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Basic Psychological-Need Satisfaction and Thwarting: A Study with Brazilian Professional Players of League of Legends

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Abstract: Recently, the skill to play games has led to the professionalization of the activity in the form of "eSports" (electronic sports). Despite the popularity of eSports, little is known about its professional players from a psychological perspective. Given the importance of the coach-created environment in the athletes' motivational processes, this study aimed to investigate the key psychological dimensions of the coach-created climate in 75 Brazilian professional players of League of Legends (LoL) considering the Self-Determination Theory (SDT) and Achievement Goal Theory (AGT). Fourteen hypotheses were tested, of which seven were confirmed. The empowering climate was a predictor of basic psychological-needs satisfaction and indirectly influenced autonomous motivation. The need satisfaction had a significant impact on both autonomous motivation and on lack of motivation, which, in turn, explained 56% of the variance in well-being and the intention to keep playing eSports. The disempowering climate was a predictor of psychological-needs thwarting but had no significant impact on autonomous motivation or lack of motivation. The results obtained support SDT and AGT in the context of eSports and were similar to those conducted with athletes from traditional sports, indicating that the empowering-and-disempowering-coaching-climates conceptualization applies not only to traditional sports athletes but also to professional eSports players.

Keywords: motivational climate; coaching; basic psychological needs; electronic sports

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1. Introduction

This study aimed to investigate the critical psychological dimensions of the coach-created climate in 75 Brazilian professional players of League of Legends (LoL) considering two contemporary motivational theories applied to the sport context: the Achievement Goal Theory (AGT) [1,2] and the Self-Determination Theory (SDT) [3,4]. Such theories argue that the coach-created motivational climate impacts the development and maintenance of the athletes' motivation, sustained participation in sports, and well-being [5,6]. Within the scope of these two theories, the AGT and SDT, the present study focused on the conceptualization of the coach-created motivational climate proposed by Duda (2013) [7], which incorporates the motivational climate that can impact athlete outcomes. The conceptualization focuses on the implications of empowering and disempowering coach behaviours and communication styles. The empowering and disempowering coach-created environment holds implications for the degree to which athletes' needs for competence, autonomy, and relatedness are satisfied or thwarted and how the athlete deals with their performance. Empowering a coach-created motivational climate is characterized by high levels of autonomy-supportive, socially supportive, and task-involving. On the other hand, a disempowering coach-created motivational climate can be interpreted as a controlling mo-

tivational climate that devalues athletes' perspectives and focuses mainly on performance goals and peer comparison (i.e., ego-involving) [5,8,9].

Sports-psychology studies have examined the usefulness of predicting motivational processes and associated outcomes of considering the coach-created motivational climate [10–16]. These studies evaluated athletes from traditional sports like football and basketball, but recently a new type of athlete has emerged in video games. The skill to play video games led to the professionalization of the activity in the form of "eSports" (electronic sports) [17]. Its impressive growth has made professional players reach the status of athletes in society, and, since then, the number of practitioners who want to become eSports professionals has increased exponentially [18–20].

Although the studies mentioned were conducted only with athletes from traditional sports [21,22], the fact that eSports presents similar psychological demands [23] leads us to assume that, whether in electronic sports or traditional sports, the athletes' experience is significantly influenced by the coach's motivational environment [24], and it is necessary to investigate this premise. The eSport players' perceptions of the degree to which their coach-created climate is empowering and disempowering could provide a better understanding of the characteristics that favour or hinder the sporting experience, enabling the creation of healthier and more-adaptive motivational climates in the context represented by eSports [25].

With that in mind, the goal of this research was to look into the connections between empowering and disempowering coach-created environments, need satisfaction/need thwarting, the motivation regulations underlying the intention to keep playing, and the well-being of professional League of Legends teams that participate in the main and major Brazilian eSports League.

A model based on the theoretical frameworks (SDT/AGT) and supported by the conceptualization of the coach-created motivational climate [7] was tested using the Structural Equation Modelling (SEM) with estimation by Partial Least Squares (PLS). PLS is considered the most appropriate method for this research due to the non-normality of the data and the small sample made available for SEM estimation based on covariance [26]. Figure 1 shows the study hypotheses framed in the structural model to be tested. Given the complexity and number of hypotheses supported by this model, we presented the hypotheses as well as the studies that have shown support for them, using a table (Table 1).

