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The Motivational Climate, Perceived Ability, and Athletes' Psychological and Physical Well-Being

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Grounded in achievement goal theory (Nicholls, 1989), the purpose of this study was to examine the relationship of the perceived motivational climate and perceptions of ability to indices of psychological and physical well-being among male adolescents taking part in team sports. Participants were 265 adolescent soccer and cricket players. Reported self-esteem was the lowest among low perceived ability athletes participating in an environment that was perceived to be high in its ego-involving features, but high among athletes perceiving a highly task-involving environment regardless of their perceptions of competence. Contingent self-esteem, physical exhaustion, and reported physical symptoms were positively predicted by perceptions of an ego-involving climate. The results suggest that an examination of variations in the perceived motivational climate may provide further insight into whether sport participation can be health promotive or potentially damaging to athletes' welfare.

It has recently been proposed that a comprehensive and meaningful model of human motivation relevant to sport should provide insight not only into differences in achievement striving but also in regard to possible positive and potentially negative health outcomes associated with sport participation (Duda, 2001a). Motivational factors emphasized in the sporting environment are presumed to play an important role in influencing the psychological and physical well-being (both positive and negative) of athletes. In particular, coaches are assumed to play an active role in athletes' training and competitive encounters and are a major source of instruction and feedback for sport participants. Therefore, it is important to investigate the perceived social situation they create and how that psychological environment corresponds to the quality of athletes' sport experiences and subjective well-being in the athletic setting and overall in their lives. From a practical perspective, such work can provide a rationale for and guidelines regarding the development of coach-focused interventions aimed at enhancing the welfare of young athletes.

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One motivational framework well suited to study the potential implications of social situational factors on well-being is achievement goal theory (Nicholls, 1989). Achievement goal theory (Nicholls, 1984, 1989) assumes that the achievement goal of demonstrating ability is the primary motivational stimulus in achievement contexts. Further, the theory holds that two conceptions of competence are extant and that these manifest themselves through two states of involvement, namely task and ego involvement. When task involved, perceived ability is self-referenced and emphasis is placed on task mastery, the exertion of effort, and the development of one's skills or knowledge of the activity. When ego involved, individuals are concerned with demonstrating normatively referenced high ability. In this case, ability is demonstrated when one's performance is perceived to exceed that of others or performed equally with less effort.

Whether an individual is in a state of task or ego involvement is assumed to depend on situational factors (i.e., the motivational climate) as well as the dispositional orientation (i.e., degree of task and ego orientation) of the person (Nicholls, 1989). Within sport, a performance (or ego-involving) and a mastery (or task-involving) climate are hypothesized to exist (Ames, 1992a, 1992b; Duda, 2001a) and sport research has supported this supposition (e.g., Newton, Duda, & Yin, 2000). An ego-involving climate is characterized by interpersonal competition, social comparison, and public evaluation. In contrast, an emphasis placed on task mastery, learning, effort exertion, and improvement distinguishes a task-involving climate (Ames, 1992b; Newton et al., 2000).

Task orientation and a perceived task-involving climate are assumed to correspond to adaptive cognitions, affect, and behaviors. Such positive responses are expected whether the person in question has high or low perceived ability. Ego orientation and a perceived ego-involving climate may be linked to the display of high achievement striving, but only if the individuals in question perceive their ability as high (Duda, 2001a; Nicholls, 1989). If perceptions of ability are low, a negative achievement pattern is predicted. Thus, it is theoretically expected that perceived competence would moderate the relationship of an ego goal emphasis on achievement-related patterns (Dweck, 1986; Nicholls, 1989).

