

Scholarship Status, Controlling Coaching Behavior, and Intrinsic Motivation in Collegiate Swimmers: A Test of Cognitive Evaluation Theory

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The purpose of this study was to test the potential moderating role of perceived controlling coaching behavior on the relationship of scholarship status to perceived competence and autonomy and, indirectly, intrinsic motivation in collegiate Division I swimmers. Simultaneously, we tested the mediating roles of perceived competence and autonomy in the relationships of scholarship status and perceived controlling coaching behavior to intrinsic motivation. NCAA Division I male and female swimmers ($N = 162$) in the United States were administered a questionnaire containing measures of all study variables. The results of path analysis revealed a significant interaction between scholarship status and perceived controlling coaching behavior predicting perceived competence ($\gamma = -.26$). In addition, the results indicated a significant negative relationship between perceived controlling coaching behavior and perceived autonomy ($\gamma = -.25$), and a significant indirect relationship between perceived controlling coaching behavior and intrinsic motivation ($R^2 = .22$), partially supporting the mediation model. The present findings provide additional support for cognitive evaluation theory and the importance of considering interactions between scholarship status and various aspects of the social context of sport in predicting perceptions of competence and autonomy, and intrinsic motivation. The findings expand the literature on the way scholarships function within the context of the coach–athlete relationship, providing new information on how coaches may impact their athletes' motivation.

Keywords: rewards, perceived competence, perceived autonomy, sport, athletes

College athletics has historically played an instrumental role in the life of a university and can have a positive influence on athletes, the student body, alumni connections, and the community (Hyman & Van Jura, 2009; Lombardi et al., 2003). In the United States, college sport has grown more complex throughout the 20th century moving from an amateur sport model to one of professionalized sport, bringing in more revenue and attracting unprecedented media attention (Lombardi et al., 2003). This evolution of the role of college sport has coincided with the development of a “win at all costs” attitude,

which has led some to refer to “student-athletes” as “athlete-students” (Hyman & Van Jura, 2009). Changes in the culture of college sport may be concerning for many reasons, not least of which is the impact they might have on athletes' motivation to play their sport. At higher levels of competition, some athletes may experience more pressure to play, not only for the love of the game, but to win for the university community, alumni, and a national audience. Unfortunately, these more external reasons for participation may not produce the most optimal sport experiences for these young athletes (Ryan & Deci, 2007).

Self-determination theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2002, 2007) categorizes different reasons for sport participation as either intrinsic or extrinsic. Intrinsic reasons reflect participation for internal reasons such as the personal satisfaction and enjoyment experienced while playing the sport. Intrinsic reasons for participation are considered completely au-

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onomous or self-determined. Extrinsic reasons, on the other hand, can be either autonomous or controlling. The autonomous forms include integrated regulation (e.g., participating in sport because it is part of who you are), and identified regulation (e.g., participating in sport because one values the benefits). The controlling forms include introjected regulation (e.g., participating in sport to gain feelings of pride or avoid feeling guilt and anxiety), and external regulation (e.g., participating in sport for rewards or social approval). Amotivation (e.g., participating in sport without any interest or desire) is considered a nonregulation and reflects unintentional behavior (Ryan & Deci, 2002; Standage & Ryan, 2012). SDT research in the sport setting clearly indicates that athletes experience more positive outcomes such as positive emotions, sport intentions, satisfaction, effort, and persistence when they experience intrinsic motivation and autonomous forms of extrinsic motivation compared with more controlling forms of motivation (Blanchard, Amoit, Perreault, & Vallerand, 2009; Pelletier, Fortier, Vallerand, & Brière, 2001; Pelletier et al., 1995). Of these, intrinsic motivation has consistently been the strongest predictor of positive cognitive, affective, and behavioral consequences in many sport studies (e.g., Gagné, Ryan, & Bargmann, 2003; Pelletier et al., 1995, 2001) and thus should be considered a superior form of motivation influencing sport experience.

Given the benefits of having more intrinsic motivation in sport, researchers have been interested in identifying how various social contextual factors impact athletes' intrinsic motivation. Cognitive evaluation theory (CET; Ryan & Deci, 2002, 2007), a sub theory of self-determination theory, helps predict how various events within the social context of sport such as coaching behavior, level of competition, or the use of rewards may impact intrinsic motivation. Specifically, it states that the influence of the social context on intrinsic motivation will depend on the extent to which it impacts athletes' feelings of competence and/or autonomy. The need for competence refers to the need to feel skilled at one's sport. The need for autonomy is the need to engage in activities of one's choosing. According to CET, any event that increases perceived autonomy or perceived competence will enhance intrinsic motivation. Conversely, any event that decreases perceived autonomy or

competence will undermine intrinsic motivation. Researchers have supported the positive relationships between satisfaction of the needs for competence and autonomy and intrinsic or autonomous motivation in sport settings (Gagné et al., 2003; Hollembeak & Amorose, 2005; Jöesaar, Hein, & Hagger, 2011; Sarrazin, Vallerand, Guillet, Pelletier, & Cury, 2002).

CET further explains that contextual events such as rewards have both informational and controlling aspects (Deci & Ryan, 1985; Ryan & Deci, 2002). The informational aspect of the reward provides information about the ability of individuals to interact effectively with their environment (e.g., receiving a "best player" award). The controlling aspect of the reward refers to how much pressure individuals experience as a result of the reward (e.g., coaches promising rewards for good performances). The relative salience of the informational and controlling aspects of a reward is referred to as the functional significance and will determine whether intrinsic motivation is enhanced or undermined. For example, if the reward is perceived as controlling, it is more likely to undermine athletes' intrinsic motivation because autonomy is diminished. However, if the reward is perceived as informational, it will depend on whether the information is positive or negative. If the information is positive, then intrinsic motivation will be enhanced owing to elevated levels of perceived competence; if the information is negative, intrinsic motivation is more likely to be undermined owing to lower perceptions of competence (Ryan & Deci, 2002). A reward that may be particularly relevant to NCAA Division I college athletes' intrinsic motivation is scholarship status.

