

Jack A. Taylor, editor
Journal of Research in Music Education

A body of research concerned with preference, attitudes, or "taste" has been developing in the area of musical aesthetics. Granted, these terms are not synonymous, but neither are they independent from one another. One can make the case that attitude is generic and that preference and taste are subsumed under attitude. It probably does not matter at this time, because these concepts and their implications for theories of music aesthetics need much more study in research settings. But attitudes (defined as an individual's demonstration of his or her mental states, emotions, or moods) are important, especially if we agree that in listening to music (and in thinking about it), one's attitude must be positive—or, at least, receptive.

The majority of research in music attitudes consists of preference studies. Students are the usual target population, with those at the middle school or junior high level and below the most popular subjects. It is not surprising that most researchers find that their students prefer popular, or "peer-oriented," music to other types. But as music teachers—and as fervent believers in the values of our art—we want our students to develop and maintain an appreciation for a variety of musical genres. Certainly, one of our major music education missions is to provide them with the requisite listening skills and motivation to enjoy a spectrum of musical literature throughout their lives.

If we are to accomplish our mission, there are (at least) two major questions that researchers must answer: Will instruction (in its most general meaning) promote greater appreciation and thus more positive attitudes toward music judged as unlikable? And if the answer to this first question is "yes," will these positive attitudes transfer to new music of the same (or perhaps of a different) type?

The first question has been researched, but not to the extent that the results of the studies are conclusive. The second questions seems *not* to have been researched—a rather stark omission, since any amount of training is worthless if our students cannot, or will not, seek and enjoy new music after they have left our classrooms.

Patricia Shehan examines these two questions with sixth-grade students and a variety of music compositions. You will find her results enlightening and worthy of additional research.

Cognitive transfer theory, specifically Thorndike and Woodworth's theory of identical elements, was applied to music preferences. Two separate but related issues were examined in this study: (a) the effect of student familiarity through performance-oriented instruction as a means of increasing preference toward a genre of music and (b) the transfer of preference from taught to untaught pieces of an unfamiliar genre. Traditional African, Asian Indian, Japanese, and Hispanic songs with instrumental accompaniment were taught to 26 sixth-grade students over a 5-week period. A pretest-posttest listening test was administered, incorporating taught and untaught selections from the ethnic genres, as well as current popular and western classical pieces. Results indicated significant preference differences between the taught and untaught selection of the treatment genres. Although instruction increased preference for unfamiliar non-Western songs, there was no transfer of preference to untaught pieces of the same genre.

Patricia K. Shehan, Washington University, St. Louis

Transfer of Preference from Taught to Untaught Pieces of Non-Western Music Genres

A major goal of the strong multicultural movement in education is to promote respect for a wide range of cultural groups. Multicultural education in music has sought to explore the ethnic diversity within the American community through representative songs, dances, and selections from the recorded repertoire of musical traditions throughout the world.

While folk, traditional, and non-Western styles of music are not currently supported by the mass media, music educators are largely responsible for the exposure of students to the variety of music styles present throughout the world. It is commonly maintained that instruction in unfamiliar musical styles provides students with a polynasticity

and tolerance for approaching other little-known genres. An awareness of the manipulation of musical elements in various world musics may not only increase awareness for one particular style, but should also serve to sensitize perceptions of more familiar music. The development of intelligent value judgments through flexible and broad-minded reception of musical styles are desirable outcomes of school music programs; however, the attitudinal transfer of tolerance and taste for all musics through instruction of selected genres may be presumptuous. Further, little is known about the transfer of preference from familiar to unfamiliar pieces of the same genre.

There are few topics more central to the educative process than the transfer of learning. Defined as the influence of a previously established habit upon the acquisition of a second habit, the transfer principle has been the concern of cognitive theorists since the late 19th century. Several distinctions have appeared in the earlier literature, including lateral vs. vertical transfer (Gagné, 1965), specific and nonspecific transfer (Ellis, 1965; Royer & Cable, 1976), and near and far transfer (Mayer, 1975). Thorndike and Woodworth's theory of identical elements (1901) has heavily influenced many subsequent considerations of transfer theory, suggesting that transfer from one task to another would only occur when both tasks shared similar features. Osgood (1949) indicated that facilitative and inhibitory transfer were functionally related to the similarity and difference relationships between stimuli and responses in an original and transfer task.