In terms of the social psychological environment created by the coach, this motivational climate is assumed to convey specific goals and conceptions of ability to his or her athletes (Ames, 1992a). Beyond achievement-related patterns, the latter are held to influence the degree to which sport participants appraise events in relation to the self, particularly with regard to their self-worth (Duda & Hall, 2001). Global self-esteem or self-worth has been defined as the extent to which a person feels positively about the self (Gergen, 1971). As noted by Fox (1997) and Diener (1984), self-esteem is a significant indicator of mental well-being and quality of life. A perceived highly ego-involving climate in which success is evaluated in terms of social comparison processes and reinforcements based on being the best would be considered hazardous in terms of developing self-esteem (Kaplan & Maehr, 1999). Environmental cues, in an ego-involving atmosphere, make it more likely that one will focus on the adequacy or inadequacy of one's competence and continual validation of high ability. This may have implications for individual's judgments regarding overall self-worth (Covington, 1992; Harter, 1999). In contrast, a perceived task-involving climate is more likely to lead to sustained or increased levels of self-esteem because competence is conceived in a self-referenced manner and success is defined in terms of mastery, improvement, and hard work. Such

factors are relatively more controllable by the person. Past research in both sport and physical educational contexts has supported a link between perceptions of a task-involving sport environment and higher self-esteem, whereas perceptions of an ego-involving climate have been shown to be a negative predictor of self-esteem (e.g., Duda & Kim, 1997).

A study by Kavussanu and Harnisch (2000) examined the relationship between goal orientations and perceived ability on global self-esteem among children participating in a summer sport camp. In line with findings from experimental studies in physical education (Treasure, 1993) supporting the moderating role of perceived ability for those holding an ego goal, they found that high ego-oriented boys with high perceived ability reported higher self-esteem than low perceived ability boys. In discussing their findings, Kavussanu and Harnisch (2000) go on to advocate the implications of a task-involving motivational environment (and reduction of ego-involving cues) for fostering feelings of self-worth. In the present investigation, we examined the hypothesized main and interactive effects of the perceived motivational climate created by the coach and perceptions of ability on athletes' level of self-esteem.

Another important hallmark of ego-involvement is that feelings about oneself are more likely to be based on whether one is able to demonstrate to others that one is competent (Dweck, 1999; Nicholls, 1989) or achieving some externally referenced standard of excellence (Deci & Ryan, 1995). In other words, when ego goals are emphasized in the sporting environment, self-esteem is likely to be contingent. According to Deci and Ryan (1995), "contingent self-esteem refers to feelings about oneself that result from — indeed, are dependent on — matching some standard of excellence or living up to some interpersonal or intrapsychic expectations" (p. 32). Contingent self-esteem is important to consider in sport, because letting one's feelings of worth as a person be a function of one's sport accomplishments can be regarded as a maladaptive cognitive thought pattern that may contribute to labile or fluctuating self-esteem and undermine psychological well-being (Greenier, Kernis, & Waschull, 1995). Limited attention has been given to the possible precursors to contingent self-worth in the sport environment.

In the athletic milieu, there is a tendency to glorify pain and injury, the infliction of injury on others, and the sacrifice of one's body to secure victory (Coakley, 1998). Such a perspective can be costly with respect to athletes' physical health. For athletes perceiving highly ego-involving sporting environments in particular, the often quoted phrase by Nicholls, "when winning is everything, you do anything to win!" (Nicholls, 1989, p. 133), may prove to be accurate. A preoccupation with winning may well be accompanied by a lack of concern not only for others (Kavussanu, Roberts, & Ntoumanis, 2002) but also, paradoxically, for oneself and one's own well-being (Messner, 1992).

Only a few studies have examined the relationship between the perceived motivational climate and potentially negative physical health outcomes associated with sport participation. In a qualitative case study with a former elite gymnast, Krane, Greenleaf, and Snow (1997) argued for a correspondence between experiencing a highly ego-involving sporting environment and the existence of unhealthy eating practices, overtraining, and practicing and competing with serious injury. Support for the contention that situational variations in achievement goal emphasis may correspond with variability in physical ill-being was also garnered in research by Duda, Balaguer, Moreno, and Crespo (2001). Investigating the association between

achievement goals and aspects of burnout among international junior elite tennis players, these researchers found that the emotional and physical exhaustion facets of feeling burned out were predicted by a motivational climate deemed to be high in its ego-involving features and low in its task-involving characteristics.

That there should be a relationship between physical health status and well-being seems intuitively clear. At the very least, physical illness and pain often present functional limitations, which can detract from opportunities for positive affect and life satisfaction (Ryan & Deci, 2001). In this study, we explored two indicators of physical ill-being, namely the emotional/physical exhaustion dimension of burnout and reported physical symptoms.

