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The Influence of Task Value, Expectancies for Success, and Identity on Athletes' Achievement Behaviors

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This study extended and supported the use of Eccles et al.'s (1983) expectancy-value model to a competitive sport context. High school varsity basketball players ($N = 189$) were assessed on expectancies for success, interest value, attainment value, utility value, and basketball identity. Achievement behavior was measured as coaches' ratings of players' effort and persistence displayed throughout the season. Significant differences emerged between African-American and White athletes on all variables; however, no gender differences were present. Regression analyses indicated different patterns in the relationships among self- and task beliefs and achievement behaviors by race. Structural equation modeling demonstrated that self- and task beliefs mediated the relationship between identity and effort and persistence. Specifically, identity was a strong predictor of self- and task beliefs and expectancies significantly predicted effort and persistence. Explanations for the racial differences are discussed as well as the role that identity plays in the expectancy-value model and practical implications for coaches.

Unlike the academic domain, sport is a voluntary achievement behavior and the determinants of this behavior may vary as a result of the freedom to choose. Consequently, sport psychology researchers have utilized several theories of motivation in an effort to understand sport involvement and associated achievement behaviors. Some of the dispositional variables examined in relation to motivation include attributions for success and failure (Weiner, 1985), self-efficacy (Bandura, 1989), perceived competence (Harter, 1978), self-determination (Deci & Ryan, 1985), goal orientations (Nicholls, 1984), and task value (Eccles et al., 1983). A common thread among these theories is their inclusion of the relationship between competence perceptions and motivation as integral to explaining achievement behaviors. Each theory constitutes a valid approach to studying motivation in the physical domain. However, some key constructs set Eccles' expectancy-value model apart from the aforementioned theories.

Eccles et al. (1983) believe that unidimensional achievement motivation theories do not sufficiently explain why differences exist in youths' levels of motivation across domains, given similar ability levels. They reasoned, for example, that there must be other factors underlying the pervasive gender differences that exist in motivation at all ages. More recently, Eccles and her

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colleagues have discussed the possibility that differences in contextual factors and social roles may underlie racial and ethnic differences (Eccles, Wigfield, & Schiefele, 1998). In an attempt to explain these differences, Eccles et al. created a model that includes multiple antecedents of achievement behaviors. Eccles et al. posit two primary determinants of achievement behavior: (a) expectancies for success and (b) subjective task value. Expectancies for success are beliefs about the self, or what individuals view as their probability for success at a specific task. Task value includes beliefs about the task, defined as the extent to which a particular activity meets an individual's various needs. Together these two factors directly influence achievement behaviors.

In Eccles et al.'s original (1983) conceptualization of the model, subjective task value was described as a multidimensional construct made up of four separate components: attainment value, interest (or intrinsic) value, utility value, and cost. Attainment value is the amount of importance one places on doing well in an activity. Interest value is the immediate rewards one gains from an activity, such as enjoyment. Utility value is how useful one views an activity for reaching one's goals or for other areas of one's life. Cost is what one has to give up in order to participate in an activity. Eccles and Harold (1991) used the term *incentive* rather than interest value, which they described as "the immediate rewards, intrinsic or extrinsic, that participating in a given activity provides" (p. 15), but more recent conceptualizations (Eccles et al., 1998) have returned to the original definition of interest value as the enjoyment an individual gets from performing the activity, akin to Deci and Ryan's (1985) construct of intrinsic motivation. Utility value equates most closely with extrinsic motivation, but it also includes internalized short and long-term goals (Eccles et al., 1998). These four components of value are proposed to have their own unique relationship with achievement behaviors.

The expectancy-value model includes a number of variables that directly or indirectly influence success expectancies and task value (Eccles et al., 1983). These variables include perceived task difficulty, goals, self-schema, perceptions of significant others' beliefs and behaviors, interpretations of past achievement outcomes, the cultural milieu and historical events. An abundance of empirical work has tested the relationships among the model's variables in different achievement settings, however much of the research has been focused within the academic domain (e.g., Eccles et al., 1983; Eccles & Harold, 1991).

Most empirical studies have focused on the relationships among expectancies for success, task value and achievement behaviors. Achievement behaviors typically have been measured as indicators of choice or time spent on task. Other achievement behaviors measured include performance indicators such as effort, performance outcomes and persistence. Research in both the academic and physical domains has demonstrated strong significant relationships among expectancies for success, task value and achievement behaviors (Dempsey, Kimiecik, & Horn, 1993; Eccles & Harold, 1991; Jacobs & Eccles, 1992; Kimiecik, Horn, & Shurin, 1996). For example, Eccles and Harold (1991) demonstrated that both task value (interest, utility, attainment) and self-concept of ability were strong predictors of the amount of free time adolescents spent on math, language arts activities, and sports. Overall, research has demonstrated the applicability of the model in various physical activity contexts (Lirgg, 1991).

