



ORIGINAL RESEARCH PAPER

**THE EFFECT OF PERCEIVED AUTONOMY SUPPORT
FROM THE COACH AND EGO- AND TASK-
INVOLVEMENT UPON EGO AND TASK
ENVIRONMENTS IN JUNIOR ELITE ICE HOCKEY**

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Abstract

Based on the self-determination and achievement goal theory, we have investigated the effect of autonomy support from the coach and task-oriented and ego-oriented athletes on a task versus an ego environment. We expected a positive relationship between perceived autonomy supports from the coach together with task involvement from the athletes on a task environment. Furthermore, we expected a negative relationship between task environment and ego-involved athletes and a negative relationship between perceived autonomy support from the coach and an ego environment. Among ego-involved athletes we expected a positive relationship with an ego environment and a negative relationship between task-involved athletes and an ego environment. Participants consisted of 401 young Norwegian ice hockey players aged 14 – 18 years. We used three different questionnaires to measure perceived coach autonomy support, task- and ego-orientation in sport and perceived motivational climate in sport. We conducted two regression analyses, one with task environment and one with ego environment as the dependent variable. The independent variables were perceived autonomy support from the coach and task- and ego-involvement. We conclude that a task environment derives from perceived autonomy support from the coach and task-oriented athletes. An ego-oriented environment, on the other hand, is created when there is a lack of autonomy support from the coach and ego-involved athletes.

Key words: *autonomy support, task environment, ego environment, task involvement, ego involvement*

Introduction

For most participants in sport, their participation in sport is intrinsically motivated. People participate in sport due to intrinsic motives, such as enjoyment and interest, more often than due to extrinsic goals (Ryan & Deci, 2017), whereas exercisers are more likely to have extrinsic motives, such as improving their appearance. Contexts that foster autonomy and perceived competence enhance enjoyment and sustain motivation (Hancox et al., 2018). Sustained exercise is more likely to occur when a person has well-internalised extrinsic motivation and intrinsic motivation both (Vlachopoulos et al., 2011).

Optimal motivational function is achieved through the satisfaction of a person's needs for autonomy, competence, and relatedness. Cognitive evaluation theory describes the environmental contingencies that lead to the adoption of intrinsically or extrinsically motivated behaviours. Organismic integration theory identifies the quality of motivation on a scale of perceived locus of causality. These causalities are ranked from highly autonomous to highly controlling (Ryan & Deci, 2017).

In Vallerand's (2007) hierarchical model of intrinsic and extrinsic motivation, Vallerand claims that different motivations exist on three levels of generality: global, contextual, and situational. These social factors are mediated by perceptions of self-determination, competence, and relatedness, which lead to different types of motivation (intrinsic motivation, extrinsic motivation and amotivation). The consequences are global, contextual, or situational in respect of affect, cognition, and behaviour. Participation in sport is at the contextual level.

Intrinsically motivated behaviour includes activities people engage in only for enjoyment, pleasure and fun, where no rewards or discernible reinforcements are involved (Hagger & Chatzisarantis, 2008). Those who adopt a controlling style are characterised as having a highly directive style of interaction (Mageau & Vallerand, 2003). Perceived autonomy support from friends is positively associated with identified regulation and intrinsic motivation (Wilson & Rodgers, 2004). Perceived autonomy support from exercise instructors positively predicts relatedness, autonomy, competence need satisfaction and intrinsic motivation (Chu & Zhang, 2019; Chu et al., 2021). Research has demonstrated the value of perceived autonomy support from the coach and a task-involving climate for predicting intrinsic motivation in athletes (Jöesaar et al., 2012). The study by Jöesaar et al. (2012) suggests that perceived autonomy support from the coach can facilitate the development of a task-involving peer motivational climate in the future.

Satisfaction of psychological needs is positively correlated with identified and introjected regulation and intrinsic motivation (Stanley et al., 2012). In terms of competence satisfaction, introjected and identified regulation can positively predict strenuous exercise behaviour, whereas external regulation is more a negative predictor of strenuous exercise behaviour. Competence satisfaction also has both direct and indirect effects on behavioural investment (Chu et al., 2021).

People are driven to achieve for different reasons. According to achievement goal theory, the reasons why they strive to achieve pertain to the standards by which they judge their own competence (Dweck & Leggett, 1988). They orient themselves towards meeting these competence standards. If people endorse mastery goals, then they are concerned with learning, growth or understanding. In a sense, they are immersed in the achievement task itself and preoccupied with their own expertise in the domain. If they endorse performance goals, they are concerned with achievement in relation to others or with how competent they appear to others (Kaplan et al., 2002). Task orientation focuses on self-referenced mastery or improvement in relation to one's own standards. Success is perceived as occurring when learning, improvement and mastery are achieved. Ego-oriented athletes are concerned with gaining positive judgements from others and compare their performance to that of competitors (Duda & Balaguer, 2007) Achievement goal theory assumes that goal orientations are not bi-polar opposites of the same construct but, rather, are independent of each other. This means that an individual can have both high and/or low levels of task orientation and ego orientation at any given time (Duda & Balaguer, 2007).