In sum, the main purpose of the present study was to investigate the relationship between perceptions of the motivational climate and indices of psychological well-being (i.e., self-esteem, contingent self-esteem) and physical ill-being (i.e., emotional/physical exhaustion and physical symptoms) among team sport athletes. In line with predictions by Nicholls (1989) and Dweck (1986), a second aim was to examine whether perceptions of ability have a moderating effect on these relationships. Based on theoretical assumptions and previous research findings, we expected perceived ability and perceptions of a task-involving climate to emerge as positive predictors of self-esteem. Perceptions of an ego-involving climate were also expected to emerge as a negative predictor of self-esteem. Among athletes perceiving a strong ego-involving climate, we predicted that those who perceived their ability to be high would report higher levels of self-esteem than those who perceived their ability as low. The interaction between a perceived task-involving climate and perceived ability was predicted to be nonsignificant. Perceptions of an ego-involving climate were assumed to be a positive predictor of basing one's self-esteem upon athletic success (i.e., level of contingent self-esteem), regardless of perceived level of ability.

With respect to reported emotional/physical exhaustion and physical symptoms, perceptions of a task-involving climate and perceived ability were assumed to be negative predictors, whereas perceptions of an ego-involving climate were expected to be significantly related in a positive manner. Due to the exploratory nature of the study, no specific predictions were made regarding a potential interaction effect for perceptions of an ego-involving climate and perceptions of ability with regard to either of the two physical ill-being variables.

Method

Participants

Two hundred and sixty-five British adolescent (M age = 16.44; SD = 1.32) male soccer and cricket players participated in this study. Players were recruited from club or school teams playing in their respective regional leagues. In terms of ethnic background, 6% reported to be Afro-Caribbean, 51% White English, 5% mixed ethnic background, and 24% Asian. Thirty-seven participants did not indicate their ethnic background. As a group, the athletes could be characterized as quite experienced with over 70% reporting that they had played organized soccer or cricket for five years or longer. The length of time playing for their current coach was more varied, however. Over 50% reported having played for their current coach for more than one year (M = 1.5 years, SD = 0.5).

Procedures

Contact information was obtained from the teams' regional organizations. Secretaries and coaches of the teams that had agreed to take part were contacted and received a letter explaining the purpose of the study. Convenient meeting dates and times were then arranged with the coaches. All athletes under the age of eighteen also received informed consent forms to be filled in by their parents/guardians. None of the athletes were denied permission to participate. A multi-section questionnaire was administered by the principal investigator either before or after a normal practice in a team clubhouse or a classroom. At all meetings, instructions on how to fill in the questionnaire were given, emphasizing that they do so as personally and honestly as possible, that there were no right or wrong answers, and that their responses would be kept confidential. The questionnaire required approximately 25 minutes to complete.

Measures

Perceived Motivational Climate in Sport Questionnaire-2. To measure the players' perceptions of the prevailing motivational climate on their respective teams, the Perceived Motivational Climate in Sport Questionnaire-2 (PMCSQ-2; Newton et al., 2000) was used. The PMCSQ-2 was designed to assess players' perceptions of the degree to which their respective team's motivational climate is characterized in terms of two higher order dimensions (task and ego-involving climate), which are composites of six underlying characteristics. Task-involving climate items reflect a sense that cooperative learning is encouraged, that each player has an important role on the team, and effort/improvement are emphasized. Ego-involving items include the view that mistakes are punished, that recognition by the coach is reserved for the most talented athletes, and that a feeling of intra-team rivalry exists among players on the team. Because our predictions stemming from achievement goal theory (Nicholls, 1989) are based on the higher order dimensions of the motivational climate, only the composite higher order scales were analyzed in the present study. When completing the PMCSQ-2, the participants were asked to think about what the environment is like on their team in general. The stem for each question was "On this team . . .". Responses were indicated on a 5-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (5). Initial work on the PMCSQ-2 has found the instrument to have adequate internal reliability and factorial validity (Newton et al., 2000). Internal consistency for the two scales in the present study was satisfactory (task-involving climate: Cronbach's alpha = .85; ego-involving climate: Cronbach's alpha = .87).

