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Winning, Motivational Climate, and Young Athletes' Competitive Experiences: Some Notable Sex Differences

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ABSTRACT

Is winning everything? We investigated the importance of team success and motivational climate on male and female athletes' evaluative reactions to their athletic experience. Seasonal won-lost record had a less pervasive influence on athletes' reactions than coaching behaviors. Notable sex differences were observed, with winning exhibiting stronger relations to attitudes for boys than girls. Although boys and girls responded positively to mastery climates, girls responded negatively to ego climates. Extreme-groups analyses of athletes experiencing strong mastery or ego climates revealed that winning was minimally related to evaluative reactions within a strong mastery climate. In boys, however, enjoyment playing on the team and liking for the coach/teammates were strongly related to winning percentage if they experienced an ego climate. Results are interpreted within the context of a "goodness of fit" of both winning and ego climate to previously reported sex differences in sport socialization and in personality and motivational factors.

Key words: Ego Climate, Enjoyment, Gender Differences, Mastery Approach to Coaching, Youth Sport

INTRODUCTION

"Winning isn't everything; it's the only thing." – Vince Lombardi
"Success means winning championships. Anything less is failure." – George Allen

These statements, attributed to two coaches enshrined in the Pro Football Hall of Fame, have been immortalized over the years. Though Lombardi later claimed that he was misquoted (apparently he meant that "winning isn't everything, but the will to win is"), the 'winning is everything' orientation has been internalized by many people connected with sports, including fans, members of the media, coaches, parents, and athletes. In essence, they reflect

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Reviewer: Britt Brewer (Springfield College, MA, USA)

extreme examples of the core philosophy of what has been termed the "professional model" of sports [1]. Clearly, the bottom-line nature of professional and high-level collegiate sports is congenial with this orientation, and its application underlies much of what occurs in those sport domains. Moreover, at all levels, down to the level of youth sports, athletic competition is by its very nature a contest in which both sides are trying to emerge victorious. However, it is also widely recognized that there are other goals and benefits to be attained through sport competition, and that application of the professional model at lower levels of involvement, particularly youth sports, can have serious negative consequences [2-4]. An alternative orientation is the "developmental model," where success resides in developing one's skills, learning the sport, enjoying participation, and giving maximum effort, not necessarily in wins and losses. In this model, winning is not the only objective, nor is it the most important one. Indeed, many of the problems in youth sports result from inappropriate applications of the professional model, resulting in undue pressure that can do damage to young athletes and drive them away from sport competition, depriving them of opportunities to develop psychosocially and physically [1].

Recognition of the important role that coaches play in the outcomes achieved from athletic competition has spurred research on coaching behaviors and on the development of evidence-based interventions based on the developmental model [5]. One of the notable findings in several studies was that winning is far less important to young athletes than many coaches believe. For example, in a study of Little League Baseball players, Smith et al.[6] found that teams' won-lost record bore no relation to athletes' attitudes toward their coaches, whereas coaching behaviors were strongly related to their attitudes toward coach, teammates, and other aspects of their athletic experience. Likewise, Cumming et al.[7] found that winning record, while related to evaluations of the coach's knowledge and teaching ability, accounted for far less attitudinal variance than did coaching behaviors.

This is not to say that winning and losing is inconsequential for young athletes. Athletic outcomes do have consequences, and winning is more important for some athletes than for others. Several studies have shown that young male and female athletes experienced more post-event anxiety following losing efforts[8, 9]. At issue is: a) the relative influence of winning on children's enjoyment of coach, teammates, and other aspects of their sport experience; and b) individual difference variables that influence the importance ascribed to winning.

Based on empirical findings that children responded most favorably to coaches who were positive, encouraging and non-punitive in response to mistakes, encouraged effort as opposed to demanding outcomes, and provided good technical instruction, Smith et al.[10] developed a cognitive-behavioral intervention designed to promote the developmental approach. This intervention, originally called Coach Effectiveness Training (CET), was a one-session workshop that taught coaches how to apply those critical positive behaviors to their coaching style. Of central importance was promoting the goals of fun, effort, skill development, and viewing mistakes as opportunities to learn and to make adjustments that enhance performance. With the later emergence of achievement goal theory [11, 12], it became clear that the evidence-based principles that had emerged from the coaching research and that guided CET mapped quite well onto one of the key constructs in AGT; namely, a mastery (or task) motivational climate.

Nicholls [13] and Ames [11] described a mastery climate as one in which teachers, coaches, or parents define success in terms of self-improvement, task mastery, and exhibiting maximum effort and dedication. In such a climate, students and athletes tend to adopt adaptive achievement strategies such as selecting challenging tasks, giving maximum effort, persisting in the face of setbacks, and taking pride in personal improvement. In contrast, an

ego-involving climate promotes social comparison as a basis for success judgments. When coaches create an ego climate, they tend to give differential attention and positive reinforcement to athletes who are most competent and instrumental to winning, and skill development is deemed more important in relation to the goal of winning than to personal improvement and self-realization, and coaches are also more likely to respond to mistakes and poor performance with punitive responses. Indeed, the principles of the CET program were so isomorphic with the mastery climate construct that in its latest iteration the CET intervention was retitled the Mastery Approach to Coaching [3, 14, 15]. It should be noted that mastery- and ego-involving climates are not mutually exclusive and it is possible for elements of each climate to co-exist.