The achievement goal theory talks about ego- and task-oriented athletes. Ego-oriented athletes who rate their ability as inferior to that of competitors are vulnerable to somatic and cognitive anxiety before and during performance (Duda & Balaguer, 2007). Athletes are more likely to drop out of competitions, set standards for their performance that are unrealistically high or low and rate competitions or evaluations as unimportant if they have a low estimate of their ability and are ego-oriented (Duda & Balaguer, 2007). Ego-oriented athletes are often under pressure from coaches and parents to reach specific goals and worry about making mistakes. Task-oriented athletes may also set specific goals, but these goals conform to the athlete's own standards (Donovan & Williams, 2003). Athletes who are task-oriented are less vulnerable to somatic and cognitive anxiety. They have more control over factors that lead to failure and success, which contributes to heightened enjoyment and intrinsic interest in sport (Roberts et al., 2007). Many athletes have multiple goal orientations. Optimal performance may result from the endorsement of moderate to high

levels of ego orientation and task orientation (Burton et al., 2011). Top ten athletes in major track and field championships are often driven by both ego and task goals (Mallet & Hanrahan, 2004). A high level of task orientation may buffer the negative effects of a high level of ego orientation (Burton et al., 2011).

As was the case for task and ego orientations, achievement behaviour patterns can be explained by how participants view their ability. Participants in sport who are characterised by an entity view adopt an ego goal focus, where they see their ability as fixed and unable to be changed through effort, or an incremental focus, where they adopt a task goal perspective and believe they can change their ability through hard work and effort (Dweck, 2008).

Participants in physical activity who adopt an ego goal focus as described above have negative thoughts and feelings about themselves (Li & Lee, 2004). Entity beliefs are also associated with increased anxiety, whereas incremental beliefs are associated with lower anxiety. Athletes who feel their natural ability is evident in their high-level performance tend to adopt an incremental view of ability.

Elite British adolescent athletes with moderate ego/higher task goal orientation levels use more self-talk than do athletes with higher ego/lower task and moderate task/lower ego goal orientation levels (Harwood et al., 2003). Coaches create motivational climates that encourage the development of task and ego orientations. Task-oriented athletes are more likely to play for coaches who emphasise the mastery of enjoyment and skills. Effort results in success and improvement in task-involving climates. Ego-involving climates lead to unequal recognition of participants, intra-team rivalry and punishment for mistakes. Normative ability and deception are the most important factors in success (Vazou, 2010).

A study of young Japanese ice hockey players demonstrated that a task-involving climate created by coaches may influence not only players' task goal orientations but also their ego orientations. An ego-involving climate created by coaches may also influence players' ego goal orientations (Saotome et al., 2012).

Task-oriented environments are likely to provide athletes with positive emotional experiences. Ego-oriented climates evoke unpleasant emotional states. Ego-involving climates are also associated with negative personal development, which leads to strategies that are unproductive for enhancing skills, such as avoiding practice and claiming handicaps such as fatigue and lack of preparation (Chu & Zhang, 2019; Chu et al., 2021).

In these climates, young athletes worry about success and failure and are less content with team membership (Ntoumanis et al., 2012). A study of

Finnish junior ice hockey players found that a motivational climate emphasising effort, personal development and improvement and the achievement of goal-mastering tasks are significant for enjoyment in junior ice hockey (Jaakkola et al., 2015).

In this study we consider the effect that autonomy support from the coach and task- and ego-oriented athletes have on a task versus an ego environment. We expect a positive relationship between, on the one hand, perceived autonomy support from the coach together with tasked involvement from the athletes and, on the other, a task environment. We expect a negative relationship between a task environment and ego-involved athletes.

Conversely, we expect a negative relationship between perceived autonomy support from the coach and an ego environment. As regards ego-involved athletes, we expect a positive relationship with an ego environment. As regards task-involved athletes and an ego environment, we expect the relationship to be negative.

Material and Methods

In this study we will consider the relationship between perceived coach autonomy, motivation, task and ego orientation, and perceived motivational climate among young ice hockey players.

Participants. The participants comprised 401 young Norwegian ice hockey players 14 – 18 years of age, probably around one-third of the players in this age range. They were all voluntary participants in the Norwegian Ice Hockey federation talent camp. There was no selection of the players for the camp. They should therefore be representative of the whole population. Of the players, 49% were 15 or 16 years of age. There were 49 girls and 352 boys. Ninety-four of the players were in the Norwegian national U – 20 and U – 18 teams. Participated also all the players who were later selected to be part of the U – 16 team. Only 59 players competed in another sport in addition to ice hockey. There were 59 goalkeepers, 127 defenders, 201 forwards and 19 players who were both forwards and defenders. We obtained parental consent for the participants to participate in the study. This study was approved in advance by the Norwegian Centre for research data NSD.