In discussing the importance of structure learning, Bruner (1960) postulated two types of transfer of training: specific skills, and principles and attitudes. While educational research frequently documents transfer of knowledge and skills, attitudinal transfer accounts are rare. It is established in the literature that attitudes are learned in a manner similar to the acquisition of cognitive skills, and that once learned, they are stable and not amenable to change.

Attitude research is historically concerned with several constructs, including opinion, taste, and preference. Explained as a predisposition to respond in a favorable or unfavorable manner to objects or situations, attitudes are not directly observable but can be expressed verbally and behaviorally as preferences (Fishbein, 1967). While music instruction has directly affected understanding, attitude, and preference for music, the transfer of preference from taught to untaught pieces within a musical style has not been studied. Familiarity through repeated listening and performance has been a significant determinant of preference (Bradley, 1971; Clary, 1979; Getz, 1966; Hargreaves, 1984). Since pieces within a musical style are identified through the similar treatment of melodic, rhythmic, and textural elements, it would appear that preference for one piece through familiarity with the style would transfer to other pieces of the same style. This paper investigates preference transfer as an extension of cognitive theories of transfer.

When considering related literature in affective responses to music, assessment techniques have included verbalized self-reports, pictographic and written response formats, physiological measures, and

behavioral evaluations (Kuhn, 1981). Previous studies have explored factors in the process of music education that may affect the preference of the students (LeBlanc, 1980; Wapnick, 1976). Beyond the "repeated exposure" paradigm that generates preference through familiarity, several other variables have direct implications for the school music curriculum, including peer group approval (Alpert, 1982; Inglefield, 1972; Tanner, 1976), educators and authority approval (Alpert, 1982; Booker, 1969; Dorow, 1977; Greer, Dorow, & Hanser, 1973; Radocy, 1976; Wiebe, 1940), teacher-guided listening (Trammell, 1979), and televised instruction (Brown, 1978; Shehan, 1979).

Children's preferences for current popular music in the elementary grades have been confirmed in the literature (Greer, Dorow, & Hanser, 1973; Greer, Dorow, & Randall, 1974; Greer, Dorow, Wachaus, & White, 1973; LeBlanc, 1979). Competing styles of Western classical, jazz, folk, country and western, and band music have been rated consistently lower by children from preschool through the secondary level. Among nonrock genres, LeBlanc (1981) reported that fast instrumental examples are more likely to elicit positive listener response.

The inclusion of non-Western music as a preference choice has been relatively rare. Flowers (1980) studied the relationship between verbal and operant responses to top-forty and African music selections. Correlations between preference measures were high, and both undergraduates and fourth-graders preferred top-forty over African music. Heingartner and Hull (1974) employed Pakistani music to show that a positive relationship exists between "mere exposure" of music and students' liking for it. In a self-report assessment of fourth- and seventh-grade students' preference for Asian and African styles, Shehan (1982) found that those ethnic styles with greater "rhythmic dynamism" (African and Japanese instrumental) were preferred to the less pulsive and less syncopated selections (Indonesian and Japanese vocal). Indonesian gamelan music was the focus of an investigation of the effects of two instructional methods on verbal and behavioral preference (Shehan, 1984). The performance-oriented heuristic group showed greater gains in overall listening time for gamelan music than did the didactic group. Although current popular music was still the favored style, both groups preferred gamelan music to Western classical music.

The present study attempted to contribute to the considerable body of research in music preference. The investigation sought (a) to determine the effects of student familiarity through performance-oriented instruction in unfamiliar non-Western music as a means of increasing understanding and ultimately affecting preference toward a genre of music and (b) to examine the transfer of preference from taught pieces of an unfamiliar genre to untaught pieces of the same genre. Assuming minimal chance of student exposure to non-Western music beyond the school experience, all subjects had a common experience with the taught and performed music and a lack of experience with the untaught music. The study tested the effects of familiarity through performance of non-Western music on verbally expressed preference. The principle of generalized transfer as applied to preference in music was in question.

METHOD

The subjects for this study were 26 sixth-grade students in a midwestern K-8 parochial school. Students in the suburban community who participated were racially mixed, and the socioeconomic status was judged to be middle class.

