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AUTHOR Lorentz, Jeffrey L.
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ABSTRACT

The reduction of data collected as part of the Carroll County, Georgia, Competency Based Teacher Certification Project is discussed. Data were collected on more than 1800 students in 59 classrooms (grades 1 - 12) during the 1974-75 school year. Data collected on teachers and students were reduced to classroom-level indices so that process-product relationships could be examined. The paper then describes the steps taken in the reduction of student data and describes some of the simple (zero-order) relationships between student growth and the teacher competency measures in the first year (1974-75) sample. (RC)

THE DEVELOPMENT OF MEASURES OF TEACHER EFFECTIVENESS FROM MULTIPLE MEASURES OF STUDENT GROWTH

Jeffrey L. Lorentz
West Georgia College

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THE DEVELOPMENT OF MEASURES OF TEACHER EFFECTIVENESS FROM MULTIPLE MEASURES OF STUDENT GROWTH

The present paper is a discussion of the reduction of data collected as part of the Carroll County, Georgia, Competency Based Teacher Certification Project. In this project, data were collected on more than 1800 students in 59 classrooms (grades 1 - 12) during the 1974-75 school year, and on more than 1300 students in 43 classrooms during the 1975-76 school year. The rationale for and the design of this project were reported in an earlier AERA paper (Lorentz, 1976) which includes a complete description of all the instruments used and a thorough discussion of the procedures.

Data collected on teachers and students were reduced to classroom-level indices so that process-product relationships could be examined. Medley (1977) discusses the reduction of the competency measures from observation data and Soar (1977) discusses the various process-product relationships between competency measures and student growth. The present paper will describe the steps taken in the reduction of student data and describe some of the simple (zero-order) relationships between student growth and the teacher competency measures in the first year (1974-75) sample.

The Measures. Three major areas of student growth were assessed with a variety of measures. Cognitive growth was assessed with standardized achievement tests, affective growth with paper and pencil self-concept measures, and student Coping Style was measured by direct observation (CASES).

It is well known that moderating variables such as a student's grade level, sex, race, and socio-economic status (SES) can influence his achievement. Therefore, the investigators recorded information about these variables for each student. An estimate of the SES of each student was obtained based on the occupation of the father (or the student's mother if she was the family's sole support).

In order to compute gain measures, every instrument (achievement, affect, and CASES) was applied twice: once in the Fall and once in the Spring. Each student was assigned a unique identification number to permit pretest - posttest matching.

Initial Data Reduction. The tests were hand or machine scored, keypunched and verified. Observation data were keypunched from data collection forms and verified. Achievement tests were scored according to subtest keys provided by the publishers and converted to grade equivalent (GE) scores using published norms tables. The ITBS (grades 3 - 8) were further converted to standard scores following preliminary analyses. This procedure will be described in more detail below.

The self-concept measures were reduced to subtest scores by summing subsets of items. The I Feel Me Feel (IFMF) scoring was based on locally-developed factor keys which were entitled: "Academic", "Self", "Frustration", "Femininity", "Fun", and "Independence". Coefficient Alpha reliabilities for these scales ranged from .54 to .84 for the CBTC sample. How I See Myself (HISM) was scored using four of Gordon's (1968) Keys entitled "Teacher-School", "Physical Appearance", "Interpersonal Adequacy", and "Autonomy". Reliabilities for these scales, using CBTC data ranged from .64 to .83. The Junior Index of Motivation (JIM) was scored according to Frymier's (1970) directions using 50 of the 80 items to produce an index of student motivation.

CASES frequencies for each student were scored using Spaulding procedure (personal communication, 1974) to identify predominant Coping Styles for each student from Aggressive-manipulative (Style A) to Other-directed, task-oriented (Style H). When CASES observations were made, observers distinquished two types of classroom setting called Teacher Directed (TD) and Program Directed (PD). Scores were obtained for students in each setting by combining data from initial and final visits collected in the same setting.

Four of the High School (TAP) subtests were dropped because of small numbers of classes. In all, 54 subtests were included as measures of various aspects of student growth. These are listed in Table I.

Insert Table I about here

It is important to note that a complete set of 54 scores was not recorded for each class, but rather, subtest to subtest. For example, the 10 first grade classes were tested with the IST-CTBS combination, while ITBS was used in the 26 classes, grades 3 - 8. The largest sample of classes (47) had CASES TD scores, while the smallest (5) was the sample with TAP-S scores. Generally, achievement measures (except ITBS 3 - 8) were applied at specific grade levels while the affect measures crossed several grades and CASES was used in all classes, grades 1 - 12. The number of classes is shown by subtest in the tables of correlations.