One aspect of Eccles et al.'s (1983) model that deserves closer examination is the relationship between the individual components of task value (attainment, interest, utility, and cost) and achievement behaviors. It is important to examine these components separately because each one is predicted to have a unique relationship with achievement behaviors. For example, researchers discovered that the overall value elementary school-aged children attached to a particular task most closely related to their interest (intrinsic value) in the task compared to the other components of task value (Wigfield, 1994). As the children got older, the attainment and utility components of task value were significant predictors of achievement behavior.

Unfortunately, although attainment, interest, and utility value have been examined within Eccles et al.'s (1983) framework, the cost component has been overlooked. Without an assessment of the cost associated with a particular activity, the value component of Eccles et al.'s model is essentially incomplete. Cost is predicted to have a negative relationship with achievement behaviors, and should be evaluated along with the other task value components in order to gain a complete understanding of how task value relates to achievement behaviors.

Gender differences in academic achievement contexts initially served as a catalyst for Eccles et al.'s model (1983; see also Eccles, 1984; Eccles & Harold, 1991; Wigfield, Eccles, Mac Iver, Reuman, & Midgley, 1991). Males and females differ with respect to self- and task beliefs and display distinct achievement behaviors across domains (Eccles & Harold, 1991; Wigfield et al., 1997). In general, findings indicate that males have higher perceptions of competence and expectancies for success in domains such as math and sport, while females have higher self-perceptions in domains including English and reading (Eccles & Harold, 1991; Wigfield et al., 1997). Perceptions of task value and subsequent achievement behaviors among boys and girls follow these patterns as well, with boys demonstrating higher value toward and greater involvement in sport, and girls reporting spending more time on reading and writing outside of school (Eccles 1984a; Eccles & Harold, 1991). Less research has examined racial and ethnic differences, although more general educational research examining the value minority children and parents have toward school indicates that minority children and parents highly value school (e.g., Stevenson, Chen, & Uttal, 1990). Eccles and her colleagues conclude that researchers should extend this work to specific value-related constructs (Eccles et al., 1998). What factors, then, might explain gender and racial differences in expectancies for success and task value?

One potential explanation for group differences in self- and task beliefs may have to do with one's self-schema. Self-schema is defined as generalizations about the self gained from past experiences that serve to determine how an individual processes all of the self-related information in his or her environment (Markus, 1977). One facet of self-schema is the many identities individuals consider salient (Brewer, Van Raalte, & Linder, 1993). In the domain of sport, whether or not individuals have an athletic identity will impact how much they value sport and their expected success in sport. Whether an individual claims an athletic identity can be determined in many ways including commitment to the activity, time invested in the activity, and the ability level of the individual (Kendzierski, Furr, & Schiavoni, 1998).

Sport has traditionally been a male dominated activity. As such, males may possess a stronger athletic identity compared to females. In the case of race, social roles and expectations likely contribute to attaching different amounts of value to sport participation, particularly for African American women (see for example Smith, 2000). The strength of an individual's athletic identity could explain why males (or African Americans) report greater value and success expectancies with respect to sport (Eccles & Harold, 1991). A positive relationship between identity (as a salient part of one's self-schema) and self- and task beliefs is predicted within the expectancy-value model. Although self-schema is included as one of the direct influences on self- and task beliefs, it has rarely been the subject of research in the academic or physical domains.

The purpose of this study was to extend Eccles et al.'s (1983) model to a competitive sport context by examining the relationships among athletes' expectancies for success, subjective task value (i.e., attainment, interest, utility, and cost), achievement behaviors, and athletic identity across gender and race. It is useful to examine the relationships between self- and task beliefs and achievement behaviors in a competitive sport context because the relationships may be quite different from other physical activity settings in which Eccles et al.'s model has been tested. This study sought to answer two primary questions within a high school basketball context: (a) Do expectancies for success and subjective task value predict effort and persistence, and do these relationships differ by gender and/or race? And (b) Do expectancies for success

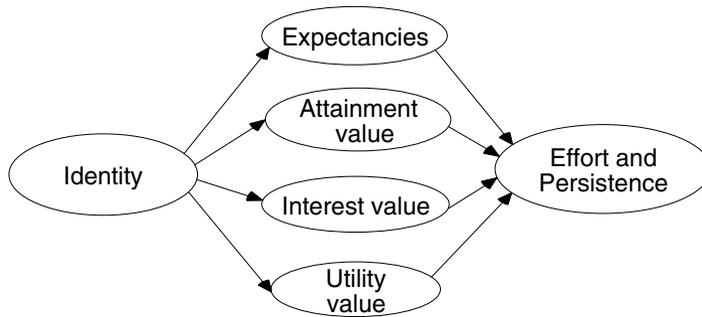


Figure 1. Preliminary model illustrating the predicted relationships among identity, self- and task beliefs and effort and persistence.

and subjective task value mediate the relationship between basketball identity and achievement behaviors?

