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ABSTRACT

This study tested various aspects of the social cognitive career theory (SCCT) suggested by Lent, et al. (1994), addressing whether these constructs could be modeled using data from adolescents participating in a minority teacher recruitment program for urban and rural at-risk minority students. The study hypothesized that self-efficacy and outcome expectations would shape interests, which would in turn lead to career intentions. Participants were 243 predominantly African American, Hispanic American, and Native American secondary school students involved in the first year of the recruitment program. Students completed a survey that addressed dimensions specifically relevant to the recruitment program's goals and objectives (teaching self-efficacy beliefs, outcome expectations, interest in teaching as a career, and intentions of becoming a teacher). Results showed mixed support for the SCCT model. There was a strong link between self-efficacy and interests. The hypothesized independent effect of outcome expectation on interests was not observed. Interests directly and strongly affected choices. Outcome expectation demonstrated a direct effect on choices, but the negative relationship was not consistent with the hypothesis predicted by the SCCT. The influence of self-efficacy on teaching goals was only indirect, unlike the SCCT hypothesis predicted. (Contains 27 references.) (SM)

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Testing a Social Cognitive Model of Career Choice Development Within the Context of a Minority Teacher Recruitment Program

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Abstract

This study empirically tests some aspects of a theoretical model suggested by Lent, et al. (1994) in a field-based situation. This paper addresses the question whether these constructs can be modeled by data from adolescent ethnic groups participating in a minority teacher recruitment program. Self-efficacy and outcome expectations are hypothesized to shape interests, which in turn, lead to career intentions. A sample of 243 high school students, made up mostly of African Americans, Hispanics, and American Indians was used in this study. The theoretical model generally fits the data from this sample. The relationships among the constructs, however, are not all in accordance with the model, with the notable missing links between self-efficacy and goals, and outcome expectations and interests.

Testing a Social Cognitive Model of Career Choice Development within the Context of a Minority Teacher Recruitment Program

The social cognitive career theory (SCCT) proposed by Lent, Brown and Hackett (1994, 1996) consolidates social cognitive theory and research to explain how people become active shapers of their own careers through activating cognitive mechanisms that mediate between learning experiences and social action, the selection and performance of career roles. The SCCT incorporates assumptions and constructs from many theoretical sources, most notably Bandura's (1986, 1997) social cognitive theory, Krumboltz, Mitchell, and Jones' (1976) social learning theory of career selection, and Hackett and Betz' (1981) application of Bandura's (1977) self-efficacy construct to gender differences in career interests. Lent, et al. (1994) organize the major theoretical constructs into three overlapping components, or segmental models, from which they derive propositions and predictions that take the form of hypotheses. The interest development model shows the different processes by which academic and career interests are formed. The choice model shows how interests and other mechanisms promote choices or goals, and the performance model shows how choices, in turn, influence individual differences in performances and persistence in educational and career pursuits.

The explication of connections between learning experiences and career choices makes the SCCT a promising model for planning and evaluating intervention programs intended to address inequities in the social and economic distribution of minorities in the occupational structure. Examples of such inequities include the underrepresentation of women and minorities in mathematics and science-related occupations and the underrepresentation of ethnic minorities

across professions such as medical sciences, law, engineering, and teaching. In fact, ethnic minorities are seriously underrepresented in most career development studies (Bandura, 1997). This paper reports the theory-testing portion of a theory-driven evaluation of national, federally funded intervention programs designed to recruit minority adolescents into the teaching profession (Schäffner, 1996).

Our purpose is to test empirically the SCCT components in a field-based, non-experimental treatment situation across nine sites. These components are tested using responses gathered for program evaluation purposes from high school students who are actively participating in learning experiences afforded by a minority teacher recruitment program, that is, a program designed to increase the number of minority students choosing teaching as a career goal. The question addressed in this study is whether the SCCT constructs can be modeled by the data obtained from geographically and ethnically diverse adolescents.

This study focuses on the first two components of the "Model of Person, Contextual, and Experiential Factors Affecting Career-related Choice Behavior" (Lent, Brown & Hackett, 1994, p. 93), as they apply to a Minority Teacher Recruitment Program. These components are (1) the processes by which interests in teaching are formed, and (2) the processes which shape career goals or intentions to enter the teaching profession. These processes are portrayed in *Figure 1* using constructs specific to the program context. Race or ethnicity of the students and the learning experience/environment of the Minority Teacher Recruitment Program are hypothesized to directly influence self-efficacy for teaching, outcome expectations associated with a teaching career, and interests in teaching as a career. Self-efficacy and outcome-expectation beliefs are hypothesized to shape interests in teaching as a career which, in turn, leads to teaching career goals or intentions. *Figure 1* shows unidirectional influences to reflect the "predominant

influence" (Lent, Brown, & Hackett, 1996, p. 383) and it is these directional paths that are tested with data from the different program sites.