Research within both educational and sport settings has shown that a mastery climate is associated with a wide range of salutary outcomes, including better achievement, greater enjoyment, and intrinsic motivation, whereas an ego climate fosters higher levels of anxiety, lower levels of enjoyment, and other undesirable effects [16-18]. However the influence of potential moderator variables that might influence athletes' responses to mastery and ego climates has received far less empirical attention.

Given the range of important coaching behaviors encompassed within mastery and ego motivational climates, together with the development of reliable and valid measures of motivational climate [19, 20], Cumming et al.[7] studied the comparative influence of team success, defined as winning percentage, and motivational climate on young athletes' (ages 10-15) late-season evaluations of their team experience, coaches, teammates, and perceived parental liking for the coach. Multilevel modeling analyses showed that winning percentage was positively related to athletes' judgments of their coaches' perceived knowledge and teaching ability, motivational climate accounted for far more variance in attitudes than did winning percentage in how much they liked playing for the coach and wished to do so in the future. Attitudes toward the coach were positively associated with mastery climate scores on the Motivational Climate Scale for Youth Sports [21], whereas ego climate scores were negatively related. However, these findings, like many others in the motivational climate literature, were for the combined sample of boys and girls. To date, potential sex differences have received little empirical attention.

Why should sex be relevant to winning and motivational climates? Although many more girls participate in sports currently than in previous decades, there is little evidence that previously-established sex differences and sex socialization patterns, have kept pace with participation patterns [22, 23]. These socialization patterns have been related to a variety of sex-related differences [24]. Hyde's [25] review of 46 meta-analyses containing 128 effect sizes comparing males and females showed that although sex differences on psychosocial variables are quite modest in comparison with physical variables such as strength and throwing velocity, sex differences do exist on certain characteristics that are relevant to the question at hand. Although there is considerable distributional overlap as well as cultural, age, and situational factors at work [25], boys as a group tend to be more aggressive, dominant, and competitive, whether through constitutional factors, social learning, or both, whereas girls are more relationship oriented, nurturant, feelings-oriented, and cooperative, and they have lower self-efficacy in the physical domain [26, 27]. Male athletes are more inclined to use objective indices of winning and peer comparison as a basis for judging success and competence, whereas female athletes have a greater tendency to use self-comparison standards, such as skill improvement and reference to internalized performance standards[28-30]. These sex differences are also reflected on measures of achievement goal orientation, such as the Task and Ego Orientation in Sport Questionnaire [16] and the Achievement Goal Scale

for Youth Sports [31], where males obtain higher ego orientation scores and score lower on mastery (task) orientation than do females. The magnitude of sex differences in ego orientation scores exceed those for mastery orientation. Taken together, these sex differences suggest the possibility that team and individual success in terms of winning percentage may be more personally significant for boys than for girls, and thus more strongly related to their attitudes toward their athletic experience. Moreover, although previous research suggests that young athletes are more receptive to a mastery climate than to an ego climate [17], we might expect that the poorer "goodness of fit" of girls' personal characteristics with an ego climate may dispose them to react more negatively to an ego climate than do boys.

In this study, we extended the earlier research by Cumming et al.[7] by exploring possible moderator effects of sex on: a) the relative importance of winning; and b) attitudinal reactions to mastery and ego climates in an independent sample of youth basketball players. We also studied the potential impact of exposure to extreme mastery and ego climates on relations between winning and the attitudinal variables in subgroups of boys and girls.

METHOD

The participants were 99 male and 93 female athletes 10 to 14 years of age (*M* age = 12.37 years, *SD* = .90) playing on 23 teams (12 boys and 11 girls teams) in a youth basketball program. All of the teams' coaches were male. The majority of the participants (n = 170) were Anglo American, with small numbers of African-Americans (*n* = 2), Asian-Americans (*n* = 8), Hispanic-Americans (*n* = 3), Pacific Islander Americans (*n* = 1), and individuals of other races (*n* = 8).

PROCEDURES AND MEASURES

Parental consent and child assent were obtained prior to the onset of the study. Athletes read and completed questionnaires in a group setting at the end of the competitive season. The coach was not present during data collection. The inventories included measures of motivational climate and evaluative reactions toward the coach, teammates and their sport experience. Team won-lost percentages were obtained from league records.

Motivational climate. The Motivational Climate Scale for Youth Sports (MCSYS [9]) was employed as an age appropriate measure of the athletes' perceived motivational climate. Adapted in part from Newton et al.'s [19] Perceived Motivational Climate in Sport Questionnaire-2, which was developed on older samples, the MCSYS was designed to allow for measurement of motivational climate in younger children and it has a Flesh-Kincaid reading level of Grade 3.3. The MCSYS consists of 12 items, 6 of which measure mastery climate and 6 of which measure ego climate. To ensure content validity relative to the PMCSQ-2, all 6 of the PMCSQ-2 subscales identified by Newton et al. [16] are represented among the MCSYS items, some of which were rewritten to achieve lower grade level readability scores. Sample mastery items are: "The coach made players feel good when they improved a skill." and "The coach told us that trying our best was the most important thing." Sample ego items are: "Winning games was the most important thing for the coach." And "The coach paid most attention to the best players." The athletes indicated their level of agreement with each item on a 5-point Likert scale (1 = *not at all true*; 5 = *very true*).