It was hypothesized that the levels of expectancies, task value, and effort and persistence as well as the relationships between them would differ across gender and race. Moreover, self- and task beliefs were predicted to mediate the relationship between basketball identity and achievement behaviors (see Figure 1).

METHOD

Participants

A total of 189 varsity basketball players from 18 teams in the mid-Atlantic region of the United States (AAA level) participated in this study. The sample included 99 males and 90 females ranging in age from 14 to 19 years ($M = 16.5$, $SD = 1.1$). The race of the participants was diverse with 91 African Americans (48.1%), 83 White (43.9%), and the remaining sample consisting of Asian and other (7.4%). The majority of the athletes were juniors in high school (81) followed by seniors (63), sophomores (26) and freshman (19). The average number of years spent playing on the varsity basketball team was 1.8 ($SD = .8$, range = 1–4), with a mean of 6.9 years of organized basketball experience ($SD = 2.5$, range = 1–14).

Measures

Expectancies for Success

The athletes' expectancies for success were assessed with the ability/expectancy-related items from the Self- and Task-Perception Questionnaire (Eccles & Wigfield, 1995). This scale has demonstrated adequate internal consistency in several studies with children ranging from the first through twelfth grade (Eccles & Harold, 1991; Eccles & Wigfield, 1995; Eccles, Wigfield, Harold, & Blumenfeld, 1993; Wigfield et al., 1997). The five items on the ability/expectancy scale were modified to make them specific to a basketball context. Also, the second item was adapted from "How well do you think you will do in basketball this year?" to "How well did you expect to do in basketball this past season?" Athletes responded to these items on a Likert scale ranging from 1 to 7, with appropriate words serving as anchors on the scale for each question. Scores for each athlete were computed by taking an average of the five items. Higher values on this composite score indicated more positive beliefs about one's basketball competence.

Subjective Task Value

A modified version of Eccles and Wigfield's (1995) scale was used to assess interest value, attainment value, and utility value. A factor analysis on items from the Self- and Task-Perception Questionnaire on data from children in grades five through twelve found that a three-factor solution best fit the data. Therefore, interest value, attainment value, and utility value were measured as three distinct components of task value.

The original 3 subscales included 2 items for interest value, 3 items for attainment value and 2 items for utility value. Reliability for these three subscales of task value was demonstrated in Eccles and Wigfield (1995), with internal consistencies greater than .70 for all scales. Items were adapted to the basketball context, and additional items were added to each subscale in order to increase variability within the task value scales. These items were created based on the definitions of task value put forth by Eccles et al. (1983). For example, on the interest value scale, an additional item was, "I have fun playing on this basketball team." An attainment value item was, "It is important to me to play basketball," and an example of a utility value item was, "How likely is it that you will use what you have learned through basketball in your life after you graduate?" With the inclusion of the additional items, each subscale had four items.¹ The athletes answered these items on a Likert scale ranging from 1 to 7 with appropriate anchors at each end of the scale. Scores for each of the three components of task value were computed by taking an average of the items in each subscale. Higher scores on each subscale indicated greater value associated with basketball.

Cost

Cost has not been measured in any empirical studies testing Eccles et al.'s (1983) model. Therefore, 5 items that were used by Raedeke (1997) as examples of costs associated with swimming in a study of burnout were modified to assess costs associated with playing basketball in this study. Participants in the current study responded to the actual cost items that Raedeke provided as examples. Some of these items included, "Basketball is too competitive and stressful" and "Basketball participation takes up too much of my time." The items were answered on a Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Scores for cost were computed by taking an average of the scores for each of the five items. Higher scores on this measure of cost indicated greater costs associated with participation on the varsity basketball team.

Basketball Identity

Basketball identity was assessed using a self-definition measure used by Kendzierski et al. (1998) in a study with undergraduate students. This measure assesses the degree to which players see themselves as basketball players. It contains six items that are answered on a seven-point Likert scale with appropriate words serving as the anchors of the scale. Items included "How important to you is being a basketball player" and "To what extent do you consider yourself a basketball player." Higher scores indicate a higher degree of basketball identity. Construct validity was demonstrated in Kendzierski et al. (1998) by a high correlation between this six-item measure and the question, "do you see yourself as a basketball player?" The internal consistency reliability for the six-item measure was above .70.