Measures. To examine the perceived coach autonomy support, we used the short version of the Sport Climate Questionnaire (SCQ) (Deci & Ryan, 2016) with six items ($\alpha=0.82$) worded in terms of “my coach”. They were answered in a Likert-type scale from 1 to 7 (1 = do not agree at all, 7 = completely agree). A high average score represented a high level of perceived autonomy support.

To measure the dispositional goal orientation, we used the Task and Ego Orientation in Sport Questionnaire (TEOSQ) (Duda & Hall, 1998). The TEOSQ has a two-factor structure representing task (7 items, $\alpha = 0.82$) and ego (6 items, $\alpha = 0.87$) orientations. As the questionnaire was administered in an ice hockey context, players were encouraged to think about how successful they felt in relation to their team. They then indicated on a five-point Likert-type scale (1 = strongly disagree, 5 = strongly agree) whether they agreed or disagreed with items reflecting a task orientation (e.g., “I feel successful when I work really hard”) or an ego orientation (e.g., “I feel successful when others cannot do as well as me”).

The Perceived Motivational Climate in Sport Questionnaire-2 (PMCSQ-2) was created to determine athletes’ perceptions of goals operating in an athletic setting (Newton et al., 2000). The PMCSQ-2 has six subscales, which are transformed into two higher-order scales labelled as “task-involving” (17 items, $\alpha = 0.88$) (including cooperative learning $\alpha = 0.74$, important role $\alpha = 0.80$ and effort/improving $\alpha = 0.79$ scales) and “ego-involving” (16 items, $\alpha = 0.91$) (including punishment for mistakes $\alpha = 0.80$, unequal recognition $\alpha = 0.89$ and intrateam rivalry $\alpha = 0.54$). Confirmatory factor analysis revealed that the six-factor model is marginally acceptable (with an intrateam rivalry subscale of $\alpha = 0.54$ (Newton et al., 2000). To complete the PMCSQ-2, the players were asked to consider their participation in ice hockey and to indicate, using a five-point Likert-type scale (1 = strongly disagree, 5 = strongly agree), whether they agreed with claims reflecting a task-involving (e.g. “in my team, players are encouraged to work on weaknesses”) or ego-involving (e.g. “in my team, players are encouraged to outdo their teammates”) climate.

Statistical Analyses. IBM SPSS Statistics 26 was used for calculation. Descriptive statistics means and standard deviations were obtained for all variables. Simple correlations were calculated to test relationships among all variables (Tables 1 and 2). We conducted a paired sample t-test to ascertain whether the differences between task and ego environment and between ego and task involvement were significant. We also conducted two regression analyses. The first model had task environment as the dependent variable and perceived autonomy support from the coach, task involvement and ego involvement as the independent variables. The second model had ego environment as the dependent variable and the same independent variables as the first model. We tested for correlations between residuals with the Durbin–Watson statistic. Collinearity diagnostics were conducted by using the variance inflation factor (VIF) (Hair et al., 2018).

Results

A high score was obtained for task environment (Table 1). The mean for ego environment is significantly lower (Table. 2). There is also a significant difference between ego involvement and task involvement. The mean for task involvement is not very high. We can also see that the mean for perceived autonomy from the coach is medium (4.19 out of 7). There is a significant (1%) positive relationship between task environment, perceived autonomy support from the coach and task involvement.

Table 1.

Correlations, means, standard deviations and Cronbach's alpha values between task environment, perceived autonomy support from the coach, and ego involvement and task involvement

	1	2	3	4
Task environment				
Perceived autonomy support from the coach	.53**			
Ego involvement	-.07	.04		
Task involvement	.41**	.21**	.07	
N	372	381	391	377
Mean	4.19	4.73	3.01	2.73
Std	.54	1.35	.92	.81
α	.88	.87	.83	.90

** < 0.01

There is also a significant negative correlation between ego environment and perceived autonomy from the coach. Ego involvement shows a significant positive relationship with ego environment (Table 2).

Table 2.

Correlations, means, standard deviations and Cronbach's alpha values between ego environments, perceived autonomy support from the coach, and ego involvement and task involvement

	1	2	3	4
Ego environment				
Perceived autonomy support from the coach	-.39**			
Ego involvement	.31**	..04		
Task involvement	-.05	.21**	.07	
N	377	381	391	377
Mean	2.73	4.73	3.01	2.73
Std	.81	1.35	.92	.81
α	.90	.87	.83	.90

** < 0.01

Perceived autonomy support from the coach, an independent variable, account for 28% of task environment, dependent variable - (Table 3).