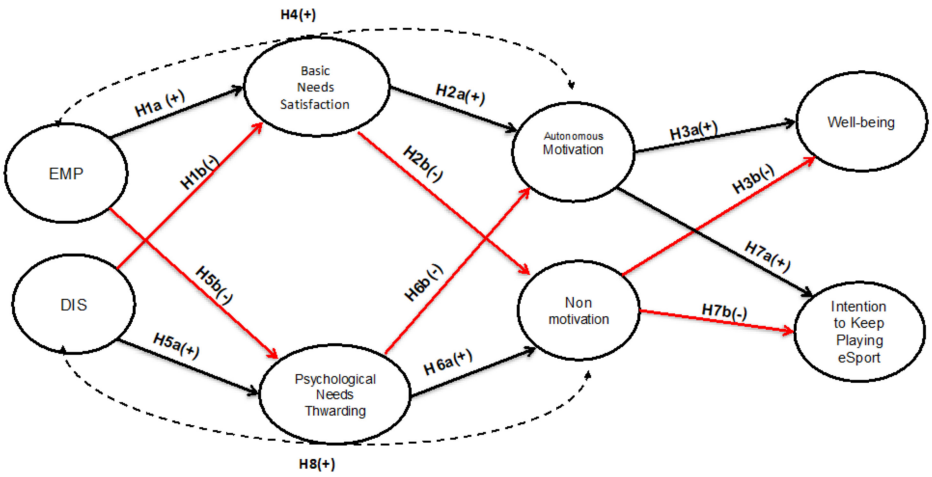

Figure 1. Hypothetical model. Legend: EMP—empowering; DIS—disempowering. Note: solid black arrows are positive direct relationships (H1a, H2a, H3a, H5a, H6a, and H7a); red arrows are negative direct relationships (H1b, H2b, H3b, H5b, H6b, and H7b); and black dashed arrows are mediation relationships (H4 and H8) (source: research results).

Table 1. Hypotheses and supporting literature.

Hypotheses	Key Supporting Literature
H1: Empowering climate is (a) positively related to psychological-need satisfaction; (b) negatively related to psychological-need thwarting	[6,7,9,10,12,16,22,27–35]
H2: Psychological-need satisfaction is (a) positively related to autonomous motivation; (b) negatively related to non-motivation	[4,10,12,22,34–40]
H3: (a) Autonomous motivation is positively related to well-being; (b) non-motivation is negatively related to well-being	[6,29,37,38,41,42]
H4: Psychological-need satisfaction mediates the relationship between empowering climate and autonomous motivation	[5,10,29,35,36,43]
H5: Disempowering climate is (a) positively related to psychological-need thwarting; (b) negatively related to psychological-need satisfaction	[5,16,44,45]
H6: Psychological-need thwarting is (a) positively related to non-motivation; (b) negatively related to autonomous motivation	[5,7,28,34–36]
H7: (a) Autonomous motivation is positively related to intention to keep playing; (b) non-motivation is negatively related to intention to keep playing	[30,31,36,38,41,46,47]
H8: Psychological-need thwarting mediates the relationship between disempowering climate and non-motivation	[10,28,34–36,43]

2. Theoretical Background

2.1. Self-Determination Theory and Achievement Goal Theory

A key concept within SDT is that of Basic Psychological Needs (BPN): autonomy, competence, and relatedness are essential for the athlete's autonomous motivation and psychological wellbeing [31]. When BPNs are not satisfied or are thwarted, discomfort is likely to occur, and the individual does not develop to their full potential. Each BPN can be satisfied or thwarted to varying degrees: need satisfaction promotes more autonomous forms of motivation; in contrast, need thwarting promotes less autonomous motivation and can instead lead to a controlled motivation or non-motivation [5].

