FACTORS INFLUENCING ACADEMIC ACHIEVEMENT AMONG NATIVE AMERICAN COLLEGE STUDENTS

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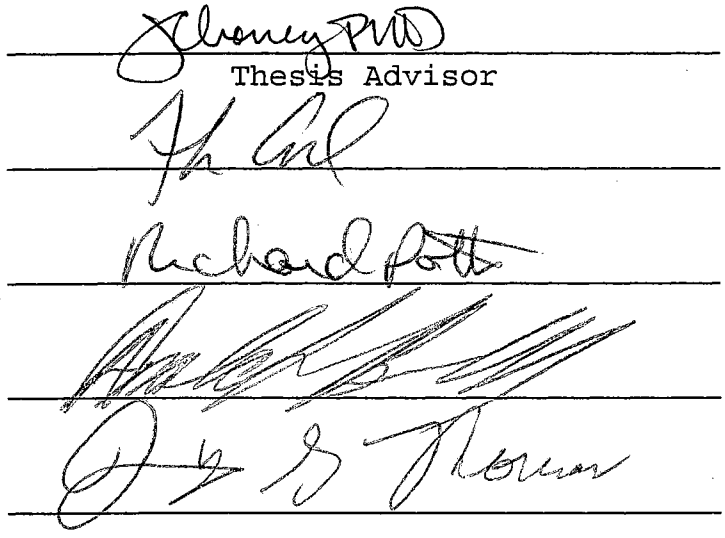

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INTRODUCTION

As a whole, the Native American population has faired poorly within academic settings. Native American college students have lower grades and higher dropout rates than Anglo American college students (Sander, 1987; Young, 1994). One-third of the Native American population is illiterate (Price, 1981; U.S. Senate Select Committee on Indian Affairs, 1985). Consequently, under-education leads to unemployment or under-employment for many Native Americans (Astin, 1982). The interaction of unemployment or under-employment, and under-education results in a self-perpetuating system of poverty among Native Americans (Astin, 1982).

Past interventions to facilitate academic achievement in Native American college students have traditionally been in the form of retention programs. The efficacy of these interventions has been explored, but most of these investigations tend to be post hoc descriptions of programs that are atheoretical in nature (Kulik, Kulik, & Shwalb, 1988). Thus, these programs are typically based more on societal beliefs about what should be done, rather than on empirically derived data that identifies specific needs of

this population. Despite the paucity of well-controlled studies, the literature on academic achievement does provide some insight into the factors that influence academic success in Native American college students.

Traditionally, variables identified in the literature as influencing academic achievement in higher education fall into four broad classes. First, measures of academic performance and skills including, standardized test scores [e.g., American College Test (ACT), Scholastic Aptitude Test (SAT)] and high school grade point averages (GPAs) have been utilized to predict academic success in higher education (Chase, 1970; Little, 1959). More recently, students' attitudes and perceptions, such as attributional style (Peterson & Barrett, 1987) and personal expectations (Tracey & Sedlacek, 1987) have been utilized to investigate academic success. Several authors (e.g., Rothblum, Solomon, & Mirakami, 1986; Rotter, 1988) have hypothesized that overt behaviors including attendance, procrastination, note taking, and study habits also influence academic achievement in college students. Lastly, the influence of other, extraneous variables [e.g., socioeconomic status (SES), illness, mental health] on academic success has also been

investigated (Astin, 1982; Peterson & Barrett, 1987).

Although these categories provide a framework for various factors that influence academic achievement, significant deficiencies in this line of research remain. For example, no overriding theoretical model exists that unites these factors or provides a theoretical foundation to guide research (Tinto, 1975). However, recent investigations (Fore, Chaney, & Cooper, 1992; Fore, Chaney, Simms, Gwartney, & Landrum, 1993) have indicated that attributional style may mediate the association between other, socio-cultural and academic, variables (e.g., SES, deprivation, ACT scores) and academic performance. Thus, the attributional reformulation of learned helplessness theory (Abramson, Seligman, & Teasdale, 1978) may be allow the integration of the divergent on academic achievement.

Additionally, because there have been few applications of theoretical models in previous studies, research examining academic success has been fragmented and emphasizes the importance of certain variables differentially, depending on the population being investigated. For example, whereas class and cultural factors, such as SES and cultural identification (Astin,

1982; Oetting & Beauvais, 1991) are typically employed when investigating minority populations, research with Anglo populations typically focuses on the students' attitudes and on behavioral aspects of academic performance (e.g., Peterson & Barrett, 1987; Rotter, 1988). Employing these variables differentially has caused a dearth of literature concerning motivational and behavioral aspects of ethnic minorities' academic performance. The lack of empirical studies on academic achievement in the Native American population is particularly evident, despite the consistent finding that Native American college students perform significantly lower than Whites and all other minority students (Sanders, 1987; Young, 1994).

The following manuscript reviews the implications of academic difficulties for the Native American population. Then a review of programs designed to facilitate Native American academic success will be presented. Next, a theory will be suggested that integrates the apparently disparate aspects of the literature concerning academic achievement in Native American students. Variables hypothesized to influence academic performance in Native American college students will be reviewed. Lastly, a theoretically driven

empirical study employing these variables will be reported.

Population Characteristics

The Native American population is the youngest and one of the fastest growing populations in the United States, with a birth rate twice as high as the general population (Yates, 1987). Citing the 1980 Census, the most current data for the Native American population, Axelson (1993), Young (1994) and Ponterotto and Casas (1991) reported that the median age for Native Americans is 23.0 years compared with 31.3 years for Anglo Americans, 24.9 years for African-Americans, and 23.2 for Hispanics-Americans. Young (1994) also reported that from 1955 to 1985 the birth rate among Native Americans has remained at a constant 2:1 ratio when compared with the rest of the United States population. During roughly the same period, (i.e., 1950 to 1980) the Native American population increased by 282% (Moncher, Holden, & Trimble, 1990). Overall, the population statistics indicate that the Native American population is a young and rapidly growing minority group.

Besides being a youthful and rapidly increasing population within the United States, Native Americans are also one of the most socioeconomically disadvantaged

population in this country (Yates, 1987; Young, 1994). Yates (1987) reported that the mean income for Native American families was about $2,000 a year. Additionally, he reported that the overall unemployment rate among Native Americans was 40%, but may reach as high as 90% on some reservations. Axelson (1993) states that although Native Americans "have begun to recognize the economic and political potential" (p. 57) of their reservations, their current situation has only marginally improved. For example, Young (1994) reported that the mean family income and per capita income for Native Americans was $16,500 and $3,600, respectively. Comparatively, all other races combined had a mean family income of $23,100 and a per capita income of $7,300. Young (1994) also reported that the annual income for 28.2% of Native Americans was below the poverty line. For comparison, Ponterotto and Casas (1991) reported that 11.0% of Anglo Americans, 31.1% of African-Americans, and 28.4% of Mexican-Americans had incomes below the poverty line.

Besides being impoverished, Native Americans tend to be less educated than Anglo Americans and evidence disproportionately higher attrition rates and lower GPAs

when compared with all other student populations (U.S. Senate Select Committee on Indian Affairs, 1985). For example, Sanders (1987) reported that "American Indians continue to have the highest dropout rate of any ethnic minority group at the high school level" (p. 81). Additionally, Kerbo (1981) and Astin (1982) independently reported that Native Americans entering college are twice as likely to drop out than Anglo American students. Young (1994) reported that 7.4% of Native Americans have graduated from college. Ponterotto and Casas (1991) reported that 20.5% of Anglo-Americans, 10.7% of African-Americans, and 5.8% of Mexican-Americans have completed a 4 year degree. At the professional level, Native Americans do not fare any better. For example, 3,098 doctoral degrees in psychology were conferred in 1980, only nine of which went to Native Americans (Russo, Olmedo, Stapp, & Fulcher, 1981). Perhaps the most compelling evidence of the academic difficulties faced by Native Americans, is that a full one-third of the Native American adult population is illiterate (Price, 1981).

Astin (1982) pointed out that the levels of education and employment an individual obtains are interrelated. Not

only is it difficult to improve socioeconomic status without the education to acquire higher paying jobs, the high rate of unemployment severely limits the financial resources available to Native American students and their parents for higher education (LaCounte, 1987). Astin (1982) found that parental income was predictive of college students' academic achievement, persistence, and satisfaction. He also reported that, although the effects of poverty on academic success may be lessened by financial aid, these effects cannot be overcome by financial assistance alone. Similarly, the United States government reported that increased spending on education has not lead to better academic performance among students ("Low Spenders," 1994). These findings suggest that poverty has effects far beyond its monetary limitations. As Sinha (1990) states, the effects of poverty extend to the physical, social, and psychological aspects of life.