Researchers who have focused on the relationship between scholarship status and motivation have revealed mixed findings in their research. In one of the earliest research studies examining scholarship status and motivation in college athletes, Ryan (1977) used enjoyment items as well as some additional questions to indirectly assess intrinsic motivation in male football players. He found that more scholarship football players were participating in their sport for extrinsic reasons compared with nonscholarship football players, and scholarship football players indicated they enjoyed their sport less than the nonscholarship players. Later, Ryan (1980) reported similar results with NCAA Di-

vision II scholarship and nonscholarship football players; however, the wrestlers and female athletes on scholarship in the study reported they enjoyed their sport more than their nonscholarship teammates. These results show how scholarships may be perceived as less controlling within the culture and climate of certain sports (e.g., wrestling and women's sports in the 70s). However, this is only speculative, as perceptions of autonomy were not assessed.

In the most recent study on sport scholarships (Medic, Mack, Wilson, & Starkes, 2007), a broader SDT framework was used to examine the relationships between scholarship status and all motivation regulations in basketball players from NCAA Division I schools and universities in Canada. The results indicated that male Division I scholarship athletes reported higher levels of introjected regulation than female nonscholarship athletes as well as higher levels of external regulation compared with female scholarship athletes and all nonscholarship athletes. Similar to the female athletes in this study, Hollembeak and Amorose (2005) examining only intrinsic motivation in athletes from a variety of sports, reported no differences by scholarship status. These studies support how scholarships may be perceived as more controlling for certain sports (e.g., football and men's basketball) and for males in particular. Collectively, these mixed findings highlight the importance of the functional significance of the scholarship and how it may differ across sport or gender. However, none of these studies directly tested the mediating roles of perceived competence or autonomy in the relationship between scholarship status and intrinsic motivation, so these pathways remain unexplored.

In other research on scholarship status, NCAA Division I college athletes on full scholarship and partial scholarship report higher perceptions of competence relative to those not on scholarship (Amorose & Horn, 2000; Hollembeak & Amorose, 2005). In contrast, no differences in perceptions of autonomy (i.e., perceived choice) have been found (Amorose & Horn, 2000, 2001; Hollembeak & Amorose, 2005). Finally, Amorose and Horn (2001) reported no differences in perceptions of competence by scholarship status. Overall, these results demonstrate that, in line with CET, higher scholarship status may communicate positive information about athletes' ability levels. This

could elevate scholarship athletes' perceptions of competence and therefore enhance their intrinsic motivation, though this was not tested in these studies. On the other hand, no differences in perceived autonomy across scholarship status suggest that the controlling aspect of scholarships was not salient for these athletes on average (Amorose & Horn, 2000, 2001; Hollembeak & Amorose, 2005). A qualitative investigation of scholarship athletes showed that experiences of autonomy can be dependent on athletes' relationship with their coach (Kimball, 2007). Therefore, potential moderating factors such as controlling coaching behavior may impact athletes' perception of their scholarship as controlling. For example, higher scholarship status may only decrease feelings of autonomy for athletes who perceive their coaches as being very controlling.

Owing to mixed results and numerous limitations, the relationship between scholarship status and motivation requires further research. Limitations include using enjoyment or perceived competence to measure intrinsic motivation (e.g., Amorose & Horn, 2000, 2001; Ryan, 1980), small sample sizes and uneven distributions of scholarships across participants (Amorose & Horn, 2001; Medic et al., 2007; Ryan, 1977), recruiting athletes from two different countries' (i.e., Canada and United States) collegiate sport systems (Medic et al., 2007), and using participants from a variety of sports introducing potentially confounding variables in the studies (Amorose & Horn, 2000, 2001; Hollembeak & Amorose, 2005). Finally, potential social factors that may influence athletes' perception of their scholarship and, thus, help clarify the mixed findings in the existing literature have not been included in scholarship research. According to CET (Ryan & Deci, 2002), the effect that scholarship status has on the intrinsic motivation within the sport context may be influenced by the interpersonal climate in which the scholarship is administered. That is, the impact of the scholarship on athletes' perceptions of competence, autonomy, and ultimately intrinsic motivation should depend in part on factors such as the coaching climate in which the scholarship is administered.

A specific type of coaching behavior that appears particularly relevant to how athletes feel about their scholarship status is controlling coaching behavior. Controlling coaching behavior includes behaviors where coaches act in

authoritarian and pressuring ways (Bartholomew, Ntoumanis, & Thøgersen-Ntoumani, 2009) and is thought to hinder more autonomous motivation (Deci & Ryan, 1985). In line with SDT, controlling coaching behaviors should undermine autonomous forms of motivation and promote more controlling forms because they fail to support satisfaction of basic psychological needs including perceived competence and autonomy (Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011b; Hodge & Lonsdale, 2011; Pelletier et al., 2001). Researchers have supported this contention in sport, revealing that perceptions of controlling coaching behavior relate positively to forms of controlling motivation and negatively to autonomous forms (Pelletier et al., 2001) and undermine perceptions of the three basic psychological needs (i.e., the needs for competence, autonomy, and relatedness; Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011a).