¹The complete scales used to assess expectancies and subjective task value are available from the first author upon request.

Effort and Persistence

According to Eccles et al. (1983) achievement behaviors include choice, effort and persistence related to a particular task. Therefore, the dependent variable assessed in this study was the effort and persistence each athlete displayed on his or her basketball team. Each athlete's respective coach rated the effort and persistence of that athlete. A subscale from the Teacher Rating of Academic Achievement Motivation (TRAAM; Stinnett, Oeheler-Stinnett, & Stout, 1991) called "student behavior related to mastery" was used to assess the effort and persistence of each athlete in the context of basketball. Some of the items were reworded to make them appropriate for the basketball context. For example, one of the original items read, "The student often makes an effort to learn more about topics that have been introduced in class." This item was changed to "On the basketball court, the player often makes an effort to learn how to perform basketball skills." Although eight items are included in the original version of this subscale, three were discarded because they did not assess sport-related effort or persistence. The final scale contained five items that were answered by the coach on a Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) for each player on the team. A total score was calculated for each player by taking an average of the five responses. Ferrer-Caja and Weiss (2000) employed this measure in a physical education setting with males and females ages 14 to 18 years and the modified subscale achieved good internal consistency.

Demographics and Background Information

Athletes completed demographic information including age, year in school, gender, race, years playing on the varsity high school team and total years of playing organized basketball.

Procedure

A pilot study was first conducted with one girl's varsity basketball team in order to test the questionnaires to be used. Parents, players, and the coach read and signed consent forms before the questionnaires were administered, and were then invited to comment on the questions. This step allowed for analysis and feedback from the participants on all items that were added to the original subscales. Based on the pilot and inspection of correlations between items a few minor changes were made. One item on the cost scale was reworded after the pilot study from, "Basketball participation requires too many sacrifices and takes up too much time," to "Basketball participation takes up too much of my time," because it did not correlate with the other cost items. The item from the basketball identity scale, "If there was another activity you could do that produced the same physical benefits and was as convenient as playing basketball, how much would you mind switching from basketball to that activity?" was deleted after the pilot because it did not correlate with the other identity items.

Coaches of girls and boys basketball teams from the mid-Atlantic region of the U.S. were then sent a letter explaining the purpose of the study and requesting their team's participation. Interested teams met, parental consent forms were distributed and returned, and questionnaires were administered to participating teams towards the end of the season (February and March). The athletes were told the purpose of the study was to discover what factors were related to motivation in basketball and were assured of the confidentiality of their questionnaires. Only the lead author was present during administration of the questionnaires, which took approximately fifteen minutes to complete.

While the athletes completed their questionnaires, the coaches stepped into another room to complete the effort and persistence rating forms. These participants also signed consent forms and were assured of confidentiality. The time needed for the coaches to complete the

questionnaires was about fifteen minutes. The final sample included 9 coaches of girls' basketball teams (90 players) and 9 coaches of boys' basketball teams (99 players).

Data Analyses

In order to examine potential differences in self- and task beliefs, identity, and effort and persistence by gender and race, a multivariate analysis of variance (MANOVA) was conducted. A linear regression analysis followed to examine the relationships between self- and task beliefs and achievement behaviors. Given the extensive differences by race evident in the MANOVA, separate regression analyses by race were conducted. To examine the hypothesis that expectancies and task value mediate the relationship between basketball identity and achievement behaviors, structural equation modeling utilizing AMOS 4 was employed. Goodness of fit was assessed using the chi-square statistic, the Goodness of Fit Index (GFI), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA). Fit index values equal to or above .90 are commonly accepted as indicating an adequate fit, while a RMSEA of .05 indicates a good fit, although values as high as .08 represent reasonable errors of approximation in the population (Byrne, 2001). Parameter estimates were considered significant when the *t* value was greater than 1.96. Standardized residuals, squared multiple correlations, and modification indices were examined in order to assess the model's appropriateness to the data.

RESULTS

Scale Reliabilities, Correlations Among Variables and Descriptive Statistics

Alpha coefficients for six of the seven scales indicated acceptable (above .70) reliability. The alpha coefficient for the cost scale was .43, and deletion of any one item did not appreciably improve the reliability, therefore it was not included in any further analyses. Reliabilities for all scales used are included on the diagonal of the correlation matrix illustrated in Table 1.