Perceived Soccer Ability. Five items of the perceived ability sub-scale of the Intrinsic Motivation Inventory (McAuley, Duncan, & Tammen, 1989) were used to determine the players' perceived ability in their respective sport. Players responded on a 7-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (7). Internal consistency for the five items (Cronbach's alpha = .85) was acceptable.

In this study, well-being/ill-being was defined in terms of athletes' self-perceptions and physical/related states. Specifically, the following measures were employed:

Self-Esteem. The 10-item General Self subscale of the SDQ II (Marsh, Parker, & Barnes, 1985) was utilized to assess level of self-esteem. Half of the items were negatively worded and participants were asked to use a response scale

which varied between 1 = *false* and 6 = *true*. Examples are “I can’t do anything right,” “Overall, I have a lot to be proud of,” and “Overall, most things I do turn out well.” Research has supported the scale’s construct validity and internal consistency (Marsh et al., 1985). The internal consistency coefficient for this measure was .87 in the present study.

Contingent Self-Worth. Contingent self-worth was assessed using the Contingent Self-worth in Sport Scale (Reinboth & Duda, 2003). This 6-item scale¹ considers contingent self-worth to be a unidimensional construct reflecting the degree to which athletes base their self-worth upon their performance in sport and view failure to do well in sport as a contributor to feelings of incompetence or worthlessness as a person. Sample items for soccer players include “I need to do well in soccer in order to feel good about myself” and “If I fail at soccer, I feel like a failure as a person.” Responses were indicated on a 5-point Likert scale anchored by *strongly disagree* (1) and *strongly agree* (5). The scale exhibited satisfactory internal consistency ($\alpha = .79$).

Emotional/Physical Exhaustion. Five items from the emotional/physical exhaustion subscale of the Athlete Burnout Measure (ABM; Raedeke & Smith, 2001) were employed to measure the degree to which athletes experienced emotional/physical ill-being in their sport. The stem for each question for the soccer players was “How often do you experience the following statements in soccer...”. Example items include “I feel physically worn out from soccer” and “I feel overly tired from my soccer participation.” Responses were indicated on a 5-point Likert scale ranging from *almost never* (1) to *almost always* (5). The subscale has been shown to be reliable and valid when employed among adolescent swimmers and college athletes from team sports (Raedeke & Smith, 2001). In the present investigation, the scale exhibited acceptable internal consistency reliability ($\alpha = .86$).

Physical Symptoms. Participants completed a physical symptom checklist (Emmons, 1991) on which they indicated the degree to which they had experienced the listed symptoms in the past two weeks. The list of symptoms included headaches, stomach-ache/pain, chest/heart pain, runny or congested nose, coughing/sore throat, faintness/dizziness, shortness of breath, acne/pimples, stiff/sore muscles, or other. Responses were indicated on a 7-point Likert scale ranging from *not at all* (1) to *very much* (7). The nine categories stemmed from previous factor-analytic work of a large list of physical sensations and symptoms (Pennebaker, 1982). Based on pilot work with a similarly aged sample, the acne/pimples symptom was not assessed in the present study as there was a concern that this item might have been personally sensitive for adolescents. The eight categories were combined into a composite symptom measure ($\alpha = .74$).

Results

Prior to analysis, the data were examined for possible univariate or multivariate outliers. Six outliers were identified using Boxplots and Mahalanobis distance criteria, respectively, and were subsequently removed from the data set. Means, standard deviations, and correlations among the study variables are shown in Table 1. Overall, most of the current sample of athletes perceived their respective team atmosphere to be relatively high in task-involving features. Their reported perceived ability was also quite high. On average, the participants seemed to report

relatively high levels of self-esteem and low levels of contingent self-esteem, physical exhaustion, and physical symptoms.

Interrelationship Among Variables

General self-esteem was negatively correlated with contingent self-esteem, emotional/physical exhaustion, and physical symptoms. Perceptions of ability in sport were positively correlated with self-esteem and negatively correlated with reported physical symptoms. These associations provide some indication of the concurrent and convergent validity for the mental and physical well-being/ill-being scales utilized in the present work. In line with previous research (e.g., Newton et al., 2000), the two perceived overriding dimensions of perceptions of the motivational climate were significantly and negatively correlated. Perceptions of an ego-involving climate were significantly and positively correlated with contingent self-esteem, emotional/physical exhaustion, and physical symptoms. In contrast, perceptions of a sport environment emphasizing task goals were significantly and positively related to perceived competence, self-esteem, and negatively correlated with self-reported physical symptoms.

