

**Positive and Negative Ability Beliefs among Navajo High School Students: How do they
Relate to Students' School Achievement Goals?**

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Purpose of the Present Research

The purpose of the present research is, using Structured Equation Modeling (SEM), to structurally validate the constructs of Navajo high school students' positive and negative ability beliefs within a model of achievement motivation. We also examine the role of these ability beliefs from the perspectives of stereotype threat and social identity theory. According to Steele and Aronson (1995) one of the affects of stereotype threat is that students stigmatized as poor academic achievers will have lower ability beliefs than students who are not labeled so. Deyhle (1995) posits that factors such as stigmatization may explain Navajo and Ute Native Americans negative attitudes toward school. A central tenant of social identity theory is that individuals strive to achieve and/or maintain a positive social identity. For low-status minority groups, one response that social identity theory predicts is that the low-status groups can contest the dominant groups right to its superior position. In fact, Deyhle (1995) hypothesizes that the stronger the social identity the more likely students are to succeed in school.

Theoretical Framework

Ability Beliefs

School ability beliefs have been shown to be related to academic goals and achievement and posited to influence choice of activities, effort expended, and persistence (e.g. Bandura, 1986; Middleton, Kaplan, & Midgley, 1998; Zimmerman, Bandura, Martinez-Pons, 1992). Students' school ability beliefs are cognitively appraised based on information from sources such as social comparison and parents, teachers and peers (Bandura, 1986; Dweck & Leggett, 1988; Schunk, 1994). Other important sources of information are students' experiences and achievement (e.g. Dweck & Leggett, 1988; Schunk, 1994).

School ability beliefs have been defined as individuals' judgements about their capability to accomplish a task or achieve a specific goal. (e.g. Pintrich, Marx, & Boyle, 1993; Eccles & Wigfield, 1995; Murphy & Alexander, 2000). However, not all researchers have viewed school ability beliefs as related solely to specific domain outcomes (e.g. Murphy & Alexander, 2000; Roeser, Midgley, & Urdan, 1996). In this latter view, the emphasis of the research is on the relations of school ability beliefs and learning orientations (e.g. mastery and performance orientations) rather than specific domain outcomes. The concern in this context is for students' beliefs about their school ability in the broader school context of learning. We adopt this position in our study.

Much of the work concerning school ability beliefs has assumed that a single continuous variable can inform us of the affects of ability beliefs for learning. However, Middleton, et al (1998) found that different levels of school ability beliefs were associated with different aspects of students' school achievement goals. This approach however does not identify negative school ability beliefs. Some minority groups, such as Navajo students, may also entertain negative ability beliefs. Such negative ability beliefs could be a consequence of labeling (Deyhle, 1995). Hence, in the context of school, Navajo students may well hold positive and negative beliefs about their school abilities.

Ability Beliefs and Achievement Goals

There seems to be agreement among researchers that ability beliefs positively covary with a mastery goal (e.g. Anderman & Young, 1994; Midgley & Urdan, 1995; Schunk, 1994). When students emphasize a mastery goal they are focused on learning, self-improvement, and effort. Some studies report positive relations between performance goals and school ability beliefs (Midgley & Urdan, 1995) while others have found negative relations (Anderman & Young, 1994). These, and other findings suggest that there are positive, negative and no relations between students ability beliefs and performance approach and performance avoidance goals (e.g. Anderman & Young, 1994; Middleton & Midgley, 1997; Midgley & Urdan, 1995). Clearly, the relationships between students' school ability beliefs and performance approach and performance avoidance goals are unclear. Hence, in the present research it is believed, analogous to the partitioning of performance goals into performance approach and performance avoidance goals, partitioning school ability beliefs into positive and negative ability beliefs is of heuristic value. This positing of a dualistic conception of separate positive and negative ability beliefs is not without precedent in self-concept literature (e.g. Marsh, 1996; Markus & Wurf, 1987).