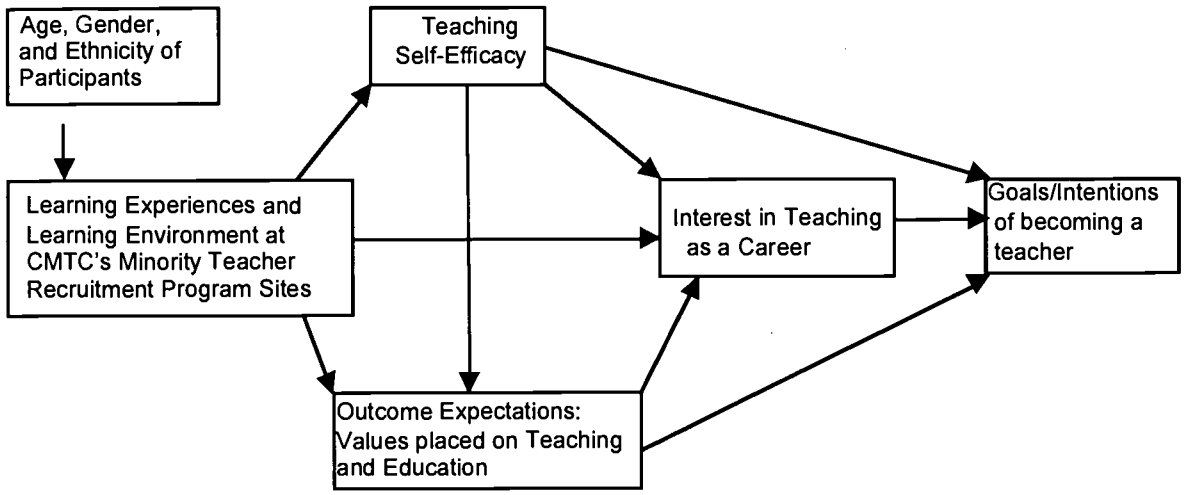

Figure 1: Hypothesized Program Model for the Minority Teacher Recruitment Program

Program Context

The Consortium for Minorities in Teaching Careers (CMTC) is a group of nine colleges and universities implementing federally funded interventions benefiting urban and rural at-risk minority students. The CMTCs Minority Teacher Recruitment Program is unique in that it brings together diverse minority populations in a variety of geographic and institutional settings, including Historically Black Colleges and Universities (HBCUs), Hispanic Serving Institutions (HSIs), and others serving these groups or American Indians. This Minority Teacher Recruitment Program is implemented in two sites in Puerto Rico (one urban, one rural), three in New York City, and one each in Baltimore, New Orleans, Los Angeles, and in River Falls, Wisconsin. All of these sites independently select their participants from high schools within their local area, i.e., from their "feeder schools". The CMTC's main purpose is to identify, prepare, and recruit high potential pre-college minority students throughout the country to enter college, pursue teacher preparation programs, and to select teaching as a career through creating an opportunity structure

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and positive incentives for self-development. While the different sites vary somewhat in their specific program implementation, the shared, short-term CMTC goals include (1) helping participants grow in self-esteem and teaching efficacy, (2) increasing their academic skills and motivations, (3) helping them understand better what it means to be a teacher, and (4) how best to prepare to enter a teacher preparation program. The CMTC program provides students with academic enrichment and teaching skills to enhance their preparation and interest in teaching. The program components employ three mechanisms through which self-efficacy is generally hypothesized (Bandura, 1986, 1997) to be acquired: (1) performance accomplishments, e.g., students' participation in actual teaching activities; (2) vicarious learning, e.g., observing successful teachers and mentors; and (3) verbal persuasion, e.g., learning about effective teaching and receiving supportive feedback. Based on their actual learning experiences in the program, the students get to know what they like and dislike about being a teacher so that it becomes easier for them to make an informed decision about teaching as a career. SCCT offers the most precise theory that explains the cognitive processes whereby learning experiences in the CMTC program are transformed by the students into career and academic choices.

Research

Although formal SCCT propositions and hypotheses were formulated in Lent et al. (1994), several empirical studies have used academic or career variables measuring two or more central constructs. Conclusions from meta-analyses (e.g., Lent et al., 1994; Sadri & Robertson, 1993) were condensed by Lent, et al. (1996) to form generalizations, two of which bear directly on the models tested in this study: "(1) interests are strongly related to one's self-efficacy and outcome expectations; ...(3) self-efficacy and outcome expectations affect career related choices largely (although not completely through their influence on interest; ..." (p.400).

These summary conclusions may require qualifications before applied to active programs like the CMTC's Minority Teacher Recruitment Program. For example, Sadri and Robertson (1993) argue that situational context may influence relationships obtained between self-efficacy and behaviors such as choices and performances, and further, that research-design effects may inflate the observed effects. They identify two design factors: the close matching of the measures of self-efficacy and behaviors, and situational demand characteristics that may influence ratings of outcome expectations. "Real life" settings offer far less clearly defined outcomes than do simulations.

Given this caution, we examined research conducted in settings that contain "real life" consequences. Church, Teresa, Rosebrook and Szendre (1992) described a field-based study in a high school completion program for 86 ethnically diverse adolescents. They found that three SCCT constructs – self-efficacy, interests, and outcome expectations (called "perceived incentives satisfactions") - predict occupational intentions (specifically, "willingness to consider" occupations) when all variables referred to 30 specific occupations. Their findings were similar across three ethnic groups but varied by gender according to whether the occupations were dominated by one gender.