Controlling coaching behavior has recently been assessed using a measure developed from an SDT perspective called the Controlling Coach Behaviors Scale (CCBS; Bartholomew, Ntoumanis, & Thøgersen-Ntoumani, 2010). The CCBS consists of four subscales: controlling use of rewards, negative conditional regard, intimidation, and excessive personal control. Each of the subscales describes a unique controlling strategy that coaches may use in the sport context and that has the potential to undermine athletes' feelings of autonomy and competence, and thus undermine autonomous motivation (Bartholomew et al., 2009). Though all four subscales reflect controlling coaching behaviors, only the controlling use of rewards subscale directly addresses how coaches might use rewards (e.g., scholarships) to control their athletes. According to CET (Ryan & Deci, 2002), the effect that scholarships have on intrinsic motivation within the sport context depends, in part, on the extent to which it is used in a controlling manner. Therefore, the way that coaches use rewards to control their athletes may have the most bearing on how athletes feel about their athletic scholarship status and, thus, how their perceptions of competence, autonomy, and intrinsic motivation are impacted.

The purpose of this study was to test the potential moderating role of perceived controlling coaching behavior on the relationship of

scholarship status to perceived competence and autonomy and, indirectly, intrinsic motivation in collegiate Division I swimmers in the United States. This study addresses limitations of past scholarship research by using a large sample of athletes from the same sport (i.e., swimming), country (i.e., United States), and level of competition (i.e., NCAA Division I), with a relatively even distribution of scholarship status, and testing the potential moderating role of perceived controlling coaching behavior in the relationship between scholarship status and intrinsic motivation. We have also extended past research by explicitly testing the mediating roles of perceived competence and autonomy in the relationships of scholarship status, controlling coaching behavior, and their interaction to intrinsic motivation. We predicted that athletes who reported lower perceived controlling coaching behavior would demonstrate a stronger positive relationship between scholarship status and perceived competence compared with athletes who reported higher perceived controlling coaching behavior. Because there has been no relationship reported between scholarship status and perceived autonomy in the literature (Amorose & Horn, 2001), we expected a negative relationship between scholarship status and perceived autonomy only under conditions of higher perceived controlling coaching behavior. Finally, perceived competence and autonomy were hypothesized to mediate the relationships of scholarship status, controlling coaching behavior, and/or their interaction to intrinsic motivation.

Method

Participants

Participants ($N = 162$) included female ($n = 91$) and male ($n = 71$) swimmers from eight NCAA Division I colleges and universities from seven conferences across the Midwest, Mid-Atlantic, and Northeast regions of the United States. Four teams were coed with the same coach working with both male and female swimmers, two teams were coed with separate coaches for males and females, and two teams were women only. All head coaches were male. The participants were members of their collegiate swim team, ranged in age from 18 to 22 ($M_{\text{age}} = 20.06$ years, $SD = 1.22$) and reported practicing swimming for 11.55 years ($SD = 3.63$). The sample

included 24.7% freshman, 25.9% sophomores, 31.5% juniors, 14.8% seniors, 1.9% graduate students, 0.6% other, and 0.6% did not report class. Swimmers were included in this study because of the variability of scholarship status within teams in NCAA Division I schools. Almost 20% reported no scholarship (0%), 69.7% were on varying amounts of partial scholarship (1%–99%), and 10.5% were on full athletic scholarship (100%). The majority of athletes reported being White/Caucasian (85.8%), with the rest identifying themselves as Black (2.5%), Asian (3.7%), Latino/Hispanic (2.5%), Bi- or Multiracial (1.9%), other (2.5%), or did not report their race (1.2%).

Measures

Perceived autonomy. Perceived autonomy was assessed using a 6-item scale developed for the sport setting by Hollembeak and Amorose (2005). Items assessed the amount of choice or control athletes feel they have in their sport participation (e.g., “I have a say in what I do when participating in sport”). Responses ranged on a 5-point scale from 1 = not at all true for me to 5 = completely true for me. This scale has demonstrated construct validity and adequate internal consistency reliability ($\alpha > .70$) in samples of college athletes (e.g., Amorose & Anderson-Butcher, 2007; Hollembeak & Amorose, 2005).

Perceived competence. Perceived competence was assessed by a modified version of the 5-item Perceived Competence subscale of the Intrinsic Motivation Inventory (IMI; McAuley, Duncan, & Tammen, 1989). Responses ranged on a 7-point scale from 1 = strongly disagree to 5 = strongly agree. The items were modified from “activity” and “at this game” to “my sport” and “during competition” (e.g., “I think I am pretty good at my sport” and “I am satisfied with my performances during competition”). Two of the items were changed from past tense to present tense (e.g., “After competing, I feel pretty competent at my sport” and “I can’t perform very well in my sport”). Modified versions of this subscale have demonstrated construct validity and adequate internal consistency reliability ($\alpha > .70$) in previous research studies with college (Amorose & Horn, 2000, 2001), club, regional, and national-level athletes (Adie, Duda, & Ntoumanis, 2008; Bartholomew et al., 2011a; Reinboth, Duda, & Ntoumanis, 2004).

Motivation regulations. Intrinsic motivation was assessed using the 4-item intrinsic motivation-general subscale (e.g., “I participate in my sport because I enjoy it”) from the Behavioral Regulation in Sport Questionnaire (BRSQ; Lonsdale, Hodge, & Rose, 2008).¹ The responses ranged on a 7-point scale from 1 = not true at all to 7 = very true. The IM-general subscale has demonstrated construct validity and adequate internal consistency reliability ($\alpha > .70$) in previous sport-related research studies examining competitive athletes (ages 18–58) from a variety of sports including soccer, basketball, track and field, swimming, and tennis (Hodge & Lonsdale, 2011; Lonsdale et al., 2008).