Stereotype Threat, Social Identity, and Ability Beliefs

Two theories guide us in investigating the nature of ability beliefs and their relationship with achievement goals; these are the stereotype threat hypothesis (Steele & Aronson, 1995) and social identity theory (Tajfel & Turner, 1986; Turner, 1987; Ward, Bochner, & Furnham, 2001)

Navajo High School Students and Stereotype Threat

The anxiety associated with knowing that one is a potential target of prejudice and stereotypes is much discussed in the social sciences (e.g. Allport, 1954; Goffman 1963; Steele & Aronson, 1995; Steele & Aronson, 1997). In an essay Steele (1990) presented a concept he referred to as racial vulnerability. Steele (1990) argued that, after a lifetime of exposure to society's negative images about their ability, students are likely to internalize an inferiority anxiety. In turn, this anxiety may lead to adaptations symptomatic of academic disengagement or avoidance. Steele and Aronson (1995) in an experimental study focussed on the immediate situational threat that derives from widely held beliefs about one's group. Their concern was for the threat to individuals who are judged and treated according to the stereotype and the self-fulfilling of that stereotype. According to Steele and Aronson (1995) the individual need not even believe the stereotype. The individual need only know that the stereotype is relevant in the context.

The conclusion Steele and Aronson (1995) reach is that students who experience stereotype threat, such as Navajo high school students, are inefficient at academic tasks. They posit that this inefficiency is similar to the inefficiency experienced with test and competition anxiety (e.g. Sarason, 1972; Wine, 1971). However they suggest that the stereotype threat anxiety leads students to try hard (effort) but with impaired efficiency. Hence, they assert that the anxiety associated with stereotype threat is additional to that generally associated with test or competition anxiety. Finally, they speculate for real-life situations, that as achievement falters and this underachievement is defined in terms of stereotypes, individuals' expectations concerning their ability might decrease. Further, over time, lower ability expectations undermine achievement by undermining motivation and effort (e.g. Bandura, 1977; Bandura, 1986). This process may eventually lead students to no longer identify with schoolwork and adopt behaviors that have the effect of avoiding academic engagement (avoidance).

This theory has implications for Navajo high school students. Among Navajo high school students there is persistent underachievement (e.g. James, Chavez, Beauvais, Edwards, &

Oetting, 1995; Vadas, 1995). Indeed, Deyhle (1995) posits stigmatization as a factor in explaining Navajo and Ute Native Americans negative attitudes toward school. As posited by Steele and Aronson (1995) this may result in students holding negative beliefs about their school abilities (See also Covington, 1992, for similar arguments regarding the implications of protecting one's self-worth in the face of academic failure).

Social Identity Theory

There is a considerable body of research concerning social identity and socio-cultural/psychological adjustment (e.g. Ward, Bochner, & Furnham, 2001). In essence, social identity theory posits that we can think of self in terms of personal and social identities (Tajfel & Turner, 1986). Tajfel & Turner posited that social identity theory makes explicit the difference between behaviour that is influenced by the individual, and that which is influenced by group based processes. A central tenant of social identity theory is that individuals strive to achieve and/or maintain a positive social identity. For low-status minority groups, social identity theory predicts three responses for members when they perceive social injustice and impermeability of boundaries precluding them access to high status group participation. First, they can leave the group (and this is not always possible), second, they can create various ways that reconstruct or redefine the dimensions that are the basis of comparison, or third, they can contest the dominant groups right to its superior position. For a more detailed description of social identity theory see Brown (2000).

More recently some researchers have placed an emphasis on the strength of social identity (e.g. Ethier & Deaux, 1994). In fact, Deyhle (1995) hypothesizes that the stronger the social identity the more likely students are to succeed in school. Perhaps this position can be seen as being consistent with hypothesis three, that the low-status group by taking pride in their heritage contest the dominant groups right to its superior position. Using this as our hypothesis we predict that Navajo students who are strong in their social identity differ in their ability beliefs to those who are less strong in their social identity.

In the present research, following on from Steele and Aronson (1995) we first test the hypothesis that Navajo high school students will hold both positive and negative ability beliefs about school. We then test the hypothesis that Navajo students who are near traditional will have stronger positive ability beliefs than those students who are non-traditional.

