

Motivational climate in the home: Implications for physical activity, psychosocial outcomes and family relations¹

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The impact of motivational climate created by coaches/teachers on children is well documented. There is little knowledge about the motivational climate in the home. This study investigated the perceived motivational climate in the home and achievement goals, physical activity involvement, and psychosocial outcomes such as empathy, family relationships, school grades, general mastery and psychological problems for 15-16 year old adolescents. Methods: Data were collected by questionnaires in a cross-sectional design. Participants were 1940 boys and 1871 girls. Gender differences necessitated separate analyses, but for both genders, mastery climate was indirectly, positively related to physical activity, mastery, empathy, family relations, and school grades via task orientation. The home climate had a direct relationship with the achievement orientation of the children and the orientation of the child had gender specific relationships to physical activity, family relationships and general mastery. Conclusion: A home mastery climate is associated with more adaptive outcomes.

KEY WORDS: Home motivational climate, Physical activity, Psychosocial outcomes, Youths.

Informed by achievement goal theory (AGT), there is now extensive evidence (e.g., Butler, 2014; Dweck, 2012; Harwood, Keegan, Smith & Raine, 2015; Lochbaum, Kazak Cetinkalp, Graham, Wright, & Zazo, 2016; Reinboth & Duda, 2006; Roberts, Nerstad, & Lemyre, 2018; Treasure & Roberts, 2001) that when coaches and teachers create a mastery motivational climate in sport and teaching environments, as opposed to a performance motivational climate, then positive outcomes emerge. Motivation is optimised, participants persist longer, performance is higher, satisfaction and enjoyment are

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higher, peer relationships are fostered, wellbeing enhanced, burn out is less likely, and participants feel more positively about themselves and the task. A mastery climate is characterised by coaches and teachers focusing on effort, self-referenced criteria of success, and improvement over time, while a performance climate is characterised by a focus on normative success, winning, avoiding mistakes, and comparing oneself to others. When coaches and teachers create a performance climate then negative outcomes may emerge. Motivation ebbs, task investment is low, persistence is low, performance suffers, satisfaction and enjoyment are lower, peer relationships suffer, cheating is more likely, burn out is more likely, and participants feel more negatively about themselves and the achievement context (e.g., Butler, 2014; Dweck, 2012; Harwood et al., 2015; Lochbaum et al., 2016; Reinboth & Duda, 2006; Roberts et al., 2018).

Surprisingly, the effects of the motivational climate created by parents in the home is less well documented (Appleton, Hall & Hill, 2010). However, some examples exist. O'Rourke, Smith, Smoll, and Cumming (2013) found that parents who initiated a mastery climate defining success as enjoyment, self-improvement and exerting effort reported higher levels of intrinsic motivation than those parents who created a performance climate characterised by winning, avoiding mistakes, and comparing performance to others. Similarly, O'Rourke, Smith, Smoll, and Cumming (2011) found that parental pressure to achieve, where parents emphasised normative criteria of success in the home, the children had the highest levels of trait anxiety, while parents who emphasised effort and self-referenced criteria of success had lower levels of trait anxiety. Kolayis, Sari and Celik (2017) found that athletes' perception of the motivational climate created by parents was important for their self-determined motivation. However, it remains that research into the effects of the climate of the home on physical activity and psychosocial outcomes is understudied. It was the purpose of this study to extend the investigation of the impact of the home motivational climate on physical activity, achievement goals, and psychosocial outcomes.

The literature on the parent-adolescent relationship has thoroughly demonstrated that the influence of parents is fundamental to adolescent wellbeing and behaviour (e.g., Resnick, et al., 1997; Scharf, Wiseman & Faten, 2011; Steinberg, 2001). The quality of the relationship is an important predictor of stress, enjoyment, wellbeing and sustained motivation in physical activity and sport (Horn & Horn, 2007; O'Rourke, et al, 2011, 2013). The need to investigate home environmental influences on the development of general mastery, empathy, family relations, psychological problems and achievement striving is based on the tenet that psychological characteristics

of the social environment are instrumental in the development of perceptions of the criteria necessary for successful achievement. Such perceptions of what it takes to achieve success may in turn lead to different psychosocial outcomes (Harwood et al., 2015; Maehr & Zusho, 2009). Much of the evidence has been informed by achievement goal theory (Nicholls, 1981) focusing on the impact of the motivational climate created by coaches and teachers within the coaching and/or teaching contexts on physical activity performance and school-work, and on general mastery and psychological problems (e.g., Butler, 2014; Harwood, et al., 2015; O'Rourke et al., 2011, 2013; Treasure & Roberts, 2001).