Computation of Gains. On an instrument by instrument basis, and within instrument by subtest, pretests and posttests were matched for each student. Students with missing pretest or posttest were dropped for that portion of the analysis only. In some instances, first and second grade teachers taught one group of students Reading and exchanged them with another teacher for Math. These students were assigned to the appropriate class for each subtest.

Using the BMD-04V Analysis of Covariance Program (Dixon,

1974) adjusted posttest means (i.e., regressed gains) were computed for each variable. The initial test measure and SES were used as covariates to adjust the posttest scores in order to minimize the errors in regression adjustment pointed out by Campbell and Erlebacher (1971). These regressed gains are the average of the difference between the predicted achievement and the actual achievement of each student in a class. They are measures of class growth which are independent of pretest and SES.

Since the largest sample of classes with a common achievement measure was the 3rd - 8th grade group (n = 26) it was essential to compute the gain measures for this group as a whole. This resulted in the need to transform the data to a common metric. Initially scores were converted to grade equivalent (GE) scores using the published tables of norms. Each student's actual grade level was subtracted from his pre and post GE scores to standardize the scale. Regressed gains were then computed using the ANCOVA procedure described above. An examination of the plots of the mean scores by grade level, however, revealed a positive (and undesirable) correlation between the resulting regressed gains and grade level.

To eliminate this correlation, the regressed gains for this group were recomputed (there was no problem with the scaling of affect measures since raw scores were used, nor with the Coping Style scores since a common index was available for all grade levels. The other achievement measures were applied within a single grade level only).

After extensive discussion with project consultants and correspondence with one of the authors of ITBS, Dr. A.N. Hieronymus (1976), the decision was made to utilize the published standard score norms (Houghton, Mifflin, 1973). These tables provide a normalized standard score scale with a mean of 80 and a standard deviation of 20 for the entire grade range, 3-8, combined. The tables permit the conversion from raw score directly to standard score.

After conversion of these ITBS subtests to standard scores, the following terms were used to create an adjusted posttest score: pretest, grade level, SES, the product of grade level and pretest, and pretest squared. Pretest and SES were again used together to minimize the errors in regression adjustment, following the solution suggested by McNemar (1975). The grade level term was used since the standard scores for the ITBS were based on all grade levels, 3-8, and the adjusted score desired was one within each grade level. The product term, grade x pretest, was entered since the correlations of pretest and posttest tend to increase at higher grade levels, and this term permits fitting different regression slopes at different grade levels. The pretest squared term permits fitting a two degree curve to the relation between pretest and posttest, and tests if a non-linear fit is significantly better than a linear one.

The purpose of the complete adjustment process, then, is to eliminate the effect of pretest, grade level, and SES from the posttest score so as to permit comparing gain within grade level across grade levels, recognizing that the relationships between pretest and posttest may differ from grade level to grade level, and that the relationship may be non-linear.

The resulting equation, then, is:

$$Y' = a + b_1 Pre + b_2 Grade + b_3 SES + b_3 Pre \times Grade + b_4 Pre^2$$

then: Gain = Post - Y'

An examination of the plots of the residuals revealed that they were essentially uncorrelated with SES, grade level, and pretest which was the desired outcome.

Since the inclusion of interaction and squared terms result in a singular sums of squares and cross products matrix which cannot be inverted, the approach used to compute the residuals for this set of data was multiple regression analysis utilizing the program BMD-02R (Dixon, 1974). (A note to the unwary user: The BMD Analysis of Covariance program will print-out results, but they are meaningless when the matrix is singular. The SPSS program tests for this condition, prints a warning to the user, and terminates the program.)

Teacher Measures. The four observation systems used as measures of teacher behavior (i.e., competency) were STARS, OScAR 5V, FLACCS, and TPOR. Each of these instruments had been empirically validated, was judged to be of the low-inference type, and was an appropriate measure of a number of the behavioral indicators of competencies previously identified.

Composites of items from these instruments were combined as behavioral indicators of teacher competency, or "competency scores". Sixty-two of these scores were produced as a priori measures of the list of competencies developed by Carroll County teachers. These are listed in Table II.