Method

Participants

Students from Kayenta High School (n=300) and Window Rock High School (n=529) participated in the survey. All students in years 9, 10, 11, and 12 participated in the data collection (year 9, n=303; year 10, n= 187; year 11, n = 164 year 12, n=160; and, missing n = 16).

Measures

Background Variables.

The near traditional and non-traditional constructs operationalized and dummy coded in the present research are language spoken at home (Navajo = 0, English = 1), living location we operationalized as town (0) and rural (1), and gender we operationalized as male (0) and female (1).

Latent Variables.

In addition to the two ability dimensions (positive & negative ability beliefs) we included 3 achievement goals regularly used in the literature; the dimensions of mastery, performance approach and performance avoidance.

Criterion Variables

For the purpose of validation the variables GPA and school attendance were included in the model.

Statistical Analysis

We base our statistical inferences on Structural Equation Modeling (SEM) using the statistical package LISREL 8.3 (Jöreskog & Sörbom, 1996a) and Prelis 2.3 (Jöreskog, & Sörbom, 1996b).

All the measured variables were used to construct a 42 X 42 covariance matrix which became the basis for all further modeling and analyses. Confirmatory Factor Analysis (CFA's) were conducted with LISREL 8.3 using maximum likelihood estimation. Following Marsh, Balla, and Hau (1996), and Marsh, Balla, and McDonald (1988) we emphasize the Non Normed Fit Index (NNFI) to evaluate goodness of fit. In addition we present the Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA) and the χ^2 test statistic. We conducted CFA's to investigate the psychometric properties of the nine motivational scales.

Following the conduct of Confirmatory Factor Analyses (CFA) to test the structural validity of our model of school achievement motivation we tested whether the negative and positive ability beliefs were divergent constructs by examining the correlations of these constructs with other constructs in our model. On completion of these tests we constructed models that tested the invariance of the model for the background variables (language, location, & gender).

1. To guide our analyses we adopted the following hypotheses:
2. We hypothesized that the positive and negative ability factors would be negatively correlated;
3. We hypothesized that the positive ability belief would positively correlate with the mastery and performance approach factor and negatively correlate with the performance avoidance factor;
4. We hypothesized that the negative ability factor would positively correlate with the performance avoidance factor and negatively correlate with the mastery and performance approach factors;
5. We hypothesized that the positive ability factor would positively correlate with GPA and negatively correlate with absence (attendance);
6. We hypothesized that the negative ability belief factor would positively correlate with absence and negatively correlate with GPA;
7. Following social identity theory we hypothesized that near traditional students (speak Navajo and live in rural areas) would have stronger correlations between the positive ability belief and the mastery and performance approach and avoidance factors than would the non-traditional students (speak English and live in towns). We further hypothesized that non-traditional students would have stronger correlations between the negative ability belief factor and the mastery and performance approach and avoidance factors than would the near traditional students; and

8. Finally, we hypothesized that females would have stronger correlations between the positive ability belief and the mastery and performance approach and avoidance factors than would female students. We further hypothesized that males would have stronger correlations between the negative ability belief factor and the mastery and performance approach and avoidance factors than would female students;

Results

The results of the CFA's revealed that our model of school achievement motivation fitted the data well (NNFI=0.90) suggesting a well defined model (See Table 1a). Further, the model had equivalent factor loadings, factor variances and covariances, and residual variances across the cohorts of the language, location and gender variables (See Table 1b, 1c, & 1d). This suggests that that the model is structurally valid for the cohorts of language, location, and gender. Table 2. Presents the correlations of interest to the present research.

Concerning hypotheses 1 through to 5:

1. The results support the hypotheses that the positive and negative ability factors would be negatively correlated ($r = -0.47$, $p < 0.001$);
2. The results support the hypothesis that the positive ability belief would positively correlate with the mastery ($r = 0.64$, $p < 0.001$) and performance approach factor ($r = 0.30$, $p < 0.001$) and negatively correlate with the performance avoidance factor ($r = -0.33$, $p < 0.001$);
3. The results support the hypothesis that the negative ability factor would positively correlate with the performance avoidance factor ($r = 0.55$, $p < 0.001$), however they do not support the hypothesis that the negative ability belief would negatively correlate with the mastery and performance approach factors. Both of these correlations were non-significant;
4. The results support the hypothesis that the positive ability factor would positively correlate with GPA ($r = 0.32$, $p < 0.001$) and negatively correlate with absence ($r = -0.27$, $p < 0.001$);
5. The results support the hypothesis that the negative ability belief factor would positively correlate with absence ($r = 0.18$, $p < 0.01$) and negatively correlate with GPA ($r = 0.25$, $p < 0.001$);
6. & 7. The tests of invariance for all 3 cohorts revealed that the model of achievement motivation was invariant for all three cohorts. This results does not support the hypotheses that the stronger the cultural identity then the more likely it is that these students will have a stronger positive ability beliefs than students whose social identity is less strong.

In general terms, the results of hypotheses 1- 2 and 4-5 provide evidence of convergent and divergent validity of the two ability belief factors.

Summary and Conclusion

For achievement goal theory, these findings demonstrate the utility for future research of partitioning ability beliefs into positive and negative constructs. Such partitioning may add vital insights and information concerning the contrary findings about the relationship of ability beliefs and performance approach and performance avoidance goals. It is worthy of note that the negative ability belief is not related, contrary to expectations, to either the mastery or approach goals. Had this been the case, and given that the negative ability belief factor behaved in the predicted fashion in its relationship with other factors, we could have

concluded that positive and negative ability beliefs relate to achievement goals as opposites. However, the moderate correlation of $r = -0.47$ together with the overall results suggest that the picture is a little more complex. While the wording of the negative ability belief items are not directly opposite of those used in the positive ability beliefs they are, perhaps, sufficiently close to expect a stronger correlation between the positive and negative ability belief factors. Hence, we must conclude that although we are satisfied that there is empirical ground to support the notion that Navajo students hold both positive and negative ability beliefs about school, we must also conclude that the results raise further questions that are beyond the scope of this paper. For example, in this model of achievement motivation, is it possible that another factor in the model, and not investigated here (e.g. social goals), is suppressing the effects of the negative ability belief such that the correlations between the negative ability belief and the performance approach and avoidance is controlled for?

The results reported in this paper add to the literature concerning the characteristics of Navajo high school students' school achievement motivation. As far as we are aware, this is the first time, using a large sample, that the concept of stereotype threat and social identity has been investigated in the context of American Indian students and certainly in the context of Navajo high school students. Steele and Aronson (1995) posit that lower ability expectations are linked to stereotype threat. The finding that the negative ability belief factor was related in the expected directions to GPA, attendance, and performance avoidance seems consistent with the theory advanced by Steele and Aronson (1995).

Concerning the hypothesis related to social identity theory, the results of the present research do not seem to support the notion that the stronger individuals social identity, then the more likely it is that they will achieve at school. However, we recognize that the measures used for strength of social identity could be stronger to test this hypothesis. In addition, the difference between these groups (non and near traditional) may not be sufficient for the purpose. We recommend that future research testing this hypothesis use more disparate groups and/or improved measures of strength of identity.

Finally, there is a need to investigate further the nature of negative ability beliefs among students with different cultural heritage's. The present research is also limited in its ability to establish causal relations among the factors. Longitudinal research in which the relations of the factors in the model can be investigated over time is needed to address this issue.

Conclusion

It seems clear that schools and teachers need to heed the findings in this study concerning the potential deleterious effects for students being seen in a negative light. In addition, we believe it important that schools address this issue by investigating ways in which the associated negative consequences can be prevented. We speculate that as a counterpoint to Navajo high school students' negative ability beliefs placing emphasis on students' positive ability beliefs would benefit their school achievement generally. In this regard, Anderman and Anderman (1999), and other motivation researchers have recently focussed on the transition period of middle school as fertile ground for understanding the development of students' attitudes about school. Hence, it may be useful if further research concerning the relations of Navajo students' positive and negative ability beliefs and achievement goals took into account the development of these relations during the middle school years.