The cumulative effect of the lack of education and unemployment seen among Native American adults is a downwardly spiraling cycle in which Native American children are at extreme risk for being under-educated and unemployed. Although the implications of this cycle within the Native

American population are cause for immediate concern, the long-term outlook is even more bleak. In light of the constant and rapid rate of growth within the Native American population, problems associated with education and unemployment will be magnified in the future. To break this cycle, the United States educational system must develop more effective means of educating Native Americans. If these means are not established, new generations of Native American people will sink further and further into unemployment and poverty.

REVIEW OF THE LITERATURE

Retention Programs

In a meta-analytic review of more than 500 studies examining the efficacy of retention programs for high-risk (i.e., lacking academic backgrounds and skills) college students, Kulik et al. (1983) found only 60 published studies to be of acceptable methodological quality for inclusion in their analysis. The authors classified the included studies into four categories, each representing a different approach to academic retention: (a) instruction in academic skills (e.g., Outlaw, 1977), (b) guidance sessions (e.g., Stewart, 1978), (c) comprehensive support services

(e.g., Pedrini & Pedrini, 1977), and (d) remedial or developmental studies (e.g., Baranchik & Ladas, 1976).

Overall, Kulik et al. (1983) reported that retention programs appear to have a positive effect on GPA and retention. However, the size of this effect is relatively small (effect size (ES = .27). Furthermore, they found that the effect size for individual studies varied widely (ES = -.21 to ES = 1.00). The authors attributed the disparity in effectiveness to factors within the individual programs, such as the age of the program, when students' GPAs were assessed, and the type of retention program. Greater increases in GPAs were found in newer programs, when GPA was assessed in the first year of college, and in retention programs offering academic skills instruction, guidance sessions, or comprehensive support services (Kulik et al., 1983). These authors highlighted the need for more systematic study of interventions and the factors influencing academic success, and the subsequent development of more standardized retention programs.

Consistent with the work of Kulik et al. (1983), Levin and Levin (1993) found serious methodological inadequacies both in retention programs offered for minority students and

in the research conducted within these programs. The authors contend that much of the research in this area is characterized by extreme inadequacies in fundamental research rigor. Deficiencies cited by the authors included a lack of appropriate comparison groups, flawed subject selection, researcher bias, and inappropriate statistical analyses. The authors contend that past research in this area has simply described the retention programs, rather than evaluating their effectiveness. Levin and Levin (1993) suggest that future studies should return to fundamental research principles including, improved research designs, random assignment of subjects, and appropriate controls that provide adequate tests of the retention programs' efficacy.

Although these criticisms are largely methodological, they support Tinto's (1975) earlier criticism that strong theoretical underpinnings are absent in this area. A broad-based theory that could encompass and integrate the separate areas in the literature would allow both research and retention programs to become more standardized, yielding more methodologically sound and rigorous research.

It is apparent a theory that could integrate the concepts and the research within the academic achievement

literature would be a significant advance. It is suggested that the attributional reformulation of the learned helplessness model (Abramson et al., 1978) is such a theory. The efficacy of attributional theory in predicting academic success in Native Americans has recently been supported by the research of Fore et al. (1992, 1993). These authors found that attributional style may mediate the relationship between other factors (e.g., SES, depression) and Native Americans' academic achievement, suggesting that attributions influence a wide range of life experiences. Thus, attributional theory may provide the conceptual framework to unite several factors that influence Native Americans' academic success.

Attribution Theory

The reformulated model of learned helplessness states that individuals make causal attributions about both positive and negative life events along three dimensions, internality, globality, and stability. Internality is the extent to which the cause is something about the person. Globality is likelihood that the cause will affect other events. Lastly, stability represents the persistence of the cause across time.

Traditionally, attributional theory has been employed in the investigation of depression, where it has an extensive empirical base (Peterson, Villanova, & Raps, 1985; Seligman & Peterson, 1984; Sweeney, Anderson, & Bailey, 1986). Empirical investigations have established that internal, stable, and global attributions for negative events lead to motivational deficits, poor decision making, depressed affect, motor deficits, and cognitive deficits. Additionally, an individual's attributional style will influence how future events are interpreted (Metalsky, Abramson, Seligman, Semmel, & Peterson, 1982; Peterson & Seligman, 1984). For example, Peterson and Seligman (1984) report that "the depressive explanatory style tends to produce depression when bad events are encountered" (p.364). Thus, it is not surprising that an individual's attributions can influence many aspects of life including, mood (e.g., Peterson & Seligman, 1984), job failure (Seligman & Schulman, 1986), and academic performance (Peterson & Barrett, 1987).

Factors Influencing Native American Academic Achievement

Attributional Style. Several authors have found that individuals' causal attributions influence academic

performance (Metalsky et al., 1982; Peterson & Barrett, 1987; Peterson, Colvin, & Lin, 1992; Wilson & Linville, 1982, 1985). For instance, Wilson and Linville (1982, 1985) found that attributional interventions can positively influence college students' academic performance. The authors reported that changing aspects (i.e., stability) of college freshmen's attributions for poor grades had both short-term (i.e., Graduate Record Exam scores one week after the intervention) and long-term (i.e., GPA in subsequent semesters) positive effects.

Similarly, Metalsky et al. (1982) reported that college students who made internal and global attributions for negative events were more vulnerable to a depressive mood following a low test score. Alternatively, students who made external and specific attributions were not vulnerable to a depressive mood after a low test score. Peterson and Barrett (1987) reported that college freshmen who explained negative academic events (e.g., failing an exam) with internal, stable, and global causal explanations achieved lower grades than students employing external, unstable, and specific causal explanations for negative events. These findings were consistent even when academic ability (i.e.,

SAT scores), gender differences, and level of depression (i.e., Beck Depression Inventory scores) were held constant (Peterson & Barrett, 1987). More recently, Peterson et al. (1992) found that students employing stable and global attributions for aversive events were less likely than more optimistic students to improve their academic performance. Therefore, students employing a pessimistic attributional style were more likely to react in a passive and helpless way when faced with an aversive event.

The work of cited above (i.e., Metalsky, 1982; Peterson & Barrett, 1987; Peterson et al., 1992; Wilson & Linville, 1982, 1985) support the hypothesis that the reformulated model of learned helplessness (Abramson et al., 1978) has utility within an academic setting. However, the utility of employing attributional style, directly or indirectly to academic achievement, has yet to be examined in minority students.

Perceived deprivation. Nolen-Hoeksema (1992) recently suggested that socioeconomic deprivation associated with poverty may constitute an aversive uncontrollable stressor, and that this uncontrollable negative stressor could lead to the cognitive, affective, and behavioral symptoms associated

with learned helplessness (i.e., Abramson et al., 1978). Nolen-Hoeksema's (1992) research suggests that minority students are at risk to exhibit a pessimistic attributional style and, subsequent, the symptoms associated with learned helplessness (e.g., passivity, cognitive deficits), due to chronic exposure to high levels of poverty and low SES.

Although the work of Nolen-Hoeksema (1992) addressed the economic aspects of deprivation, Astin (1982) and Sinha (1990) suggest that poverty has implications that reach far beyond the economic impact. For example, poverty has a detrimental effect on IQ (Sinha, 1990), learning (Agarwal, 1988), concept formation (Dasen & Colomb, 1982), problem solving (Misra & Tripathi, 1980), and linguistic skills (Bernstein, 1973). Furthermore, Sinha (1990) reported that poverty effects school attendance, GPA, and dropout rates. Similarly, Sinha (1980) reported that the more severe the deprivation, the greater the academic deficits. Given these findings, deprivation clearly has a significant impact on academic achievement.

Similarly, Misra and Tripathi (1977) suggest that deprivation is a broad concept, encompassing economic, physical, social, and psychological aspects of life. To

more accurately test the effects of deprivation, they developed the Prolonged Deprivation Scale, a 96-item Likert-type questionnaire, which assesses 15 areas of deprivation including, food, religious experiences, educational experience, interaction with parents, etc. A factor analysis revealed that the 15 areas on the Prolonged Deprivation Scale represent three independent factors that reflect economic, cultural or recreational, and emotional deprivation (Mukerjee, Chatterji, & Gupta, 1991).

It is apparent that the research on prolonged deprivation is not based solely on the concept of economic deprivation. Instead, the concept of prolonged deprivation is based on the hypothesis that organismic deprivation (e.g., nutrition, clothing, sleep, etc.) and environmental deprivation (e.g., housing, education, employment, etc.) impact individuals, and that this impact has a temporal component (i.e., the longer the deprivation the greater the impact). Furthermore, the authors state that environmental and emotional deprivation exerts an influence on an individual's psychological well-being and academic performance. For example, Mukerjee et al. (1991) reported that prolonged deprivation accounted for almost as much of

the variance in academic achievement (i.e., final grades) as that of intellectual ability (i.e., Raven's Progressive Matrices score).