Achievement goal theory argues that achievement goals govern achievement beliefs and guide subsequent decision making and behaviours in achievement contexts. Individuals give meaning to their achievement striving through the goals they adopt. An individual's investment of personal resources (time, effort, talent) is dependent on his/her achievement goal. It is argued that two goals are manifest: A mastery goal where the focus of the individual is to demonstrate self-referenced competence and effort; and a performance goal where the focus of the individual is to demonstrate normative competence and doing better than others. The adoption of one, or both goals, becomes one's personal theory of what it takes to achieve success (Nicholls, 1989). For a mastery person, success is realised when one develops mastery, learns, or improves at a task. For a performance person, success is realised when one exceeds the performance of others, especially when exerting less effort (Butler, 2014; Maehr & Zusho, 2009; Roberts, 2012; Roberts et al., 2018). A person is disposed to be mastery and/or performance oriented and behaves accordingly; or one interprets the criteria extant in the achievement context whether it is the home, the classroom, or sport, and tries to meet those criteria (e.g., Maehr & Zusho, 2009). The research focus of this study is on the motivational climate created by parents on the development of achievement goals, physical activity and on psychosocial outcomes.

In a performance-oriented climate, the context reflects a pressuring, ego investing environment in which individuals feel compelled to pursue success through being better than others. In this climate, the parent typically compares performance with siblings and/or peers. The social-comparative elements are perceived to be externally induced and less controllable and are experienced as pressure to maintain self-esteem, to attain social approval and rewards, and to demonstrate superior normative ability (Deci & Ryan, 2002; Ommundsen, Lemyre, Abrahamsen & Roberts, 2010; O'Rourke et al., 2011; Roberts, 2012; Roberts, et al., 2018; Wang & Biddle, 2001). Hence, a performance climate may lead to a performance oriented and controlled internali-

sation of competence into the individual's identity, a condition AGT refers to as a performance-oriented achievement goal (e.g., Nicholls, 1989; Ommundsen et al., 2010; Quested & Duda, 2010).

In contrast, in a mastery climate parents typically encourage children to make use of self-referenced and self-chosen criteria to judge competence. In this climate, there should be little or no external constraints from the parent to achieve and to be better than others. In a mastery climate, children are motivated to stay involved through achieving mastery and learning. A mastery climate thus allows for making use of more personally controllable and less ego investing criteria of success such as doing your best or exerting optimal effort (O'Rourke et al., 2013; Parish & Treasure, 2003; Roberts, 2012), and may lead to a mastery oriented achievement goal (Nicholls, 1989; Ommundsen et al., 2010; Quested & Duda, 2010).

Despite this research evidence from sport, physical activity and classroom contexts with climates created by coaches and/or teachers, there is a dearth of evidence about the motivational climate created by parents, with the exceptions noted above (Jowett & Rhind, 2007; O'Rourke et al., 2011, 2013). Yet this is the most prevalent environment experienced by children and adolescents. The purpose of the present study therefore was to extend previous research and investigate the relationship between perceived parental motivational climate for sport, own goal orientations, sport and exercise involvement, and psychosocial outcomes.

In this research study, we were constrained by the fact that this was a population health investigation performed by The National Institute of Public Health (NIPH). The focus of the investigation was a health survey of adolescents in two counties in Norway. The NIPH allows other scientists from universities to submit proposals for research projects within the larger investigation. We submitted a proposal to investigate the impact of the home climate on achievement goals and psychosocial outcomes. We were successful but severely limited on the number of questions we could include. However, we were free to utilise the questions included by the NIPH.

In our proposal, we included items to measure the motivational climate for sport in the home (PMCSQ; Seifriz et al., 1992), but were required to cull the items to six, three for mastery and three for performance. We also included six items for achievement goal orientations (POSQ; Roberts, Balague & Treasure, 1998), three each for task and ego. The other variables in the investigation were submitted by the NIPH or other research teams. Based on theoretical and empirical criteria, we selected sport and exercise involvement as the evidence suggests that a mastery climate enhances future exercise and physical activity involvement (Hall, Kerr, Kozub & Finnie, 2007); family relationships, because

there is evidence that coaches and teachers who use mastery criteria to give feedback to young athletes create a climate that enhances empathy, peer and social relationships (e.g., Ommundsen, Roberts, Lemyre & Miller, 2005). Former research has demonstrated that motivational climate can affect both positive outcomes such as wellbeing and general mastery and negative outcomes such as psychological problems (e.g., Kaplan & Maehr, 1999). We selected general mastery as an indicant of wellbeing and included psychological problems as an indicant of ill-being. We also included schoolwork as evidence exists that the achievement climate influences schoolwork (Butler, 2014). In this study, we hypothesised that the climate created by parents for sport involvement would also affect schoolwork (e.g., Roberts et al, 2018).