In SDT, the classification of motivation as a continuum that goes from the lowest level of self-determination (non-motivation) to the highest level (intrinsic motivation) has been supported in the sport context [9]. The fundamental distinction is between intrinsic and extrinsic motivation, and each has a specific type of regulation. Intrinsic motivation is the most accurate example of autonomous regulation: a participation's base is pleasure, interest, and satisfaction in performing the task [10,35]. Athletes with intrinsic motivation play sports for the joy and satisfaction inherent in their activity and interpret events in an informative way. Extrinsic motivation refers to behaviours controlled by external sources (e.g., doing an activity because of external pressures), but extrinsic goals, on average, tend to be less autonomously regulated than intrinsic goals. Non-motivated is a person who experiences a sense of purposelessness, has erratic and involuntary functioning, and believes that the results are independent of their behaviour [34].

According to the AGT, the degree to which individuals judge their competence and define success using task- and or ego-involved criteria impacts how they interpret and respond to achievement-related activities. When performing tasks or sports activities, people's primary interest is to feel successful or competent. To succeed, the individual must demonstrate competence in the face of the demands of the situation. The theory emphasizes the concept of competence to understand how athletes interpret success and failure. In the ego-involving criteria, success and failure are most generally the results of comparisons with the performance of other competitors. The actions are primarily motivated to demonstrate normative competence, such as beating an opponent and demonstrating superior ability. In contrast, competence is judged comparing oneself in the task-involving criteria, and the actions are primarily motivated by personal mastery, improvement, and achievement of higher ability [45,48].

When the coach supports the athletes' autonomy, offering freedom and facilitating their involvement in the decision-making process, then BPNs are favoured. The motivational climates that promote the development of BPNs also stimulate people to become more intrinsically self-determined [12,30,32]. A task-involving coach values athletes that work hard and work together to do their best [30]. However, the psychological needs are thwarted when the coach has a controlling style, acting in a coercive way, exerting pressure, and behaving in an authoritarian manner. Athletes' perceptions of ego-involving have been linked to maladaptive responses, psychological difficulties, use of avoidance coping strategies, and a tendency to give up on sports [32,39,45].

2.2. The Professional Player of League of Legends

The League of Legends is one of the most popular electronic games in the competitive scenario. It is among the most played games worldwide and the most studied in the research literature [49]. LoL is an example of the Multiplayer Battle Online Arena (MOBA) game genre. Team engagement is critical because the game's strategies are socially constructed, and each player plays a role within the team [50]. In the competitive scenario, the LoL championships have excellent infrastructure, with interviewers and commentators for the matches broadcasted online. Although the game is online, the most important championships are in-person and broadcast live online. The finals of CBLoL (Brazilian Championship of LoL), the most important tournament in the country, are held live with the public and televised. Teams have sponsorships and fans, and professional eSports players (pro-players) advertise their sponsoring brands. However, the players' routine is not limited to participating in championships. Professional LoL players live together in a house (referred to as Game House) that serves as a training centre and housing, receive salaries and rewards like any other athlete, and have an intense training routine that sometimes results in physical and emotional strain [24,51].

LoL's professional teams are made up of coaches, assistants, analysts, physical trainers, and psychologists who work to achieve peak performance. Generally, the coach is responsible for managing the team of players and is present in training and championships, scheduling training sessions, developing game strategies, and solving conflicts. These aspects raise some questions about the coach's role and their influence on the motivation and well-being of pro-players [52]. Is the experience of pro-players significantly influenced by the coach's motivational environment, just as it is in traditional sport? What is the relevance of the coach's behaviours to variability in athletes' eSports experience? The answers to these questions can help to better understand the characteristics that favour or hinder the sporting experience, creating healthier and more adaptive motivational climates in the eSports context.

3. Materials and Methods

3.1. Participants and Data Collection

This study was carried out with an intentional non-probabilistic sample consisting of 75 professional LoL players with ages between 18 and 30 years (M = 21; SD = 2.7). The mean of daily training was 14 h (SD = 1.3), 6 times per week (SD = 1.1). The players had a highly competitive profile and represented around 70% of the total professional LoL players in Brazil.