Cultural identification. Cultural identification is the degree to which an individual identifies with his or her traditional minority culture (Oetting & Beauvais, 1991). The efficacy of this concept within the academic achievement literature has been investigated in the Native American population. The idea that culture influences Native American students' academic performance is widely supported in the literature (Oetting & Beauvais, 1991; Kerbo, 1981; LaCounte, 1987; Sanders, 1987; Axelson, 1993). Kerbo (1981) reported that racial identity (i.e., cultural identification) was the best predictor of college GPA for Native American students, when compared to high school GPA and ACT scores. One probable explanation for this influence is presented by Sanders (1987). She states that Native American college students experience conflict between Native American expectations/values and Anglo American norms. Similarly, Wilson (1991) has noted that Native American high school students are expected to be bi-cultural. That is, they are expected to function and be equally competent in

two cultures (i.e., Native American and Anglo). Sanders (1987) hypothesizes that this conflict contributes to the development of a negative self-image, that results in poor academic performance.

Oetting and Beauvais (1991) have developed a measure to assess cultural identity based on their orthogonal model of cultural identification. The model posits that identification with a given culture is independent of identification with another culture. Thus, cultural identification, as defined by this model, allows individuals to identify with several different cultures simultaneously. For example, an individual may be highly identified with the African-American and Native American cultures, while also sightly identified with the Anglo American and Mexican-American cultures.

Employing their measure with Native American students, Oetting and Beauvais (1991) reported that students who endorsed a bicultural identity (i.e., Native American & Anglo American) had higher self-esteem, stronger familial ties, and better school adjustment. Conversely, those students with low identification with both the Native American and Anglo American cultures exhibited lower self-

esteem, family difficulties, and poorer school adjustment. These results suggest that identification with any culture may be more important than the particular culture with which an individual is identified (Oetting & Beauvais, 1991). Although empirical investigations in this area are limited, it does appear that cultural identification exerts an influence on academic achievement in Native American students. However, the precise mechanisms (e.g., motivational, emotional, or psychological) by which cultural identification exerts this influence await further empirical investigation.

Noncognitive factors. It has been suggested that traditional measures of academic success (e.g., high school GPA, standardized test scores, etc.) are not sufficient to predict college performance and retention for Native American students (e.g., Lunneborg & Lunneborg, 1986). Consequently, a new group of academically oriented variables have been investigated. Termed noncognitive factors, these variables have been found to influence academic performance in both African-American and Anglo American populations (Tracy & Sedlacek, 1984; Tracey & Sedlacek, 1985; Boyer & Sedlacek, 1988; Tracey & Sedlacek, 1987; White & Sedlacek,

1986).

Tracey and Sedlacek (1984) developed an instrument, the Noncognitive Questionnaire (NCQ), to assess eight noncognitive areas hypothesized to influence academic achievement. The authors reported that for both Anglo American and African-American college students the NCQ added significant, unique variance when predicting students' GPAs that was beyond the influence of standardized test scores. Additionally, they reported noncognitive factors to be highly predictive of retention within the sample of African-American college students. In later work, Tracey and Sedlacek (1987) found the NCQ to be significantly related to graduation five and six years later, whereas traditional measures (e.g., SAT scores) were not. Additionally, they reported that these noncognitive factors are more predictive of retention in both African-American and Anglo American college students than traditional academic measures (e.g., SAT scores). Thus, it appears that these noncognitive factors may tap abilities needed for academic success that are less culturally biased than traditional measures of academic performance, thereby lending them for use with Native American college students.

Summary

It is apparent from the preceding review that poverty can have extensive physical, psychological, cognitive, and motivational effects (Sinha, 1990). Several authors have pointed out that impoverished children are at increased risk for experiencing a variety of cognitive impairments, such as deficits in learning, memory, problem solving skills, concept formation, and conservation skills (Agarwal et al., 1988; Sinha, 1990). Not surprisingly, poverty has also been linked to academic performance difficulties. In fact deprivation associated with poverty is almost as predictive of academic achievement as innate intellectual ability (Mukerjee et al., 1991). It follows that these cognitive deficiencies resulting from poverty and deprivation are also likely to adversely effect the development of noncognitive skills (e.g., leadership skills) associated with academic success. Because poverty is so wide spread poverty in the Native American population (Young, 1994), it follows that this group is at risk to develop academic difficulties.

Although cultural identification has been found to influence academic performance in Native American students, the personal determinates of this process are not yet known

(Kerbo, 1981; Oetting & Beauvais, 1991). It may be that strong identification with the Native American culture simply leads to conflicts with beliefs, values, and expectations of the Anglo culture. Alternatively, the influence of cultural identification on academic achievement may reflect the identification with perceptions of deprivation and, the cognitive and motivational deficits that accompany these perceptions. Indeed, it has been reported that impoverished individuals tend to make more internal attributions for negative events and external attributions for positive events, suggesting a passive, helpless approach to life (Sinha, 1990). This suggests that Native Americans may be at risk for the development this pessimistic attributional style and the deficits associated with it (Metalsky et al., 1982; Peterson & Seligman, 1984). Similar arguments have been put forth regarding the motivational and social problems encountered by Asian American and African American individuals in this country (e.g., Powell, 1990; Sue, 1977).

Although we know that poverty and cultural identification may influence academic success, these findings provide little behavioral or motivational

information regarding the personal determinants of academic achievement. Attributional theory may provide some insights into the operation of these class and cultural variables at an individual level. Thus, an individual's attributional style may act as a filter through which the effects of perceived deprivation, minority identification, and noncognitive factors will be eventually manifested. However, another view suggests noncognitive factors may have the most direct influence on academic achievement in Native American students (Fore et al., 1992, 1993), and the effects of perceived deprivation, minority identification, and attributional style may be mediated by these more proximal academic determinants. The present study investigates both possibilities in an attempt to better understand the mechanisms by which class and cultural variables influence academic achievement in Native American college students.

THE PRESENT STUDY

Based on the preceding review of the literature, it is apparent that many factors influence academic achievement. Clearly, past empirical attempts to predict academic success have been narrowly focused and atheoretical. These studies have yielded a broad but shallow field of research, in which

it is difficult to make comparisons and/or generalizations of findings across studies. The present prospective study is designed to investigate the utility of attributional style as a construct that may provide a theory to unify previous works in this field. Specifically, the present study examines psychological and socio-cultural variables related to academic achievement and the potential mediating effects of attributional style in these relationships. The possibility that noncognitive factors mediate the influence of psychological and socio-cultural variables on academic achievement is also explored. Specific research questions are:

Research Question 1a

Will attributional style mediate the effects of noncognitive factors, cultural identification, and perceived deprivation on Native American and Anglo American college students' GPAs over the course of one year?

Research Question 1b

Similarly, does attributional style mediate the effects of noncognitive factors, cultural identification, and perceived deprivation on Native American and Anglo American college students' retention over the course of one year?

Research Question 2a

Do noncognitive factors mediate the effects of attributional style, perceived deprivation, and cultural identification on Native American and Anglo American college students' GPA's over the course of one year?

Research Question 2b

Will noncognitive factors mediate the influence of attributional style, perceived deprivation, and cultural identification on Native American and Anglo American college students' retention over the course of one year?

METHODS

Participants and Procedures

In the present study, two groups of subjects were examined. The first group consisted of self-identified Native American undergraduate students. During the same time period, a comparison sample of Anglo American undergraduates was obtained.

Native American Recruitment. Subjects were recruited during the Fall 1994 semester at Oklahoma State University (OSU). Solicitation of Native American subjects was conducted through three avenues: 1) by mail, 2) classroom solicitation, and 3) solicitation through campus

organizations. For the mailing, potential subjects' addresses were obtained from the campus computer system. A brief letter, explaining the purpose of the study, and a background information sheet were sent to each potential subject. The background information sheet addressed basic demographic information and the subjects' willingness to participate further in the study. Subjects completed the background sheet and returned it in a prepaid envelope. Those consenting to further participation were mailed a packet of paper-and-pencil measures. Once completed, this packet was also returned via a prepaid envelope. The initial packet was sent to approximately 900 students. One hundred, eight-five of these packets were returned, yielding a response rate of approximately 21%. Of the 185 packets returned, 167 or 90% of the subjects agreed to participate further and were mailed the packet of questionnaires. Sixty-eight of these packets were returned for a 41% return rate.

Subjects were also recruited from Introductory Psychology courses. These subjects were presented a scripted, oral explanation of the study. If they chose to participate, subjects then completed the questionnaires in a

group format. These subjects received extra credit points in their Introduction to Psychology class for their participation.

Lastly, Native American subjects were recruited from the Native American Student Association (NASA) and American Indians Science and Engineering Society (AISES) on the OSU campus. The same scripted, oral briefing, previously used in classroom recruitment, was utilized. If subjects chose to participate, they then completed the questionnaires in the same groups as those recruited from the classroom.