An inner city middle school serving an ethnically diverse population was the setting for a math-science career information program and an especially careful study of SCCT propositions (Fouad & Smith, 1996). Self-efficacy, interest, outcome expectations, and choices were all measured with reference to math-science classes and careers. Their path analysis modeled both the SCCT interest development model and the choice (intentions) model. They also found that age and gender mediated the effect of learning experiences on outcome expectancies and interests, but not self-efficacy.

The SCCT interest development model was tested for mathematics academic and career paths reported by 296 advanced algebra and geometry students from one suburban, middle class high school setting (Lopez, Lent, Brown, & Gore, 1997). A path model demonstrated support for the direct effects of math self-efficacy on math outcome expectations and math interests and the indirect effects of self-efficacy on interest through outcome expectations.

Each study focused on a specific academic or career domain, collected data under "real life" conditions (i.e., the preferences and choices related to on-going programs), and obtained results that supported SCCT propositions. Taken together these findings strengthen the internal validity of the two conclusions cited above and supported our argument that SCCT offers theoretical models appropriate for the CMTC's program setting.

Theoretical Components

Any empirical test of the SCCT requires careful conceptual and operational definitions of the central constructs. Clarity is important for two reasons: SCCT derives constructs from multiple theoretical sources and empirical tests of the theory have employed several different measures of the constructs (Lent, et al., 1994). Four constructs are central to this study: Self-efficacy, Outcome expectation, Interests, and Goals (Intentions).

Self-efficacy, defined as the belief a person has of his or her own ability to perform a given task successfully, determines what a person will do with the skills he or she has (Bandura, 1986, 1997). For this study, with pre-college, pre-service "future teachers", teaching self-efficacy is interpreted as a person's judgement of his or her own teaching competence (Ashton & Webb, 1986). A person is more likely to choose an activity at which he or she feels competent, to expend more effort in it, and to persist at it in the face of obstacles (Bandura, 1997). Self-efficacy is a cognitive process mediating between learning experiences and subsequent choice and

achievement behaviors. If there is sufficient ability to perform a specific behavior, as well as a feeling of competence, it may foster growth of interest in that specific task (Schiefele, 1992; Schunk, 1991; Zimmerman, 1989). This implies that self-efficacy precedes interest. Social cognitive theory (Bandura, 1986, 1997) strongly suggests that self-efficacy be examined within a specific domain, in this study it is teaching, because personal experiences and perceptions are influenced by self-appraisals about one's competence in a specific task.

Self-efficacy is a multidimensional construct that, as Bandura (1997) pointed out, can be measured in three ways: (1) level, or number of tasks a person can do; (2) strength, how resolutely a person believes in an ability to perform each task; and (3) generality, the extent to which the expectancy generalizes from one situation to the next. In this study, self-efficacy was measured as strength of belief as expressed on ratings of statements about teaching tasks. Some self-efficacy items on the evaluation instrument are: "I already know how to make school lessons interesting for students," "Compared to others my age, I have the potential to become a good teacher," and "As a teacher, I am good at controlling a class."

The nature of interests, as their functions are specified in the SCCT, requires a clarification of the construct. The model appears to assume that interests operate as cognitive, motivational and goal oriented aspects in personality rather than as enduring attitudes or personality traits. The model requires a functional view of interests, like that assumed in recent instructional psychology (Hidi, 1990; Krapp, Hidi, & Renninger, 1992) and derived from the early writings of John Dewey (1913). Consistent with SCCT, Dewey strongly believed that interest is an intrinsically adaptive part of the self, moving the individual to action. Interest is relative to specific objects or tasks, has high personal meaning and gives the individual a feeling of pleasure. More recently, educational researchers have reconsidered Dewey's conceptualization

of the term *inter-esse,* "to be between" the person's self, an object, and the outcome of an action (Krapp, et al., 1992). This functional view of interests is incorporated in Bandura's (1986) social cognitive theory.

Learning and development are influenced by two distinct types of interests (Krapp, et al., 1992; Schiefele, 1992): individual interest, a relatively enduring personal preference for a certain topic, subject area, or activity, and situational interest, an emotional state aroused by a specific condition or object in the environment. Schiefele (1992) found that both have a positive influence on achievement and now defines interest as "a domain-specific or topic-specific motivational characteristic of personality, which is composed of feeling-related and value-related valences" (p. 154). As with self-efficacy, the measure of situational interests must be domain- or topic specific. Therefore, situational interests should ideally be measured as expressed interests as opposed to inventoried interests.

Following Schiefele's (1992) definition, "feeling-related valence" was operationalized in this study as the expectation of experiencing certain feelings in doing the task, or job. Examples of situational interest items on our evaluation instrument with regard to teaching are: "Being a teacher would be a lot of fun", "I would like to be a teacher", or "Being a teacher would bore me to death." Applying "value-related valence" students are asked to state what value the task, or job has for them personally. Examples of interest items on our instrument with a value related valence are: "Teaching is a bad career choice for me", or "I would like working with other teachers".