Insert Table II about here

Process-Product Relations. As a first step in the examination of process-product relationships, the 54 student gain measures were correlated with the 62 competency scores resulting in 3,348 competency-outcome correlations. With $\alpha = .05$, one would expect to find 167 significant by chance. Actually, 374 or 11.2% were statistically significant. The significant competency-outcome correlations are presented in Table III (1st and 2nd grade gains), Table IV (3-8 grade gains), Table V

(H.S. gains), Table VI (changes in Coping Style), and Table VII (changes in Affect).

Insert Tables III - VII about here

Of the 114 significant correlations between competency scores and achievement gains, 82 or about 72% were negative. In other words, those teachers who were observed to exhibit high levels of some "competencies" had low achieving students, and vice-versa. (The negative correlations between CASES and Affect measures and competency are not as readily interpretable since it is desirable for some Coping Styles and attitudes to decrease as a result of "good" teaching.)

It is possible to draw some tentative conclusions about the relationships between the so-called teacher competencies and student growth.

For example, teachers in grades 3-8 paused, and responded to student questions (3B-T), who listened to students (4A-T), and allowed students to speak out (4B-T) had students with low vocabulary achievement. Other relationships are also in a direction other than expected, and some of these are described elsewhere.

This is compelling evidence that what we think we know about teaching and learning may not necessarily be true. It certainly holds serious implications for the future training of teachers.

In addition to the examination of process-outcome relations, it was considered important to know whether the achievement gains were related to changes in Coping Style and affect. An examination of the significant correlations between achievement gains and changes in affect (shown in Table VIII), between achievement gains and changes in Coping Style (in Table IX), and between changes in Coping Style and affect (in Table X)

Insert Tables VIII - X about here

revealed that the correlations which did appear as significant were not surprising. However, the number of significant correlations was about what would be expected by chance, indicating that the three sets of outcome measures are generally independent. This supports the need for a variety of measures of student growth to be related to measures of teacher behavior.

Conclusions. The development of comparable measures of student growth is a complex task. This is especially true when students in grades 1-12 are used as subjects. Problems of

missing data, comparability of measurement scales, small numbers of classes, and many others were addressed in the present project.

It is apparent, however, that these "impediments" to the study of teaching can be solved and that indices of student achievement, Coping style, and affect can be developed as correlates of teacher effectiveness.

It is highly desirable in future studies of this type to utilize larger samples of classes which share a common grade level. (The alternative, of course, would be the development of valid, reliable wide-range measures of student outcomes.)

The large number of negative relationships between teacher behaviors and student outcomes should be taken as a clear-cut mandate to reexamine our educational thinking. These data will provide valuable input to further analyses in this regard.

TABLE I

STUDENT GROWTH MEASURES

Grade	Code	Description	Reference
Student Achievement Measures			
1	IST	Scott Foresman Initial Survey Test, Form A (pretest)	Monroe, Manning, Wepman, and Gibb, 1972
	IST R	Reading Subtest	
	IST M	Math Subtest	
	CTBS	Comprehensive Test of Basic Skills, Level B, Form S (posttest)	CTB/McGraw-Hill, 1974
	CTBS R	Reading	
	CTBS M	Math	
2	ITBS-P	Iowa Tests of Basic Skills, Level 7, Form 6	Hieronymus, Lindquist, and others, 1972
	Voc.	Vocabulary	
	W. Anal.	Word Analysis	
	Read.	Reading Comprehension	
	L-1	Language 1 (Spelling)	
	M-1	Math 1 (Concepts)	
	M-2	Math 2 (Problems)	
3 - 8	ITBS	Iowa Tests of Basic Skills, Form 5 and 6	Hieronymus and Lindquist, 1971
	V	Vocabulary	
	R	Reading Comprehension	
	L_1	Language 1 (Spelling)	
	L_2	Language 2 (Capitalization)	
	L_3	Language 3 (Punctuation)	
	L_4	Language 4 (Usage)	
	L_T	Total Language	
	W_1	Work-Study Skills 1 (Map Reading)	
	W_2	Work-Study Skills 2 (Reading Graphs & Tables)	
	W_3	Work-Study Skills 3 (Knowledge & Use Reference Materials)	
	W_T	Total Work-Study Skills	
	M_1	Math 1 (Concepts)	
	M_2	Math 2 (Problem Solving)	
	M_T	Total Math	
High School	TAP	Tests of Academic Progress, Form S	Hieronymus and Lindquist, 1971
	S	Science	
	R	Reading	

TABLE I (continued)