Since this was a newly developed scale, Confirmatory Factor Analyses (CFA) was used to examine the adequacy of the proposed a priori one-factor structure underlying the Contingent Self-worth in Sport Scale. The analysis was carried out with EQS 5.7 (Bentler, 1995) using the Maximum Likelihood Estimation Method. The fit of the measurement model was examined using various indices of fit provided by EQS. Results indicated that the scale showed a poor model fit indicating that the factorial structure should be revised $\chi^2(9) = 88.35, p < 0.001$, CFI = .83; NNFI = .71; RMSEA = .19 (90% CI = .15 – .22); SRMSR = .09. Examination of the modification indices provided by EQS (Lagrange Multiplier

Table 1 Descriptive Statistics and Zero-Order Correlations Among the Study Variables

Variable	M	SD	1	2	3	4	5	6
1. Ego-involving climate	2.67	.83						
2. Task-involving climate	3.97	.49	-.31 **					
3. Perceived ability	5.82	.89	.04	.23**				
4. Self-esteem	5.03	.62	-.11	.29**	.64**			
5. Contingent self-worth	2.64	.75	.29**	-.07	-.06	-.25**		
6. Physical exhaustion	2.43	.80	.32**	-.06	-.05	-.21**	.24**	
7. Physical symptoms	2.67	1.08	.24**	-.14*	-.16*	-.26	.32**	.43**

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

and Wald Test) suggested the elimination of the item, “If someone does something better than me in soccer/cricket, then I feel like I am worthless.” The original model was respecified to a five item model and reevaluated. The final model had an acceptable fit $\chi^2(5) = 17.28, p < 0.01, CFI = .96; NNFI = .92; RMSEA = .10$ (90% CI = .05 – .15); SRMSR = .05. With respect to the elimination of the above item, the internal consistency of the scale was reassessed via the calculation of an alpha coefficient (Cronbach, 1951). Results indicated that the removal of the item did not compromise the scale’s internal consistency ($\alpha = .76$).

Perceptions of the Motivational Climate and Well-Being

In order to determine the relationship of the perceived motivational climate and perceptions of ability and their interaction to the targeted indicators of well-being and ill-being, we conducted a series of hierarchical moderated regression analyses (Aiken & West, 1991). A significant interaction effect was inferred by a significant increment in R^2 when an interaction term was entered into the equation. In each regression, the task and ego climate and perceived ability scales were first entered individually to determine their unique contribution to the amount of variance explained. Next, the three two-way interactions of task and ego climate, task climate and perceived ability, and ego climate and perceived ability terms were entered. The three-way interaction term of these variables was entered in the last step. As advocated by Aiken and West (1991), all predictor variables were centered prior to the formation of the interaction terms to avoid multicollinearity. When evaluating the results of moderated hierarchical regression analysis, Jaccard, Turrisi, and Wan (1990) recommended the use of unstandardized regression coefficients, which should be interpreted in the spirit of standardized scores. A summary of the regressions on each dependent variable is presented in Table 2.

Two main effects were found to be significantly related to self-esteem, accounting for 43% of the variance. Inspection of each variable’s contribution showed that self-esteem was positively predicted by perceptions of a task-involving climate and perceived ability. Moreover, the perceived ego-involving climate \times perceived of ability interaction term was found to be significant for self-esteem, bringing the combined variance explained to 44%.