In a previous study [21], confirmatory factor analysis provided strong support for a two-factor structure representing mastery and ego climates (GFI and CFI = .97; RMSEA = .04). The subscales also demonstrated adequate reliability and strong evidence of construct validity in relation to other measures. In the present sample, both subscales, given their restricted number of items, had acceptable internal consistency as measured by Cronbach's

alpha (Mastery = .77; Ego = .71).

Athletes' evaluative reactions and intention to return. Attitude items from the Sport Enjoyment Questionnaire (SEQ [32]) designed to measure specific evaluative reactions were used to assess the athletes' enjoyment of participating in the sport and on their team, evaluative reactions toward their coach and teammates, personal-and coach-attributed importance of winning and intention to return to the program the following year. The athletes responded to each of the 11 items on 9-point scales:

1. How much do you like playing this sport? (hate it/ love it)
2. How much fun did you have playing on this team this past season? (none at all/a great deal)
3. How much did you like playing for your coach? (really disliked playing/loved playing)
4. How much would you like to play for this coach in the future? (would hate to/would love to)
5. How much does your coach know about this sport? (almost nothing/everything)
6. How good is your coach at teaching kids how to play this sport? (Poor/excellent)
7. How much did your coach like you? (Really disliked me/really liked me)
8. How much did you like the other players on the team? (I really disliked playing on this team/I loved playing on this team)
9. How important was winning for you this season? (Not at all important/very important)
10. How important was winning for your coach? (Not at all important/very important/)
11. Are you going to play this sport next year? (Definitely won't/Definitely will)

The single-item scales were used to assess evaluative responses of interest in relation to winning and motivational climate. Single item scales of this nature have proven to be valid measures of relevant constructs in many studies, and they often exceed the validity coefficients of multi-item scales [33-35]. In previous studies, the SEQ items have consistently been related to other variables in theoretically meaningful ways and shown to be sensitive to coach training interventions, so that their construct validity is well established [5].

Won-lost percentage. At the end of the regular season, the won-lost percentages ([total number of games won / total number of games played] x 100) were obtained from the league administrators and the winning percentage was calculated for each team. Postseason playoff games were not included, as not all of the teams participated.

RESULTS
Winning percentage was not significantly correlated with either mastery (r = .11) or ego (r =.06) climate scores, establishing winning and motivational climate as statistically independent predictor variables. As in previous studies involving the MCSYS, the mastery and ego climate scales, though sharing some common variance, $r(190) = -.33, p < .01, r^2 = .11$, are appropriately regarded as reflecting separate dimensions rather than a single bipolar dimension, a conclusion supported by both exploratory and confirmatory factor analysis [21]. Therefore, the motivational climate subscales were treated as separate predictor variables as well.

Means and standard deviations for the predictor and outcome variables for boys and girls are presented in Table 1. As is evident in the MCSYS climate scores, both boys and girls characterized the motivational climate created by their coach as far more mastery-oriented than ego-oriented, $t(191)= 27.42, p <.001$. Nonetheless, sufficient variance occurred on both climate scales to reflect significant variation among coaches and to relate mastery and ego climates to athletes' evaluative reactions to their sport experience.

Table 1. Descriptive statistics for predictor variables and athletes' evaluative reactions to their sport experience

| | Boys (n = 99) | | Girls (n = 93) | |
Predictor/Criterion Variable	M	SD	M	SD
Seasonal Won-Lost Percentage	41.74	32.54	52.78	31.51
MCSYS Mastery Climate Score	25.25	4.21	26.42	2.99
MCSYS Ego Climate Score	10.94	3.68	9.90	4.04
How much do you like playing this sport?	8.17	1.27	7.91	1.71
How much fun playing on this team?	7.71	1.83	7.90	1.71
Enjoyment playing for this coach	7.75	1.77	7.79	1.79
Desire to play for the coach in the future	7.97	1.38	7.84	1.31
Coach's knowledge of the sport	7.74	1.42	7.97	1.34
Coach's teaching ability	7.98	1.51	8.01	1.46
How much did your coach like you?	7.97	1.38	7.84	1.31
Liking for the other players on your team?	7.74	1.42	7.97	1.34
Importance of winning for the athlete	6.36	2.31	5.59	1.99
Importance of winning for the coach	5.45	2.32	4.91	2.23
Intention to play basketball next year	8.12	1.61	7.78	2.13

Analyses of sex differences in the means shown in Table 1 revealed that the boys' teams had a lower winning percentage than did the girls' teams, $t(190) = 2.39$, $p < 02$. Boys and girls did not differ on mastery climate scores, but boys reported more ego climate coaching behaviors than did the girls, $t(190) = 2.12$, $p < .05$. Boys also rated winning as more personally important than did the girls, $t(190) = 2.27$, $p < .03$. Finally, relative to boys, girls rated their coaches as knowing more about the sport of basketball, $t(190) = 2.09$, $p < .05$. No significant sex differences were found for the other variables.

Two approaches were taken to analyzing the data. In the primary analysis, multilevel regression analyses (hierarchical linear models [36]) were computed to assess the respective roles of winning percentage, mastery climate scores, and ego climate scores in accounting for criterion variance. In order to assess possible sex differences directly, this analysis was conducted separately for boys and girls. We followed this analysis with a second analysis that focused on the athletes who described their coaches as falling within the top 38% of either the mastery or ego climate distributions. In this extreme-groups analysis, we computed correlations between the team's won-lost record and attitudes toward the coach, teammates, and other aspects of their sport experience for the separate motivational climate and sex groups, as well as for the combined sex groups. This analysis addressed two questions: How important does winning become as a factor in evaluative reactions for children who have spent a competitive sport season in either mastery or an ego involving motivational climate? Second, does this relation differ for boys and girls?