Method

PARTICIPANTS

Participants were 3811 boys and girls 15-16 years of age in two counties in Norway. The response rate was 89%. There were 1940 boys and 1871 girls in the total investigation. The sample used for this article was the 3277 boys and girls that answered the questions about perceived parental motivational climate in the home.

PROCEDURES

This study was part of a health investigation performed by the NIPH. The primary purpose of the study was to document general health issues, and to measure physical activity and various psychosocial variables. As noted earlier, there are often severe constraints on the number of questions in order to gain approval of the NIPH. Therefore, part of our research was to determine the reliability of the short versions of the Perception of Success Questionnaire (POSQ, Roberts et al., 1998), and the adaptation for parents of the Perceived Motivational Climate in Sport Questionnaire (PMCSQ; Seifriz et al., 1992). The design of the study was cross-sectional, and data were collected by questionnaires. There was one main questionnaire with the general health questions and issues, and one additional questionnaire with more extensive information about school, psychological adjustment and physical activity issues. The NIPH granted ethical approval to collect the data used in this article by the Data Protection Authorities in Norway with the proviso that all publications maintain participant anonymity. This manuscript was approved for publication by the NIPH.

MEASURES

Motivational climate. The motivational climate in the home was measured by a short version (six items) of the PMCSQ (Seifriz, et al, 1992) adapted for the purposes of this study.

Example items are: "In physical activity (sport, dance or exercise/play) my parents think I am most successful when I demonstrate personal progress" (mastery); and "In physical activity (sport, dance or exercise/play) my parents think I am most successful when I get better results than others" (performance). (All items for the measures are included in an appendix). A mean score was computed across the three items for each climate.

Goal orientations. Goal orientations were measured by a short version (six items) of the POSQ (Roberts et al., 1998). Example items are: "In physical activity (sport, dance or exercise/play), I feel most successful when I am the best" (performance orientation), and: "In physical activity (sport, dance or exercise/play) I feel most successful when I fulfil a goal" (mastery orientation). A mean score was computed across the three items for each orientation.

Physical activity. Engagement in physical activity/exercise/sport was measured by reporting the number of hours engaged in sports or exercise per week outside of school hours.

General mastery. The variable named general mastery consisted of five items describing expectations of handling various situations rated on a four point scale from *completely true for me* to *completely wrong about me*. Example item is: "I always manage to solve problems I am faced with". A factor analysis extracted one factor that explained .51 % of the variance for both boys and girls.

Family relations. Family relations was measured by a mean score of five items about family relations rated on a four-point scale ranging from *totally agree* to *totally disagree*, e.g., "I would say that I am taken seriously by my family". A factor analysis extracted only one factor that explained 63 % of the variance for boys, and 68 % for girls.

Empathy. Empathy was measured by a mean score of five items about relationship with others rated on a three-point scale ranging from *it is not true of me* to *it is completely true of me*, e.g., "I am helpful if anybody is upset or in need of support". A factor analysis demonstrated only one factor that explained 42 % of the variance for boys and 39.8 % for girls.

Psychological problems. Psychological problems were measured by HSCL-10 (Derogatis, Lipman, Rickles, Uhlenhuth & Coviell, 1974). This is a widely used self-report measure of psychological problems. Response to questions such as: "Have you in the last week experienced being scared or anxious?" are given on a four point scale ranging from *Not bothered* to *Very much*, and meaned across items about anxiety, nervousness and depression.

School grades. School grades were measured by summing the actual grades in the subjects of mathematics, written own language, social science, and English. Even if the value of school grades for learning is debated (e.g. Schinske & Tanner, 2014), this was the only measure available as an indicator of success in school.

DATA ANALYSIS

Structural equation modeling with *Mplus* version 7.2 (Muthén & Muthén, Los Angeles, California, USA) was used to examine the adequacy of the proposed model. To assess the fit of the proposed model to the data a two-index presentation strategy was used (Hu & Bentler, 1999). This approach recommends using the Standardized Root Mean Square Residual (SRMR) coupled with one or more incremental or absolute indices of fit. In the present study, the SRMR is supplemented with the Comparative Fit Index (CFI) and the Root-Mean Square Error of Approximation (RMSEA). For CFI, values of over .90 represent an acceptable fit, whereas values close to or above .95 indicate excellent fit between the model and the data. In SRMR and RMSEA values close to or lower than .08 and .06, respectively, are indications of a well-specified model (Hu & Bentler, 1999).