Controlling coaching behavior. The 4-item controlling use of rewards subscale (e.g., “My coach tries to motivate me by promising to reward me if I do well.”) from the Controlling Coach Behaviors Scale (CCBS; Bartholomew et al., 2010) was used to assess the extent to which athletes perceived their coaches used rewards (e.g., scholarships) to control them. The responses ranged on a 7-point scale from 1 = strongly disagree to 7 = strongly agree. The controlling use of rewards subscale alone has demonstrated adequate internal consistency reliability ($\alpha > .70$) with competitive adolescent athletes (Bartholomew et al., 2010).

Demographic questions. Each participant was asked to respond to demographic questions concerning personal information and sport background. Athletes also indicated their athletic scholarship status ranging from no scholarship (0%), to four levels of partial scholarship (1%–25%, 25%–50%, 50%–75%, 75%–99%), to full scholarship (100%). Athletic scholarship was treated as a continuous variable in the study on a 6-point scale ranging from 0 to 5, with 0 = no scholarship (0%) to 5 = full scholarship (100%).

Procedures

Twenty head coaches of NCAA Division I swim teams in the Midwest, Mid-Atlantic,

¹ Participants also completed the other subscales included in the BRSQ and CCBS. In addition, they completed measures of perceived relatedness, autonomy support, and two items assessing their perception of their scholarship. There were 86 total items included on the questionnaire.

and Northeast regions of the United States were contacted first via e-mail or phone by the principal or coprincipal investigator requesting permission to invite their athletes to participate in this study. The three different regions were selected based on the principal investigator's access to these schools and available resources. Only 8 of the 20 coaches agreed to allow access to their athletes. After coaches gave their permission, a date and time to meet with the athletes were arranged. During this meeting, the purpose and procedures of the study were explained to athletes verbally and in written consent form. Athletes were asked to sign a letter of consent if they would like to participate and then completed a questionnaire that included measures of different motivation regulations, need satisfaction, controlling coaching behavior, and demographic questions (86 total items). The questionnaire took 15 to 20 min to complete. Participants were reminded their answers would be confidential. Coaches were not involved in the administration of the questionnaire.

Data Analyses

Prior to addressing the main purposes of this study, preliminary analyses were conducted including identifying multivariate outliers, calculating means, standard deviations, scale reliabilities, and correlations and testing for univariate and multivariate normality (i.e., skewness and kurtosis), and multicollinearity of all study variables using SPSS 18.0. Study hypotheses were tested using path analysis (i.e., observed indicators only) with maximum likelihood estimation in LISREL 8.71 (Scientific Software Inc., Chicago, IL). This allowed us to maintain an appropriate ratio of participants to estimated parameters (i.e., 10:1; Kline, 2005). In all models tested, the means of study variables were used as the observed variables, with the exception of scholarship status, which was a single-item indicator.

To test the moderating role of controlling coaching behaviors on the relationships of scholarship status to perceived competence and autonomy, we followed the recommendations of Cortina, Chen, & Dunlap (2001; see also Breevaart & Bakker, 2011) by first creating an interaction term calculated as the

product of the centered variables for controlling coaching behaviors and scholarship status. Then, we tested a model that included scholarship status, controlling use of rewards, and their interaction, predicting perceptions of competence and autonomy which, in turn, predicted intrinsic motivation (i.e., mediation model). Consistent with past SDT research, the errors of perceived competence and autonomy were allowed to correlate in all models (e.g., Hollembeak & Amorose, 2005). Next, we constrained the relationships of the interaction term to perceived competence and autonomy to be zero in order to compare the fit of these two models. Lastly, we followed the recommendations of James, Mulaik, and Brett (2006) to test the mediating roles of perceived competence and autonomy. The mediation hypothesis is supported if in the mediation model (a) the independent variables relate significantly to competence and autonomy, and competence and autonomy are significant predictors of intrinsic motivation, (b) there are significant indirect relationships between independent variables and intrinsic motivation, and (c) the specified relationships provide a good fit to the data. Lastly, we added direct paths from scholarship status, controlling use of rewards, and their interaction to intrinsic motivation (i.e., partial mediation model) to determine whether or not these direct relationships were significant in the presence of the mediating variables. Nonsignificant direct relationships between the independent variables and intrinsic motivation provide additional support for a full mediation model. To assess the fit of all models tested, goodness of fit statistics were examined using the Root Mean-Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Standardized Root Mean-Square Residuals (SRMR), and the Goodness of Fit Index (GFI). RMSEA values $<.06$ (Hu & Bentler, 1999), CFI values $>.95$ (Byrne, 1998), SRMR values $<.05$ (Byrne, 1998), and GFI values that approach 1.00 (Byrne, 1998) were interpreted as a good fit of the model.

Results

Missing Data Analyses

Data were missing across 43 of 96 variables and 36 of 168 cases. There were no variables

with $\geq 5\%$ missing values. Little's MCAR (i.e., missing completely at random; Tabachnik & Fidell, 2007) test was nonsignificant ($\chi^2 = 1,781.652$, $df = 1,687$, $p > .05$), indicating that there was no significant deviation from a pattern of values that are "missing completely at random." Next, three cases were deleted owing to missing an entire measure or most of a measure and three more who were missing the athletic scholarship status variable. Missing values in the remaining cases ($N = 162$) were imputed using the expectation maximization (EM) algorithm. The number of missing values ($\leq 5\%$) was considered acceptable and not expected to impact parameter estimates (Tabachnik & Fidell, 2007).

Preliminary Analyses

First, two multivariate outliers were identified ($p < .01$) using Mahalanobis distance. The main analyses were then conducted with and without the outliers and did not show any meaningful differences, therefore all cases were retained. Means, standard deviations, scale reliabilities, and correlations are included in Table 1. The items used to measure controlling use of rewards, autonomy, competence, and intrinsic motivation variables were all internally consistent ($\alpha > .70$) and normally distributed (skewness range: -0.64 to 0.32 ; kurtosis range: -1.07 to 0.57). Tests for multivariate skewness and kurtosis

were significant ($p < .01$) but were at levels deemed acceptable when using maximum likelihood estimation (see Hu & Bentler, 1998).