Outcome expectations have assumed several definitions in social cognitive theory and research. Bandura (1997) defines an outcome expectancy as the belief that a given behavior will produce a particular outcome that can take three major forms: physical effects, social effects, and

self-evaluative effects (p. 22), each can be a positive or a negative expectation. Lent, et al. (1996) define the construct as combining "two basic components: (1) the outcomes that one anticipates as following from participation in a given activity and (2) the relative value or importance of these outcomes to the individual." The first component is similar to Vroom's (1964) instrumentality construct and the second component is similar to his valence construct, commonly recognized as values. The construct of work values has also been construed in many ways, we have chosen to emphasize the value component because it has a basic motivating force. Katz (1993) defines values as "judgements about the satisfactions or rewards that may be expected as outcomes or results of a decision" (p. 106). Examples of outcome expectation items on our instrument are: "Teaching is a good way to serve the community" and "Good teachers can really make a difference to children". Some researchers (e.g., Lopez, et al., 1997) emphasize the instrumentality qualities, the expectancy of achieving desirable outcomes, in their operational definitions of outcome expectations.

Career goals (i.e., intentions to act) are distinguished by Lent, et al. (1994) from preferences (e.g., expressed career interests), and career actions (e.g., overt steps taken to enter a work role). In Bandura's social cognitive theory, goal setting plays an important role in self-regulated behavior in that it "provides a continuing source of self-motivation" (Bandura, 1986, p. 232). He defines a goal as a determination to participate in a particular activity or to bring about a desired future outcome. Career goals are also multifaceted and have been shown to vary according whether they are clear or specific, attainable, or proximal (Lent, et al., 1994, p. 95)

In this study, goals are construed as the immediate, short-term outcomes of the Minority Teacher Recruitment programs, that is, the student's intentions of becoming a teacher. They are measured in the evaluation instrument by an open-ended question on the demographic page

asking students to write down what careers they expect to prepare for if they plan to go to college, as well as their responses to the statement: "I plan to major in education in college".

Methods

Participants

During Year One of the program (Yarbrough, 1995) a group of junior high and high school students participated in the CMTC Minority Teacher Recruitment Program at the nine different sites. From this group, only the 243 high school students (9th - 12th grade), of whom 157 were girls, are used in this study. This group was made up of 95 African Americans from five sites (the sites in Baltimore and New Orleans have African American students only, accounting for 79% of the total for this group). Hispanics totaled 97 from five sites (both sites in Puerto Rico have homogeneous Hispanic groups, accounting for 65% of the total for this group), American Indians were 18 at one site only from the Lac Court Oreilles Reservation near Hayward, Wisconsin, and 33 "others", for example, Asian, Caribbean, etc.

Instrument Development

Final program outcomes as specified in the evaluation designs cannot yet be measured because it will take another four to five years to ascertain whether any program participant actually enters the teaching profession. Therefore, only intermediate outcomes can be measured at present.

The evaluation team, in close cooperation with the project directors at the different sites, developed the instrument used in this study. This instrument was pilot tested during the 1992-1993 school year, which was also the pilot year of the program. Construct validity was verified through an exploratory factor analysis and structured interviews with 20 students at a randomly selected site (New Orleans). Subscales were developed according to factor loadings and logical

groupings. These subscales were then correlated with the coded interviews and convergence was obtained. The convergent validity coefficient between the interview and the interest subscale was .98, corrected for attenuation, and the validity coefficient between the interview and the self-efficacy subscale was .81, corrected for attenuation (Schaffner & Yarbrough, 1993).

In follow-up meetings with the project directors, the instrument was improved and an outcome expectation scale was added, which included four items from the Gibson and Dembo (1984) teacher efficacy scale.

The present instrument has 44 statements scale accompanied by a six-point Likert-type scale indicating degrees of agreement or disagreement with the statements. The instrument addresses dimensions specifically relevant to the goals and objectives of the CMTC's Minority Teacher Recruitment Program, as portrayed by the underlying theory in *Figure 1*. These are teaching self-efficacy beliefs, outcome expectations, interest in teaching as a career, and goals (intentions of becoming a teacher). This instrument is administered to all the participants as a traditional pre- and posttest, or as a post-program retrospective test. This study however, is only concerned with the posttest observations, collected at the end of the program during the Summer workshops. Participant demographic questions attached to each instrument yielded categorical variables such as site, gender, ethnic/racial identity, age, and future career goals. This last item was an open-ended question: "If you plan to go to college, for what career(s) do you expect to prepare?" This item was scored with a 1 if the student put teaching as a first choice, 2 if the student put teaching as a second choice, 3 if it was a third choice, and 4 if no teaching career was mentioned.

Internal consistency reliabilities, i.e., Cronbach's alpha were obtained for the subscales for all participants combined (Table 1).

Table 1.

Subscale Items and Cronbach's Alphas for All Participants and Separated by Specific Ethnic Groups

			Separated by Specific Groups		
Subscale	# Items	All Participants N = 243	Hispanic N = 97	African American N = 95	American Indian N = 18
(1) Interest	10	.88	.87	.90	.76
(2) Self-efficacy	15	.92	.94	.88	.81
(3) Outcome Exp.	11	.82	.87	.78	.74
(4) Attitude	6	.68	.63	.67	.85
(5) Goals	2	.61	.59	.73	.64

These reliabilities ranged from .61 to .92 for the total group, and .59 to .94 separated by ethnic groups. Differences tended to reflect the length of the scales, with longer scales showing greater internal consistency.