Consistent gender differences in all variables, except family relations, (see Table 1) accompanied by previous theoretical and empirical evidence of gender differences within AGT research (e.g., Butler, 2014; Ommundsen et al., 2005) suggest the necessity of analysing boys and girls separately. A prerequisite of group comparisons is to establish measurement invariance across groups (Vandenberg & Lance, 2000). A common procedure for assessing measurement invariance is as follows (Geiser, 2013; Sass, 2011): The first step is to assess the model fit in each group (boys and girls) separately to ensure adequate factorial validity. Next, a configural invariance model is tested to obtain a baseline model that is later used to compare with a weak invariance model (equal factor loadings) and a strong invariance model (equal factor loadings and intercepts). The problems related to evaluating fit for invariance models are well documented (Chen, Sousa, & West, 2005). The change in χ^2 allows for a statistical comparison between nested models, but it is sensitive to sample size and complexity (e.g., rejecting the null hypothesis with large sample size and complex models) (Chen, 2007). Although the χ^2 test statistic certainly has some benefits, common practice often places less emphasis on it (Barrett, 2007). Thus, results are often interpreted using change in χ^2 accompanied with change in other fit statistics (SRMR, CFI, and RMSEA). Chen proposed some practical guidelines for adequate invariance model fit with continuous data and ML estimation (Chen, 2007). The suggested acceptable model fit for more restrictive invariant models are as follows: $\Delta\text{CFI} < .01$, $\Delta\text{RMSEA} < .015$, and $\Delta\text{SRMR} < .03$ for tests of factorial loading invariance and $\Delta\text{CFI} < .01$, $\Delta\text{RMSEA} < .015$, and $\Delta\text{SRMR} < .01$ for tests of intercept invariance. If full measurement invariance cannot be established it is possible to establish partial measurement invariance by relaxing constraints on invariant items. Byrne, Shavelson and Muthén (1989) argue that when at least two loadings and intercepts are equal across groups valid inferences regarding factor latent means can be made.

In the present study, all questionnaire items served as indicators for its respective latent factor, with one exception; for psychological problems we used a parceling technique where two items were randomly assigned to make up one parcel (e.g., five parcels, each with two items) (Little, Cunningham, Shahar, & Widaman, 2002). Finally, as physical activity was measured by one item it was included in the structural model as an observed variable.

TABLE I
Descriptive Statistics With Gender Differences

Variable	Range	Boys			Girls		t	p
		n	α	Mean $\pm$ SD	α	Mean $\pm$ SD		
Mastery climate	1 – 5	1637	.87	3.59 $\pm$ 1.06	1617	.82	3.76 $\pm$ 0.94	4.83 <.001
Performance climate	1 – 5	1647	.86	3.11 $\pm$ 1.03	1630	.86	2.77 $\pm$ 1.10	8.96 <.001
Mastery orientation	1 – 5	1578	.92	3.92 $\pm$ 1.12	1551	.88	4.08 $\pm$ 1.01	4.35 <.001
Performance orientation	1 – 5	1573	.86	2.92 $\pm$ 1.11	1551	.77	2.36 $\pm$ 0.98	15.00 <.001
General mastery	5 – 20	1626	.76	15.28 $\pm$ 2.44	1617	.76	14.49 $\pm$ 2.40	9.19 <.001
Empathy	1 – 3	1639	.65	2.36 $\pm$ 0.38	1623	.62	2.59 $\pm$ 0.32	18.18 <.001
Family relations	1 – 4	1624	.85	3.60 $\pm$ 0.52	1617	.88	3.57 $\pm$ 0.56	1.38 .167
Psychological problems	10 – 40	1616		12.80 $\pm$ 3.61	1598		15.41 $\pm$ 5.26	16.29 <.001
School grades	1 – 6	1527	NA	3.76 $\pm$ 0.82	1515	NA	4.07 $\pm$ 0.76	10.93 <.001
Hours physical activity	0 $\rightarrow$	1622	NA	3.51 $\pm$ 1.46	1589	NA	3.04 $\pm$ 1.19	10.01 <.001

Note. SD = standard deviation

Results

DESCRIPTIVE STATISTICS

The final sample consisted of the 3277 youths that answered the questions about the perceived parental climate, 1647 (50.3%) boys and 1630 (49.7%) girls. The measurement instruments performed as expected, and Table I illustrates that the internal reliabilities of the instruments were acceptable of the short forms of these measurement instruments.

As evidenced in Table I, there were consistent gender differences in all variables measured other than family relations. The differences confirmed theoretical and empirical expectations found in earlier research (e.g., Abrahamsen, et al., 2008; Miller, et al., 2004). These findings made it necessary to perform separate analyses for boys and girls.

MEASUREMENT INVARIANCE ANALYSES

Results from the measurement invariance analyses using the MLR estimator showed that the baseline confirmatory factor analyses for both boys and girls provided excellent fit to the data. Next, the configural invariance model also provided good model fit and justified the evaluation of more restrictive invariance models (see Table 2). In the next step the factor loadings were constrained to be equal and the change in fit indices indicated that the model was still invariant across gender. The final step was to constrain the intercepts to be equal. For this step, the evaluation of change in fit indices indicated that the invariance between boys and girls did not hold. To obtain partial measurement invariance the most non-invariant intercept was relaxed (e.g., one of the intercepts in school grades). This final measurement invariance model yielded good fit to the data and acceptable change in fit indices. Altogether this provided support for partial strong measurement invariance across gender.