To determine the form of the interaction, a procedure outlined by Aiken and West (1991) for plotting interactions was utilized. Two regression lines were plotted to represent the regression of perceptions of an ego-involving climate on self-esteem as a function of low (one standard deviation below the mean) and high (one standard deviation above the mean) perceptions of ability. Having plotted the interaction (Figure 1), additional post-hoc simple slope analyses were conducted. The simple slope was significant for perceptions of low ability $b = -22, t(256) = -3.39, p < 0.01$, but not for those perceiving their ability to be high, $b = -0.05, t(256) = -0.82, p > 0.10$. This effect showed that athletes with high perceived ability could maintain relatively high levels of self-esteem despite perceiving the coach as creating a strong ego-involving motivational climate. In contrast, for low perceived ability athletes, level of self-esteem decreased the more they perceived their sporting environment to be ego-involving in nature. As hypothesized, perceived ability did not moderate the relationship between perceptions of a mastery climate and indices of well-being, as the perceived task-involving climate \times perceived ability interaction did not emerge as significant with respect to any of the dependent variables. Findings also showed perceptions of an ego-involving climate to be a significant positive predictor of contingent self-worth.

Table 2 Summary of Final Moderated Hierarchical Regression Analyses

Predictors	R^2 change	F	df	b	t
<i>Self Esteem</i>					
Task-involving climate	0.08	23.61	1, 258	0.37	4.9***
Perceived ability	0.35	65.24	3, 256	0.42	12.6***
Ego-involving climate × perceived ability	0.01	34.03	6, 253	0.08	2.0
<i>Contingent Self-worth</i>					
Ego-involving climate	0.08	11.75	2, 257	0.27	4.7***
<i>Physical Exhaustion</i>					
Ego-involving climate	0.10	15.22	2, 257	0.33	5.4***
<i>Physical Symptoms</i>					
Task-involving climate	0.02	4.39	1, 258	-0.30	-2.2*
Ego-involving climate	0.04	8.55	2, 257	0.29	3.5*
Perceived ability	0.02	8.11	3, 256	-0.20	-2.6**

* $p < .05$, ** $p < .01$, *** $p < .001$.

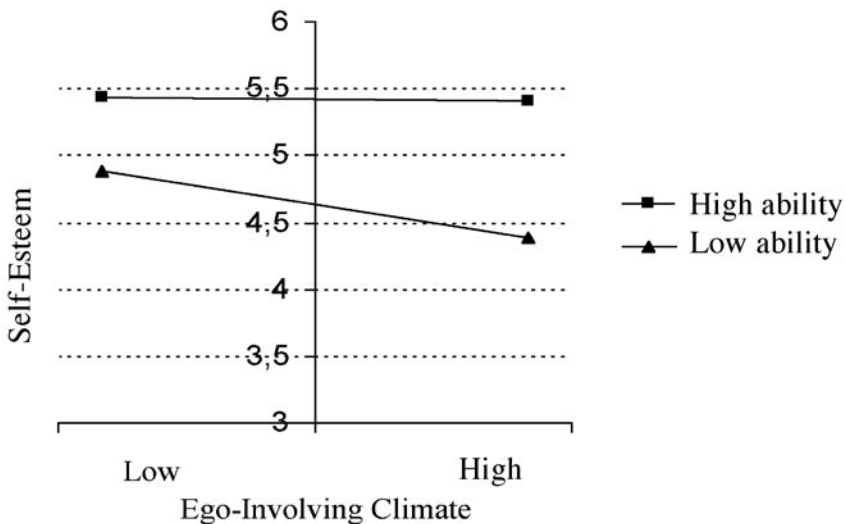


Figure 1 — Interaction effect of perceived ego-involving climate and perceived ability on self-esteem.

With regard to indices of physical ill-being, results indicated that physical exhaustion and reported physical symptoms were positively predicted by perceptions of an ego-involving climate. Perceptions of ability and perceptions of a task-involving climate emerged as negative predictors of physical symptoms. However, it should be noted that the total variance explained with respect to each of these dependent variables was relatively small (mean $R^2 = 0.09$).