Pearson's product moment correlations among the subscales, as well as the means and standard deviations are given in Table 2. The correlations ranged from a moderate $r = .61$, $p < .001$ (two-tailed) between interests and goals, to a weak $r = .22$, $p < .001$ (two-tailed) between outcome expectancies and goals. All correlation coefficients were significant beyond a .001 level (two-tailed) using Fisher's transformation. The subscale means and standard deviations are reported in descending order.

Table 2.

Subscale Correlations, Means and Standard Deviations for all sites combined (N = 243).

	Self-efficacy	Interest	Out. Exp.	Goals	Means	Std. Dev.
(1) Self-efficacy	1.00				30.9	12.5
(2) Interest	.60*	1.00			27.3	11.7
(3) Outcome Exp.	.59*	.51*	1.00		19.8	7.2
(4) Goals	.36*	.61*	.22*	1.00	5.7	2.8

Note: * significance $p < .001$

The SCCT program model was tested in two steps. First, a confirmatory factor analysis was performed to confirm the factor structure of the constructs in the model: self-efficacy, interest, and outcome expectation. This was done to establish that the measurement model holds, that is, to verify the independence of the constructs. Second, path models were constructed and tested using LISREL (Jöreskog & Sörbom, 1993a,b) to confirm the hypothesized structure of the model in Figure 1.

With four dependent constructs and a sample size of 243 it was not possible to have all 44 items loading on the four factors, because the number of parameters to be estimated would have been too large. Therefore, we decided to include only three variables per construct by creating random item clusters for each of the subscales. The clusters of the first three constructs were created by selecting every third item from a subscale into a cluster and then obtaining the mean of each cluster. (a) Teaching Self-efficacy clusters SELF1, SELF2, and SELF3 each contain five items. (b) Interest in Teaching as a Career clusters INTR1, INTR2, and INTR3 each contain three items. (c) Outcome Expectations clusters VALU1 and VALU2 each contain three items and VALU3 contains four items. (d) Goals or Intentions of becoming a Teacher contains

only the two items: "I plan to major in education in college" (6-point Likert-type) and "If you plan to go to college, for what career(s) do you expect to prepare?"

The covariance matrix of those clusters was obtained and read into a LISREL (Jöreskog & Sörbom, 1993a) confirmatory factor analysis program to confirm the factor structure and construct validity for our subscales. A measure of overall fit of the model to the data was obtained, which equaled to $X^2 = 38.37$ with 38 degrees of freedom ($p = .453$) indicating a very good fit. Other fit indexes that are not as dependent on the sample size as the chi-square were also examined. The goodness of fit index (GFI) and the adjusted goodness of fit index (AGFI) measures do not depend on sample size explicitly and measure how much better the model fits as compared to no model at all, and should approach 1.00 (Jöreskog & Sörbom, 1993a,b). In this case they were GFI = 0.97 and AGFI = 0.95 respectively, indicating a good model fit. The Root Mean Square Residual (RMR) is an indication of the average discrepancies, between the observed covariance matrix and the hypothesized covariance matrix. This should ideally be equal to, or less than 0.05, as is the case here (RMR = 0.038), which indicates that the constructs are independent. According to these results the items in the model represent each construct fairly well and can be entered into the path model.

Results

Path analysis is a technique "to assess the direct causal contribution of one variable to another in a non-experimental situation" (Jöreskog & Sörbom, 1993b, p. 11). This is done by estimating the coefficients of a set of linear structural equations, which represent the causal relationships hypothesized by the theory. Most theories in the social sciences, such as the SCCT posited by Lent et al. (1994), are formulated in terms of hypothetical constructs. In this case these constructs are (1) teaching self-efficacy, (2) interest in teaching as a career, (3) outcome

expectation (teaching values), and (4) goals (intentions of becoming a teacher). An a priori model is needed to specify how the constructs are related to each other. Theoretical constructs, such as the ones used in this study, are not observable and the theory cannot be tested directly. "All one can do is examine the theoretical validity of the postulated relationships in a given context" (Jöreskog & Sörbom, 1993b, p. 112).

The LISREL path analysis technique first solves the structural equations for the dependent variables in terms of the independent variables. During that step LISREL also estimates the measurement errors associated with the dependent variables, then estimates the regression of the dependent variables on the independent variables. After that has been completed, LISREL solves for the structural parameters in terms of the regression coefficients. Every one-way arrow in the path diagram represents a parameter or structural coefficient.

The research question in this study is whether the constructs and the hypothesized relationships among them in the social cognitive model generalize to the ethnic groups participating in this program and other similar programs. *Figure 2* portrays the initial analysis