Correlation coefficients ranged from weak to moderate and did not reveal any relationships that might indicate multicollinearity (i.e., $r > .70$). Scholarship status was not significantly related to any study variables. Perceptions of controlling use of rewards were negatively related to perceived competence, autonomy, and intrinsic motivation. Perceived competence, autonomy, and intrinsic motivation were positively correlated with each other. For descriptive purposes, a multivariate analysis of variance (MANOVA) was conducted to test for gender, year in school, and scholarship status differences on all study variables. Results revealed no significant differences by gender (Wilks' $\lambda = 0.96$, $F_{(5,156)} = 1.18$, $p > .05$), year in school (Wilks' $\lambda = 0.86$, $F_{(25,562)} = 0.91$, $p > .05$), or scholarship status (Wilks' $\lambda = 0.91$, $F_{(20,508)} = 0.74$, $p > .05$).

Main Analyses

The mediation model fit the data well ($\chi^2 = 3.43$, $df = 3$, $p = .33$; RMSEA = $.03$; CFI = 1.00 ; SRMR = $.03$; GFI = $.99$) and explained 8% of the variance in perceived autonomy, 12% of the variance in perceived competence, and 22% of the variance in intrinsic motivation according to R^2 values. These represent medium effect sizes (Ferguson, 2009). In this model (see Figure 1 for standardized path coefficients), controlling use of rewards was negatively related to perceived competence and autonomy, whereas scholarship status did not relate to either. The interaction term was a significant predictor of perceived competence only. Both perceived competence and autonomy were positively related to intrinsic motivation. In addition, the indirect relationship between controlling use of rewards and intrinsic motivation was significant ($-.13$, $p < .01$), whereas the indirect relationships from both scholarship status and the interaction term to intrinsic motivation were not significant ($-.01$ and $-.07$, respectively, $p > .01$). In a model where the relationships of the interaction term to perceptions of competence and autonomy were constrained to zero, the fit was significantly and meaningfully worse ($\Delta\chi^2 = 11.57$, $\Delta df = 2$, $p < .01$; RMSEA = $.11$; CFI = $.89$; SRMR = $.07$; GFI = $.97$) as

Table 1
Summary of Correlations, Internal Consistencies,
Means, and Standard Deviations For Study
Variables ($N = 160$)

Variable	1	2	3	4	5
1. Scholarship status	—				
2. Controlling use of rewards	.08	.81			
3. Competence	.10	-.20*	.82		
4. Autonomy	-.10	-.26*	.29*	.79	
5. Intrinsic motivation	-.13	-.20*	.31*	.43*	.92
Possible range	0-5	1-7	1-7	1-5	1-7
<i>M</i>	2.10	2.90	5.08	3.20	5.01
<i>SD</i>	1.62	1.29	1.13	0.81	1.37

Note. Cronbach's alpha coefficients are in bold along the diagonal. Correlation values are below diagonal. All variables excluding athletic scholarship are measures of perceptions. Scholarship status is a single-item variable.

* $p < .01$ (two-tailed).

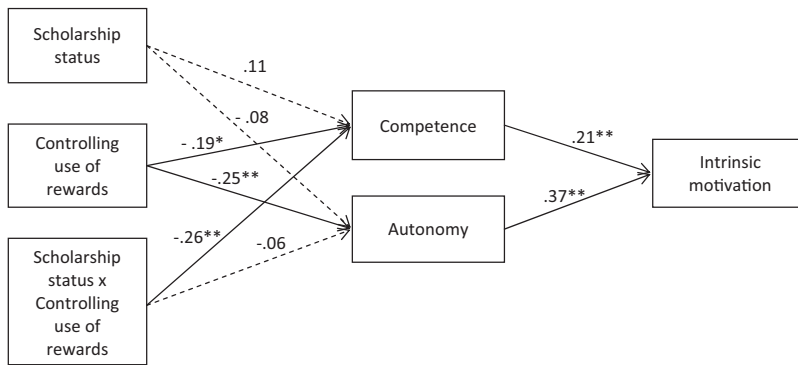


Figure 1. Standardized path coefficients for the mediation model. All variables excluding scholarship status are measures of perceptions. * $p < .05$, ** $p < .01$. Dashed lines represent nonsignificant relationships.

indicated by a significant increase in χ^2 and a decrease in CFI $> .01$ (Cheung & Rensvold, 2002).

The significant interaction between scholarship status and controlling use of rewards predicting perceived competence was graphed and interpreted using Dawson and Richter (2006) software based on the recommendations of Aiken and West (1991; see also Breevaart & Bakker, 2011; Cortina et al., 2001 for examples using structural equation modeling). Figure 2 displays the interaction. To test the significance of the simple slopes, we used the Dawson and Richter (2006) worksheet using one standard deviation above and below the mean as values of the moderator (i.e., controlling use of rewards) at which to evaluate slope. The higher perceived controlling use of rewards slope was not significant, $t = -1.34$, $p > .05$, whereas the

lower perceived controlling use of rewards slope was significant, $t = 3.23$, $p < .05$, supporting predictions. Athletes who perceived their coaches as less controlling demonstrated a positive relationship between scholarship status and perceived competence, whereas athletes who perceived their coaches as more controlling showed no such relationship.