A listening tape incorporating 12 music examples was prepared. Two vocal selections with instrumental accompaniment were included for the generic styles of current popular, Asian Indian, African, Hispanic, and Japanese; the Western classical selections were instrumental only. One taught and one untaught piece comprised the selections from the ethnic genres. The non-Western pieces were chosen from the recordings of an elementary textbook series. Authentic regional instruments were employed as accompaniment on the recordings, and children's choirs sang the lyrics in both English and the foreign languages. The inclusion of the more familiar current popular and Western classical styles served as critical competitors, with the intention of showing whether the non-Western styles compete with the peer-approved genre of current popular music or with the less preferred style. Selections were matched on the component of beat/tempo, ranging from M.M. = 170 to 250, with a mean of 210. The 12 music excerpts were arranged in two random orders to control for placement on tape, boredom, and satiation.

Students indicated the degree of preference for a musical selection by checking one response block on a 0-6 continuum. Five bipolar semantic differential scales were utilized for each musical selection: "like-dislike," "good-bad," "interesting-uninteresting," "valuable-worthless," and "buy-would not buy." The last scale provided information on behavioral intention as an extension of verbal preferences. The length of the excerpt was determined by the length of one verse each in English and in the native language, ranging from 43 to 65 sec, with a mean of 54 sec.

The rating scale was thought to provide for the presentation of a greater number of music selections than a behavioral measure. Free operant measures such as the Music Selection Recorder and the Operant Music Listening Recorder require individual testing and can present only a small number of music selections for subject response. While a composite of indexes has been recommended in the assessment of music attitudes and preferences (Kuhn, Sims, & Shehan, 1981), the operant measure was not included because of feasibility problems in fitting the testing of individual subjects into the constraints of the school schedule.

The investigator taught five weekly 35-min sessions, a time period considered typical for a study unit of non-Western music at the elementary school level. The content of the lessons consisted of listening to the recorded selection of non-Western music, first without and then with the visual aid of notation and lyrics projected on an overhead screen. Students were taught to sing the melody in English by rote, listening and then repeating each individual phrase three times. The complete song was then sung with and without the recording. Simple ostinatos on recorders and percussion instruments were added, and the

class was divided into two groups that alternately sang or played the instrumental accompaniment. In this way, all students sang and played the instrumental accompaniment. Due to the time limitation, foreign lyrics were not taught or performed. Closure was provided through a final listening to the recorded song. Folk songs from the four ethnic regions investigated were learned in similar procedure. The fifth class meeting was utilized to review the taught songs by listening to the recording and alternately singing and performing the instrumental ostinato.

RESULTS

Reliability of the listening test examined internal item consistency through the KR-20 formula. A coefficient of .79 was obtained, which was judged suitable and comparable to previous studies.

The mean scores and standard deviations for each of the six styles are presented in Table 1. Pre- and posttreatment preference measures for the 12 music selections indicate current popular as the preferred style, while the Western classical selections drop from a second-place to last-place rating. When the scores for the taught and untaught music of the non-Western styles are combined, preference gains are noted for all, with a substantial increase for Indian, Hispanic, and Japanese music.

Statistical analysis was done using computer program BMDP2 (Dixon, 1983). The data were analyzed using two-way analyses of variance with repeated measures on both factors. Variables in the study were preference change from pretest to posttest and the effect of instruction of non-Western music on the transfer of preference to untaught pieces of the same styles. Tables 2-5 report analysis of variance (ANOVA) results, while Table 6 displays pretest and posttest cell means and standard deviations for taught and untaught pieces of each treatment style.

Results are similar across styles. While there is no significant testing effect, the taught/untaught variable is significant for all non-Western music styles ($p < .01$). Table 5 reveals the only interaction effect, between tests and taught/untaught pieces of the Hispanic style.

Table 1
Summary of Pretest and Posttest Preference Score Means and Standard Deviations for Combined Taught/Uнтаught Songs

	African	Indian	Japanese	Hispanic	Western classical	Current popular
Pretest						
<i>M</i>	60.96	48.64	48.16	59.28	69.88	80.44
<i>sd</i>	21.94	23.74	19.28	20.68	23.80	22.58
Posttest						
<i>M</i>	61.68	38.80	38.84	67.96	57.08	75.28
<i>sd</i>	21.25	25.59	25.54	24.26	23.91	25.59

Table 2
Two-Way Analysis of Variance with Repeated Measures Comparing Tests and Taught/Untaught Pieces on Preference for African Music

Source of variance	SS	df	MS	F	p
Between effects					
Tests	10.24	1	10.24	0.03	.8328
Error	10,911.72	48	227.39		
Within effects					
Taught/untaught	761.76	1	761.76	7.75	.0077
Tests × Taught/untaught	309.76	1	309.76	3.15	.0823
Error	4,720.48	48	98.34		

As *F* tests alone do not show direction of change, Table 6 indicates that the preference gain for the taught selection is significantly greater than for the untaught selection within each ethnic genre. While Indian and Japanese untaught pieces showed small gains, there is no change in preference for the Hispanic song, and a decrease at the posttest for the African selection.