Discussion

This study examined the relationship of perceptions of the motivational climate and perceived ability to indices of psychological and physical well-being among male adolescents taking part in a team sport. To date, the examination of the possible correlates of variations in dispositional and/or situationally emphasized achievement goals in sport has largely been restricted to a focus on achievement-related outcomes and processes (Duda, 2001a, 2001b). The present findings suggest that the perceived motivational climate created by the coach may also correspond in conceptually consonant ways to indices of athletes' mental and physical welfare. Particularly attractive about the situational approach to motivation and well-being epitomized in the present work is the potential it holds for intervention and prevention. Although individual remediation to enhance the quality of motivation by changing an athlete's dispositional goal orientation may be effective, it is very expensive and time consuming and may not be very practical in sporting contexts (Treasure & Roberts, 1995). Influencing the well-being of athletes through reengineering the motivational climate, therefore, makes more sense from a practical perspective. First, the findings related to the prediction of self-esteem and contingent self-esteem will be discussed. Second, results regarding the prediction of emotional/physical exhaustion and physical symptoms as collective indicators of physical ill-being will be addressed.

Self-Esteem and Contingent Self-Worth

In accordance with Nicholls' (1989) theorizing and with results from previous research (Duda & Kim, 1997), perceptions of a task-involving motivational climate was a positive predictor of global self-esteem. This result is also consonant with the perspective of Fox (1997), who argued that sources of competence judgments in a task-involving environment (i.e., the experience of personal mastery and aspects of the performance process per se are emphasized, rather than the outcomes associated with participation) can provide an important contribution to positive self-regard.

In line with the work of Harter (1999) as well as Covington's (1992) self-worth theory, perceived ability was the strongest positive predictor of self-esteem. Although we did not assess the reported importance of the sporting activity to the athletes sampled in this research, the present finding seem to indicate that perceiving themselves as good at their sport is central to athletes' ratings of their general self-worth. Based on recommendations by Horn and Harris (1996), one way coaches could increase adolescents' perceptions of competence is by encouraging athletes to develop internalized performance standards. This can be done by involving athletes in self-monitoring of their exerted effort and self-evaluation of their performance. Providing athletes with more autonomy in their sport engagement might also lead to enhanced perceived competence (Deci & Ryan, 1995).

A further objective of this study was to investigate potential interactive effects of the perceived motivational climate and perceived ability on indices of the psychological well-being of athletes. Grounded in Nicholls' (1989) argument that perceived ability moderates responses when ego goals are pronounced, we hypothesized that high perceived competence would "buffer" the negative effects of an ego-involving sporting environment on indicators of athletes' mental welfare. Consonant with our predictions, a significant interaction emerged between perceptions of an ego-involving climate and perceived ability for self-esteem. This interaction, however, explained little variance above and beyond the independent contributions of the main effects. It should be noted, though, that this result is not unusual as interactive effects are difficult to detect in field-based survey research and seldom contribute more than 3% of explained variance (Chaplin, 1991). One of the main reasons for this is that measurement error has a large impact on the effect size of interactions (Aiken & West, 1991). While the main effect for perceived ability accounted for the largest percentage of variance in reported self-esteem scores, the interaction effect between an ego-involving climate and perceptions of ability highlights the importance that the interplay between these constructs may have for our understanding of the motivational processes which underpin self-esteem appraisals.

The observed significant perceived ego climate \times perceived ability interaction also makes practical and conceptual sense in that those athletes who have high perceived ability are more likely to be able to live up to the narrow definition of success that is grounded in an ego-involved conception of ability (i.e., having high ability means demonstrating higher ability than that exhibited by others; Nicholls, 1984). In an ego-involving climate, the light shines on ability differences. Thus, high perceived ability athletes would be expected to feel good about themselves on those perhaps relatively frequent occasions when they are better than others. In contrast, those with low perceived ability who find themselves in a highly ego-involving atmosphere are perhaps less likely to demonstrate competence in the differentiated sense (Nicholls, 1984). Their more probable experiences of subjective failure and feeling like one does not have a relevant role to play on one's team are unlikely to promote high levels of self-worth. Due to late physiological maturation, injuries, or moving up to a higher-level league, it is simply not possible to perceive ability as high at all times. By creating a task involving climate, the coach can make it possible for everyone, not only those who are currently the top performers, to perceive their competence as adequate and feel good about themselves.