Table 1a: Base 13-factor model

13-factor model with mastery and utility as a single factor CU	1245.30	743	0.90	0.91	0.033(RMSEA ^a <.05=1.00)	Uniquenesses of items B48 and B38 free to correlate
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Table 1b: Fit indices for the solutions of the 13-factor model invariant factor loadings

Model	Chi	df	NNFI	CFI	RMSEA	Comments
M23 13-factor model baseline – Language	1764.84	1428	0.93	0.94	0.026(RMSEA ^a <.05=1.00)	
M24 13-factor model factor loadings – Language	1779.32	1457	0.94	0.94	0.024(RMSEA ^a <.05=1.00)	$\Delta\chi^2 = 14.58$ $\Delta df = 29$ NS
M25 13-factor model baseline – Location	1635.73	1428	0.96	0.96	0.020(RMSEA ^a <.05=1.00)	
M26 13-factor model factor loadings – Location	1643.24	1457	0.96	0.97	0.019(RMSEA ^a <.05=1.00)	$\Delta\chi^2 = 7.51$ $\Delta df = 29$ NS
M27 13-factor model baseline – Gender	1693.52	1428	0.94	0.95	0.021(RMSEA ^a <.05=1.00)	
M28 13-factor model factor loadings – Gender	1706.55	1457	0.95	0.95	0.020(RMSEA ^a <.05=1.00)	$\Delta\chi^2 = 13.03$ $\Delta df = 29$ NS

Table 1c: Fit indices for the solutions of the 13-factor model invariant factor loadings, factor covariances and variances

Model	Chi	df	NNFI	CFI	RMSEA	Comments
M29 13-factor model baseline – Language	1764.84	1428	0.93	0.94	0.026(RMSEA ^a <.05=1.00)	
M30 13-factor model factor correlations – Language	1826.97	1535	0.94	0.95	0.023(RMSEA ^a <.05=1.00)	$\Delta\chi^2 = 62.13$ $\Delta df = 107$ NS
M31 13-factor model baseline – Location	1635.73	1428	0.96	0.96	0.020(RMSEA ^a <.05=1.00)	
M32 13-factor model factor correlations – Location	1665.11	1535	0.97	0.98	0.014(RMSEA ^a <.05=1.00)	$\Delta\chi^2 = 29.38$ $\Delta df = 107$ NS
M33 13-factor model baseline – Gender	1693.52	1428	0.94	0.95	0.021(RMSEA ^a <.05=1.00)	
M34 13-factor model factor correlations – Gender	1738.53	1535	0.96	0.96	0.017(RMSEA ^a <.05=1.00)	$\Delta\chi^2 = 45.01$ $\Delta df = 107$ NS

Table 1d: Fit indices for the solutions of the 13-factor model invariant factor loadings, factor covariances and variances and factor residual variances

Model	Chi	df	NNFI	CFI	RMSEA	Comments
M35 13-factor model baseline – Language	1764.84	1428	0.93	0.94	0.026(RMSEA ^a <.05=1.00)	
M36 13-factor model factor residual variance – Language	1859.61	1575	0.95	0.95	0.022(RMSEA ^a <.05=1.00)	$\Delta\chi^2 = 94.77$ $\Delta df = 147$ NS
M37 13-factor model baseline – Location	1635.73	1428	0.96	0.96	0.020(RMSEA ^a <.05=1.00)	
M38 13-factor model factor residual variance – Location	1680.21	1575	0.98	0.98	0.012(RMSEA ^a <.05=1.00)	$\Delta\chi^2 = 44.48$ $\Delta df = 147$ NS
M39 13-factor model baseline – Gender	1693.52	1428	0.94	0.95	0.021(RMSEA ^a <.05=1.00)	
M40 13-factor model factor residual variance - Gender	1757.05	1575	0.96	0.97	0.015(RMSEA ^a <.05=1.00)	$\Delta\chi^2 = 63.53$ $\Delta df = 147$ NS

Note: ^a = P-Value for Test of Close Fit

CU = Correlated Uniqueness

Table 2. Correlations Among the 13 Factors of a Model of School Achievement Motivation

Note that the correlations of interest are embolden.