DISCUSSION

Consistent with previous studies, current popular music is the preferred style among middle school students. Standard rhymed lyrics of a romantic nature and the familiarity of the song and performing group through previous media exposure were likely extramusical factors in the preference choice. Musical influences may have included the clear rhythmic pulse, melodic redundancy, and repeated choral progressions so typical of current popular genres. The high ranking of Western classical music pieces in the pretest may have reflected familiarity with that genre, which is not surprising when considering current textbook offerings in European and American art music. Indirect teacher approval through previous class lessons that emphasized the standard orchestral repertory may have further prompted the high ratings.

Table 3
Two-Way Analysis of Variance with Repeated Measures Comparing Tests and Taught/Untaught Pieces on Preference for Indian Music

Source of variance	SS	df	MS	F	p
Between effects					
Tests	745.29	1	745.29	2.51	.1190
Error	14,267.96	48	297.25		
Within effects					
Taught/untaught	858.49	1	858.49	14.74	.0013
Tests × Taught/untaught	272.25	1	272.25	3.72	.0595
Error	3,308.76	48	75.09		

Table 4
Two-Way Analysis of Variance with Repeated Measures Comparing Tests and Taught/Untaught Pieces on Preference for Japanese Music

Source of variance	SS	df	MS	F	p
Between effects					
Tests	756.25	1	756.25	3.13	.0831
Error	11,586.56	48	241.39		
Within effects					
Taught/untaught	712.89	1	712.89	8.59	.0052
Tests × Taught/untaught	106.09	1	106.09	1.28	.2637
Error	3,981.52	58	82.95		

Initial preferences reveal a wide disparity between Western and non-Western styles. The lowest ratings for the more "musically exotic" Indian and Japanese selections may indicate response to unusual timbres and textures, as well as to the progressive and nonrepetitive structure of the music. The higher ranking African and Hispanic pieces were organized in repeated verse-refrain form. Although beat/tempo was a controlled variable, the strong rhythmic component and consonant harmonies in thirds inherent in African and Hispanic genres are not matched in the Asian musics. Although new and unusual treatment of musical elements may provide a certain intrigue and attract listener reception to the ethnic genres, the degree of novelty may be significant factor in the direction of the preference response.

According to Thorndike and Woodworth (1901), the conditions for transfer are established when an original learning event and a transfer event share common stimulus properties. If attitudes are learned as skills are acquired, then it follows that music preferences as overt attitudinal expressions might transfer from one musical selection to a second selection of the same style. Songs within one historical period or

Table 5
Two-Way Analysis of Variance with Repeated Measures Comparing Tests and Taught/Untaught Pieces on Preference for Hispanic Music

Source of variance	SS	df	MS	F	p
Between effects					
Tests	515.29	1	515.29	1.97	.1667
Error	12,543.00	48	261.31		
Within effects					
Taught/untaught	2,162.25	1	2,162.25	21.11	.0000
Tests × Taught/untaught	515.29	1	515.29	5.03	.0295
Error	4,915.96	48	102.42		

Table 6
Summary of Posttest and Posttest Cell Means and Standard Deviations for Taught and Untaught
Songs of the Non-Western Styles

	African		Indian		Japanese		Hispanic	
	pre	post	both	pre	post	both	pre	post
Taught								
M	31.16	35.32	33.24	27.40	34.16	29.78	25.76	33.32
sd	13.92	10.78		14.42	15.17		12.38	13.88
							14.14	14.45
Untaught								
M	29.16	26.28	27.72	22.84	25.00	23.92	22.48	23.92
sd	12.35	13.71		12.17	12.41		9.21	12.57
							11.79	13.06
Both								
M	30.16	30.80	30.48	24.12	29.58	26.85	24.12	29.62
							26.87	29.62
							34.16	31.89

regional style share a similar treatment of elements and structure and are viewed as communicating in the same musical dialect.