After approval by the Research Ethics Committee, contact was made with the heads of the all-Brazilian professional LoL teams requesting permission to evaluate the pro-players. After the agreement of the coaches and the consent of the athletes, the questionnaires were applied. The players who voluntarily agreed to participate were informed of the objectives of the study, the confidentiality of the responses, and the handling of the data. The average response time was 35 min. The instruments used to assess the pro-players are described below.

3.2. Instruments

The psychometric instruments were answered using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

A coach-created Empowering and Disempowering Motivational Climate Questionnaire (EDMCQ-Q) [53] assesses the athletes' perception of the socio-environmental characteristics proposed by the AGT and SDT. The Brazilian version was adapted by Oliveira and contributors (2018) [54]. The scale has 32 items subdivided into five Latent Variables (LV), of which three (17-items) are related to positive behaviours that make up the Empowering Climate: Task-Involving (TI—"My coach encouraged players to try new skills"), autonomy-supportive (AS—"My coach gave players choices and options"), and socially-supportive (SS—"My coach really appreciated players as people, not just as athletes"). The remaining 15 items refer to a disempowering climate and are divided into two LV: Ego-involving (EI—"My coach had his favourite players") and controlling–coaching (CO—"My coach threatened to punish players to keep them in line during training"). The construction of the TI and EI items was based on the motivational climate proposed by AGT, while the AS, SS, and CO assessed the aspects of the motivational climate that encompass SDT. The version validated for Brazilian athletes showed good internal consistency ($\alpha = 0.91$ for the empowering climate and $\alpha = 0.98$ for the disempowering climate).

The Basic Needs Satisfaction Sport Scale (BNSS) [55] was used to assess the satisfaction of basic needs in the sport context. The scale consists of 12 items, four for each dimension of competence satisfaction (S-COM), autonomy satisfaction (S-AUT), and relatedness satisfaction (S-REL). The version validated for Brazilian athletes [56] also showed good internal consistency in all subscales, ranging from 0.79 to 0.85.

The Psychological Needs Thwarting Scale (PNTS) [28] is a 12-items Likert scale, four for each dimension of competence frustration (F-COM), autonomy frustration (F-AUT), and relatedness frustration (F-REL). The authors who developed the instrument provided evidence on the psychometric adequacy and good internal consistency in all subscales, ranging from 0.72 to 0.85.

The Sport Motivation Scale (SMS-II) [57] was developed to measure the 6 motivation subtypes proposed by the self-determination theory: (a) intrinsic motivation (INTR)—refers to the motivation to perform certain activities derived from the satisfaction found in the behaviour itself; (b) integrated regulation (INTE)—occurs when behaviour is not only seen as something of value but also considered consistent with the other objectives, goals, and needs of life; (c) identified regulation (IDEN): occurs when behaviour is interpreted as personally important and valuable; (d) introjected regulation; (e) external regulation; and (f) non-motivation (NM). The instrument can be modelled with three higher-order variables to assess autonomous motivation (AM; factors a, b, and c), controlled motivation (factors d and e), and NM (factor f). The authors who developed the instrument provided evidence on the psychometric adequacy of the SMS-II in the study of the scale's development. The version validated for Brazilian athletes [58] also showed good internal consistency in all subscales, ranging from 0.61 to 0.78.

The Intention to Keep Playing Scale (IKPS) was adapted to eSports based on the items used in a study with soccer players [59]. Three items are considered positive (e.g., "I intend to keep playing next season"), while two items are negative (e.g., "I intend to drop out when this season ends"). The score of the IKPS was obtained after the inversion of the items referring to the intention to drop out. The authors who developed the instrument provided evidence on the psychometric adequacy of the scale and good internal consistency ($\alpha = 0.85$).

The Satisfaction With Life Scale (SWL) is a one-dimensional scale composed of 5 items that assesses how people perceive well-being (WB) according to their subjective criteria. It was adapted to evaluate Brazilian athletes and showed good internal consistency ($\alpha = 0.81$) [60,61].