STRUCTURAL MODEL ANALYSIS

The structural model yielded acceptable fit of the model to the data [χ^2 (1235) = 4187.5, $p < .0001$; $\chi^2/df = 3.39$; SRMR = .059; RMSEA (90% CI) = .036 (.035, .037); CFI = .934] and the standardized parameter estimates are depicted in Figure 1a for girls and 1b for boys.

TABLE II
Model Fit Statistics For The Testing Of Invariance Across Girls And Boys

Model	χ^2	df	$\Delta\chi^2$	Δdf	RMSEA	ARMSEA	RMSEA 90% CI	SRMR	ASRMR	CFI	CFI	Pass?
Baseline boys	1236.25	558			.025		.023, .027	.029		.969		
Baseline girls	1687.27	558			.033		.031, .035	.037		.950		
Configural baseline	2914.01	1116			.029		.028, .031	.033		.959		Yes
Weak invariance	3272.57	1152	358.56	36	.031	.002	.030, .033	.057	.024	.952	.007	Yes
Strong invariance	3915.93	1179	643.36	27	.035	.004	.034, .036	.061	.004	.938	.014	No
Partial strong invariance ^a	3676.17	1178	403.60	26	.034	.003	.032, .035	.060	.003	.944	.008	Yes

Note. Df = degrees of freedom; RMSEA = Root-Mean Square Error of Approximation; CI = confidence interval; SRMR = Standardized Root Mean Square Residual; CFI = Comparative Fit Index; ^a released constraint on the intercept of written language grade.

INDIRECT RELATIONSHIP ANALYSES

To examine indirect relationships, a bias-corrected bootstrapping procedure was performed. The standardised point estimates with their respective 95% upper and lower confidence intervals for boys and girls are reported in Table III. The standardised point estimates revealed that, for both boys and girls, the mastery climate was indirectly positively related to general mastery, empathy, family relations, school grades, and physical activity via task orientation. For boys, performance climate had a positive association, via task orientation, to empathy, school grades, and physical activity. For boys also, the performance climate had, via ego orientation, a positive association with general mastery and negative association with empathy. None of these indirect associations were evident for girls, but performance climate had a positive association with physical activity through ego orientation.

TABLE III
Standardized parameter estimates of indirect associations for girls and boys

Independent	Mediator	Dependent	β	Bootstrap		β	Bootstrap	
				bias-corrected			bias-corrected	
				95% CIs			95% CIs	
				(lower, upper)		(lower, upper)		
				Boys		Girls		
Mastery climate	Task	General mastery	.05*	.01,	.10	.13***	.07,	.19
Mastery climate	Task	Empathy	.11***	.06,	.17	.10***	.05,	.15
Mastery climate	Task	Family relations	.05*	.01,	.09	.11***	.05,	.16
Mastery climate	Task	Psychological problems	-.02	-.05,	.02	-.07	-.14,	.01
Mastery climate	Task	Grades	.19***	.14,	.25	.27***	.23,	.32
Mastery climate	Task	Physical activity	.08***	.04,	.12	.11***	.06,	.16
Mastery climate	Ego	General mastery	-.01	-.03,	<.01	.01	<.01,	.02
Mastery climate	Ego	Empathy	.01	<-.01,	.04	<-.01	-.01,	<.01
Mastery climate	Ego	Family relations	<.01	<-.01,	.02	<-.01	-.01,	<.01
Mastery climate	Ego	Psychological problems	<-.01	-.01,	<.01	<.01	-.01,	.01
Mastery climate	Ego	Grades	<.01	<-.01	.02	<.01	<-.01,	.01
Mastery climate	Ego	Physical activity	<-.01	-.01,	<.01	.01	<-.01,	.03
Performance climate	Task	General mastery	.02	>.01,	.04	<.01	-.01,	.02
Performance climate	Task	Empathy	.04**	.02,	.07	<.01	-.01,	.01
Performance climate	Task	Family relations	.02	<.01,	.04	<.01	-.01,	.01
Performance climate	Task	Psychological problems	-.01	-.02,	<.01	<-.01	-.01,	<.01
Performance climate	Task	Grades	.06***	.03,	.10	.01	-.01,	.03
Performance climate	Task	Physical activity	.03**	.01,	.05	<.01	-.01,	.01
Performance climate	Ego	General mastery	.09**	.03,	.16	.05	<-.01,	.10
Performance climate	Ego	Empathy	-.10*	-.19,	-.02	-.04	-.09,	<.01
Performance climate	Ego	Family relations	-.04	-.10,	.01	-.03	-.08,	.02
Performance climate	Ego	Psychological problems	.03	-.01,	.07	.01	-.07,	.08
Performance climate	Ego	Grades	-.01	-.09,	.06	<.01	-.04,	.04
Performance climate	Ego	Physical activity	.01	-.05,	.07	.12***	.08,	.16