MULTILEVEL DATA ANALYSES
Multilevel regression analysis takes into account the fact that athletes within a given team are typically more similar to one another than athletes across teams because the former share the same coaching environment. The nesting of athletes within teams is taken into account in multilevel regression analyses that assess within (Level 1, athlete) and between-team (Level 2) estimations of the relations between predictor and outcome variables.

In accordance with research examining the effects of motivational climate and/or win loss

records [7, 37] transformations were conducted on a number of skewed variables (mastery climate, ego climate, and all but two of the evaluation items) to limit any effects associated with data non-normality. Variables that were reversed due to the transformations (i.e., those that were negatively skewed), were multiplied by negative one (i.e., re-reversed) to aid interpretations and help infer interaction effects. Following the transformations, all variables were standardized (z scores) so they had a mean value of 0 and standard deviation of 1 across the sample. Interactions were represented by the products of the standardized variables. As all of the variables in this study are standardized, the model coefficients can be considered to be standardized beta coefficients for all variables except the interactions [37].

Next, to establish the effect of nesting within teams upon the variables of interest, we tested a series of unconditional models with no predictor variables. Unconditional models were tested for each of the motivational climate scales and for each of the items assessing the coach and sport experience. The intraclass (i.e., intrateam) correlation for each variable was determined by dividing the variance of the intercept by the sum of the residual variance and the intercept variance [38]. For motivational climate, the intraclass correlations were .26 for ego and .27 for mastery, indicating that 26% and 27% of the variance in ego and mastery climate scores, respectively, was explained by players within teams providing similar ratings. The estimated variance associated with the intercepts was significant for both ego and mastery climate. For the coach and sport experience items, the intraclass correlations ranged from .08 ("How good is your coach at teaching kids how to play this sport?") to .37 ("How much did you like playing for your coach"), with a mean ICC of .25. The estimated variances associated with the intercepts were significant for all items with the exception of… "How much do you like playing this sport? And "How much did your coach like you?" For these variables, virtually all variance was attributed to the individual athletes. Collectively, these results indicate that a degree of within-team homogeneity exists for most variables in terms of how players evaluate the coach and the sport experience, underlining the need to control for the nesting of athletes within teams. Not taking into account variation due to within-team non-independence can result in inaccurate statistical tests without appropriate multi-level modeling of the data [36]. In the present case, however, the intraclass correlations also indicate that in addition to the variance accounted for in motivational climate and the criterion variables by intrateam homogeneity, a majority of the variance (more than 70% in the case of motivational climate) is attributable to individual athlete factors, indicating that analyses based on team means to avoid the within-team nonindependency issue would also be nonoptimal because they would mask the clearly-apparent intrateam variability resulting from individual athletes' perceptions and attitudes. The multilevel analysis we employed takes both individual and team-based components of variance into account, thereby providing a more appropriate evaluation of predictor variable effects.

Results of the multilevel analyses involving standardized predictor and criterion variables are shown in Table 2. Consistent with the results of an earlier study [7], motivational climate exhibited stronger and more pervasive relations to the evaluative outcome variables than did winning. Winning percentage did relate strongly to two of the outcome variables for both boys and girls, namely, enjoyment derived from playing the sport and intention to continue to play the sport the following season.

For both boys and girls, mastery climate scores were positively and significantly related to most of the athletes' evaluative reactions. Regardless of sex, mastery climate scores were positively related to attitudes in all cases where significant, In contrast, ego climate scores were negatively related to the outcome measures with one exception: They were positively related to the perceived importance of winning exhibited by the coach, a result that supports the construct validity of the ego climate measure.

Table 2. Standardized beta coefficients and standard errors associated with multilevel models examining the main and interactive effects of perceived motivational climate and won-lost percentage on male (B) and female (G) youth basketball players' evaluative reactions to their sport experience