Grade	Code	Description	Reference
Student Coping Style Measure			
1-12	CASES	Coping Analysis Schedule for Educational Settings	Spaulding, 1974
	TD	Teacher Directed Setting	
	PD	Program Directed Setting	
	Style A	Aggressive, Manipulative	
	B	Inappropriately Self-directed	
	C	Passive, Withdrawn	
	D	Peer Dependent	
	E	Compliant	
	F	Social, Productive	
	G	Inner-directed, Task-oriented	
	H	Other-directed, Task-oriented	
	Overall	Composite of A - H	
Student Affect Measures			
1 - 3	IFMF	I Feel Me Feel	Yeatts and Bentley, 197(
	Aca.	Academic	
	Self	Self	
	Frus.	Frustration	
	Fem.	Femininity	
	Fun	Fun	
	Ind.	Independence	
4 - 12	HISM	How I See Myself	Gordon, 1968
	T,S	Teacher-School (Academic)	
	P.A.	Physical Appearance	
	Int.	Interpersonal Adequacy	
	Auto	Autonomy	
	Aca.	Academic Adequacy	
8 - 12	JIM	Junior Index of Motivation	Frymier, 1970
Other Measures			
1 - 12	SES	Socio Economic Status Based on Father's Occupation	Warner, Meeker, and Eells, 1960

TABLE II

KEY TO CBTC COMPETENCIES

Code	Description
G-1	Gathers and uses information related to individual differences
1B-S	Reduced deviant behavior
1C-S	Better physical, mental health
G-2	Organizes pupil, resources, and materials for effective instruction
2A-T	Selects goals and objectives appropriate to pupil need
2C-T	Gathers multi-level materials
2D-T	Involves student in organizing and planning
2A-S	Enjoys class, happy smiles
2B/C-S	Actively involved, working on-task
2B/C-S	Evidence academic growth
2D-S	Absence of withdrawn behavior
2E-S	Enthusiastically involved
2F-S	Evidence of involvement
G-3	Demonstrates ability to communicate effectively with students
3A-T	Gives clear explicit directions
3B-T	Pauses, elicits and responds to student questions
3C-T	Uses a variety of methods, verbal and non-verbal
3A-S	Less confusion, less time wasting
3C-S	Self-directed to move toward task
G-4	Assists students in using a variety of relevant communication techniques
4A-T	Demonstrates proper listening skills
4B-T	Respects individual's right to speak
4C-T	Utilizes non-verbal communication skills
4B-S	Students able to speak freely
4C-S	Able to follow directions on-task
4D-S	Able to communicate through writing
G-5	Assists students in dealing with their misconceptions or confusions, using relevant clues and techniques
5A-T	Utilizes student feedback, verbal and non-verbal, to modify teaching practices
5B-T	Demonstrates flexibility in classroom management practices
5D-T	When student not on-task, teacher makes contact
5E-T	Provides feedback to pupil on his misbehavior

TABLE II (continued)

Code	Description
5A-S	Students ask questions
5B-S	Students feel free to interrupt pupil presentations
5C-S	Movement toward tasks
G-6	Responds appropriately to coping behavior of students
6A-T	Maintains self-control in classroom situation and with students
6B-T	Recognizes and treats individual student behavior
6D-T	Accepts necessity of dealing with individual students
6A-S	Absence of student manipulation of teacher and peers
6B-S	Modifies behavior positively
6C-S	Reduction of disruptive behavior
G-7	Uses a variety of methods and materials to stimulate and promote pupil learning
7A-T	Uses more than one teaching method in a single presentation
7C-T	Uses more than on instructional activity simultaneously
7A-S	Attentive
7C-S	Actively involved
G-8	Promotes self-awareness and positive self-concepts in students
8C-T	Evidence of a personal one-to-one relationship with students
8E-T	Evidence of praise and/or rewards in operation
8F-T	Supportative classroom management
8B-S	Moving toward self-direction
8C-S	Attending to task
8E-S	Evidence of importance as class member, group involvement
8G-S	Evidence of enthusiasm
G-9	Reacts with sensitivity to the needs and feelings of others
9A-T	Accepts and incorporates student ideas
9B-T	Listens to students and provides feedback
9C-T	Evidence of opportunity for one-to-one counseling
9A-S	Expresses ideas and opinions different to those of teacher
9B-S	High interest
9D-S	Evidence of confidence in teacher