Native American subjects came from many (i.e., 14) different tribes. However, the most common tribal affiliation was Cherokee (35.6%). This is not surprising, given that the Cherokee Nation is centered in Oklahoma. The second most numerous subjects were members of the Choctaw tribe (13.6%). Although many tribes were represented, the majority of the represented tribes only had one or two participants.

Non-Native Recruitment. Non-Native American subjects were recruited exclusively from Introductory Psychology courses. Subjects were given a scripted, oral explanation of the study. If they chose to participate, subjects then

completed the questionnaires in group testing sessions with the Native American subjects recruited from Introductory Psychology courses. Subjects received extra credit points in their Introduction to Psychology class for their participation. All questionnaires given in the group format were checked for completeness before the subject departed. Thus, the return rate was 100%.

Electronic Information. With the participant's consent, transcripts and other information were obtained via the OSU computer system. First, demographic and other variables that influence academic performance were gathered (e.g., ACT scores, parental income, high school GPA, etc.). Next, students' GPA and enrollment status across the three semesters (i.e., Fall 1994, Spring 1995, and Fall 1995) were also examined. College GPA and retention were employed as outcome or dependent variables for this study.

Although many subjects were recruited, incomplete questionnaire data and, more troublesome, incomplete data within the campus computer system significantly limited the final number of subjects. Important demographic information that was not available on every subject through the computer system included: parental income, high school GPA, ACT

score, and age. Complete questionnaire and computer data was obtained on a total of 76 Anglo American subjects and 59 Native American subjects. Thus, a total of 135 subjects were utilized in the analyses involving the retention dependent variable. Due to graduations and drop outs (8 Anglo Americans and 9 Native Americans), the final sample for the analyses of GPA was comprised of 65 Anglo American subjects and 47 Native American subjects. Subjects in this sample were 31 male and 81 female undergraduate students enrolled at Oklahoma State University during the Fall 1994 semester. In the Anglo American group, 27.6% of the subjects were male and 72.4% were female. Within the Native American group 20.3% were male and 79.7% were female. The subjects in the Native American group were also slightly further along in their education than Anglo American subjects.

Instruments

Background Information Sheet. The Background Information Sheet is a 10-item questionnaire designed to gather general demographic information, including tribal affiliation, subjects' parents level of education, marital status of subjects' parents. Additionally, three questions tap students' expectations of academic performance in

college. The final item asks students to consent to participate further in the study.

Academic Attributional Style Questionnaire (AASQ). The AASQ (Peterson & Barrett, 1987) is a 48-item, self-report instrument containing 12 hypothetical negative academic events. First, imagining themselves in the negative situation, an individual writes down a probable cause for the negative academic event. Second, for each event, the causal attributions are rated on a seven-point Likert-type scale across three dimensions (i.e., internality, globality, and stability). By summing the scores along the three dimensions and by summing the three dimension scores themselves the AASQ yields four scores (i.e., internal-negative, stable-negative, global-negative, and composite-negative). Peterson and Barrett (1987) reported the reliability to be .84 using Cronbach's (1951) coefficient alpha. In the present study, Cronbach's (1951) coefficient alphas of .81 were obtained for both groups.

Perceived Deprivation Scale (PDS). The PDS is a 12-item, six-point Likert-style scale that assesses the degree to which individuals' beliefs about deprivation in certain areas of living (e.g., money, clothing, family support, peer

support, religious support, etc.). This measure was adapted from the Prolonged Deprivation Scale (Misra & Tripathi, 1977) and contains items based on the same general categories of deprivation (i.e., emotional, cultural, and economic). By summing the items on the PDS, a total deprivation score is obtained.

The psychometric properties of the Prolonged Deprivation Scale, from which the PDS was adapted, have been researched extensively. Misra and Tripathi (1977) reported a split-half reliability of .91 and internal consistency to be .92. In the present study, Cronbach's (1951) coefficient alphas were .77 and .76 for the Native American and the Anglo American groups, respectively. To establish construct validity, the scores from the subscales of the Prolonged Deprivation Scale were correlated with the total score; the resulting correlations were all significant at the .01 level. The predictive validity of Prolonged Deprivation Scale has also been supported. For example, it has been found that greater deprivation is related to impaired performance on cognitive tasks (Misra & Tripathi, 1977; Tripathi & Misra, 1975).

Cultural Identification (CID). The CID is a four-item

scale taken from Oetting and Beauvais' (1991) original cultural identification scale of 21 items. This instrument assesses an individual's degree cultural identification. That is, the extent an individual subscribes to their traditional cultural beliefs and values. Individuals rate how true the item is for them or their family. A rating along each of the five cultural classifications assessed by the instrument is obtained on a four-point Likert-type scale. For example, on the item "Do you live in the ... way of life?" The subject rates how true this statement is for him or her for each of the five cultures (e.g., Native American, Mexican-American, Anglo American). However, because two specific populations are being investigated, only the Anglo American identification and the Native American identification scores will be used.

Oetting and Beauvais (1991) reported the internal consistency of the four-item scale to be .89 and .87 for Native American and Anglo American identification, respectively. They also reported acceptable concurrent validity on the four-item scale, which correlated adequately ($r = .39$ to $r = .74$) with other statements reflecting enculturation in the Native American culture. Furthermore,

discriminant validity was supported by low correlations (r = .18 to r = .26) between Anglo American identification and statements related to the Native American culture.

Noncognitive Questionnaire (NCQ). The NCQ (Tracey & Sedlacek, 1984) taps nontraditional factors that contribute to academic success in college. The NCQ is a 27-item questionnaire consisting of two items on academic expectations, eighteen Likert-type items concerning expectations about the educational setting and self-assessment, and three open-ended questions concerning goals, past accomplishments, and group memberships. The NCQ yields eight factor scores: positive self-concept, realistic self-appraisal, understanding and dealing with racism, preference for long-term vs. short-term goals, availability of a strong support person, successful leadership experience, demonstrated community service, and knowledge acquired in a field.

The authors (Tracey & Sedlacek, 1984) report adequate test-retest validity over a two week period with correlations ranged from .70 to .94 with a median of .85.

Inventory to Diagnose Depression (IDD). The IDD (Zimmerman, Coryell, Corenthal, & Wilson, 1986) is an 18-

item measure that assesses the severity of DSM-IV (APA, 1994) depressive symptomatology. Each item is five statements arranged in order of increasing severity. The items on the IDD can be summed to obtain a severity index of depressive symptomatology.

The reliability and validity of the IDD are well documented (Zimmerman & Coryell, 1987; Zimmerman & Coryell, 1988; Zimmerman et al., 1986). The psychometric properties of the IDD with Native American youths have also been established (Ackerson, Dick, Manson, & Baron, 1990). Ackerson et al. reported the internal consistency of the IDD to be .94 using Cronbach's alpha (1951); Spearman-Brown split-half reliability for this instrument was .96. Cronbach's (1951) coefficient alphas were .89 for both the Native American and the Anglo American groups in the present study.

RESULTS

Preliminary Analyses

Three different recruitment methods were employed for the collection of the Native American sample. Seventy-two percent of this sample was recruited via mail, 23.4% came from classroom recruitment, and 4.2% were recruited through

NASA and AISES. Two MANOVAs were conducted to investigate potential differences in demographic and psychological variables across the recruitment methods. No significant effect was found for the recruitment method across demographic [$F(2,53) = .806$, $p = .64$] or psychological variables [$F(2,53) = 1.32$, $p = .18$] within the sample (see Tables 2 & 3).

Given the small number of subjects within the group from the professional organizations, the power of the MANOVA analysis may be compromised. This potential reduction in power suggests that the likelihood of finding a difference between the three types of recruitment methods may be lessened. Conversely, because of the small number of subjects within these groups any systematic differences that were not detected are probably not likely to influence the overall results of the study.

Initial differences between the Native American and the Anglo American groups were assessed through two separate MANOVAs. The first MANOVA analyzed group differences in demographic variables. Significant differences [$F(5,106) = 3.68$, $p = .004$] were found between the two groups and follow-up ANOVAs were conducted. A significant difference

between subjects' father's level of education [$F(1,110) = 18.30$, $p < .001$] was noted. The fathers of Anglo Americans were more likely to be college graduates or have post-graduate degrees than the Native Americans. Thus, parental education was controlled by covarying the effect before performing the primary analyses. No other demographic variables were found to differ significantly from each other.

The second MANOVA investigated possible differences between groups in psychological and academic variables (i.e., attributional style, perceived deprivation, level of depression, and noncognitive factors). No significant differences [$F(11,100) = 1.30$, $p = .237$] were found. Thus, no initial, significant differences between potential predictor or mediator variables were noted across groups (see Table 5).