Dependent Variables		Mastery Climate β (SE)	Ego Climate β (SE)	Win/Loss β (SE)	Mastery Climate x Win/Loss β (SE)	Ego Climate x Win/Loss β (SE)
How much do you like playing this sport?	B	31 (.10)**	.03 (.11)	.27 (.13)**	.03 (.12)	.15 (.11)
	G	.13 (.10)	-.42 (.11)***	.40 (.14)*	.01 (.10)	.23 (.10)*
How much fun playing on this team?	B	.35 (.11)**	-.05 (.10)	.30 (.11)*	-.10 (.11)	.03 (.11)
	G	.25 (.09)**	-.40 (.10)***	.33 (.20)	-.04 (.09)	-.04 (.05)
How much did you like playing for your coach?	B	.40 (.09)***	-.17 (.09)*	.35 (.13)*	-.03 (.10)	.06 (.08)
	G	.41 (.10)***	-.10 (.11)	.13 (.17)	-.01 (.10)	10 (.10)
Desire to play for this coach in the future	B	.28 (.10)**	-.16 (.10)	.40 (.15)*	-.11 (.11)	.05 (.09)
	G	.47 (.10)***	.00 (.11)	.20 (.14)	-.05 (.09)	.11 (.11)
Coach's knowledge of the sport	B	.29 (.11)**	.05 (.10)	.16 (.18)	-.17 (.12)	-.13 (.10)
	G	.15 (.10)	-.43 (.11)***	.24 (.18)	-.07 (.10)	-.09 (.10)
Coach's sport teaching abilities	B	.30 (.10)**	.01 (.10)	.31 (.18)	-.08 (.12)	.04 (.10)
	G	.23 (.10)*	-.35 (.11)**	.28 (.14)	-.12 (.10)	-.06 (.10)
How much did you your coach like you?	B	.37 (.11)**	.08 (.11)	.15 (.10)	-.09 (.12)	-.08 (.12)
	G	.33 (.10)**	-.29 (.11)**	.25 (.17)	.04 (.10)	-.03 (.10)
How much did you like your teammates?	B	.20 (.11)	.01 (.10)	.35 (.11)*	-.32 (.11)**	.05 (.10)
	G	.34 (.10)**	.22 (.12)	.11 (.17)	.01 (.10)	-.05 (.11)
Importance of winning for you?	B	.02 (.11)	.17 (.11)	.43 (.20)	.26 (.12)*	.12 (.10)
	G	.01 (.11)	.13 (.12)	.33 (.14)*	-.09 (.11)	.00 (.11)
Importance of winning for your coach?	B	.10 (.10)	.43 (.10)***	.35 (.13)*	-.17 (.11)	-.10 (.10)
	G	-.06 (.10)	.31 (.11)**	.27 (.15)	-.15 (.10)	-.06 (.10)
Intention to play basketball next year	B	.31 (.11)**	-.04 (.10)	.35 (.09)***	-.12 (.11)	.08 (.11)
	G	.17 (.09)	-.20 (.10)	.47 (.19)*	-.06 (.09)	.18 (.09)*

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

Note: For the models examining variance in the items relating to boys' liking for the sport, perceived liking by the coach, and intent to return to the program, the Hessian Matrix in the models was not definite positive. In accordance with the recommendations of West et al. (2007), a simpler model with the random effect excluded was therefore tested as an alternative.

Beyond the general pattern of results were a series of notable sex differences in how winning and motivational climate related to the outcome variables. An ego climate clearly had a stronger negative relation to the outcome measures for girls than it did for boys. Ego climate scores were negatively related to how much girls liked the sport, how much fun they had playing on their teams, their evaluations of the coaches' knowledge and teaching ability, and how much they believed the coach liked them. None of these relations occurred in the boys subsample. Boys exhibited a negative relation between ego climate and enjoyment playing for the coach, but this relation, though also negative, was not significant for girls.

Aside from the results concerning sport enjoyment and intention to return, winning clearly had a stronger and more pervasive influence for boys than it had for girls. For boys but not for girls, winning percentage was positively related to how much fun the athletes reported

deriving from playing on their team, liking for the coach and desire to play for the coach in the future, and liking for teammates. The latter result was qualified by a significant interaction between winning and mastery motivational climate. Follow-up analyses revealed that high attraction toward teammates occurred for boys within a low mastery climate only if the team was highly successful. For boys, a low mastery-low winning combination was associated with the lowest level of attraction toward teammates. Additionally, the significant interaction between mastery climate and winning reflected high personal importance attributed to winning only when a high mastery climate was associated with a strong winning record. The lowest personal importance of winning (by more than 1 *SD*) was reported when low mastery climate scores were associated with a low winning percentage. These interactions were not observed in girls.

Several ego climate x winning interaction effects occurred for girls. As noted earlier, winning percentage exhibited significant main effects for both liking for the sport and intention to return the following year in girls, as it did in boys. However, these main effects for girls were qualified by significant ego climate x winning interactions. Follow-up analyses revealed that for girls, enjoyment and intention to return were extremely low (more than 2 *SD*s lower than any other ego climate-winning combination) for both variables when a high ego climate was associated with a low winning percentage.

To summarize the results of the multilevel analyses, motivational climate had generally stronger relations to the outcome variables than did winning percentage, replicating the basic results of Cumming et al.[7]. Regardless of sex, mastery climate scores were positively related to attitudes in all cases where significant. In general, girls reacted more negatively than did boys to an ego climate. These results indicate notable sex differences in response to both the importance of winning and to experiencing an ego climate.

EXTREME GROUPS ANALYSIS

The multilevel regression analyses were based on the entire distributions of male and female athletes. They therefore include athletes whose coaches who created neither prototypic mastery nor ego climates. As Nunnally [39] has noted, such analyses can therefore mask the influence of a predictor variable by including large numbers of data points that reflect weak levels of the constructs of interest. Such cases can obscure notable differences occurring at the tails of a distribution that reflect meaningful differences in the construct in question, in this case, mastery or ego climates. This problem can be addressed via analyses of extreme groups that can be assumed to differ in a meaningful fashion in relation to the construct of interest [40-42]. Numerous statistical studies have demonstrated that the power to detect group differences is maximized when groups that exceed the top and bottom 27% of the distribution are compared [41].