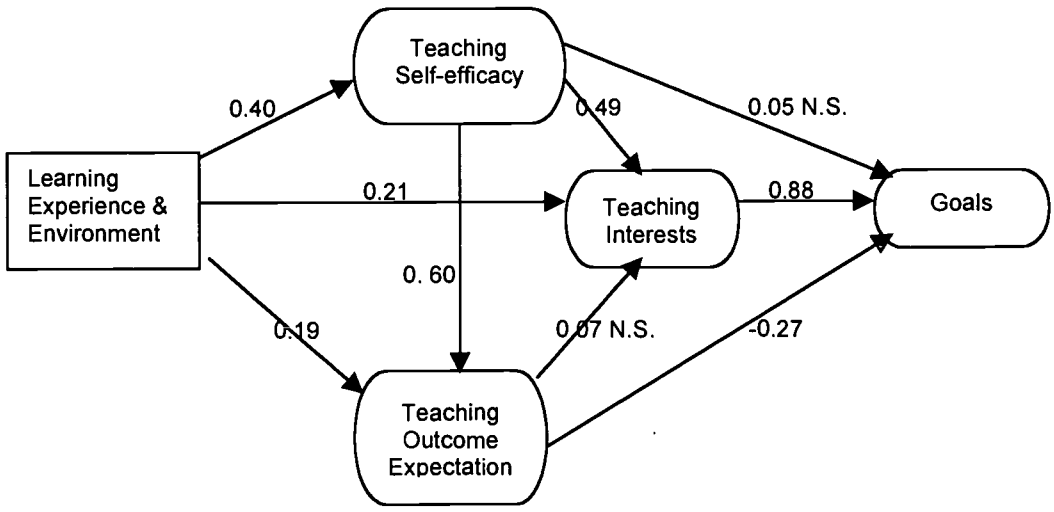

Figure 2: Initial path model showing the completely standardized solution including the learning experience/environment.

testing the hypothesized model based on the underlying program theory in *Figure 1*, which includes all the paths hypothesized in the SCCT (Lent, et al., 1994, p. 93).

The independent variable, learning experience and environment in this model was obtained by entering the arbitrary codes given to each of the nine sites, participating in the CMTC's Minority Teacher Recruitment Program. The fit statistics, that is, the chi-square (X^2) in the full model with 45 degrees of freedom equals 55.55 ($p = 0.13$), which indicates that the fully identified model does not fit the data too well and there is room for improvement. This is also indicated by the RMR, which should ideally be equal to, or less than 0.05, but equals 0.67 here.

As expected, the learning experiences at the various sites contributed mostly to teaching self-efficacy, because the CMTC's Minority Teacher Program sites employ three mechanisms through which self-efficacy is generally hypothesized (Bandura, 1997) to be acquired. They are (1) performance accomplishments, e.g., students' participation in actual teaching activities; (2) vicarious learning, e.g., observing successful teachers and mentors; and (3) verbal persuasion, e.g., learning about effective teaching and receiving supportive feedback. The learning experience also contributed to interests and outcome expectations, though in a lesser degree. Two paths, from self-efficacy to goals and from outcome expectations to interests, were statistically non-significant in this model and were examined further.

Next, the model was tested without the learning experience, because (1) site was confounded with every variable, and (2) age and gender differences were found to be statistically non-significant. Ethnicity however was a significant contributor to the full model and was entered next as the independent variable in *Figure 3*.

In this model, in *Figure 3*, ethnicity contributed significantly to self-efficacy, but not to interests and outcome expectations.

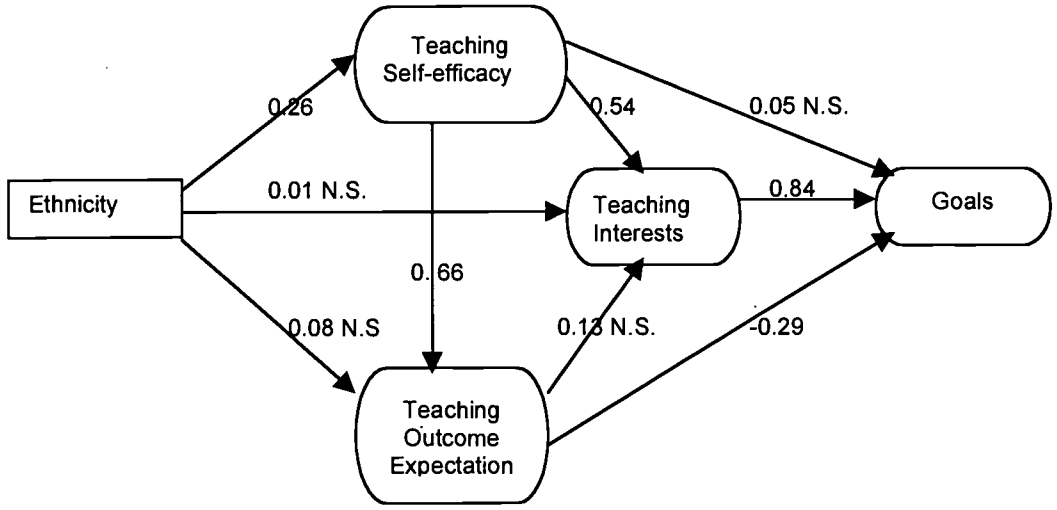

Figure 3: Path model showing the completely standardized solution with ethnicity as the independent variable

The fit statistics show that this model fits the data much better than the initial model, i.e., there is a significant difference between the two chi-squares ($p < .01$). The chi-square with 45 degrees of freedom now equals 44.75 ($p = 0.48$). The RMR has been reduced to 0.031 indicating a very good fit. The same two paths were still non-significant and a third model was fitted.