The correlations among the variables (expectancies for success, interest value, attainment value, utility value, identity, and effort) were mostly significant, with most falling in the moderate range ($r = .3-.5$). The only correlation of concern for multicollinearity was between attainment value and identity at .80. This issue is addressed in the structural equation model results discussed later. Means and standard deviations for the athlete variables are included at

Table 1
Alpha Coefficients, Correlations, and Descriptive Statistics ($N = 189$)

	1	2	3	4	5	6
Expectancies for success	.84					
Interest value	.37**	.76				
Attainment value	.49**	.49**	.83			
Utility value	.47**	.42**	.56**	.82		
Basketball identity	.51**	.50**	.80**	.51**	.87	
Effort and persistence	.22**	.19**	.12	.17*	.08	.86
<i>M</i>	4.98	6.16	5.44	4.98	5.41	3.70
<i>SD</i>	.92	.92	1.26	1.40	1.28	.84

Note. All variables are scored on 7-point scales. Values on the diagonal are alpha coefficients. Other values represent correlations between variables.

* $p < .05$, ** $p < .01$

Table 2
Race and Gender Differences

	African American (<i>n</i> = 91) <i>M</i> (<i>SD</i>)	White (<i>n</i> = 83) <i>M</i> (<i>SD</i>)	<i>F</i>	η^2	Female (<i>n</i> = 80) <i>M</i> (<i>SD</i>)	Male (<i>n</i> = 94) <i>M</i> (<i>SD</i>)
Expectancies for success	5.29 (0.89)	4.68 (0.84)	17.80**	.095	4.84 (0.94)	5.14 (0.88)
Interest value	6.35 (0.78)	5.98 (1.01)	4.87*	.028	5.98 (1.01)	6.34 (0.79)
Attainment value	5.74 (1.16)	5.20 (1.26)	8.00**	.045	5.36 (1.43)	5.59 (1.05)
Utility value	5.37 (1.23)	4.60 (1.40)	13.17**	.072	4.85 (1.46)	5.14 (1.28)
Identity	5.66 (1.25)	5.21 (1.27)	5.55*	.032	5.37 (1.36)	5.50 (1.20)
Effort and persistence	2.80 (0.55)	2.54 (0.62)	11.94**	.066	2.73 (0.66)	2.63 (0.54)

p* < .05, *p* < .01.

the bottom of Table 1. Athletes scored relatively high on interest value and attainment value associated with basketball, as well as on the strength of their basketball identity. They scored above the median, but relatively lower, on expectancies for success and the usefulness associated with basketball. The means and standard deviations for the coach rating scores are also included in Table 1. Coaches rated their players above the median in effort and persistence.

Differences by Gender and Race

In order to examine potential gender and racial differences on the variables of interest, a multivariate analysis of variance (MANOVA) was conducted on expectancies, the value components, identity, and effort. Only those athletes who indicated either a “White” (*n* = 83) or “African American” (*n* = 91) racial identity were included in the race analysis. The main effect for gender was not significant, Wilks’ lambda = .965, *F*(6, 165) = .43, *p* = .997 ($\eta^2 = 3.9\%$). However, the race main effect was significant, Wilks’ lambda = .793, *F*(6, 165) = 7.16. *p* < .001 ($\eta^2 = 20.7\%$). Follow-up univariate analyses indicated that for all of the variables except effort and persistence, African-American athletes scored significantly higher than their White counterparts. Interestingly, African-American athletes were rated significantly lower on effort and persistence than their White teammates. The interaction effect was not significant, Wilks’ lambda = .957, *F*(6, 165) = 1.25, *p* = .284 ($\eta^2 = 4.3\%$). Table 2 provides the means and standard deviations for all variables by gender and race.

Do Expectancies for Success and Task Value Predict Achievement Behaviors?

Given the significant differences by race, separate standard multiple regression analyses were employed for African-American and White athletes (see Tables 3 and 4, respectively).

Table 3
Regression Analysis for African-American Athletes

Variable	<i>B</i>	<i>SE B</i>	β	<i>sr</i> ²
Expectancies for success	.201	.109	.232	.034
Interest value	-.038	.118	-.039	.001
Attainment value	.052	.078	.078	.004
Utility value	.096	.078	.153	.015

Note. *R*² = .13 (*p* < .05).

Table 4
Regression Analysis for White Athletes

Variable	B	SE	β	sr ²
Expectancies for success	.422	.117	.404**	.130
Interest value	.248	.101	.284*	.060
Attainment value	-.137	.095	-.197	.021
Utility value	.041	.074	.065	.003

Note. $R^2 = .22$ ($p < .001$).

* $p < .05$, ** $p < .01$

The predictor variables were entered into the equation as a block since there was no theoretical reason to order them. The predictor variables included expectancies for success, interest value, attainment value, and utility value, while the dependent variable was effort and persistence.