3.3. Data Analysis

Despite the complexity of the model and the relatively small sample, its size met the guidelines suggested by Hair and contributors (2014) regarding the number of observations necessary to reach a statistical power of 80% and to detect R^2 values of at least 0.25. The sample was also sufficient when applying the "10 times rule," which suggests that the sample size should be at least 10 times the maximum number of structural paths pointing to a latent variable in any direction of the path model [62]

Measurement models were tested using Partial Least Squares Structural Equation Modelling (PLS-SEM), which simultaneously assesses the relationships between multiple constructs, giving consistency to the observed results. PLS-SEM is a well-established analytical and appropriate method for research aims that are focused on predictions and theory building and is also recommended for estimating complex models that have many latent variables and indicators [26]. The estimation procedure is based on ordinary least squares regression and uses the available data to estimate the model path relationships in order to minimize the error terms (residual variation) and maximize the explained variance of endogenous latent variables. Researchers benefit from the high efficiency of parameter estimation, which manifests itself in the method's greater statistical power [63].

Despite the complexity of the model and the relatively small sample of this study, PLS-SEM is a silver bullet to tackle this dataset because it can operate efficiently with small sample sizes [64]. Besides that, PLS estimation is robust to multivariate non-normality, which is the main reason for choosing the method to obtain a predictive model [65].

The algorithm relies heavily on the aggregation of indicators to infer latent variable scores. Therefore, the relevance of the results depends entirely on the quality of the measurement model. Internal consistency was assessed using composite reliability (CR must be $\geq$ than 0.70). The convergent validity was evaluated by the average variance extracted (AVE) of each latent variable (AVE must be > than 0.50) and outer loadings ($\lambda \geq 0.50$ acceptable; $\lambda \geq 0.70$ satisfactory). The discriminant validity was assessed by the Fornell–Larcker criterion: the square root of AVE values must be greater than the correlation between the latent variables ($\sqrt{}$AVE > rlv), and outer loadings must be greater than cross-loadings [66].

Once the validity of the measurement model is assured, the evaluation of the structural model allows us to appreciate the predictive capabilities of the proposed model. The Pearson's coefficients (R^2) evaluate the portion of the variance of the endogenous variables, which is explained by the structural model (R^2 = 2%, 13%, and 26% refer to small, medium, and large effects, respectively) [67]. The Stone–Geisser indicator (Q^2) evaluates the accuracy of the adjusted model; a value of $Q^2 > 0$ represents the presence of the predictive relevance of the model [63], e.g., a perfect model, which reflects reality without errors, would be $Q^2 = 1$ [68].

The effect size (f^2) was explored to verify whether the influence of a specific variable has a substantial impact (f^2 = 0.02, 0.15, and 0.35 are small, medium, and large, respectively) [65,69]. Single-predictor effect sizes are obtained by comparing the amount of variation explained when a predictor is included or excluded from the path model: $f^2 = (R^2 \text{ included} - R^2 \text{ excluded})/(1 - R^2 \text{ included})$. The variance inflation factor (recommended value: VIF < 5) was used to verify the multicollinearity [69,70]. The analyses were done in the SmartPLS software (version 3.3.2).

4. Results

4.1. Hierarchical Component Model

PLS-SEM can be designed as a hierarchical components model that includes the observable lower-order components and unobservable higher-order components to reduce model complexity, reduce bias due to collinearity issues, eliminate potential discriminant validity problems, and make it more parsimonious [63,71]. Except for well-being, the intention to keep playing eSports, and non-motivation, five variables were modelled as higher-order LV: 1. An empowering climate is a higher-order VL, and its indicators are TI,

AS, and SS; 2. A disempowering climate is a higher-order VL, and its indicators are EI and CO; 3. Basic-Needs Satisfaction is a higher-order VL, and its indicators are S-COM, S-AUT, and S-REL; 4. Psychological-Needs Thwarting is a higher-order VL, and its indicators are F-COM, F-AUT, and F-REL; 5. Autonomous Motivation is a higher-order VL, and its indicators are INTR, INTE, and IDEN. To generate the factor scores, a Principal Component Analysis for each LV was performed. A previous analysis of PCA's for each LV can help decide whether to maintain all indicators to obtain the scores or not [72].