At this time only the relationships among the four central constructs of the SCCT were examined, without the sociocultural precursors and the learning experience variables. This was done to examine the pure relationship among those constructs without the influence of other variables. This "full" model yielded a chi-square with 38 degrees of freedom equal to 35.68 ($p = 0.58$) (a p-value of 1.00 would indicate perfect fit), so we were getting a much better fit with this model. This was also indicated by the RMR, which by now equals 0.029. This is the best fit yet, but we were still interested in removing the two non-significant paths.

When both non-significant paths were removed, the test statistics in the post hoc reduced model in *Figure 4* showed about the same fit as the previous model. The chi-square with 40 degrees of freedom was 37.79 ($p = .57$). This chi-square difference was not statistically

significant, but we have decided that *Figure 4* is a more parsimonious model for this sample of pre-college minority students.

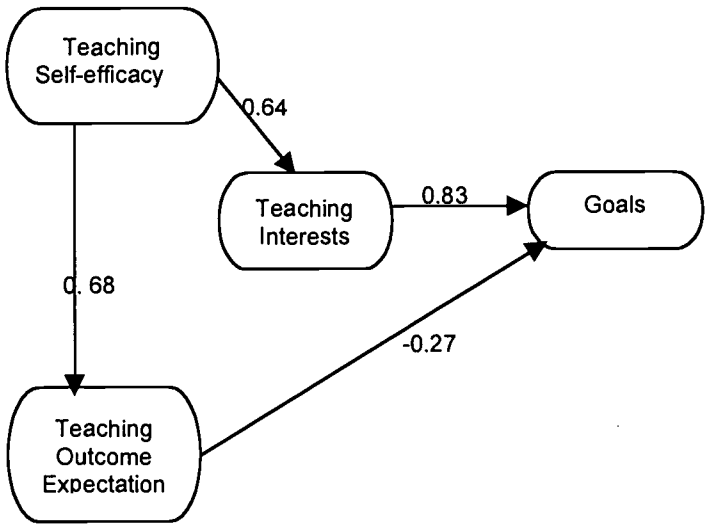

Figure 4: Path model showing the completely standardized solution without ethnicity and without the paths from self-efficacy to goals and outcome expectations to interests

This sample included African Americans, Spanish speaking Puerto Rican Americans and other Hispanics from various geographic regions, and American Indians from the Lac Court Oreilles Reservation near Hayward, Wisconsin who participated in these programs. Cross-validation was done on the two major subgroups Hispanic (N = 97) and African American (N = 95). Caution must be given that these samples are very small. LISREL recommends that the sample size be at least 200 to minimize convergence problems for obtaining stable parameter estimates (Jöreskog & Sörbom, 1993b). Although these numbers are small, there are indications that the model fits adequately in both cases, though not as well as for the whole group. The chi-square with 38 degrees of freedom for the full model in the Hispanic group equaled 48.69 ($p = 0.12$), and for the African American group the chi-square equaled 44.72 ($p = 0.21$). Cross-validation showed that the factor structure and the paths were not invariant across the two groups, but differed for each group.

Conclusions

Our findings support some predictions from SCCT propositions (Lent, et al., 1994) and do not support others. The path analysis both for the full sample and the cross-validation tests demonstrated a strong link between self-efficacy and interests, thus supporting theoretical Hypothesis 1A (Lent, et al., 1994) and replicated findings from several studies. The independent effect of outcome expectations on interests was not observed, failing to support Hypothesis 1B. Competing cognitive theories may explain the findings. For example, Katz (1993) has argued for a conceptual and empirical differentiation between interests and values and our findings tend to support that interpretation because the outcome expectation measure used in this study focused on outcome values rather than expectations. Second, Vroom (1964) hypothesized that interests are a function of both outcome valences, as measured herein, and instrumentalities (sometimes called subjective probabilities) as outcome expectations were measured in other SCCT research (e.g., Lopez, et al, 1997). Perhaps we will need to add measures to capture direct effects of outcome expectations on interests.

The results from this study offered mixed support for the SCCT choice model. Interests directly and strongly effected choices, thus supporting Hypothesis 5A and replicating earlier findings (Lent, et al., 1994). The empirical distinction between the two constructs was established by findings from the factor analysis.

Outcome expectation demonstrated a direct effect on choices but the negative relationship that emerged is not consistent with Hypothesis 4A predicted by SCCT (Lent, et al., 1994). Apparently, positive outcome expectations contribute to less strong intentions to enter teaching. Perhaps the program awakened students to positive outcomes associated with teachings but did not elicit a commitment to enter teaching in particular. The students had high

expectations of status and expecting social rewards for going to college but generally saw teaching as a low status occupation. Comments by selected students interviewed at the end of the pilot year suggested that this may have been the case; while they valued teaching outcomes, they also preferred other professions that they perceived as leading to the same positive outcomes.

The influence of teaching self-efficacy on teaching goals in this study was only indirect (through interests) and not direct as SCCT Hypothesis 3A predicts. Perhaps we did not include enough "contextual influences proximal to choice behaviors" (Lent, et al., 1996). For example, cultural emphasis on collateral values rather than individual values may be salient with these populations; ethnic minority students may interpret their goals as functions of broader "community" needs rather than personal needs.

In summary, the results suggest that the SCCT offers a useful explanation for some cognitive aspects of career choice development among ethnic minority adolescents participating in the CMTC's Minority Teacher Recruitment Program. The theory merits further application to such programs but may require more refined measures and adding contextual variables.