In addition to the broader questions addressed by the multilevel regression analyses, we were interested in the importance of winning on athletes' evaluative reactions if they played on teams whose coaches had presumably created either a strong mastery climate or a strong ego climate. Using the combined boys and girls distributions on mastery and ego scores, we selected athletes who reported high scores for their coaches within the top 35% of the two distributions (raw score > 27 on the mastery climate scale and >10 on the ego climate scale). While not maximizing power in terms of what statisticians refer to as "the 27% rule" [41] because a quartile split yielded relatively small groups, we were able to compare groups of athletes who participated within relatively high mastery or ego climates, respectively. A total of 72 athletes (36 boys and 36 girls) played for the high mastery coaches and 74 athletes (44 boys and 30 girls) played for the high ego climate coaches. A total of nine teams (5 male and 4 female) were represented in each of the extreme groups. The numerical sex disparity in the high ego climate group occurred because, in

general, girls assigned lower ego scores to their coaches than did boys.

The moderate negative correlation ($r = -.33$) between mastery and ego climate scores (reflecting the fact that virtually all coaches engage in varying combinations of mastery- and ego-relevant behaviors), yielded athlete groups that reported relatively high levels of behaviors creating one climate and relatively low levels of the other. Specifically, the high mastery climate group had a mean mastery score that corresponded to the 83rd percentile of the MCSYS mastery climate norms reported by Smith et al.[21] and a mean ego score that corresponded to the 47th percentile of the normative ego climate distribution, whereas the high ego climate group had a mean ego score that corresponded to the 88th percentile of the MCSYS ego norms and a mean mastery score that corresponded to the 29th percentile of the mastery climate norms.

Within these two climate groups, we then correlated the winning percentage of the athletes' teams with their ratings of liking for the sport, fun playing on the team, coach evaluation scores, perceived liking by the coach, liking for teammates, personal importance of winning, perceived importance of winning for the coach, and intention to return to the program the following year. Separate analyses were carried out for boys and girls and for the combined sex groups.

Correlations between winning percentage and the athlete evaluative measures as a function of motivational climate and sex are presented in Table 3. Among athletes who played in a strong mastery environment, few significant correlations were found between winning percentage and the athletes' evaluative reactions to their experience. Liking for coach and teammates and desire to return the following year were unrelated to winning for either boys or girls. For girls (but not boys) a significant positive relation was found between winning and perceived liking by the coach. For boys, but not girls, winning was linked with personal importance of winning for the athlete, and this relation was the only significant relation for the combined high mastery sex groups.

Table 3. Correlations between won-lost percentage and evaluative reactions of boys and girls as a function of exposure to a high mastery or a high ego motivational climate

Variable	High Mastery Climate			High Ego Climate		
	Boys n = 36	Girls n = 36	All n = 72	Boys n = 44	Girls n = 30	All n = 74
How much do you like playing this sport?	.10	.21	.13	.35*	.47*	.32*
How much fun did you have playing on this team?	16	.26	.22	.34*	.22	.24*
How much did you like playing for your coach?	.05	-.00	.00	.52***	-.01	.27*
Desire to play for the coach again	.06	.05	.06.	.50***	.10	.37***
Coach's knowledge of the sport	.15	.26	.20	.23	. -.07	.20
Coach's sport teaching ability	.06	.21	.15	.40**	-.10	.13
How much did your coach like you?	.01	.33*	.16	.18	-.03	.02
Liking for teammates	-.09	.20	.07	.62***	-.11	.39***
Importance of winning : athlete	.43**	.29	.31*	.52*	.52*	.49***
Importance of winning : coach	.30	.22	.22	.41**	.37*	.38***
Intention to play next year	.15	.28	.19	.46***	.61***	.46***

* p < .05 ** p< .01 ***p < .001

Winning assumed a far more prominent role for athletes who played in a strong ego climate. For the combined sex groups, seven of the eight evaluative measures were significantly correlated with winning percentage. For both boys and girls, significant relations were found between winning percentage and liking for the sport, importance of winning for both athlete and coach, and intention to return the following year. Nonetheless, some notable sex differences were found. In the ego climate, liking for coach and teammates were significantly related to winning for boys, but not for girls. The sex differences in correlations were significant for enjoyment playing for the coach, $z = 2.36$, $p < .02$, coach's teaching ability, $z = 2.11$, $p < .05$, and liking for teammates, $z = 3.37$, $p < .001$. Enjoyment playing on the team and desire to play for the coach again were positively and significantly related to winning record for boys, but not for girls. The only variable not related to winning for either boys or girls was perceived liking by the coach.

DISCUSSION

The purpose of this investigation was to reexamine the relative contributions of team success defined objectively in terms of won-lost record and motivational climate to young athletes' reactions to their sport experience. We therefore replicated and extended the study by Cumming et al.[7] with an independent sample of young athletes and expanded the range of outcome variables beyond the coach evaluations studied by Cumming. Additionally, we examined differences between male and female athletes to assess a potentially important individual difference variable that has not previously been taken into account in studies comparing the influence of these two predictor variables. We performed separate multilevel analyses for boys and girls to provide a more explicit picture of possible sex differences with regard to both the importance of winning and boys' and girls' responses to mastery and ego motivational climates. Finally, in addition to the variable-centered approach represented in the multilevel regression analyses, which included all athletes and levels of motivational climate, we conducted a person-centered analysis involving groups of athletes who rated their coaches as extremely mastery-oriented or ego-oriented in their behavior patterns. The empirical question here was whether exposure to such climates over the course of the season would be differentially associated with the importance of winning percentage in coloring the athletes' evaluative reactions to their experience.

