tsui, 1988; Costantino, Malgady, Bailey, & Colon-Malgady, 1989; Costantino, Colon, Malgady, & Perez, 1989). In the first study, Costantino, Malgady, Rogler, and Tsui (1988) administered the TEMAS to two groups of Hispanics and blacks, comprising 100 outpatients from psychiatric centers and 373 public school students (outpatients: 67 Hispanics, 33 blacks; students: 167 Hispanics, 206 blacks). A discriminant analysis yielded a classification rate of 89%, thus lending support for the TEMAS's ability to differentiate clinical from nonclinical test subjects. However, the authors of the study point out that it would be premature to use the TEMAS to distinguish between specific diagnostic categories of patients and normals. Also, the authors caution against overgeneralizing results from this and earlier studies to other subgroups of blacks and Hispanics, as mostly lower SES and Puerto Rican subjects from New York City have been employed in these studies. The generalizability of the TEMAS could be furthered

by studies that include higher SES black and Hispanic groups and other Hispanic subgroups (e.g., Cubans, Mexicans, etc.).

In the second study, Costantino, Malgady, Bailey, and Colon-Malgady (1989) attempted to further the findings of the previous discriminant analysis study (Costantino, Malgady, Rogler, & Tsui, 1988) by adding a subgroup of clinical and nonclinical white children. They administered the TEMAS to Hispanic, black, and white outpatients and public school students (outpatients: 67 Hispanics, 33 blacks, 36 whites; students: 71 Puerto Ricans, 40 blacks, 49 whites). Discriminant analyses yielded classification rates of 89% for Hispanics, 91% for blacks, and 86% for whites, thus demonstrating the test's utility in classifying clinical and nonclinical groups according to racial/ethnic background. Again, the authors warn that profiling specific diagnostic categories is premature.

Finally, in the third study, Costantino, Colon, Malgady, and Perez (1989) administered the TEMAS to 95 outpatients from mental health centers and 163 public school students, consisting of Hispanics, blacks, and whites (outpatients: 35 Hispanics, 25 blacks, 35 whites; students: 71 Hispanics, 40 blacks, 52 whites). The outpatients comprised a group of children/adolescents meeting the diagnosis for Attention-Deficit Hyperactivity Disorder (ADHD; American Psychiatric Association, 1987). It was hypothesized that ADHD children would be more likely to omit perceptual details of pictorial stimuli than would normal-functioning children. Two-tailed *t* tests between group means indicated that all three ADHD groups (Hispanic, black, and white) were more likely to omit details regarding characters, settings, and events than the public school students. These results suggest the possible use of thematic apperceptive techniques for distinguishing ADHD children from normals.

Criterion-related validity encompasses both concurrent and predictive validity. The concurrent validity of the TEMAS was examined by correlating eight different measures with results from TEMAS protocols using a sample of 210 Puerto Rican children. These children were chosen to participate in a study of behavioral problem children from New York City public schools (Malgady et al., 1984). The eight measures were measures of ego development (the Sentence Completion Test of Ego Development, Loevinger & Wessler, 1970; or its Spanish version, Brenes-Jette, 1987), trait anxiety (the Trait Anxiety scale of the State-Trait Anxiety Inventory for Children, Spielberger, Edwards, Lushene, Montuori, & Platzek, 1973; or its Spanish version, Villamil, 1973), teacher behavior rating (the Teacher Behavior Rating Scale, Costantino, 1980), mother behavior rating (Mother Behavior Rating Scale, Costantino, 1980), delay of gratification, self-concept, disruptiveness, and aggression (the last four assessed via observer ratings of role-playing situations). Regression analyses resulted in significant correlations for all of these measures with TEMAS profiles, except for trait anxiety. The significant correlations ranged from .32 to .51. Thus, this study demonstrated the ability of the TEMAS to predict criterion-related measures.

Predictive validity was assessed using 123 subjects from the same sample used in the concurrent validity study (Malgady et al., 1984). This time, subjects underwent a period of treatment before being retested. A hierarchical multiple regression analysis was performed, using the same eight criterion measures in the study above. Pretherapy TEMAS profiles significantly predicted all posttherapy mea-

sures, except for self-concept of competence, ranging from 6% to 22% variance increments.

Coefficient alpha was computed by ethnic group for the TEMAS Long Form on a group of 73 Hispanic and 42 black children selected by their teachers for absence of behavior problems (Costantino, Malgady, & Rogler, 1988). Alpha coefficients for the Long Form yielded a range of .41 to .98 (with a median value of .73) for the Hispanic sample and a range of .31 to .97 (with a median value of .62) for the black sample. Internal consistency was generally lower for the Personality Functions, perhaps in part due to the few cards pulling for each function. However, the sample size in this study falls short of the recommended minimum number of 200 subjects to ensure statistically reliable results in such studies (Kline, 1986).

Reliability coefficients were computed for the Short Form on a group of 210 Puerto Rican children chosen to participate in a study of behavioral problem children from New York City public schools (Costantino, Malgady, & Rogler, 1988). Alpha coefficients for the Short Form yielded a range of .30 to .92 (with a median value of .74). Internal consistency could not be calculated for the Personality Functions due to the few cards pulling for each function.