For African-American athletes, the relationship between the predictor variables and effort and persistence was significant, $F(4, 86) = 3.20$, $p < .017$. R^2 indicated that 13% of the variance in effort and persistence was accounted for by the predictor variables (see Table 3). However, regression weights showed that no variable independently contributed to the relationship (i.e., no beta weights significant at $p < .05$). In order to explore the possibility of a suppressor effect, the simple correlations between each independent variable and the dependent variable were compared to the beta weights. Tabachnick and Fidell (1996) state that if the simple correlation is substantially smaller than the beta weight, or if the two have opposite signs, then a suppressor variable is likely. This was not the case here. Thus, these findings suggest that, in combination, African American athletes who have high expectancies for success in basketball and thought basketball was more useful, interesting, and important displayed more effort and persistence in practice and games.

For the White athletes, the relationship between the predictor variables and effort and persistence was significant, $F(4, 78) = 5.48$, $p < .001$. Collectively, the athletes' expectancies for success, interest value, attainment value, and utility value predicted 22% of the variance in effort and persistence (see Table 4). Expectancies for success ($\beta = .40$) and interest value ($\beta = .28$) were significant positive predictors of effort and persistence. A check for suppressor variables indicated no apparent problems. These results indicate that for White athletes, collectively the self- and task beliefs predicted effort and persistence, with high ability perceptions and enjoyment of basketball contributing the most to the relationship.

Do Expectancies for Success and Task Value Mediate the Relationship Between Identity and Achievement Behaviors?

In order to test whether expectancies for success, interest value, attainment value and utility value mediated the relationship between basketball identity and effort and persistence, a structural equation model utilizing AMOS 4 was conducted.

Model Estimation

The fit of the full model was unsatisfactory, $\chi^2(351) = 805.91$, $p < .001$, RMSEA = .091, GFI = .765, TLI = .821, CFI = .839. To locate the source of lack of fit, standardized residuals, squared multiple correlations, and modification indices were inspected. Five subsequent models were tested, each time removing an item that indicated poor reliability rather than removing or correlating error terms. This process resulted in the removal of items from the following

Table 5
Comparison of Fit Indices for Full and Alternative Models

Model	χ^2	<i>df</i>	GFI	CFI	TLI	RMSEA
Full model	805.9	316	.765	.839	.821	.091
Minus I4	679.5	291	.786	.867	.851	.084
Minus U1	617.7	267	.794	.873	.858	.084
Minus I2	559.8	244	.807	.883	.868	.083
Minus E2	497.0	222	.816	.895	.880	.081
Minus EP1	417.9	181	.822	.902	.890	.080
No attain	253.9	146	.872	.932	.919	.072

Note. Each successive model deletes that item plus the items eliminated in previous steps.

I = Interest value; U = Utility value; E = Expectancy for success; EP = Effort and Persistence.

scales in the order listed: interest value, utility value, interest value, expectancies, and the effort scale. After the removal of each item the fit indices were examined and showed improvement over the previous version. Once the items were removed each scale had a total of three items except for the interest value scale, which had two. The final model demonstrated adequate fit, $\chi^2(146) = 299.78$, $p < .001$, RMSEA = .075, GFI = .861, TLI = .908, CFI = .921. Table 5 presents fit statistics for all models tested.

Relationships Among the Variables

We then examined the model relationships among identity, expectancies, the value components, and effort and persistence. Figure 2 displays those relationships. A critical ratio or t-value ≥ 1.96 was used. Consistent with the hypotheses, identity was a strong and significant predictor of expectancies and all of the value components, although only expectancies significantly predicted effort and persistence. Identity showed an indirect effect of .154.²

Because of the high correlation between identity and attainment value, we also ran the model removing the attainment variable, maintaining the indirect relationship between identity and achievement through expectancies and the other task components. The fit was further improved, $\chi^2(129) = 253.97$, $p < .001$, RMSEA = .072, GFI = .872, TLI = .919, CFI = .932. The relationships among the variables, however, remained consistent. Based on these findings and consistent with the expectancy–value model, identity is a significant predictor of expectancies and task value. Additionally, expectancies for success mediated the relationship between identity and effort and persistence, partially supporting the expectancy–value model.

DISCUSSION

The purpose of this study was to examine the relationships among expectancies for success, subjective task value, achievement behaviors, and basketball identity within Eccles' et al. (1983) expectancy–value model in a population of male and female competitive high

²Amos 4 does not report the significance of indirect effects. Therefore, the model was subsequently examined using Lisrel in order to assess the indirect relationship between identity and effort and persistence. The results of this analysis indicated that this indirect relationship was nonsignificant.