TABLE III

SIGNIFICANT CORRELATIONS ($p < .05$) BETWEEN COMPETENCIES AND STUDENT GAINS: GRADES ONE AND TWO

Competency	1st Grade		2nd Grade					
	IST R	IST M	ITBS-P Voc.	ITBS-P W. Anal.	ITBS-P Read.	ITBS-P L-1	ITBS-P M-1	ITBS-P M-2
n=	(10)	(10)	(6)	(6)	(6)	(6)	(5)	(5)
2A-S						-82		-92
2B/C-S	75							
2E-S	64							
4C-T							-94	
4D-S			-87					
G-5			-87	-95	-81	-91		
5E-T								-90
5B-S			-82					
7A-S								98
7C-S	73							
G-8			-82		-93	-90		
8C-T			-83	-85	-86	-88		
8B-S								99
8G-S	68							
9B-S	68							96

TABLE IV

SIGNIFICANT CORRELATION ($p < .05$) BETWEEN COMPETENCIES AND 3 - 8 ACHIEVEMENT

	ITBS													
Competency n=	V (26)	R (26)	L_1 (23)	L_2 (23)	L_3 (23)	L_4 (23)	L_T (23)	W_1 (23)	W_2 (23)	W_3 (23)	W_T (23)	M_1 (24)	M_2 (24)	M (2
1B-S					-56	-62	-44		-45			-43		-4
G-2		41												
2C-T		50						41			44			4
2A-S		40								42				
2B/C-S		43												
G-3									-45					
3B-T	-44													
3C-T					-54		-46		-43	-52	-46			
G-4	-53		-45					-45		-50	-47			
4A-T	-39												44	
4B-T	-49													
4C-T					-56		-48	-50		-57	-50			
4B-S									-52	-45	-45			
4D-S					-54	-62	-43		-51			-48	-51	-5
G-5	-47								-41		-42			
5A-T					41									
5B-T												47		4
5E-T	-38		-51					-53	-41	-51	-51			
5B-S										-48				
6B-T														44
6D-T									48			47	45	51
6A-S		-48				-54			-56		-48	-45		
6C-S		-38				-47								
G-7						42								
G-8	-39													
8C-T													41	41
8E-T								-47						
8F-T			-46		-42			-48		-50	-48			
9B-T														40
9C-T	-40													
9A-S				-58			-43							
9D-S												42		

TABLE V

SIGNIFICANT CORRELATION ($p < .05$) BETWEEN COMPETENCIES AND HIGH SCHOOL TESTS

Competency	TAP S (5)	TAP R (11)
n =		
5A-T	-89	65
G-7	-90	
7A-T	-92	
9D-S		66

TABLE VI

SIGNIFICANT CORRELATION ($p < .05$) BETWEEN COMPETENCIES AND CASES

	TD Setting - Style:									PD Setting - Style:								
y	A	B	C	D	E	F	G	H	Over all	A	B	C	D	E	F	G	H	Over all
	(47)	(47)	(47)	(47)	(47)	(47)	(47)	(47)	(47)	(44)	(44)	(44)	(44)	(44)	(44)	(44)	(44)	(44)
	67									36	-30				-32			
						30							-49		38			33
						34												
															-31			
				33		36												
															37	42	-43	57
		-34			49				38					40	42		-37	37
					31							-32			32			32
	50	40		32					-29	43								-36
					50				38					39	41		-39	
		-39	-30		48				42					44	32		-38	31
	34		-31			37												
	34											-34						
		-38			46	33			42									
	48		-33			31									-47			
		-39			49				41					39			-35	
					37	31								33	38		-37	34
		-35	-34		38	36			38					41				
						45								36				
			-30		45	32			37					39				
		-37	-31					31										
	55					42								38				
		-30	-34		43				35					38	37		-40	32
	62									35								
		-29			45				36									

TABLE VI (continued)

Competency	TD Setting - Style: A	B	C	D	E	F	G	H	Overall	PD Setting - Style: A	B	C	D	E	F	G	H	Overall
n =	(47)	(47)	(47)	(47)	(47)	(47)	(47)	(47)	(47)	(44)	(44)	(44)	(44)	(44)	(44)	(44)	(44)	(44)
5A-T		-38			63				54					38	32			
5B-T		-31	-33															
5D-T	45		-29															
5E-T						40												
5B-S													-31					
5C-S			-31		39									36	38		-38	33
G-6			-30												-38			
6A-T			-33												-36			
6B-T		-32	-34															
6D-T		-35																
6A-S	75									31								
6B-S		-39			49				41					39			-35	
6C-S	64	37							-30	45								-41
G-7												45						
7A-T												43						
7C-T					31													
7A-S	-31					-34												
7C-S		-33			51				42					37	48		-48	39
G-8		-44	-33			38												
8C-T		-37	-29			34												
8E-T		-52	-34					29	35									
8F-T		-42	-29			36												
8B-S		-31			52				39								-38	
8C-S		-39	-30		48				42					44	32		-38	31
8E-S			-29		42	33			34					40	48		-34	33
8F-S		-37			50				45					33	50		-50	47
G-9		-34	-29															