Table 3.

Regression analysis with task environment as the dependent variable, and perceived autonomy support from the coach and task involvement and ego involvement as the independent variables

Task environment			
Variable	Model 1 β	Model 2 β	Model 3 β
Perceived autonomy support from the coach	.53 **	.46**	.47**
Task involvement		.31**	.31**
Ego involvement			-.13**
R ²	.28	.37	.38
F	139.78**	104.39**	74.12**
ΔR^2		.09	.02
ΔF		49.87**	8.93**

** < 0.01

Task involvement from the athlete is positively related to the dependent variable, accounting for 9% of the dependent variable. Ego involvement also accounts for 2% of the dependent variable. The relationship with task environment is negative.

Table 4.

Regression analysis with ego environment as the dependent variable and perceived autonomy support from the coach and task involvement and ego involvement as the independent variables

Ego environment			
Variable	Model 1 β	Model 2 β	Model 3 β
Perceived autonomy support from the coach	-.41**	-.42**	-.43**
Task involvement		.04	.02
Ego involvement			.32**
R ²	.16	.16	.27
F	71.79**	36.19**	44.59**
ΔR^2		.00	.10
ΔF		.66	51.31**

** < 0.01

Ego environment as a dependent variable is explained only by a negative relationship with perceived autonomy support from the coach (16%) and by a positive relationship with ego involvement (10%) (Table 4).

Discussion

Scientific literature has shown that perceived autonomy support from exercise instructors positively predicts relatedness, autonomy, competence need satisfaction and intrinsic motivation (Chu & Zhang, 2019; Chu et al., 2021). The values for perceived autonomy support from the coach and task-involving climate predict intrinsic motivation in athletes (Jöesaar et al., 2012). Perceived autonomy support from the coach can also facilitate a task-

involving peer motivational climate in the future. Task-oriented environments are likely to provide athletes with positive emotional experiences. Ego-oriented climates evoke unpleasant emotional states (Chu & Zhang, 2019; Chu et al., 2021).

We hypothesised that there would be a positive relationship between perceived autonomy support from the coach together with task involvement from the athletes on a task environment. We also expected a negative relationship between a task environment and ego-involved athletes. As this relates to our reported findings, this hypothesis has been fulfilled, as we have been able to demonstrate that perceived autonomy support from the coach and task-involved athletes have a positive effect on the dependent variable of task environment and a negative relationship with ego involvement.

Our second hypothesis is not fulfilled, as we found a negative relationship between perceived autonomy from the coach and the dependent variable of ego environment. Among ego-involved athletes, we found a positive relationship with ego environment, as expected. Task-involved athletes did not demonstrate a relationship with ego environment, where we had expected a negative relationship.

The results of the study underscore the importance of supporting athlete autonomy to create a task environment. They also emphasise the importance to of creating tasked-involved athletes in junior ice hockey. We have seen that ego-oriented athletes who rate their ability as inferior are vulnerable to somatic and cognitive anxiety before and during performance (Duda & Balaguer, 2007). They are also more likely to set standards for their performance that are unrealistically high or low and to drop out of sport (Duda & Balaguer, 2007). Ego-oriented athletes are often under pressure from coaches and are worried about making mistakes. Task-oriented athletes more often set goals which conform to the athlete's own standards (Donovan & Williams, 2003). Athletes who are task-oriented have more control over factors that lead to failure and success and are less vulnerable to somatic and cognitive anxiety. They also have heightened enjoyment of and intrinsic interest in sport (Roberts et al., 2007)

We have also seen that coaches can create motivational climates that encourage the development of task and ego orientations. Coaches who emphasise the mastery of enjoyment and skills create task-oriented athletes. The improvement of task-involving climates leads to athletes who improve. Ego-involving climates cause intra-team rivalry and unequal recognition (Vazou, 2010). Task-involving climates created by coaches may influence not only players' task goal orientations but also their ego orientations (Saotome et al., 2012).

Autonomy support from the coach leads to more intrinsically motivated athletes. Intrinsic motivation leads to more sustained practice from the athletes and less drop out from sport.

A limitation of the study is the impossibility of establishing cause-effect relations to determine the effect that the application of different strategies may have on the variables in the study.

Conclusion

Based on the self-determination and achievement goal theory, it was concluded that task environment derives from perceived autonomy support from the coach and task-oriented athletes. An ego-oriented environment, on the other hand, is created when there is a lack of autonomy support from the coach and ego-involved athletes. The importance of training junior ice hockey coaches to create a task environment and give autonomy support to players is emphasised, as this will lead to more intrinsically motivated players and, hopefully, a longer career for the players in ice hockey.

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