Primary Analyses

The primary analyses investigated the relationships between potential mediating (i.e., attributional style and noncognitive factors) and predictor variables(e.g., cultural identification, perceived deprivation, etc.) and academic success (Time 2 GPA, retention). Because differences in the

interrelationships among variables associated with academic achievement were of interest, analyses were conducted for the Native American group and Anglo American group, separately.

To test the mediational role of attributional style in the relationship between the predictor variables and GPA, partial correlations were first calculated to assess the association of the predictor variables with the outcome variable after controlling for covariates (i.e., parental education, Time 1 GPA, Time 1 classification, level of depression). Next, zero-order correlations were used to assess the relationship between predictor variables and mediator variables. Hierarchical step-wise multiple regression analyses were then conducted to test the mediational effects of attributional style in these relationships.

Baron and Kenny (1986) reported that four criteria must be met before a mediational relationship can be established: (a) the predictor variable must be related to the outcome variable, (b) the predictor variable must be related to the potential mediator, (c) the mediator must be related to the outcome variable after controlling for the predictor

variable, and (d) the effect of the predictor variable on the outcome variable must not be significant once the mediator is controlled. The number of analyses for each group varied according to the number of variables that met Baron and Kenny's (1986) first two criteria for a mediator relationship.

For example, for Research Question 1a, cultural identification, perceived deprivation, and noncognitive factors must be significantly correlated with Time 2 GPA, after controlling for the covariates. Next, each of these predictor variables must be significantly correlated with attributional style. If these two criteria are met, hierarchical step-wise multiple regressions will determine if the effect of attributional style on Time 2 GPA remains significant when the covariates and predictor variables are statistically controlled.

Consistent with Cohen and Cohen (1983), the covariates (e.g., Time 1 GPA, depression, parental education, and student classification) will be entered first in a block on step one of the equation; on step two, attributional style and one of the significant predictor variables (e.g., perceived deprivation) will be entered. Thus, the

regressions will be hierarchical between sets and step-wise within sets. Lastly, if the predictor variable's contribution to Time 2 GPA is not significant when attributional style is held constant, it can be ascertained that the relationship between the predictor variable and GPA is mediated by attributional style.

Research Question 1a. The analyses for Research Question 1a within the Native American group, showed that four predictor variables were significantly correlated with Time 2 GPA after controlling for covariates (i.e., criterion #1). These variables were goal preference, availability of support, Native American identification, and perceived deprivation (see Table 6). Although greater pessimistic attributional style (i.e., mediating variable) was associated with lower Time 2 GPA, the predictor variables, (i.e., goal preference, availability of support, Native American identification, and perceived deprivation) were not significantly correlated with attributional style. Thus, the second of Baron and Kenny's (1986) criteria was not met. Therefore, attributional style could not be examined as a mediator in the relationship between Time 2 GPA and goal preference, availability of support, Native American

identification, and perceived deprivation within the Native American group.

In the Anglo American group only leadership experience was positively associated with Time 2 GPA after controlling for the covariates (criterion #1), but this variable was not significantly related to attributional style (criterion #2) (see Table 7). Thus, attributional style could not be examined as a mediator in the relationship between Time 2 GPA and these noncognitive factors in either the Anglo American or Native American groups.

Research Question 1b. Point bi-serial correlations were used in the investigation of potential mediational effects of attributional style on retention because retention is a dichotomous variable. Also, due to the dichotomous nature of retention, a forward step-wise logistic regression analysis was employed to test for mediational effects rather than a linear regression analysis. As with the linear regression analysis, significant covariates (see Table 1) were entered on the first step, followed by the significant predictor variables on the next step, and the mediator variable were entered last.

Within the Native American group, two variables (i.e., goal preferences and availability of support) were correlated with retention after controlling for covariates (criterion #1) (see Table 6). Neither of these two predictor variables were related to attributional style (i.e., criterion #2). Thus, attributional style could not be examined as a mediator in the relationships between retention and goal preferences or availability of support, in the Native American group.

For the Anglo American group, perceived deprivation and Anglo identification were significant correlates of retention after controlling for covariates (see Table 7), but they were not related to attributional style. Thus, Baron and Kenny's (1986) second criterion was not met, and attributional style's mediating influence in this relationship could not be tested.

Research Questions 2a. Similar to Research Questions 1a and 1b, Baron and Kenny's (1986) criteria were also employed with both groups to test Research Questions 2a and 2b. These Research Questions predicted that factors from the NCQ would mediate the effect of the predictor variables on Time 2 GPA and retention after controlling the effects of

significant covariates (see Table 1).

The potential mediating effects of the eight noncognitive factors on the predictors of retention and Time 2 GPA were considered separately for the Native American and Anglo American groups. Within the Native American group, attributional style, Native American identification, and perceived deprivation were significantly correlated with Time 2 GPA after controlling for covariates (criterion #1). Of these, only perceived deprivation met Baron and Kenny's (1986) second criterion and was correlated with available support (i.e., mediating variable) (see Table 6). Guided by Baron and Kenny (1986), a linear regression analysis was employed to further test for the mediational relationship. The covariates were entered into the equation on the first step and perceived deprivation was entered on the second. Availability of support was conditionally entered on the third step. Unfortunately, this analysis found that availability of support was not related to retention after controlling for perceived deprivation (t = -.60, p = .55) (criterion #3). Thus, availability of support from the NCQ did not mediate the relationship between perceived deprivation and retention in the Native American group.

In the Anglo American group results were less promising. Although leadership experience (i.e., mediating variable), was significantly associated with Time 2 GPA after controlling for covariates, no predictor variables (i.e., cultural identification, perceived deprivation, attributional style) were related to the outcome Time 2 GPA (criterion #1) (see Table 7). Thus, mediator relationships could not be examined.

Research Questions 2b. Because retention is a dichotomous variable, point bi-serial correlations were used in the investigation of potential mediational effects between noncognitive factors and retention. In the Native American group two mediating variables (i.e., availability of support and goal preference) were significantly related to retention (see Table 6). However, because none of the predictor variables (i.e., cultural identification, perceived deprivation, attributional style) were significantly related to retention (criterion #1), no mediational relationships could be examined.

Within the Anglo American sample, two predictor variables (i.e., perceived deprivation and Anglo identification) met Baron and Kenny's (1986) first criterion

(see Table 7). Perceived deprivation and Anglo identification were also related to leadership experience from the NCQ, a potential mediator variable (criterion #2) (see Table 7).

Following the work of Baron and Kenny (1986) two logistic regression analysis, one for each predictor variable, was used to further test for mediational relationships. A forward step-wise logistic regression analysis was employed to test for mediational effects because of the dichotomous nature of retention. The covariates were entered into each equation on the first step. In the first equation perceived deprivation was entered on the second step and Anglo identification was entered on the second step of the second equation. Leadership experience was conditionally entered on the third step of both equations. Unfortunately, these analyses found that leadership experience was not related to retention after controlling for perceived deprivation (chi square = .105, p = .75) or Anglo identification (chi square = .100, p = .75) (criterion #3). Hence, noncognitive variables did not mediate the relationship between perceived deprivation and retention within the Anglo American group.

Exploratory Analyses

Due to the lack of positive findings with the proposed analyses, exploratory analyses were employed to investigate the relationship of the demographic and primary variables with Time 2 GPA and retention (see Table 1). Two separate step-wise regression analyses were completed for the Native American and Anglo American groups. In the first set of regression equations, Time 2 GPA was utilized as the dependent variable. Time 1 GPA and the other covariates were entered in the first step of the equation. All other significant correlates, after controlling for the covariates, were entered in the second step. Within the second block a step-wise analysis was performed, in which variables were analyzed for their independent contribution to the equation.

For the Native American group, five variables (i.e., attributional style, availability of support, goal preference, Native American identification, and perceived deprivation) were entered in the second block, after the covariates were entered. Of these five variables, only the availability of support factor from the NCQ added significantly ($t = 2.47$, $p = .02$) to the prediction of Time

2 GPA after controlling for covariates (see Table 8).

For the Anglo American group, the analyses were less involved because only one variable was related to Time 2 GPA after controlling for the covariates. All of the covariates were entered in the first block. On step two, only one variable from the NCQ (i.e., leadership experience), was entered. Leadership experience did contribute significant variance (t = 2.37, p = .02) to the equation beyond that of the covariates (see Table 9).

In the second set of regression equations, retention was the dependent variable. Because retention is a dichotomous variable, a logistic regression was used to analyze the data. Again, all covariates were entered in the first block. In the second step the significant correlates, after controlling for covariates, were entered into the forward step-wise conditional analyses.

In the Native American group two variables were entered into the equation (i.e., goal preference and availability of support) after the covariates (see Table 6). The NCQ goal preference factor was the only variable that contributed significant variance (chi-square = 5.20, p = .02) to the equation after controlling for the covariates (see Table

10).