Finally, the partial mediation model was tested, which included direct relationships from scholarship status, controlling use of rewards, and their interaction to intrinsic motivation. In the partial mediation model, none of the direct relationships between the independent variables and intrinsic motivation were significant ($p > .05$). These nonsignificant relationships provide support for the mediation model (James et al., 2006). A comparison of the total ($-.19$) to indirect effect ($-.13$) of controlling use of re-

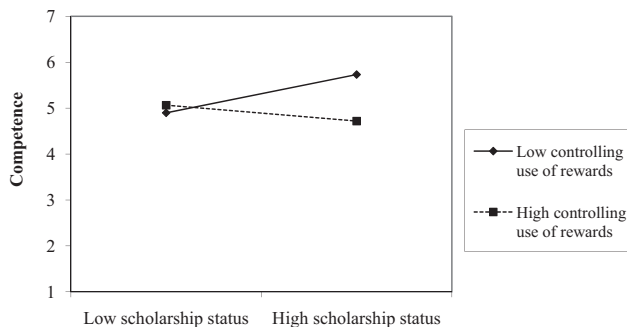


Figure 2. Perceptions of controlling use of rewards moderate the relationship between scholarship status and perceived competence.

wards in the partial mediation model showed that 68% of the effect was explained by the indirect relationships (Preacher & Kelley, 2011). Therefore, most of the effect of controlling use of rewards on intrinsic motivation was mediated by perceived competence and autonomy, and the full mediation model was accepted as the final model.

Discussion

The purpose of this study was to test the potential moderating role of perceived controlling coaching behavior on the relationship of scholarship status to perceived competence and autonomy and, indirectly, intrinsic motivation in college swimmers. Furthermore, the study tested the mediating roles of perceived competence and autonomy in the relationships of scholarship status and controlling coaching behavior to intrinsic motivation. The findings supported an interaction between scholarship status and perceived controlling coaching behavior in predicting perceived competence, as well as the mediating roles of perceived autonomy and competence in the relationship between controlling coaching behavior and intrinsic motivation.

The significant interaction between scholarship status and perceived controlling coaching behavior predicting perceived competence partially supported our hypotheses. Specifically, athletes who perceived their coaches as less controlling demonstrated a positive relationship between scholarship status and perceived competence, whereas those athletes who perceived their coaches as more controlling showed no such relationship. If we interpret this within a CET (Ryan & Deci, 2002) framework, it means that higher scholarship status may communicate more positive competence information to athletes but only under conditions of lower perceived controlling coaching behavior. Therefore, the coaching climate in which the scholarship is administered appears to impact the functional significance of the scholarship. Past research has supported the importance of scholarship status to athletes' perceived competence by demonstrating the positive relationship between scholarship status and perceived competence (Amorose & Horn, 2000; Hollembeak & Amorose, 2005). However, a controlling coach may counteract the positive competence information that high scholarship status communicates to athletes.

This moderating role of perceived controlling coaching behavior also helps explain study findings showing no differences in perceptions of competence by scholarship status (Amorose & Horn, 2001).

Conversely, neither scholarship status nor its interaction with controlling coaching behaviors predicted perceived autonomy. Taken together with past research, the functional significance of scholarships seems to be more informational than controlling. That is, scholarship status appears to communicate information about how competent athletes are (i.e., higher status = higher competence), but does not necessarily serve a controlling function. In fact, the only studies that clearly demonstrate that scholarship athletes experience lower intrinsic motivation or greater controlling forms of motivation compared with nonscholarship athletes have done so with males from high profile college sports (i.e., football, basketball; Medic et al., 2007; Ryan, 1977, 1980), suggesting that other factors common to these athletes may be controlling their motivation. These factors may include controlling coaching behavior as our results demonstrate, but also pressure stemming from media scrutiny, potential professional careers and contracts, or fear of losing one's status on the team in such a competitive environment. Any or all of these factors could contribute to undermining intrinsic motivation and/or promoting more controlling forms of motivation.

Next, the mediating roles of perceived competence and autonomy in the relationships of scholarship status and controlling coaching behaviors to intrinsic motivation were partially supported. In line with SDT (Deci & Ryan, 1985; Ryan & Deci, 2002), perceived autonomy and competence mediated the relationship of perceived controlling coaching behaviors to intrinsic motivation given that perceived controlling coaching behaviors related negatively to both perceived competence and autonomy and had the only significant indirect relationship to intrinsic motivation. These findings add to the previous literature testing the mediation effects of need satisfaction on the relationship between social contextual factors (i.e., coaching behavior) and motivation in the sport setting. Previous researchers have supported the mediating roles of perceived competence and/or autonomy in the relationships between a variety of coaching behaviors and different types of motivation reg-

ulations, including intrinsic motivation (Amorose & Anderson-Butcher, 2007; Hollembeak & Amorose, 2005; Jöesaar et al., 2011). Finally, perceived autonomy and competence did not mediate the relationship of scholarship status to intrinsic motivation. Supporting past research, only controlling coaching behavior and not the scholarship itself seems to have an impact on athletes' feelings of autonomy (Amorose & Horn, 2000, 2001; Bartholomew et al., 2011a; Hollembeak & Amorose, 2005). The controlling aspect of scholarships was not functionally significant for this group of athletes in predicting intrinsic motivation. Overall, the amount of variance explained in intrinsic motivation represents a medium or moderate effect, with most of the effect of controlling coaching behavior being mediated by perceptions of competence and autonomy.

Although the findings of this study contribute to the knowledge base on scholarships and intrinsic motivation as well as CET (Ryan & Deci, 2002), a number of limitations are still present, primarily related to the external validity of study findings. First, the head coaches in our study were limited to males and including some athletes with female coaches would allow a test of potential differences. Second, although the sample size was large enough to address our study purposes, a greater sample size would allow us to test for the invariance of these relationships across gender or year in school. Finally, this study was focused on examining only one aspect of controlling coaching behavior and only intrinsic motivation. This may have limited the information we can learn from considering the other roles that coaches play and how these relate to additional forms of motivation. Future research should examine other controlling coaching behaviors such as negative conditional regard, intimidation, judging, or additional coaching behaviors such as autonomy-support in order to test for other potential interactions with scholarship status and their relationship to all forms of motivation.