The variable-centered and extreme groups analyses provide somewhat different, though complementary, answers to the question, "How important is winning?" Consistent with the findings of Cumming et al.[7], the sex-based multilevel analyses containing all athletes indicate that for both boys and girls, motivational climate exerts a stronger and more pervasive influence on athletes' evaluative relations than does winning. For both boys and girls, exposure to a mastery climate was associated with more positive attitudes toward the coach, greater enjoyment playing on the team, higher perceived liking by the coach, and greater liking for other team members. However, there were notable sex differences where ego climate was concerned. Except for boys' perception of the importance of winning for the coach, ego climate scores were unrelated to any of the outcome variables. In contrast, girls evaluations were negatively associated with ego climate behaviors. For girls, ego climate scores had strong negative relations to their attitudes toward the coach, enjoyment playing on the team, liking for the sport, and perceived liking by the coach. Where ego climate was concerned, the only sex consistency was that ego climate scores were related to perceptions that winning was important to the coach, indicating that this priority was evident on both boys and girls teams. Where liking for the sport was concerned, mastery climate was positively related for boys but not for girls. In contrast, ego climate was unrelated for boys

but negatively related for girls. Finally, mastery climate was related to intent to return the following year for boys, whereas ego was not. For girls, neither climate score predicted intention to return. Overall, the results indicate that a mastery climate is associated with a more positive experience for both boys and girls, but an ego climate is negatively related to evaluative reactions to the sport experience for girls, but not for boys.

Although, as in the Cumming et al.[7] study, won-lost record was more weakly and less pervasively associated with athletes' reactions than the motivational climate, winning did appear to matter. For both boys and girls, winning was related to liking for the sport, importance of winning for the athlete, and intention to return the following year. Again, however, there were some notable sex differences. For boys, winning percentage predicted positive evaluations of the coach, including desire to play for the coach in the future, whereas won-lost record was unrelated to coach and sport experience evaluations for girls. For boys, but not for girls, winning percentage was positively related to liking for teammates and the degree of enjoyment derived from playing on the team. However, high attraction toward teammates occurred within a low mastery climate only if the team was highly successful; a low mastery-low winning combination was associated with the lowest level of attraction toward teammates. Additionally, the lowest personal importance of winning (by more than 1 SD) was reported by boys when low mastery climate scores were associated with a low winning percentage. Thus, in general, winning had a more pervasive positive influence on boys' evaluative reactions than on those of girls.

The extreme groups analysis addresses addressed a somewhat different question: After exposure to a coach-initiated motivational climate that strongly emphasizes either mastery- or ego oriented values or definitions of success, how important does winning become? The pattern of correlations in Table 3 indicates that winning was relatively unimportant if the athletes had played in a mastery climate with one important qualification: Winning percentage was significantly related to boys' ratings of how important winning is to them. In girls, however, team winning percentage was not related to the ascribed personal importance of winning.

In sharp contrast to the mastery climate, strong relations occurred between winning and evaluative reactions in both boys and girls when they had been exposed to an ego climate. For both sexes, winning was positively related to liking for the sport, importance of winning, coach-attributed importance of winning, and intention to return to the sport the following year. Whereas winning record was unrelated to personal importance of winning for girls exposed to a mastery climate, it was significantly related (as for boys) in the ego climate group, suggesting that winning comes to assumes considerable importance in both boys and girls exposed to the values and emphasis on winning communicated in an ego climate if winning does indeed result. However, in the absence of importance measures obtained at the beginning as well at the end of the season, we do not know if these relations reflect climate-produced changes in the importance of winning.

Again, however, we also found significant sex differences in the ego-climate group, most notably in athletes' reactions to their coach and teammates. Whereas boys' attitudes toward the coach and teammates were strongly related to the team's winning percentage if they had played in an ego climate, this was not the case for girls.

In general, then, our results, though correlational in nature, support the following tentative conclusions:

1.   Winning can influence children's evaluative reactions of their sport experience, but motivational climate exerts a stronger and more pervasive influence.

2.   Winning exerts a stronger influence on boys' attitudes toward various aspects of their sport experience than it does on girls' attitudes.

3.   Consistent with much previous research, both boys and girls respond positively to a mastery climate.

4.   An ego climate has a stronger negative impact on girls than it does on boys.

5.   Winning within an ego climate may promote greater importance placed on winning in both boys and girls.

Why is winning more important for boys than for girls, and why is an ego climate more negatively associated with girls evaluations of the coach and sport experience than boys? Findings from the sport socialization and sex literatures may provide an explanatory framework. As noted earlier, boys as a group tend to be more aggressive, dominant, and competitive, whereas girls are more relationship oriented, nurturant, feelings-oriented, cooperative, and have lower self-efficacy in the sport skills domain [26, 27, 43]. Moreover, male athletes are more inclined to use objective indices of winning and peer comparison as a basis for judging success and competence, whereas female athletes have a greater tendency to use self-comparison standards, such as skill improvement and reference to internalized performance standards [29, 30]. In line with these frequently reported differences in success criteria, the boys in our athlete sample rated winning as more personally important than did girls.