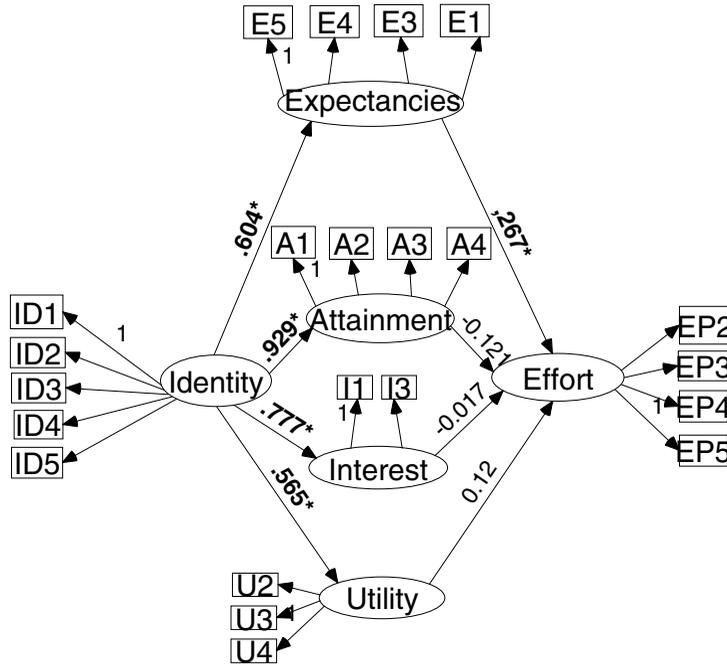


Figure 2. The final model illustrating the strength of the relationships among identity, self- and task beliefs and effort and persistence. Coefficients with an asterisk are significant.

school athletes. The first hypothesis stated that the levels and relationships among expectancies for success, task value and effort and persistence would differ across gender and race. This hypothesis was supported in that there were significant differences between African-American and White athletes on all mean variable scores, although there were no significant differences between males and females. Additionally, expectancies and task value predicted effort and persistence for both African-American and White athletes, but to differing degrees.

The second hypothesis predicted that self- and task beliefs (expectancies for success and task value) would mediate the relationship between basketball identity and achievement behaviors in males and females. This hypothesis was supported through evidence in the structural equation model that demonstrated significant and strong relationships between basketball identity and self- and task beliefs in addition to the significant relationship between expectancies and effort and persistence. There was also an indirect relationship between basketball identity and effort and persistence.

The mean differences that emerged between African-American and White athletes on expectancies for success, interest value, utility value, attainment value and identity highlight the importance of examining these beliefs across different racial and ethnic groups. African-Americans scored significantly higher than Whites on all self- and task beliefs as well as athletic identity, indicating they had higher perceptions of competence, were more interested in basketball, believed basketball to be more useful to them, felt that basketball was more important to them and identified more strongly as basketball players compared to the White athletes. One reason for their higher scores on these self- and task beliefs could be due to the

fact that in African-American culture, sport is valued as an expression of self and a potential way out of economic hardship and racial oppression (Coakley, 2001; Major, 1998). In terms of identity, our findings suggest that identifying with an athletic role holds a central place in one's racial identity, just as identifying with specific student roles have been linked to an African-American identity (Oyserman, Harrison, & Bybee, 2001).

Surprisingly, coaches rated their African-American athletes lower on effort and persistence compared to White athletes. A plausible explanation for this finding could be an unintended bias on the part of the coaches. Support for this type of bias comes from the racial stereotyping literature. For example, Coakley (2001) defines race logic as the assumption that racial differences in sport abilities are grounded in biological factors. Thus, some may attribute African-American athletes' proficiency in basketball to genetic factors rather than effort or persistence. Due to the belief in the "natural" ability of African-American athletes, coaches may attribute higher levels of effort to White athletes who achieve a comparable level of performance. Clearly this issue deserves further attention, particularly since the little we know about race and sport is directed at the African-American male athlete (Hall, 2001).

Differences also emerged between African-American and White athletes concerning the relative contributions of the independent variables in explaining the variance in effort and persistence. For African-American athletes, only expectancies for success approached significance, while both expectancies and interest value were significant predictors of effort and persistence for White athletes. These relationships support past research that has demonstrated that ability perceptions and interest have the strongest relationship with achievement behaviors (Dempsey et al., 1993; Eccles & Harold, 1991; Papaioannou & Theodorakis, 1996). Knowing the relative contributions of these variables for African-American and White athletes can help coaches and other practitioners more carefully structure the sport environment in order to maximize the positive expectancies and value that individuals hold for their activity.

Through the use of structural equation modeling, results indicated that expectancies for success mediated the relationship between basketball identity and effort and persistence. The significant relationships among identity, expectancies, interest value, utility value and attainment value lend strong support to the inclusion of self-schema in Eccles et al.'s (1983) expectancy-value model. According to the model, if an individual feels that aspects of a particular activity such as basketball are a critical piece of his or her self-schema, then participation in basketball should have high attainment value for that individual and achievement behaviors will be high (Eccles & Harold, 1991). Apparently, self-schema has a strong impact on the other self- and task beliefs as well, making it an important piece of the model.