TABLE VI (continued)

Competency	TD Setting - Style: A	B	C	D	E	F	G	H	Overall	PD Setting - Style: A	B	C	D	E	F	G	H	Overall
n =	(47)	(47)	(47)	(47)	(47)	(47)	(47)	(47)	(47)	(44)	(44)	(44)	(44)	(44)	(44)	(44)	(44)	(44)
9A-T															30			
9B-T		-33	-29															
9C-T						46												
9A-S				34														
9B-S	-37								45					33	47		-46	38
9D-S					49	47		-41										

TABLE VII

SIGNIFICANT CORRELATIONS ($p < .05$) BETWEEN COMPETENCIES AND CHANGES IN STUDENT AFFECT: GRADES 1 - 12

Grades:	1 - 3						4 - 12					8-12
Competency n =	IFMF FUN (17)	IFMF AEA (17)	IFMF Frus. (17)	IFMF Fem. (17)	IFMF SELF (17)	IFMF Ind. (17)	HISM T,S (39)	HISM P.A. (39)	HISM Int. (39)	HISM Auto (39)	HISM Aca. (39)	JIN (13)
1B-S							-42		-33			
G-2											34	
2A-T	-79	-49			-61	-67						
2B-T							33		34			68
2C-T			52									
2A-S							47		39			
2B/C-S			49									
2D-S							-38			-41		
2F-S										35		
3A-T	-56						-36					
3C-T							-45		-32			
3A-S										33		
3C-S												65
G-4											-32	
4C-T									-34			
4C-S	50		52									-66
4D-S							-35			34		
5A-T												
5B-T						52				34		
5D-T							-44					
5A-S	51			51								
G-6							-35					
6A-T							-39					
6B-T											-36	
6D-T						54						
6A-S						52						
6B-S									-34			
6C-S										33		
							-46		-35	-39		
8E-T												
8B-S												-73
8C-S										37		
8E-S			66			49				35		
8G-S										34		
9A-T												
9B-S							40					
9D-S				-51						35		

TABLE VIII

SIGNIFICANT CORRELATIONS ($p < .05$) BETWEEN STUDENT GAIN MEASURES: ACHIEVEMENT AND AFFECT

Achievement Measure		IFMF			HISM		
	n =	Frus. (5)	T,S (22)	P.A. (22)	Int. (22)	Auto (11)	Ade. (22)
ITBS-P	M_1	91					
ITBS	L_1			43			
ITBS	L_2			43			
ITBS	W_1			46	43		
ITBS	W_3		50	65	79		62
ITBS	W_T			62	56		
TAP	R					66	

TABLE IX

SIGNIFICANT CORRELATIONS ($p<.05$) BETWEEN STUDENT GAIN MEASURES: ACHIEVEMENT AND COPING STYLE

Achievement Measure	TD - CASES - A	B	D	E	H	Over all	PD - CASES - B	C	E	G	H	Over all
IST M		-73	-73			76						
ITBS-P R						-96	90					
ITBS L_1						95						
ITBS L_2				47								
ITBS L_3	-51											
ITBS L_4	-56											
ITBS L_T	-51			51								
ITBS W_2	-51											
ITBS W_3											-48	
ITBS M_1	-44							-50	-50			
ITBS-P M_2					95					-93		
TAP R				72	-86					76		76

TABLE X

SIGNIFICANT CORRELATIONS ($p < .05$) BETWEEN STUDENT CHANGE MEASURES: COPING SYTLE AND AFFECT

CASES Style	IFMF ACA.	IFMF Frus.	IFMF Fem.	IFMF Ind.	HISM T,S	HISM Int.	HISM Auto	HISM Aca.	JIM
TD Setting n=			(14)		(33)	(33)	(33)		(10)
A					-41	-42			
D									64
E							43		
F			-56						
H									-65
PD Setting n=	(17)	(17)	(17)	(17)	(26)			(26)	(9)
B		53							
C	48								
E								-42	
F									81
G				-63	45				
H			59		-44				
Overall			-57						

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