Within the Anglo American group, Anglo identification and perceived deprivation were analyzed as predictor variables after controlling for the covariates. The results indicate that perceived deprivation was a significant predictor of retention (chi-square = 9.29, p = .002) within the Anglo American group (see Table 11).

DISCUSSION

The present longitudinal study of Native American and Anglo American college students investigated the relationships between psychosocial variables (i.e., perceived deprivation and cultural identification) and academic success (i.e., GPA and retention) and the potential mediating roles of attributional style and noncognitive factors in these relationships. Specifically, four research questions were addressed: 1) Does attributional style mediate the relationship between psychosocial variables and Time 2 GPA?, 2) Does attributional style mediate the relationship between psychosocial variables and retention?, 3) Do noncognitive factors mediate the relationship between psychosocial variables and Time 2 GPA?, 4) Do noncognitive factors mediate the relationship between psychosocial

variables and retention?

The findings of this study did not support either attributional style or noncognitive factors as mediational variables for Time 2 GPA or retention. However, several significant correlates of Time 2 GPA and retention were noted in both the Native American and Anglo American groups.

In the Native American group, there were several significant correlates of Time 2 GPA after controlling for the covariates. Attributional style, Native American identification, perceived deprivation, availability of support, and goal preference were related to Time 2 GPA. Exploratory regression analyses found the availability of support factor from the NCQ to be predictive of Time 2 GPA after controlling for covariates.

For the Anglo American group, only the leadership experience factor from the NCQ was significantly related to Time 2 GPA. Exploratory analyses also confirmed this factor as a significant predictor of Time 2 GPA after the covariates were controlled. Thus, for both groups, noncognitive factors were the most predictive of Time 2 GPA after controlling for the covariates.

With respect to retention in the Native American group,

there were even fewer significant correlates. Only goal preference and the availability of support from the NCQ were related to retention. The results of the exploratory analyses indicated that only the goal preference factor was a significant predictor of retention in the Native American group once the covariates were controlled.

For the Anglo American group, primary analyses showed that perceived deprivation and Anglo identification were significantly correlated with retention. Follow-up analyses confirmed perceived deprivation as a predictor of retention after controlling for the covariates.

Thus, the findings with retention were more heterogeneous across the two groups than the findings with Time 2 GPA. Although a noncognitive factor (i.e., availability of support) was still the best predictor of retention in the Native American group, perceived deprivation was the best predictor within the Anglo American group. Noncognitive factors (i.e., goal preference and leadership experience) were the best predictors of Time 2 GPA for the Native American and Anglo American groups, respectively.

Across the two groups the results suggest that

noncognitive factors are more important for Native American students than for Anglo American students. More specifically, in the Native American group noncognitive factors were consistently found to be the best predictor of both Time 2 GPA and retention. The availability of support factor was the best predictor of Time 2 GPA. It is suggested that the areas of support tapped by this factor are pivotal in the academic achievement among Native American college students. Concerning retention goal preference was the most predictive factor, suggesting that adopting certain aspects of the majority culture allow Native American students to continue their education.

The efficacy of noncognitive factors to predict academic achievement in the Native American group in this study supports the work of Boyer and Sedlacek (1988), who found noncognitive factors to be predictive of GPA and retention in international students. Further, Tracey and Sedlacek (1985) found noncognitive factors to be more predictive of retention for African-American college students than SAT scores. The present results indicate that noncognitive factors also demonstrate efficacy in predicting academic success for Native American students as well.

In the Anglo American group, the findings were less consistent. Leadership experience, as measured by the NCQ, was predictive of Time 2 GPA. For retention, the perceived deprivation variable was the most predictive variable. Thus, leadership skills may facilitate higher GPAs, but perceived deprivation may lead to Anglo American students dropping out of college.

Implications of Results

Among Native American college students, noncognitive factors seem to be important in determining academic success. Specifically, the availability of support factor is influential in short-term academic success (i.e., GPA). Moreover, the present findings suggest that this support does not necessarily have to come from a mentor and may be provided instead by friends, family, or teachers. Thus, the provider of the support (e.g., mentor, teacher, friend, parent, etc.) is not as important as the support itself, or the fact that the support must be consistent and readily available to the student. For example, parental education was related to higher GPAs in the Native American group with the children of more highly educated parents achieving higher students' GPAs. It is hypothesized that Native

American parents with a higher level of education value education and are more likely to provide support, both emotional and financial, to their children.

Support may also ease the transition between cultures. Several authors (e.g., Collins, Green, & Chaney, 1992; Lazarus, 1982; Sue & Sue, 1990) have suggested that there is often conflict between the beliefs and values of the dominant and Native American cultures in academic settings. As Native American students learn to live and function within the dominant culture many difficulties must be overcome and conflicts in attitudes and beliefs must be resolved.

Within the Native American group, the variables associated with retention may be indicative of this cultural conflict. Traditionally, Native Americans focus on short-term or immediate goals with little consideration for the distant future (e.g., Sue & Sue, 1990). However, a preference for long-term goals was associated with retention. This suggests that Native American college students who are flexible enough to take on traits of the majority culture are more likely to remain in college.

Interestingly, higher Native American identification

was also related to higher Time 2 GPA. At first glance, this finding appears to be in direct opposition with the goal preference factors (i.e., a preference for long-term goals). However, Oetting and Beauvais (1991), suggest that such findings are not incompatible. They believe that individuals can be identified with and function within more than one culture. The current findings lend support to this assertion. That is, the Native Americans who were most likely to achieve high GPAs were those who remained identified with their culture, but also identified with the majority culture (i.e., developed long-term goals).

Following the work of Atkinson, Neville, and Casas (1991), the present results suggest that consistent and readily available support may ease the transition into the majority culture. This support may also allow the Native American student to maintain his/her traditional beliefs and at the same time develop the majority skills (e.g., long-term goals) to function within an academic setting, as suggested by Oetting and Beauvais (1991).

Nolen-Hoeksema (1992) has pointed out another pitfall for Native American college students. She suggests that emotional, cultural, or financial deprivation may lead to a

depressive attributional style, which in turn was associated with lower GPAs in the Native American sample. This finding is consistent with the research of Peterson and Barrett (1987) who found that a depressive attributional style was associated with lower GPAs on college students. Although attributional style did not meet the criteria for a mediational relationship in the present study, results nevertheless indicate that consistent support and more positive causal attributions for academic events are associated with higher GPA's.

For the Anglo American group, the significance of the NCQ leadership experience factor was not surprising given the individualistic and competitive nature of the dominant culture, particularly within a university setting. Although Anglo Americans also need support, the findings indicate that they may not need the consistent support of their academic pursuits. This may be because they do not have to learn to function within a new culture or because the dominant culture innately supports and values academic pursuits. Further, attributes valued by the dominant culture (e.g., initiative, individualism, and competitiveness) are required to have successful leadership

experiences. Successful leaders within the dominant culture are typically autonomous, driven to excel, and competitive. These traits translate easily to an academic setting and are rewarded with success.

With respect to retention within the Anglo American sample, perceived deprivation was the best predictor. As described earlier, perceived deprivation taps two main aspects of support, emotional and financial. The emotional support component includes familial, religious, and peer support; the financial component includes the quality and availability of transportation, clothing, and money. The perceived deprivation factor is similar to, but broader than, the availability of support factor from the NCQ that only taps emotional support.

Thus, because only the perceived deprivation factor, and not the support factor from the NCQ, was predictive of retention, the present data suggest that it is the availability of financial support that influences retention among Anglo American students rather than emotional support. Since perceived deprivation was highly correlated with SES in Anglo American students, but unrelated to SES among minority students, financial support may be more important

for Anglo American than for Native Americans in maintaining enrollment. Support for this can be found in the research of Hernandez (1995), who suggests that the parental income variable, had it been available, is likely also to have evidenced significant predictive ability for retention.

Limitations

Although efforts were made to minimize short-comings of the data, some limitations remain that warrant note. First, the power of the analyses was limited by sample size. The final numbers were short of the projected, original goals. The reason for these reduced numbers is twofold. Firstly, conducting research with Native Americans in general has often been cited as difficult and characterized by low participation rates (Fore, et al., 1992; Fore, et al., 1993; LaCounte 1987). Also, subject data was not always complete, particularly when obtained by mail. Often when subjects' questionnaire data were complete, information from the campus computer system often was not. This missing computer data further limited the number of completed protocols that could be used in the study. Although other variables were substituted, such as college classification for age, perceived deprivation for parental income, and Time 1 GPA

for composite ACT, these were only rough approximations at best. Thus, findings may have been more robust if other demographic and academic approximations had been utilized.