The results of this study suggest practical implications and directions to coaches. The results indicate that the controlling use of rewards by coaches is detrimental for athletes because it undermines their perceived autonomy and competence and, thus their intrinsic motivation. Therefore, coaches should focus on alternative means of motivating their athletes (e.g., more autonomy-supportive behavior), which will

help make their college athletic experience more positive. Developing more autonomy-supportive behaviors (e.g., encouraging volition, and self-regulation of behavior; Deci & Ryan, 1985) such as providing athletes with more choices and not using their scholarships to control them will help athletes experience more enjoyment and satisfaction playing their college sport (Amorose & Anderson-Butcher, 2007; Quested & Duda, 2010; Reinboth & Duda, 2006; Reinboth et al., 2004).

This study addressed some of the limitations of past scholarship research (e.g., Amorose & Horn, 2000, 2001; Medic et al., 2007; Ryan, 1977, 1980) by using a large sample of athletes from the same sport (i.e., swimming), with a relatively even distribution of scholarship status, supporting the moderating role of perceived controlling coaching behavior in the relationship between scholarship status and perceived competence, as well as supporting the mediating roles of perceived competence and autonomy in the relationship between perceived controlling coaching behavior and intrinsic motivation. The present findings provide additional support for CET and the importance of considering an interaction between scholarship status and various aspects of the social context of sport in predicting perceptions of competence and autonomy, and intrinsic motivation. Finally, the findings expand the literature on the role of scholarships in conjunction with the coach-athlete relationship, providing new information on how coaches may impact their athletes' motivation.

References

- Adie, J. W., Duda, J. L., & Ntoumanis, N. (2008). Autonomy support, basic need satisfaction and the optimal functioning of adult male and female sport participants: A test of basic needs theory. *Motivation and Emotion*, 32, 189–199. doi:10.1007/s11031-008-9095-z
- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Amorose, A. J., & Anderson-Butcher, D. (2007). Autonomy-supportive coaching and self-determined motivation in high school and college athletes: A test of self-determination theory. *Psychology of Sport and Exercise*, 8, 654–670. doi:10.1016/j.psychsport.2006.11.003
- Amorose, A. J., & Horn, T. S. (2000). Intrinsic motivation: Relationships with collegiate athletes'

- gender, scholarship status, and perceptions of their coaches' behavior. *Journal of Sport and Exercise Psychology*, 22, 63–84.
- Amorose, A. J., & Horn, T. S. (2001). Pre- to post-season changes in the intrinsic motivation of first year college athletes: Relationship with coaching behavior and scholarship status. *Journal of Applied Sport Psychology*, 13, 355–373. doi:10.1080/104132001753226247
- Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., Bosch, J. A., & Thøgersen-Ntoumani, C. (2011a). Self-determination theory and diminished functioning: The role of interpersonal control and psychological need thwarting. *Personality and Social Psychology Bulletin*, 37, 1459–1473. doi:10.1177/0146167211413125
- Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., & Thøgersen-Ntoumani, C. (2011b). Psychological need thwarting in the sport context: Assessing the darker side of athletic experience. *Journal of Sport & Exercise Psychology*, 33, 75–102.
- Bartholomew, K. J., Ntoumanis, N., & Thøgersen-Ntoumani, C. (2009). A review of controlling motivational strategies from a self-determination theory perspective: Implications for sports coaches. *International Review of Sport and Exercise Psychology*, 2, 215–233. doi:10.1080/17509840903235330
- Bartholomew, K. J., Ntoumanis, N., & Thøgersen-Ntoumani, C. (2010). The controlling interpersonal style in a coaching context: Development and initial validation of a psychometric scale. *Journal of Sport and Exercise Psychology*, 32, 193–216.
- Blanchard, C. M., Amiot, C. E., Perreault, S., & Vallerand, R. J. (2009). Cohesiveness, coach's interpersonal style and psychological needs: Their effects on self-determination and athletes' subjective well-being. *Psychology of Sport and Exercise*, 10, 545–551. doi:10.1016/j.psychsport.2009.02.005
- Breevaart, K., & Bakker, A. B. (2011). Working parents of children with behavioral problems: A study on the family-work interface. *Anxiety, Stress, and Coping*, 24, 239–253. doi:10.1080/10615806.2010.527958
- Byrne, B. M. (1998). *Structural equation modeling with LISREL, PRELIS, and SIMPLIS: Basic concepts, applications, and programming*. Mahwah, NJ: Erlbaum, Inc.
- Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling*, 9, 233–255.
- Cortina, J. M., Chen, G., & Dunlap, W. P. (2001). Testing interaction in LISREL: Examination and illustration of available procedures. *Organizational Research Methods*, 4, 324–360. doi:10.1177/109442810144002
- Dawson, J. F., & Richter, A. W. (2006). *Interpreting interaction effects*. Retrieved from <http://www.jeremydawson.co.uk/slopes.htm>
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press.
- Ferguson, C. J. (2009). An effect size primer: A guide for clinicians and researchers. *Professional Psychology: Research and Practice*, 40, 532–538.
- Gagné, M., Ryan, M. R., & Bargmann, K. (2003). Autonomy support and need satisfaction in the motivation and well-being of gymnasts. *Journal of Applied Sport Psychology*, 15, 372–390. doi:10.1080/10413200390238031
- Hodge, K., & Lonsdale, C. (2011). Prosocial and antisocial behavior in sport: The role of coaching style, autonomous vs. controlled motivation, and moral disengagement. *Journal of Sport and Exercise Psychology*, 33, 527–547.
- Hollebeak, J., & Amorose, A. J. (2005). Perceived coaching behaviors and college athletes' intrinsic motivation: A test of self-determination theory. *Journal of Applied Sport Psychology*, 17, 20–36. doi:10.1080/10413200590907540
- Hu, L., & Bentler, P. M. (1999). Cut-off criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1–55.
- Hyman, J., & Van Jura, M. (2009). Elite collegiate athletics and the academy: Criticisms, benefits, and the role of student affairs. *The Vermont Connection*, 30, 42–52.
- James, L. R., Mulaik, S. A., & Brett, J. M. (2006). A tale of two methods. *Organizational Research Methods*, 9, 233–244. doi:10.1177/1094428105285144
- Jøesaar, H., Hein, V., & Hagger, M. S. (2011). Peer influence on young athletes' need satisfaction, intrinsic motivation and persistence in sport: A 12-month prospective study. *Psychology of Sport and Exercise*, 12, 500–508. doi:10.1016/j.psychsport.2011.04.005
- Kimball, A. (2007). “You signed the line”: Collegiate athletes' perception of autonomy. *Psychology of Sport and Exercise*, 8, 818–835.
- Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York: Guilford Press.
- Lombardi, J. V., Capaldi, E. D., Reeves, K. R., Craig, D. D., Gater, D. S., & Rivers, D. (2003). The sports imperative in America's research Universities. *An annual Report form the Lombardi Program on Measuring University Performance*. The Center, University of Florida, Gainesville.
- Lonsdale, C., Hodge, K., & Rose, E. A. (2008). The behavioral regulation in sport questionnaire