The posttest scores resulted in preference differences between the taught and untaught selection of the treatment genres. The implications are interesting for music education. Cognitive transfer theory has maintained that prior learning and attitudes are retrieved and applied to new settings. The assumption that a transfer of preference follows a similar pattern is discounted in the present study. No generalization of preference response can be inferred, regardless of stylistic similarities between pieces.

The instructional method that emphasized song and instrumental performance resulted in significant preference increases for the treatment selections. Familiarity through repeated listening and participatory experiences were positive influences on the affective response. As in previous research, concrete experiences in active music-making evoked favorable changes in preference.

Further inquiry into the nature of preference transfer might involve a more extended period of exposure to targeted music styles. Acquisition of knowledge about music and any consequent attitudinal change may require study units focused on one specific musical style designed for use in several class sessions. A variety of song, movement, and listening experiences with a number of specific pieces may provide a more thorough exposure to an unfamiliar style. Instruction in non-Western musics may benefit from the combined efforts of music and arts specialists, and classroom and/or social science teachers who can provide a sociocultural context for the music in study.

Although music educators will continue to teach for understanding and the broadening of musical taste, the expectation that study of one representative piece from a style will impact upon interest in other stylistically similar pieces is not supported. Lessons in unfamiliar music, such as the non-Western genres, can hope to provide some flexibility of approach, but care should be taken to differentiate between tolerance and preference.

REFERENCES

- Alpert, J. (1982). The effect of disc jockey, peer, and music teacher approval of music on music selection and preference. *Journal of Research in Music Education, 30*, 173-186.
- Booker, G. A. (1969). The disc jockey and his impact on teenage musical taste as reflected through a study in three north Florida cities. *Dissertation Abstracts International, 30*, 3038A. (University Microfilms No. 69-30, 424)
- Bradley, I. L. (1971). Repetition as a factor in the development of music preferences. *Journal of Research in Music Education, 19*, 295-298.
- Brown, A. (1978). Effects of televised instruction on student music selection, music skills, and attitudes. *Journal of Research in Music Education, 26*, 445-455.
- Bruner, J. A. (1960). *The process of education*. New York: Vintage Books.
- Clary, R. M. (1979). *The effect of rehearsal and performance on high school choir students' preference for choral music*. Unpublished master's thesis, Kent State University, Kent, Ohio.
- Dixon, W. J. (Ed.). (1983). *BDMF statistical software*. Berkeley: University of California.
- Dorow, L. G. (1977). The effect of teacher approval/disapproval ratings on student music selection behavior and concert attentiveness. *Journal of Research in Music Education, 25*, 32-40.
- Ellis, H. C. (1965). *The transfer of learning*. New York: Macmillan.
- Fishben, M. (1967). Attitude and prediction of behavior. In M. Fishben (ed.), *Readings in attitude theory and measurement*. New York: John Wiley and Sons.
- Flowers, P. J. (1980). Relationship between two measures of music preference. *Contributions to Music Education, 8*, 47-54.
- Gagné, R. M. (1965). *The conditions of learning*. New York: Holt, Rinehart, and Winston.
- Gez, R. P. (1966). The effects of repetition on listening response. *Journal of Research in Music Education, 14*, 178-192.
- Greer, R. D., Dorow, L. G., & Hanser, S. (1973). Music discrimination training and the music selection behavior of nursery and primary school children. *Bulletin of the Council for Research in Music Education, 14*, 24-31.
- Greer, R. D., Dorow, L. G., & Randall, A. (1974). Music listening preferences of elementary school children. *Journal of Research in Music Education, 22*, 284-291.
- Greer, R. D., Dorow, L. G., Wachaus, G., & White, E. R. (1973). Adult approval and students' music selection behavior. *Journal of Research in Music Education, 21*, 345-354.
- Hargreaves, D. J. (1984). The effect of repetition on liking for music. *Journal of Research in Music Education, 32*, 35-47.
- Hengartner, A., & Hull, J. V. (1974). Affective consequences in adults and children of repeated exposure to auditory stimuli. *Journal of Personality and Social Psychology, 29*, 719-723.
- Inglefield, H. G. (1972). Conformity behavior reflected in the musical preferences of adolescents. *Contributions to Music Education, 1*, 56-67.
- Kuhn, T. L. (1981). Instrumentation for the measurement of music attitudes. *Contributions to Music Education, 9*, 2-38.
- Kuhn, T. L., Sims, W. I., & Shehan, P. K. (1981). Relationship between listening time and like-dislike ratings on three music selections. *Journal of Music Therapy, 18*, 181-192.
- LeBlanc, A. (1979). Generic style preferences of fifth-grade students. *Journal of Research in Music Education, 27*, 255-270.