The second major issue is generalizability of the findings, which must be addressed on several levels. Although the varied tribal make-up within the Native American group may increase generalizability across represented tribes, it is unclear whether these findings will have utility with tribes that were not represented. Most of the participants were from tribes with ties in the Plains States and the East. There were no participants from Southwest tribes, which tend to be more isolated from the dominant culture. Five hundred and thirty Native American tribes are recognized across the United States, and differences between these tribes may be greater than differences between the tribes and the dominant culture (Sue & Sue, 1990). Thus, the results for the Native American group should be interpreted carefully and with consideration for this significant heterogeneity.

Thirdly, the collected sample may not have typified the OSU student body. For example, enrollment rates for both the Native American and Anglo American samples were much

higher than that of the general student body. Additionally, when compared with the entire student body dropout rates and graduation rates, the rates were notably lower within both samples. These differences were likely caused by a sampling bias. That is, the percentages reported for the student body spans across all levels of students (e.g., freshman, sophomore), but both collected samples were skewed toward the lower end. Thus, it is not surprising that the graduation rate and dropout rate are lower. If these samples were followed through four years, it is very likely that these rates for the sample would be consistent with the rest of the student body.

Alternatively, the results may also reflect a self-selection sampling bias, particularly within the Native American group. Considering the previous literature review, the sample of Native American college students is unusual, from the outset, in that their level of academic achievement exceeds the vast majority of Native Americans. That is, they have already been successful enough to be admitted to college and have the desire to achieve higher academic goals. It is likely that the factors in this study would behave differently in a younger sample of students. For

example, Native American high school students with a depressive, pessimistic attributional style are unlikely to be in college. Thus, attributional style may select out individuals at earlier developmental stages than the one investigated in this study. This example suggests that the current group of Native American subjects may have been a highly select sample with respect to traits allowing them to succeed in higher education and that others with less ability were not represented in the present sample.

Future Research

Future research should address more directly the impact of readily available and consistent support with Native American college students. Ideally, outcome studies would employ control groups and differential conditions (e.g., support program vs. none).

For Anglo American students, the effects of increasing financial assistance on retention should be more throughly investigated with controlled outcome studies. With respect to influencing Anglo American students' GPA, longitudinal studies that assess the impact of various leadership opportunities and programs could facilitate understanding of the development of the skills necessary to achieve higher

GPAs.

Summary

To summarize, the hypotheses that attributional style or noncognitive factors mediate the effects of psychosocial variables on academic achievement were not supported. However, other results that have important implications for academic success were found.

The current study suggests that Native Americans achieve higher GPAs and if they have readily available and consistent emotional support to mediate the conflict between their minority culture and the majority culture. Native American students tend to remain in college longer (i.e., retention) if they are flexible enough to adopt traits of the majority culture. Mentor programs, familial support, minority professional organizations, and minority role may positively impact academic success among Native American college students.

For Anglo Americans, leadership skills and financial assistance seem to have a greater influence on academic achievement than support. Impacting Anglo Americans' level of achievement (i.e., GPA) may prove more difficult than influencing retention, but programs that encourage

leadership skills (e.g., athletics, student council, etc.) in high school and during the first years of college may give them an opportunity to achieve higher GPAs throughout their academic career.

On a broader scale, these empirical data reflect what has been suggested theoretically by Collins, Green, and Chaney (1992), Lazarus (1982), and Sue and Sue (1990). The predictors of academic success reflect differences between the two cultures. Within the Native American culture, tribal affiliation and cooperation are highly valued. Individuals are traditionally taught to work for the good of the community/tribe and not for individual achievement or accomplishment. Individuals within the Anglo American culture learn to strive for individual achievement and accomplishments. Individualism is stressed and rewarded within the dominant culture, particularly within academic settings. Thus, consistent support from either parents, mentors, or role models is important to help Native Americans' survive within and adopt traits of the dominant culture and, consequently, continue their education and achieve academic success.

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Appendix A

Institutional Review Board Approval.

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS REVIEW

Date: 03-17-94 **IRB#:** AS-94-022

Proposal Title: PREDICTING ACADEMIC SUCCESS IN NATIVE AMERICAN HIGH SCHOOL STUDENTS

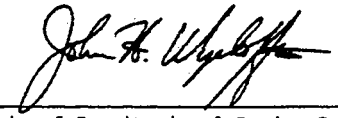
Principal Investigator(s): John M. Chaney, Chris L. Fore

Reviewed and Processed as: Expedited

Approval Status Recommended by Reviewer(s): Approved

APPROVAL STATUS SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT MEETING.
APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL. ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Reasons for Deferral or Disapproval are as follows:
PROVISIONS RECEIVED AND APPROVED

Signature:  Date: March 17, 1994

Chair of Institutional Review Board

Table 1

Study Variables by Type.

Demographic Variables	Father's Education Level
(Covariates)	Mother's Education Level
	Time 1 GPA
	Time 1 Classification
	Level of Depression
Primary Variables	Attributional Style
(Mediators)	Positive Self-Concept*
(Predictors)	Realistic Self-Appraisal*
	Successful Leadership Experience*
	Availability of Support*
	Community Service*
	Knowledge Acquired in a Field*
	Goal Preference*
	Coping with Racism*
	Anglo American Identification
	Native American Identification
	Perceived Deprivation
Outcome Variables	Time 2 GPA
	Retention

* = Noncognitive factors

Table 2

Demographic Characteristics of Native American subjects by Recruitment Method.

	Mail		Classroom		Organizations	
Variables	Mean	STD.	Mean	STD.	Mean	STD.
Time 1 GPA	2.92	.75	2.78	1.06	2.66	.14
Time 1 Class	2.31	1.08	2.00	.74	2.50	2.12
Fathers' Ed	3.07	1.07	2.83	1.27	3.00	1.41
Mothers' Ed	2.98	1.22	2.75	1.42	3.50	.71

Table 3

Psychosocial Characteristics of Native American subjects by Recruitment Method.

	Mail		Classroom		Organizations	
Variables	Mean	STD.	Mean	STD.	Mean	STD.
Attrib. Style	151.58	18.26	160.77	39.13	155.10	1.27
Deprivation	21.69	12.45	16.42	5.43	35.50	2.12
Depression	12.40	9.04	10.92	12.52	19.00	7.07
Self-Appraisal	9.87	1.80	11.00	1.76	9.50	2.12
Support	13.07	2.05	13.92	1.08	13.00	1.41
Leadership	9.68	1.82	10.06	1.22	9.45	.64
Goals	8.61	1.67	9.22	1.25	8.84	3.06
Knowledge	2.16	.50	2.17	.44	1.67	.00
Service	5.46	.99	5.17	.52	5.84	.41
Confidence	18.50	2.62	18.22	2.12	20.84	1.18
Racism	17.62	2.50	18.75	1.66	15.50	6.36

Table 4

Sample Demographic Characteristics by Racial Group.

	Native Americans		Anglo Americans	
Variables	Mean	STD.	Mean	STD.
Time 1 GPA	2.93	.64	2.97	.54
Time 1 Classification	2.17	.92	1.94	.90
Fathers' Education *	2.96	1.10	2.14	1.14
Mothers' Education	2.83	1.22	2.52	1.08

* P < .001

Table 5

Sample Psychosocial Characteristics by Racial Group.

	Native Americans		Anglo Americans	
Variables	Mean	STD.	Mean	STD.
Attributional Style	154.66	25.45	155.72	24.20
Perceived Deprivation	19.32	9.66	15.74	4.01
Depression	11.74	9.28	7.40	5.64
Realistic Self-Appraisal	10.23	1.64	10.62	1.88
Availability of Support	13.64	1.47	14.23	1.20
Leadership Experience	9.91	1.56	9.95	1.28
Goal Preference	8.88	1.55	8.92	1.39
Knowledge in a Field	2.21	.47	2.15	.49
Community Service	5.49	.83	5.61	.60
Confidence	18.72	2.54	18.78	2.12
Dealing with Racism	17.98	2.52	18.40	2.04

Table 6

Zero-Order and Partial Correlation Matrix for the Native American Group.