- (BRSQ): Instrument development and initial validity evidence. *Journal of Sport and Exercise Psychology*, 30, 323–355.
- McAuley, E., Duncan, T., & Tammen, V. V. (1989). Psychometric properties of the Intrinsic Motivation Inventory in a competitive sport setting: A confirmatory factor analysis. *Research Quarterly for Exercise and Sport*, 60, 48–58.
- Medic, N., Mack, D. E., Wilson, P. M., & Starkes, J. L. (2007). The effects of athletic scholarship on motivation in sport. *Journal of Sport Behavior*, 30, 292–306.
- Pelletier, L. G., Fortier, M. S., Vallerand, R. J., & Brière, N. M. (2001). Associations among perceived autonomy support, forms of self-regulation, and persistence: A prospective study. *Motivation and Emotion*, 25, 279–306. doi:10.1023/A:1014805132406
- Pelletier, L. G., Fortier, M. S., Vallerand, R. J., Tuson, K. M., Brière, N. M., & Blais, M. R. (1995). Toward a new measure of intrinsic motivation, extrinsic motivation, and amotivation in sports: The sport motivation scale (SMS). *Journal of Sport and Exercise Psychology*, 17, 35–53.
- Preacher, K. J., & Kelley, K. (2011). Effect size measures for mediation models: Quantitative strategies for communicating indirect effects. *Psychological Methods*, 16, 93–115.
- Quested, E., & Duda, J. L. (2010). Exploring the social-environmental determinants of well- and ill-being in dancers: A test of basic needs theory. *Journal of Sport and Exercise Psychology*, 32, 39–60.
- Reinboth, M., & Duda, J. L. (2006). Perceived motivational climate, need satisfaction and indices of well-being in team sports: A longitudinal perspective. *Psychology of Sport and Exercise*, 7, 269–286. doi:10.1016/j.psychsport.2005.06.002
- Reinboth, M., Duda, J. L., & Ntoumanis, N. (2004). Dimensions of coaching behavior, need satisfaction, and the psychological and physical welfare of young athletes. *Motivation and Emotion*, 28, 297–313. doi:10.1023/B:MOEM.0000040156.81924.b8
- Ryan, E. D. (1977). Attribution, intrinsic motivation, and athletics. In L. I. Gedvilas & M. E. Kneer (Eds.), *Proceedings of the National Association for Physical Education of College Men National Conference Association for Physical Education of College Women National Conference*. University of Illinois at Chicago, IL.
- Ryan, E. D. (1980). Attribution, intrinsic motivation and athletics: A replication and extension. In C. H. Nadeau, W. R. Halliwell, K. M. Newell, & G. C. Roberts (Eds.), *Psychology of motor behavior and sport* (pp. 19–26). Champaign, IL: Human Kinetics.
- Ryan, R. M., & Deci, E. L. (2002). An overview of self-determination theory. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 3–33). Rochester, NY: University of Rochester Press.
- Ryan, R. M., & Deci, E. L. (2007). Self-determination theory and the promotion and maintenance of sport, exercise and health. In M. S. Hagger, & N. L. D. Chatzisarantis (Eds.), *Intrinsic motivation and self-determination in exercise and sport* (pp. 1–19). Leeds: Human Kinetics.
- Sarrazin, P., Vallerand, R., Guillet, E., Pelletier, L., & Cury, F. (2002). Motivation and dropout in female handballers: A 21-month prospective study. *European Journal of Social Psychology*, 32, 395–418. doi:10.1002/ejsp.98
- Standage, M., & Ryan, R. M. (2012). Self-determination theory and exercise motivation: Facilitating self-regulatory processes to support and maintain health and well-being. In G. C. Roberts & D. C. Treasure (Eds.), *Advances in motivation in sport and exercise* (3rd ed., pp. 233–270). Champaign, IL: Human Kinetics.
- Tabachnik, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Pearson Education.

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