Due to the high correlation between identity and attainment value, attainment value was removed from the second model. Although this model provided a slightly better fit for the data, it can be argued theoretically that attainment value should remain in the model because it represents a construct that is distinct from identity. An individual may decide that a particular activity supports his or her self-schema (forming an identity) and then decide to attach value or importance to that activity (attainment value). Based on the findings from both models, it appears that identifying with a specific athletic role may have an important impact on self- and task beliefs and an indirect influence on achievement behaviors. Due to the significant racial differences we discovered, future research should examine this model separately for African-American and White athletes in order to discover whether or not the relationships are consistent.

The findings from this study support other studies that have tested Eccles' model in the physical or sport domain, including Eccles and Harold (1991), Dempsey et al. (1993), and Papaioannou and Theodorakis (1996). Specifically, the current study replicated Eccles and Harold (1991) through a comparison of self- and task beliefs between males and females. Unlike

the findings of Eccles and Harold, no significant gender differences emerged with respect to expectancies, interest value, utility value, attainment value, or achievement behaviors. This may be due to the differing contexts in which the two studies took place. Eccles and Harold examined sixth graders as well as children in kindergarten through the fourth grade, whereas this study investigated varsity basketball players competing at the highest level in high school athletics. At this level of competition, males and females have more in common than not. Thus, while Eccles and Harold lamented that gender differences emerge at ages as young as six years old, our findings indicate that within a competitive sport environment females can feel just as competent, have as much interest in sport, place as much importance on sport, and perceive sport to be as useful as males do. Perhaps the social context at the higher levels of competition is part of what fosters these higher self- and task beliefs.

Our study extended the use of Eccles et al.'s (1983) model into a competitive high school context. Many of the previous tests of Eccles' model have been in a physical activity setting (Deeter, 1989, 1990; Kimiecik et al., 1996; Papaioannou & Theodorakis, 1996) or in reference to sport (Eccles & Harold, 1991), and often with samples of children or young adolescents in middle school. The use of Eccles' model was also extended into a racially diverse context with 48% African-Americans. The significant relationships among self- and task beliefs and effort and persistence for racially diverse males and females in a competitive high school sport setting lend strong support to the generalizability of Eccles et al.'s model across physical activity contexts.

On a practical note, due to the significant relationships in the models tested, coaches should be encouraged to emphasize positive expectancies for success with their players. One way to promote positive expectancies is to provide appropriate and contingent feedback. Previous research has shown that specific types of feedback in a sport setting relate favorably to competence beliefs or expectancies for success. Findings from studies in the sport domain (Allen & Howe, 1998; Amorose & Weiss, 1998; Black & Weiss, 1992) have consistently demonstrated that more frequent praise following successful performances, and more frequent encouragement and information following unsuccessful performances is related to higher perceptions of competence in males and females. If coaches are encouraged to incorporate appropriate feedback into practices and games then expectancies for success should increase and lead to increases in effort and persistence.

A couple of limitations of this study deserve discussion. The scale that was used to measure the cost component of task value demonstrated low internal consistency and could not be used in further analyses. Cost is defined as one of the four components of task value in Eccles et al.'s (1983) model, yet it has rarely been measured in studies that test the model, and never in the sport domain. In retrospect, the questions used to measure cost in this study may have been too specific and thus not applicable to each athlete. Future research should continue to explore the impact of cost, but in relation to more general costs such as the time commitment, loss of alternative activities, and physical effort required. Perceived costs may influence the relationship between task value and achievement behaviors. For instance, a male high school athlete may have high expectancies for success and enjoy playing baseball, but due to a conflict with running track that same season he discontinues his participation in baseball. Without a reliable measure of cost (missing track) his reason for discontinuing baseball will not be evident.

Another limitation to the current study was the inclusion of only one measure of achievement behaviors in the data analysis. It would be of great value to include multiple measures of achievement behaviors including actual performance indices, free time spent engaged in sport, and choice of involvement in sport. This would allow a comparison of the relationships among self- and task beliefs and different achievement behaviors.

This study provided additional support for Eccles et al.'s (1983) expectancy–value model of achievement behaviors within a diverse population of competitive athletes. It also supported the examination of the separate components of task value as evidenced by the unequal contributions of interest value, attainment value, and utility value toward predicting effort and persistence. Differences in the relationships among self- and task beliefs and achievement behaviors lend insight into which athletes are most likely to continue participation in sport, put forth the most effort, and strive to perform at higher levels.

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