In a more recent study, the TEMAS Long Form was administered to 140 public school students, 140 private school students, and 50 clinical subjects from San Juan, Puerto Rico (Costantino, Malgady, Casullo, & Castillo, 1989). Alpha reliability coefficients ranged from .13 to .96 (with a mean of .72) for the public school group, .18 to .95 (with a mean of .62) for the private school group, and .27 to .96 (with a mean of .74) for the clinical group. Internal consistency was generally higher for the more objective indices, moderate to high for the Affective Functions, and somewhat lower for the Personality Functions (again, perhaps due to the few pictures pulling for each function).

Two studies examined test-retest reliability (Costantino, Malgady, & Rogler, 1988; Costantino et al., 1987). In the first (Costantino, Malgady, & Rogler, 1988), 51 subjects randomly selected from the group of 210 Puerto Ricans in the behavioral problem study were tested twice with the TEMAS Short Form with an 18-week interval. Only 8 of the 34 functions measured by the TEMAS resulted in significant correlation coefficients. Correlations were generally in the low to moderate range (ranging from –.01 to .53).

In the second study (Costantino et al., 1987), two random subsamples of 70 public school and 70 private school students from San Juan, Puerto Rico, were administered the TEMAS Long Form twice at a 2-month interval. Correlation coefficients were computed for the nine Personality Functions. Results, again, were generally disappointing: coefficients ranged from .09 to .59. However, these studies were confounded by numerous variables. For example, different raters were used at pre- and posttesting, large samples were not used, and variables, such as age, sex, and SES, were poorly controlled. In addition, the authors posed the problem, inherent with all projective instruments (see Obrzut & Cummings, 1983), of the instability of constructs when measuring young children to explain the poor results.

Interrater reliability of the TEMAS was assessed by two separate studies (Costantino, Malgady, & Rogler, 1988; Costantino, Malgady, Casullo, & Castillo, 1989). In the first (Costantino, Malgady, & Rogler, 1988), 27 Hispanic and 26 black chil-

dren were randomly selected from a group of 73 Hispanics and 42 blacks participating in a previous study. Two raters independently scored each of these protocols, and the results were then correlated. Results indicated correlations ranging from .31 to 1.00. In the second study (Costantino, Malgady, Casullo, & Castillo, 1989), two raters independently scored 20 Argentinian protocols as part of a study validating the TEMAS with various Hispanic subcultures. Results were generally higher than the previous study, with correlations ranging from .75 to .95 (with a mean of .81). The authors point out that the higher interrater reliabilities for the second study may have reflected refinements to the scoring system in the interim between the first study (conducted in 1983) and the second (conducted in 1987).

Critique

The *Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 1985) is a seldom-used but critical reference for how well a test meets technical standards of construction and application. Although the TEMAS would seem to be one of the few apperception tests that approximates these standards, there are a couple of standards with which the test does not yet comply.

One primary standard concerning criterion-related validity studies states that (a) the amount of time that elapses between administering the test and collecting criterion data should be reported, and that (b) validation reports should be dated clearly and specify the time interval in which data were collected. Although this information is presented in the study establishing the TEMAS's predictive validity (Malgady et al., 1984), unfortunately it does not appear in the manual.

The *Standards* also warn that when translating a test into another language, the reliability and validity of that version need to be established. As the TEMAS was standardized utilizing bilingual examiners who tested Hispanic subjects in their predominant language, no assumption can be made as to the equality of these two forms of administration. Separate reliability and validity studies should have been conducted for the Hispanic sample because some of these subjects were administered the test in Spanish and some were administered in English. There is no evidence demonstrating the comparability of both forms of administration.

However, the TEMAS represents a serious attempt to address the lack of psychometric rigor so characteristic of other apperceptive techniques. Indeed, the numerous studies undertaken by the test's authors to validate their instrument are quite impressive. At the time of this writing, further studies were in progress, especially those aimed at cross-cultural validation (G. Costantino, personal communication, July 1989). Future normative studies should be composed of larger, stratified samples to ensure accurate representation of target populations. In addition, it is recommended that further test-retest reliability studies be conducted, as this form of reliability has not yet been adequately established for the TEMAS (Costantino, Malgady, & Rogler, 1988; Costantino et al., 1987). Although the generally disappointing results may reflect true developmental changes in children, other confounding variables must first be ruled out in order to have confidence in

what the TEMAS is measuring. Finally, a study on the relative effectiveness of the TEMAS and other apperception tests in discriminating clinical from nonclinical samples is recommended. Such a study would demonstrate the relative effectiveness of the TEMAS with regard to other available instruments.

The TEMAS stands with the Michigan Picture Test—Revised (MPT-R; Hutt, 1980), the Roberts Apperception Test for Children (RATC; McArthur & Roberts, 1982), and the Children's Apperceptive Story-Telling Test (CAST; Schneider, 1989) as one of the few thematic apperceptive techniques currently available that address the need for psychometric rigor and approximate the standards of psychological testing.

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