Consistent with what was hypothesized, perceptions of an ego-involving climate were a positive predictor of contingent self-worth. Viewing achievement situations in sport as opportunities to prove one's worth as a person is certainly not a healthy option motivationally, psychologically, and perhaps physically as well, particularly due to the structure of the ego-involving climate. Such an environment is rigged to highlight ability differences and exacerbate feelings of failure among those not performing up to par with others. As the demanding and sometimes unpredictable outcome of competitive sport makes it difficult to be the winner/the best all the time, athletes marked by contingent self-worth will probably exhibit fluctuations in their level of self-esteem over time. Moreover, even when things are going well, their self-esteem can in fact be quite fragile and insecure because the need for continual validation may drive high contingent self-worth athletes to require

more and more success. Such motivation, although powerful, is less self-determined and, thus, assumed to thwart healthy adjustment and well-being (Deci & Ryan, 1995). More research is needed to test the antecedents as well as the consequences of contingent forms of self-worth on athletes' welfare and functioning.

Indices of Physical Ill-Being

Among the present sample of team sport participants, perceptions of an ego-involving climate were positively related to the emotional/physical exhaustion facet of burnout, as well as reported physical symptoms. Perceptions of a task-involving climate emerged as a negative predictor of physical symptoms. These results are aligned with our hypotheses and previous research linking perceptions of the motivational climate to reported burnout in sport (Duda et al., 2001). Gould, Tuffey, Udry, and Loehr (1996) showed that unmet expectations and the inability to reach goals were linked to burnout in their work involving junior tennis players. Specifically, those players who experienced this burned out state cited a lack of improvement, success, and talent as contributors. With these findings in mind, the present results suggest that perceptions of an ego-involving climate, in particular, might be an important antecedent of burnout because such an environment may thwart feelings of success and make athletes more aware of the adequacy or limitations of their ability.

No significant interaction effect for perceptions of an ego-involving climate and perceived ability emerged with respect to either of the targeted indicators of physical ill-being. These findings coupled with the self-esteem results are intriguing as they suggest that, although athletes perceive a highly ego-involving climate, they may be relatively well-adjusted psychologically (at least in a short term, cross sectional analysis) as long as they perceive their ability as high. This does not, however, seem to be the state of affairs when it comes to indices of compromised physical welfare.

A possible explanation for the positive relationship between perceptions of an ego-involving climate and the reporting of physical strain and symptoms could be a presumed greater willingness for athletes to "do anything to win" in such an atmosphere (Nicholls, 1989). According to Coakley (1998), sports organized around what he defines as the power and performance model, which is very similar to the characteristics of an ego-involving climate, emphasize the notion that excellence is proved through making sacrifices, risking one's personal well-being, and playing in pain. In the view of Messner (1992), such an environment may, especially for male athletes, in turn "come back to haunt them" and ultimately result in violence against one's own body. Indeed, research by Hall, Finnie, and Kerr (1995) has found a link between ego orientation and the willingness of runners to run even when injured. The case study by Krane and colleagues (1997) also supports the notion that a strong environmental emphasis on ego goals may lead athletes to jeopardize their health in order to experience competitive success.

Clearly, it is important for young individuals to be active if they want to be healthy, now and in the future. However, it is also important for young people to be healthy if they want to be physically active currently and over the years (Duda, 2001b). Little research exists on the cumulative effects over the life span of intense physical activity and sport related injuries experienced during youth. More work is also needed to test the possibility if, or how, such beliefs of self-sacrifice and pain endurance to achieve victory can mediate the influence of an ego-involving climate on the physical damage experienced by athletes.

The findings of the current study suggest that in order to improve athletes' psychological and physical well-being in sport, coaches should be concerned about fostering athletes' perceived competence and creating a strong task-involving climate (and/or an atmosphere that is *not* marked by ego-involving cues). In our view, they can achieve both of these aims by applying Epstein's (1988) TARGET principles to change the motivational climate (see Ames, 1992a; Treasure & Roberts, 1995, for a review). The practical significance of the present results must, however, be interpreted with some caution due to the low explained variance accounted for by perceptions of the motivational climate. One of the limitations of this study is that we did not include an assessment of athletes' goal orientations, which could have captured more variance in the dependent variables. Based on research by Scheier and Carver (1992), athletes' level of optimism and pessimism is another individual difference variable, which perhaps could have enhanced the prediction of the targeted facets of well-/ill-being.

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Author Note

¹ The scale assessing contingent self-worth in sport will be available from the first author upon request.

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