	1.	2.	3.	4.	5.	6.	7.
1. Time 1 GPA	-						
2. Time 1 Clas	-.27*	-					
3. Depression	-.31*	-.04	-				
4. Mother Ed.	.30*	-.08	-.28*	-			
5. Father Ed.	.25	-.07	-.19	.40*	-		
6. Attr. Style	-.05	-.11	.18	.10	.12	-	
7. Appraise	.33*	.26*	-.58**	.20	.35*	.04	-
8. Confide	-.03	-.14	-.11	-.06	-.04	.12	.20
9. Racism	.19	.21	-.22	.13	.09	.02	.32*
10. Goals	.14	-.12	-.45**	.07	-.03	-.14	.28*
11. Support	.04	.07	-.51**	.48**	.38*	-.02	.38*
12. Leader	.04	.07	-.10	.08	.06	-.10	.10
13. Service	.31*	.27*	-.37*	.26*	.15	-.17	.48**
14. Knowledge	-.27*	.02	-.12	.19	.01	.24	.05
15. NA Id.	-.22	-.06	-.02	.13	.06	-.04	.03
16. AA Id.	.15	-.14	-.16	.40**	.13	-.08	.20
17. Deprive	.02	-.14	.24	.42**	.17	.08	-.09
18. Retention	.07	.01	.14	.17	.17	.11	.25*
19. Time 2 GPA	.90*	.27*	-.31*	.55**	.38*	-.08	.35*

Note. Class. = student classification (e.g., Freshman, Senior); Ed. = education; Attr. = attributional; Id. = identification

* = $p < .05$
** = $p < .001$

Table 6 (continued)

	8.	9.	10.	11.	12.	13.	14.
1. Time 1 GPA							
2. Time 1 Clas							
3. Depression							
4. Mother Ed.							
5. Father Ed.							
6. Attr. Style							
7. Appraise							
8. Confide	-						
9. Racism	.36*	-					
10. Goals	.30*	.07	-				
11. Support	-.04	.19	.18	-			
12. Leader	.03	.14	.40**	.12	-		
13. Service	.09	.14	.19	.38**	.13	-	
14. Knowledge	.11	.13	.08	.11	-.10	-.03	-
15. NA Id.	.25	.05	.06	.01	.01	-.01	.19
16. AA Id.	-.25	-.01	.18	.22	.04	.05	.14
17. Deprive	.14	-.07	-.15	-.47**	-.15	.09	-.22
18. Retention	.18	.10	.29*	.38**	.26	.11	.29*
19. Time 2 GPA	-.05	.27	.03	.38**	-.03	.32*	-.15

* = $p < .05$
** = $p < .001$

Table 6 (continued)

	15.	16.	17.	18.	19.
1. Time 1 GPA					
2. Time 1 Clas					
3. Depression					
4. Mother Ed.					
5. Father Ed.					
6. Attr. Style				(.10)	(-.31*)
7. Appraise				(.23)	(.06)
8. Confide				(.18)	(.02)
9. Racism				(.08)	(.26)
10. Goals				(.29*)	(-.30*)
11. Support				(.29*)	(.83**)
12. Leader				(.24)	(.26)
13. Service				(.07)	(-.05)
14. Knowledge				(.22)	(.05)
15. NA Id.	-			(.13)	(.38*)
16. AA Id.	-.28*	-		(.14)	(.22)
17. Deprive	.14	-.44**	-	(.09)	(-.34*)
18. Retention	.15	.19	.01	-	
19. Time 2 GPA	-.10	.30*	.50**	-	-

Note. Zero-order correlations appear under the diagonal. Partial correlations (in parentheses) control for Time 1 GPA, Time 1 classification, mothers' education, fathers' education, level of depression.

* = $p < .05$
** = $p < .001$

Table 7

Zero-Order and Partial Correlation Matrix for the Anglo American Group.

	1.	2.	3.	4.	5.	6.	7.
1. Time 1 GPA	-						
2. Time 1 Clas	-.03	-					
3. Depression	-.06	.19	-				
4. Mother Ed.	.22	-.02	.05	-			
5. Father Ed.	.14	-.13	.04	.51	-		
6. Attr. Style	-.08	-.08	-.01	.13	.19	-	
7. Appraise	.16	.04	-.19	-.04	.08	.09	-
8. Confide	.01	.37**	.06	.17	.24*	.10	.32*
9. Racism	-.06	.05	-.08	-.02	.08	.08	.14
10. Goals	.15	.31*	.02	.03	-.04	-.18	.19
11. Support	.19	-.06	-.34**	-.04	.15	.11	.02
12. Leader	.17	.10	.08	-.04	.04	-.18	.15
13. Service	.20	.03	-.01	-.06	.26*	-.01	.08
14. Knowledge	.10	.13	.11	.15	.08	-.01	-.06
15. NA Id.	-	-	-	-	-	-	-
16. AA Id.	-.02	-.10	-.24*	.23*	.05	.06	-.06
17. Deprive	-.05	.27*	.40**	.23*	.05	.07	-.10
18. Retention	-.07	-.19	.09	-.20	-.10	.14	-.09
19. Time 2 GPA	.84**	.06	-.08	.18	.14	-.09	.25*

Note. Class. = student classification (e.g., Freshman, Senior); Ed. = education; Attr. = attributional; Id. = identification

* = $p < .05$
** = $p < .001$

Table 7 (continued)

	8.	9.	10.	11.	12.	13.	14.
1. Time 1 GPA							
2. Time 1 Clas							
3. Depression							
4. Mother Ed.							
5. Father Ed.							
6. Attr. Style							
7. Appraise							
8. Confide	-						
9. Racism	.09	-					
10. Goals	.23*	.29*	-				
11. Support	.09	.30*	-.03	-			
12. Leader	.10	.07	.28*	.09	-		
13. Service	.18	.35*	.18	.16	.23*	-	
14. Knowledge	.01	-.11	.03	.02	-.03	-.09	-
15. NA Id.	-	-	-	-	-	-	-
16. AA Id.	-.19	.18	.11	.27*	.01	-.13	.08
17. Deprive	.21	-.01	-.03	-.29*	-.10	.01	-.02
18. Retention	-.13	-.10	-.03	.09	-.02	-.15	.20
19. Time 2 GPA	.06	.03	.06	.26*	.35*	.26*	.12

* = $p < .05$
** = $p < .001$

Table 7 (continued)

	15.	16.	17.	18.	19
1. Time 1 GPA					
2. Time 1 Clas					
3. Depression					
4. Mother Ed.					
5. Father Ed.					
6. Attr. Style				(.10)	(-.03)
7. Appraise				(-.07)	(.18)
8. Confide				(-.11)	(.03)
9. Racism				(-.10)	(.13)
10. Goals				(.04)	(-.19)
11. Support				(.11)	(.18)
12. Leader				(.03)	(.39*)
13. Service				(-.12)	(.15)
14. Knowledge				(.22)	(.27)
15. NA Id.	-			-	-
16. AA Id.	-	-		(.31*)	(.04)
17. Deprive	-	-.64**	-	(.45**)	(.09)
18. Retention	-	.37*	.50**	-	
19. Time 2 GPA	-	-.01	.01	-	-

Note. Zero-order correlations appear under the diagonal. Partial correlations (in parentheses) control for Time 1 GPA, Time 1 classification, mothers' education, fathers' education, level of depression.

* = $p < .05$
** = $p < .001$

Table 8

Regression Analysis for Time 2 GPA within the Native American group.

Step	Variable	Beta	t for predict	R Change	Cumul. R square	F Change
1	Time 1 GPA	.820	9.98**	.82	.82	38.02*
	Time 1 Class	-.088	-1.28			
	Mothers' Ed.	-.091	-1.12			
	Fathers' Ed.	-.029	-.40			
	Depression	-.003	-.04			
2	Support	.180	2.41*	.03	.85	1.65**
	Goal Preference	-.046	-.60			
	Perceived Dep.	.008	.12			
	NA Id.	.109	1.70			
	Attr. Style	.084	-1.30			

* = $p < .05$
** = $p < .001$

Table 9

Regression Analysis for Time 2 GPA within the Anglo American group.

Step	Variable	Beta	t for predict	R Change	Cumul. R square	F Change
1	Time 1 GPA	.859	12.10**	.72	.72	31.25**
	Time 1 Class	.115	1.67			
	Mothers' Ed.	.057	.68			
	Fathers' Ed.	-.026	-.31			
	Depression	-.022	-.32			
2	Support	.164	2.36*	.03	.75	1.25**

* = $p < .05$
** = $p < .001$

Table 10

Logistic Regression Analysis for Retention within the Native American group.

Step	Variable	Beta	Wald stat	R Change	Cumul. R square	Chi-Square Change
1	Time 1 GPA	.758	1.50	.00	.00	4.29
	Time 1 Class	-.034	.075			
	Mothers' Ed.	.293	.782			
	Fathers' Ed.	.348	1.37			
	Depression	.034	.128			
2	Goal Preference	.679	4.37*	.23	.23	.905*

* = $p < .05$

Table 11

Logistic Regression Analysis for Retention within the Anglo American group.

Step	Variable	Beta	Wald stat	R Change	Cumul. R square	Chi-Square Change
1	Time 1 GPA	.887	1.14	.11	.11	5.29
	Time 1 Class	.335	.840			
	Mothers' Ed.	.608	2.66			
	Fathers' Ed.	-.116	.095			
	Depression	.034	.622			
2	Deprivation	.239	5.98*	.30	.30	4.00*

* = $p < .05$

VITA

Chris L. Fore

Candidate for the Degree of

Doctor of Philosophy

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