Although both boys and girls respond more positively to a mastery climate than to an ego climate, we suggest that an ego climate (including an emphasis on establishing superiority by outdoing others, including teammates, and on winning) is more compatible with male standards and tendencies, but less compatible for those of females, whose stronger "tend and befriend" orientation places a premium on positive and supportive relationships [44]. Likewise, girls' greater emphases on effort and self-referenced improvement are compatible with a mastery climate but less so with an other-referenced ego climate. Such differences may be reflected in a clear tendency for girls in our study to react more negatively to an ego climate than do boys in terms of enjoyment and liking for the coach.

Our extreme-groups results also bear on the question of how exposure to an ego environment may influence the importance ascribed to winning by boys and girls. Particularly if the team is highly successful, such exposure can enhance the personal value placed on winning in girls as well as boys. Winning also was highly related to both boys' and girls' liking for the sport and stated intention to participate the following year. These relations involving winning percentage did not occur in girls exposed to a mastery environment. Given the nature of the youth sport program in question, which draws from the surrounding neighborhoods, it seems unlikely that this result can be attributed to preseason self-selection of ego-oriented coaches by young girls who highly valued winning to begin with. Rather, it seems more likely that the differential pattern in comparison to those who played in a mastery climate is influenced by season-long exposure to an ego environment and its emphasis on winning. However, our data do not permit the inference that athletes *change* in this respect, for we did not assess importance of winning at the beginning of the season. However, the question of how exposure to mastery and ego environments can promote changes in boys and girls over the course of the season is worthy of future empirical attention.

Another finding not previously reported emerged when we formed groups of athletes who played for coaches who were high in either mastery or ego climate scores. In our sample, as

in others that have found a moderate negative correlation between mastery and ego climate scores [45], there is a challenge in forming high mastery or ego groups whose coaches do not also engage in behaviors that comprise the other climate. We elected to select athletes whose climate scores fell in the top third of either the ego or mastery distribution. On average the mastery coaches had quite extreme ratings whose means fell in the 83rd percentile of the mastery norm distribution and the ego coaches' mean score corresponded to the 88th percentile of the ego climate norms [14]. However, when we computed the mean score on the other climate measure, we found evidence that the mastery coaches engaged in more ego climate behaviors (at the 47th percentile) than the ego coaches engaged in mastery behaviors (29th percentile). It thus appears that the distributions of behaviors of coaches who create ego climates may conform more uniformly to that orientation, whereas a mastery climate is more likely to include ego orientation behaviors as well (perhaps especially during games, where an emphasis on winning is likely to be a salient factor). It could be the high levels of mastery involvement protect against and/or mitigate any effects of ego-involvement. Future investigators may wish to more closely examine the interactive effects of mastery- and ego-involving climates, and what the 'optimal mix' of climates is for promoting successful and adaptive engagement in sport. Whether this pattern is in the eyes of the beholders (athletes) or whether it actually exists would best be answered by behavioral observation studies using an instrument such as that developed by Morgan et al.[46] to assess motivational climate. Behavioral observations would also address the question of whether there are differences in the qualitative characteristics of the mastery and ego climates created on boys and girls teams.

Motivational climates are multifaceted situations having many potential "active ingredients," any of which could engage particular individual difference variables. Age, sex, and personality/motivational factors may sensitize individuals to particular aspects of the motivational climate in question. Additionally, one person may react to a particular situational component, whereas another person may react to a different one. Consistently positive relations have been found with a wide range of outcome variables [17, 18], suggesting that the positive aspects of such a climate are well received by athletes in general, as in this study. An ego climate, in contrast, has a variety of potentially aversive elements that may affect subsets of athletes in different ways. For example, Kipp and Amorose [47] found that two key facets of an ego climate, unequal recognition based on ability and promotion of intra-team rivalry, were unrelated to intrinsic motivation (autonomy) in a sample of female high school athletes, whereas the facet of punishment for mistakes was linked to lower intrinsic motivation. It is quite possible, however, that certain personality factors, such as a high need for social approval, would make some athletes highly reactive to a different facet, such as unequal recognition. The manner in which personal characteristics influence responses to different motivational climates is a topic deserving of future empirical attention.

We should note several limitations of this study. As noted above, this is a correlational study based on self-report data from a single source, namely, the athletes. Given the correlational nature of the data, the tentative causal conclusions drawn above should be regarded as in that light. However, the data do take into account the individual perceptions of the athletes, which are more strongly related to the SEQ variables than are behavioral measures [6]. Moreover, the modest intraclass correlations for motivational climate scores found in this and previous motivational climate studies [7, 37, 45] suggest that individual perceptions and experiences with the coach are the primary determinants of motivational climate scores on measures such as the MCSYS. Nonetheless, it would be of interest to have behavioral observation data on the coaches to assess the mix of mastery and ego climate

behaviors that occur in mastery and ego environments. Is it indeed the case that extreme ego-climate coaches use relatively fewer mastery-climate behaviors than extreme mastery climate coaches use ego-climate behaviors?

CONCLUSION

We should note that the differential correlations between winning and attitudes within the extreme climate groups are based on relatively modest subsample sizes that do not maximize the potential power of extreme-groups analysis based on more extreme groups (for example, the top and bottom quartiles). Replication of those findings with larger subsamples would be both statistically and theoretically desirable. Nonetheless, our results suggest that failure to examine sex differences in sport psychology research, either by studying single-sex samples or combined-sex samples, may mask important sex-specific relations, promote Type 2 errors by obscuring sex-relevant effects in combined samples, or may lead to generalized conclusions that are not applicable to both sexes.

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