Note. CI = confidence interval; * $p < .05$; ** $p < .01$; *** $p < .001$

As stated earlier, this was an extensive community health investigation by the NIPH and all research teams were required to use very short questionnaires. For the purpose of this investigation, we used abbreviated versions of the motivational climate scale (PMCSQ, Selfriz et.al., 1992) and the achievement goal disposition scale (POSQ, Roberts et al., 1998). The results demonstrated that the short versions of both scales (6 items each) were reliable and the separate confirmatory factor analyses adequately demonstrated the internal reliability of the items we used to measure the perceived motivational climate (mastery and performance) of the parents and dispositional orientation (task and ego) of the children. In addition, the items used all contributed to the measures for both boys and girls as evidenced by Figures 1a and 1b. The findings are consistent with previous research (e.g., Abrahamsen et al., 2008; Jowett & Rhind, 2007; Miller et al., 2004; O'Rourke, et al., 2011, 2013) and consistent with theoretical predictions (e.g., Ames, 1992; Nicholls, 1989; Roberts, 2012). Therefore, for both boys and girls, we can be confident

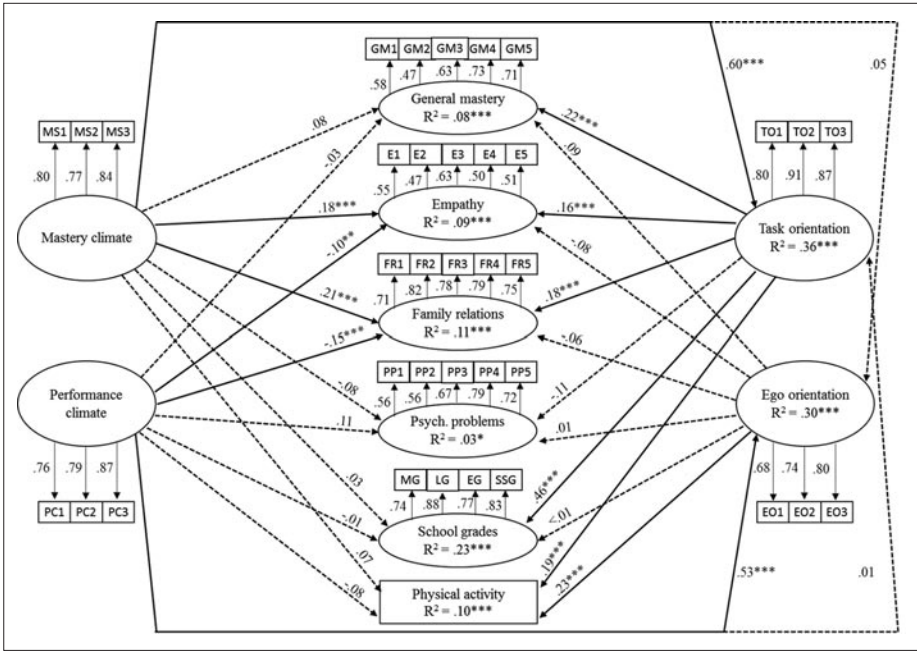


Fig. 1a. - Structural model of the associations between climate, orientations, and outcome variables among girls. All regression path coefficients are standardized and non-significant pathways ($p > .05$) are denoted with dotted arrows. ** $p < .01$; *** $p < .001$