REFERENCES

Ashton, P.T. & Webb, R.B. (1986). *Making a Difference: Teacher's Sense of Efficacy and Student Achievement*. New York, NY: Longman.

Bandura, A. (1977). Self-Efficacy: Toward a Unifying Theory of Behavioral Change. *Psychological Review*, 84, 191-215.

Bandura, A. (1986). *Social Foundations of Thought and Action: A Social Cognitive Theory*. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1997). *Self-Efficacy: The Exercise of Control*. New York, NY: W.H. Freeman & Co.

Church, T.A., Teresa, J.S., Rosebrook, R., & Szendre, D. (1992). Self-efficacy for Careers and Occupational Considerations in Minority High School Equivalency Students. *Journal of Counseling Psychology*, 39 (4), 498-508.

Dewey, J. (1913). *Interest and Effort in Education*. Boston, MA: Houghton Mifflin Co. The Riverside Press.

Fouad, N.A. & Smith, P.L. (1996). A Test of a Social Cognitive Model for Middle School Students: Math and Science. *Journal of Counseling Psychology*, 43, 3, 338-346.

Gibson, S. & Dembo, M.H. (1984). Teacher Efficacy: A Construct Validation. *Journal of Educational Psychology*, 76, 4, 569-582.

Hackett, G. & Betz, N.E. (1981). A self-efficacy approach to the career development of women. *Journal of Vocational Behavior*, 18, 326-336.

Hidi, S. (1990). Interest and its contribution as a mental resource for learning. *Review of Educational Research*, 60, 4, 549-571.

Jöreskog, K.G. & Sörbom, D.G. (1993a). *LISREL 8: A guide to the program and applications.* Chicago, IL: SPSS

Jöreskog, K.G. & Sörbom, D.G. (1993b). *LISREL 8: Structural Equation Modeling with the SIMPLIS Command Language.* Chicago, IL: SSI.

Katz, M.R. (1993). *Computer-Assisted Career Decision Making: The Guide in the Machine.* Hillsdale, NJ: Lawrence Erlbaum Associates.

Krapp, A., Hidi, S., & Renninger, K.A. (1992). Interest, Learning, and Development. In K.A. Renninger, S. Hidi, & A. Krapp (Eds.), *The Role of Interest in Learning and Development*, Chapter 1. Hillsdale, NJ: Lawrence Erlbaum Associates.

Krumboltz, J.D., Mitchell, A.M., & Jones, G.B. (1976). A Social Learning Theory of Career Selection. *Counseling-Psychologist*, 6, 1, 71-81.

Lent, R.W., Brown, S.D., & Hackett, G. (1994). Monograph: Toward a Unifying Social Cognitive Theory of Career and Academic Interest, Choice, and Performance. *Journal of Vocational Behavior*, 45, 79-122.

Lent, R.W., Brown, S.D., & Hackett, G. (1996). Career Development from a Social Cognitive Perspective. In D. Brown, L.L. Brooks, and Associates, *Career Choice and Development, Third Edition.* San Francisco, CA: Jossey-Bass.

Lopez, F.G., Lent, R.W., Brown, S.D., & Gore, P.A. (1997). Role of Social-cognitive Expectations in High School Student's Mathematics Related Interest and Performance. *Journal of Counseling Psychology*, 44, 1, 44-52.

Renninger, K.A., Hidi, S., & Krapp, A. (Eds.) (1992). *The Role of Interest in Learning and Development.* Hillsdale, NJ: Lawrence Erlbaum Associates.

Sadri, G. & Robertson, I.T. (1993). Self-efficacy and Work-related Behavior: A Review and Meta-analysis. *Applied Psychology: An International Review*, 42, 139-152.

Savickas, M.L. & Lent, R.W. (Eds.) (1994). *Convergence in Career Development Theories: Implications for Science and Practice*. Palo Alto, CA: CPP Books.

Schäffner, M. (1996). *The Contribution of a Theory-driven Evaluation Component of a Minority Teacher Recruitment Program.* Unpublished doctoral dissertation. Iowa City, IA: The University of Iowa.

Schäffner, M & Yarbrough, D.B. (1993). The Voice of the Future Teacher: Affective Outcomes of a Consortium for Minorities in Teaching Careers Program. *Paper presented to the American Evaluation Association Annual Meeting* in Dallas, Texas.

Schiefele, U. (1992). Topic Interest and Levels of Text Comprehension. In K.A. Renninger, S. Hidi, & A. Krapp (Eds.), *The Role of Interest in Learning and Development,* Chapter 7. Hillsdale, NJ: Lawrence Erlbaum Associates.

Schunk, D.H. (1991). Self-Efficacy and Academic Motivation. *Educational Psychologist*, 26 (3 & 4), 207-231.

Yarbrough, D. B. (March 1995). *Summative Evaluation Report for Year One for the Consortium for Minorities in Teaching Careers*. Center for Evaluation and Assessment, University of Iowa, Iowa City, IA.

Zimmerman, B.J. (1989). A Social Cognitive View of Self-regulated Academic Learning. *Journal of Educational Psychology,* 81 (3), 329-339.

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