- LeBlanc, A. (1980). Outline of a proposed model of sources of variation in musical taste. *Bulletin of the Council for Research in Music Education*, 61, 29-34.
- LeBlanc, A. (1981). Effects of style, tempo, and performing medium on children's music preference. *Journal of Research in Music Education*, 29, 143-156.
- Mayer, R. E. (1975). Information processing variables in learning to solve problems. *Review of Educational Research*, 45, 525-541.
- Osgood, C. E. (1949). The similarity paradox in human learning: A resolution. *Psychological Review*, 56, 132-143.
- Radowy, R. E. (1976). Effects of authority figure biases on changing judgments of music events. *Journal of Research in Music Education*, 24, 119-128.
- Royer, J. M., & Cable, G. W. (1976). Illustrations, analogies, and facilitative transfer in prose learning. *Journal of Educational Psychology*, 68, 205-209.
- Shehan, P. K. (1979). The effect of the television series "Music" on music listening preferences and achievement of elementary general music students. *Contributions to Music Education*, 7, 51-62.
- Shehan, P. K. (1982). Student preferences for ethnic music styles. *Contributions to Music Education*, 9, 20-27.
- Shehan, P. K. (1984). Effect of instruction method on preference, achievement, and attentiveness for Indonesian gamelan music. *Psychology of Music*, 12, 34-42.
- Tanner, F. D. (1976). The effect of disc jockey approval of music and peer approval of music on music selection. *Dissertation Abstracts International*, 37, 3492A. (University Microfilms No. 76-27709)
- Thorndike, E. L., & Woodworth, R. S. (1901). The influence of improvement in one mental function upon the efficiency of other functions. *Psychological Review*, 8, 247-261.
- Trammel, P. T. (1979). An investigation of the effectiveness of repetition and guided listening in developing enjoyable music listening experiences for second-grade students. *Dissertation Abstracts International*, 40, 2450A. (University Microfilms No. 79-07767)
- Wapnick, J. (1976). A review of research on attitude and preference. *Bulletin of the Council for Research in Music Education*, 48, 1-20.
- Wiebe, G. (1940). The effect of radio plugging on students' opinions of popular songs. *Journal of Applied Psychology*, 24, 721-727.

October 15, 1984

The purpose of the study was to determine whether the Computer-Assisted Program in Error Detection (CA-PED) was an effective method for developing that skill in college music education majors through a comparison with an effective error detection program, the Program in Error Detection (PED). The computer program, written for the Apple II + microcomputer, is an interactive, programmed-instruction format that utilizes four-voice examples of published band literature. The results indicated significant gains in error-detection skill for both groups, but no significant difference ($p < .05$) between treatment groups on the Test in Error Detection (TIED) in each of three analyses of covariance, utilizing TIED pretest, Alferts-Stiecklem Music Achievement Test, College Midpoint Level (AS), and combined TIED pretest and AS as the covariates, respectively.

John J. Deal, University of North Dakota

Computer-Assisted Instruction in Pitch and Rhythm Error Detection

The ability to detect pitch and rhythm errors in ensemble performance is an essential skill for the instrumental music teacher. Both Parr (1976) and Taebel (1980) support this contention. Parr reported that skills in detecting pitch and rhythm errors while viewing printed scores were "essential" skills, while Taebel concluded that those skills were the two most important musical competencies for the instrumental music teacher.

One of the most effective methods for developing error-detection skill appears to be programmed learning. A number of researchers reported significant gains in error detection ability as a result of programmed instruction (Boyer, 1974; Costanza, 1971; DeCarbo, 1981; Dolbeer, 1969; Grunow, 1980; Ramsey, 1978; Sidnell, 1971; Stuart, 1979), but each program exhibits one or more weaknesses or limitations. These

This article is based on the author's doctoral dissertation at the University of Iowa, 1983.

For reprints of this article, contact John J. Deal, Box 8124, University Station, University of North Dakota, Grand Forks, ND 58202