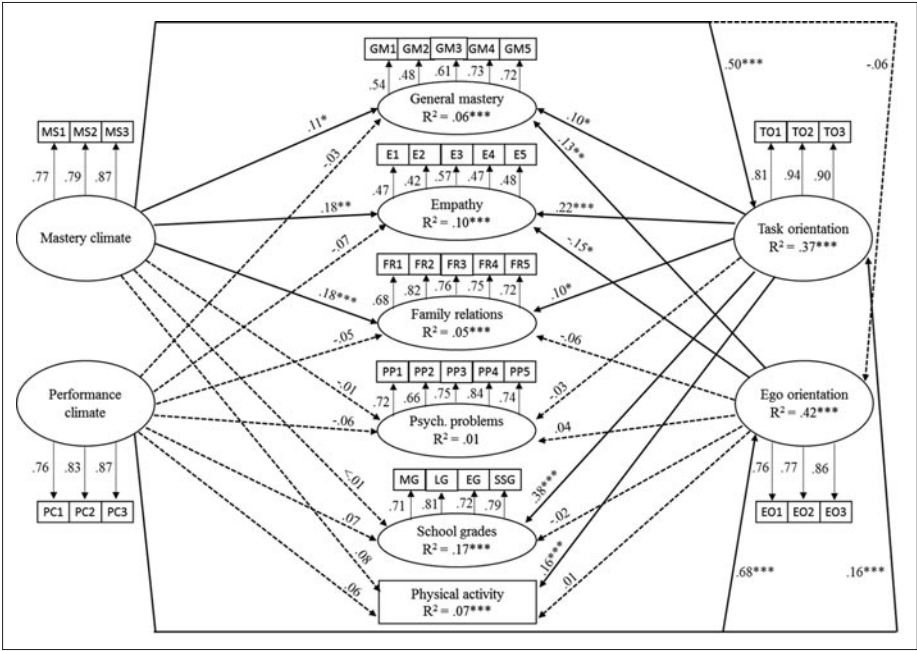


Fig. 1b. - Structural model of the associations between climate, orientations, and outcome variables among boys. All regression path coefficients are standardized and non-significant pathways ($p > .05$) are denoted with dotted arrows. * $p < .05$; ** $p < .01$; *** $p < .001$

the short forms of the scales measured both achievement goal orientations of the children and their perception of the home climate appropriately.

Discussion

Research into the effects of the climate of the home on physical activity and psychosocial outcomes for children generally are understudied. Previous research has found that when parents emphasise mastery criteria, then children are higher in motivation and lower in trait anxiety (Kolayis et al., 2017; O'Rourke et al., 2011, 2013). We wished to extend this research to investigate the impact of the motivational climate in the home on physical activity and certain psychosocial outcomes. We expected that when parents emphasised mastery criteria for sport involvement in the home, then this would result in an emphasis on task orientation by the adolescents in the study, pos-

itive sport involvement and psychosocial outcomes such as empathy, family relations, school grades, general mastery and less psychological problems. In contrast, when parents emphasised performance criteria, then this would result in an emphasis on ego orientation, less positive sport involvement and less positive psychosocial outcomes.

As expected, we found support for AGT informing relationships between perceived motivational climate (mastery and performance) and development of own goal orientations (task and ego) for both boys and girls: A mastery climate was associated with task goal orientation, and a performance climate was associated with ego goal orientation. We found that the inclination of the parents to emphasise mastery and/or performance criteria toward sport involvement fostered the development of task and ego orientations respectively in their children. In view of the extensive evidence of the implications of being task oriented versus ego oriented (e.g., Butler, 2014; Dweck, 2012; Harwood et al., 2015; Lochbaum et al., 2016; Reinboth & Duda, 2006; Roberts et al., 2018), we know that task involved individuals in general have adaptive motivational outcomes, while ego involved individuals in general have maladaptive motivational outcomes. The results of the present study are consistent with that evidence.

In the present study, the standardised point estimates (Table III) revealed that for both boys and girls we found that a perceived mastery climate was indirectly associated with physical activity, general mastery, empathy, family relations, and school grades in favourable directions via task orientation. Becoming task-oriented through the home environment that encouraged mastery criteria of success had adaptive outcomes. Task-oriented boys and girls were more physically active outside of school hours and in this age when we are attempting to encourage children to be more physically active to counter the obesity crisis, this is an encouraging finding. Parents who use mastery criteria of success for sport have more active children outside of school hours. In addition, task-oriented boys and girls were higher in both empathy and general mastery. Family relationships were also fostered through being task-oriented. These findings are consistent with previous research in both coach created environments (see Harwood et al, 2015; Horn & Horn, 2007; Lochbaum et al., 2016; ; Roberts et al., 2018) and parent initiated environments (e.g., O'Rourke, Smith, Smoll, & Cumming, 2011, 2013).

An interesting finding in the present study is that school-work was also associated with being task-oriented. The motivation climate measure we used investigated parental use of mastery criteria for sport participation, therefore it is interesting to speculate that when parents are mastery focused

in the home toward sport, it may be that they are mastery focused toward achievement for their children in general. Clearly, this is an important avenue of research that should be pursued.

In addition, for boys the mastery climate was also directly associated with general mastery, empathy and family relations. For girls, the mastery climate was directly associated with empathy and family relations. Perhaps more importantly, we found that the only outcome variable not associated with perceived mastery climate and task orientation was psychological problems, which means that when focusing on mastery criteria, there was no association with psychological problems, a positive outcome. In contrast, perceived performance climate and ego orientation relationships were not as clear cut as the mastery climate outcomes. There were negative associations between performance climate and empathy, family relations, and a positive association between ego orientation and physical activity for girls. This latter finding is interesting as it suggests that for female adolescents, they need to have some degree of ego involvement to be physically active. This clearly calls for more investigation. Parents may encourage girls to focus on normative criteria when engaging in physical activity, but that is only a speculation from the current data.