	Language	Location	Gender	Absence	GPA	Persval
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Language	1.00					
Location	-0.26	1.00				
Gender	-0.09	0.01	1.00			
Absence	-0.14	0.02	0.07	1.00		
GPA	0.08	-0.11	0.14	-0.41	1.00	
Persval	0.07	-0.03	0.12	0.00	0.07	1.00
Sure	0.08	-0.04	-0.04	-0.27***	0.32***	0.26
Unsure	0.06	0.01	0.21	0.18***	-0.25***	0.06
Approval	0.05	0.12	0.07	-0.04	-0.02	0.14
Concern	0.15	0.00	0.32	-0.07	0.18	0.42
Mastery	0.18	-0.06	0.13	-0.11	0.24	0.48
Approach	0.05	0.04	-0.31	-0.06	0.01	0.17
Avoidance	-0.04	0.11	-0.18	0.15	-0.36	-0.05
	Sure	Unsure	Approval	Concern	Mastery	Approach
	-----	-----	-----	-----	-----	-----
Sure	1.00					
Unsure	-0.47***	1.00				
Approval	0.30***	0.19**	1.00			
Concern	0.39***	-0.01	0.33	1.00		
Mastery	0.64***	0.06	0.41	0.54	1.00	
Approach	0.30***	0.07	0.65	0.14	0.38	1.00
Avoidance	-0.33***	0.55***	0.20	-0.12	-0.21	0.13
	Avoidance					

Avoidance	1.00					

Note: * = $p < 0.05$
 ** = $p < 0.01$
 *** = $p < 0.001$

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Appendix A. List of items used in the present research.

MASTERY (MASTERY) SCALE (4 ITEMS).

- B33 I like to see that I am improving in my schoolwork.
B40 I work hard to try to understand something new at school.
B56 When I am improving in my schoolwork I try even harder.
B89 I am always trying to do better in my schoolwork.

PERFORMANCE APPROACH (APPROACH) SCALE (4 ITEMS).

- B1 I want to be better at class work than my classmates.
B2 Winning is important to me.
B14 I am happy only when I am one of the best in class.
B76 I work harder if I am trying to be better than others.

PERFORMANCE AVOIDANCE (AVOIDANCE) SCALE (3 ITEMS).

- B80 Trying hard at school is not much fun if the competition is too strong.
B95 I only like to do things at school that I am confident at.
B98 I always chose easy work at school so that I don't have too much trouble.

SOCIAL APPROVAL (APPROVAL) SCALE (5 ITEMS).

- B17 Praise from my teachers for my schoolwork is important to me.
B23 Praise from my friends for my schoolwork is important to me.
B41 At school I work best when I am praised for my school work.
B73 I want to be praised for my schoolwork.
B91 Praise from my parents for schoolwork is important to me.

SOCIAL CONCERN (CONCERN) SCALE (5 ITEMS).

- B10 It is very important for students to help each other at school.
B21 I like to help other students do well at school.
B29 I care about other people at school.
B35 I like working with other people at school.
B46 I enjoy helping others with their schoolwork even if I don't do so well myself.

PERSONAL VALUE OF SCHOOL (PERSVAL; 4 ITEMS).

- A31 School students should complete high school
A32 Most people who are important to me think that I should complete high school.
A33 I am the kind of person who would complete high school.
A34 I personally feel that I should complete high school.

UTILITY VALUE OF SCHOOL (UTILITY; 4 ITEMS).

- B22 I want to do well at school so that I can have a good future.
B38 I aim my schooling towards getting a good job.

B48 I try hard to do well at school so that I can get a good job when I leave.

B54 It is good to plan ahead to complete my schooling.

ABILITY BELIEF SCALES.

Sure ability beliefs (Sure) scale (4 items).

B75 I am very confident at school

B69 Generally I am pleased with myself at school.

B83 I think that I can do quite well at school.

B93 I succeed at whatever I do at school.

Unsure ability beliefs (Unsure) scale (5 items).

B45 At times I feel that I am not good at anything at school.

B58 No one pays much attention to me at school.

B67 I often think there are things that I can't do at school.

B77 I wish I had a little more confidence in my schoolwork.

B81 I often worry that I am not very good at school.

SCHOOL MEASURES OF ACHIEVEMENT.

GPA The schools supplied these data.

Absence The schools supplied these data.