A counter intuitive finding for boys was the positive relationship between the perceived performance climate and task-orientation. This meant that the performance climate was indirectly and positively related to physical activity, empathy, and school grades via task orientation. It may well be that parents of adolescents who emphasise performance criteria do not have total focus on performance criteria, but buffer performance criteria with task involving criteria too.

The important feature of the data analyses is that the hypotheses inherent in the model are generally supported and the findings are generally consistent with research evidence from sport and education (e.g., Harwood et al., 2015; Maehr & Zusho, 2009; Roberts, et al, 2018). The climate has an indirect effect on the variables of interest through the orientations. It confirms that the climate inherent in the home has a direct effect on the adoption of the orientation of the children in the study, for both boys and girls. The more mastery the climate is in the home, the more likely the child will be task oriented; the more performance the climate is in the home, the more likely the child will be ego oriented.

Parents focusing on mastery criteria of success in the home are more likely to enhance the task involvement focus of children. When we consider the psycho-social advantages of being task involved evident in the present data and previous findings, this is meaningful. Being task oriented is associated with the perception of general mastery, empathy to others, positive fam-

ily relations, school grades and physical activity, but negatively associated with psychological problems. This is a very positive profile for children to have and is likely to lead to positive wellbeing and self-esteem.

Limitations

As is the case with cross-sectional designs, we cannot discuss cause and effect in this study. We merely observed functional relationships: Interesting and thought provoking as they were. Secondly, the participants were from a very limited age range and the results may not generalise to other age groups. In addition, we did not know if one parent or the other was primarily responsible for setting the criteria of success in the home, either mastery or performance, or a combination. By necessity, because of the constraints placed on us by the National Institute of Public Health, our questionnaire for the motivational variables was limited to 6 items each for the climate and the disposition constructs. However, the items proved to be reliable and valid. Finally, we used self-report for physical activity which is a source of weakness.

Conclusion

The present findings highlight the importance of taking the parent created motivational climate into account when considering the amount of engagement in physical activity, development of general mastery, academic prowess, empathy and family relationships. This conforms to research that has demonstrated that mastery criteria have been associated with positive psychosocial development (e.g., Ommundsen, Roberts, Lemyre & Miller, 2006), moral functioning (e.g., Kavussanu, Roberts & Ntoumanis, 2002), affect (e.g., Lemyre, Treasure & Roberts, 2006), and wellbeing (e.g., Reinboth & Duda, 2004). When a parent focuses on development and mastery criteria of success for achievement in the home, then general mastery, amount of physical activity and other positive attributes are likely to be enhanced. When a parent focuses on performance criteria of success, then general mastery, amount of physical activity and other positive attributes are put into jeopardy!

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APPENDIX
Scales with all items

Short version of The Perception of Success Questionnaire (POSQ, Roberts, Treasure & Balague, 1998)

In physical activity (sport, dance or exercise/play) I feel the most successful when :

I am the best

I make a good effort

I am completely superior to the others

I demonstrate personal progress

I overcome difficulties

I get to show others that I am the best

Answering alternatives: Totally disagree (1), partly disagree (2), Neutral (3), partly agree (4), totally agree (5)

Short version of The Perceived Motivational Climate in Sport Questionnaire (PMCSQ, Selfriz, Duda & Chi, 1992).

In physical activity (sport, dance or exercise/play) my parents think I am the most successful when :

I learn new skills

I am better than others

I practice what I am not so good at

I win

I try out new skills

I get better results than others

Answering alternatives: Totally disagree (1), partly disagree(2), Neutral (3), partly agree (4), totally agree (5)

Scale of General Mastery: (Self-mastery refers to problem-focused coping facilitated through personal agency.)

I always manage to solve difficult problems if I try hard enough

If somebody works against me, I can find ways to get things my way

If I have a problem and am completely stuck, I normally find a way out

I feel confident that I can handle unexpected situations in an efficient way

I keep my calm when faced with difficulties because I trust my ability to master them

Rated on a 4 point scale ranging from 1 (Completely wrong about me) to 4 (Completely right about me)

Scale of family relations:

I would say that I feel connected to my family

I would say that I am taken seriously by my family

I would say that my family value my opinions

I would say that I mean a lot to my family

I would say that I can count on my family when I need help

Rated on a 4 point scale ranging from 1 (Totally disagree) to 4 (Totally agree)

Scale of empathy

I am happy to share with others (food, games, pencils etc.)

I am helpful if anybody is upset or in need of support

I am kind to those younger than me

I think well before I act

I often offer to help others

Rated on a 3 point scale: 1 (Is not true of me), 2 (is partly true of me, 3 (Is completely true of me)

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