4.2. Measurement Model Evaluation

The results of the measurement model that includes all observed variables were adequate. To evaluate individual fit, items were carefully examined based on standardized factor loadings. Only two items showed factor loadings slightly below expectations (W1 = 0.67 and F-REL = 0.69) as shown in Figure 2.

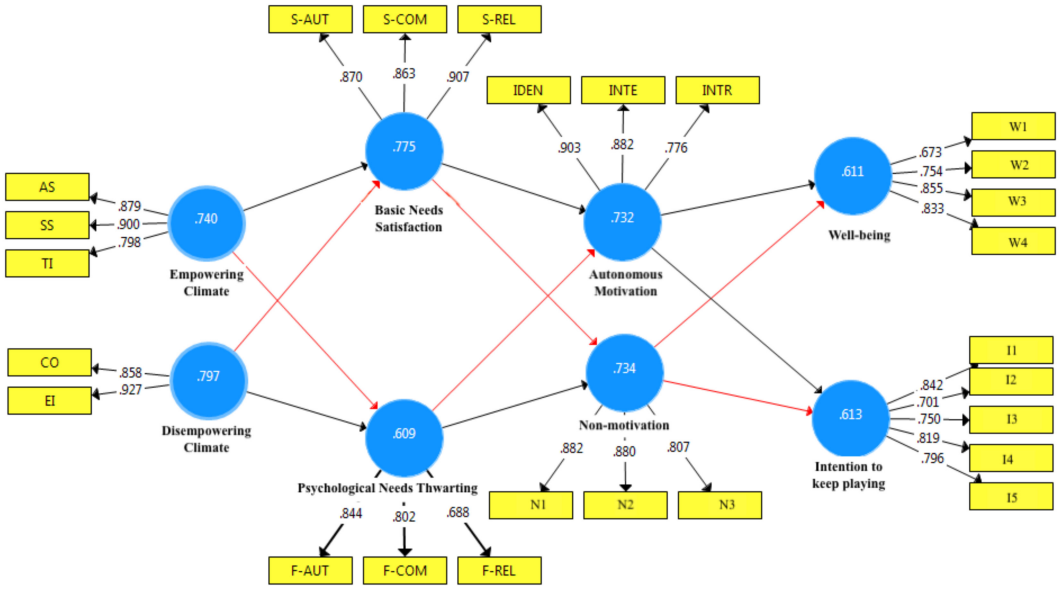

Figure 2. Factor loadings of the Hierarchical Component Model. Legend: TI—task-involving; SS—socially-supportive; AS—autonomy-supportive; CO—controlling-coaching; EI—ego-involving; S-AUT—autonomy-satisfaction; S-COM—competence-satisfaction; S-REL—relatedness-satisfaction; F-AUT—autonomy-thwarting; F-COM—competence thwarting; F-REL—relatedness-thwarting; INTR—intrinsic motivation; IDEN—identified regulation; INTE—integrated regulation. Note 1: Inside the circles are AVE values (reference values: AVE > 0.5). Note 2: AS, SS, TI, CO, EI, S-AUT, S-COM, S-REL, F-AUT, F-COM, F-REL, INTR, IDEN, and INTE are lower-order latent variables. All lower-order variables were modelled as indicators based on the results of the coefficients, between higher-order and lower-order latent variables, available in the SmartPLS output (source: research results).

Table 2 presents the complete matrix of factor loadings where the adequacy of the model was verified. The items have satisfactory factor loadings and all items loaded onto their proposed factors. It can also be observed that the factor loadings (in bold) are greater than the cross-loadings ("off-diagonal" loadings).

Table 2. Matrix of factor loadings (cross-loadings).

Items	NM	WB	DIS	EMP	PNT	IKP	AM	BNS
N1	**0.88**	−0.23	0.08	−0.30	0.40	−0.58	−0.57	−0.60
N2	**0.88**	−0.17	0.17	−0.24	0.42	−0.39	−0.50	−0.59
N3	**0.81**	−0.49	0.08	−0.13	0.43	−0.28	−0.45	−0.71
W1	−0.13	**0.67**	−0.17	0.14	−0.17	0.04	0.09	0.35
W2	−0.23	**0.75**	−0.09	0.15	−0.20	0.05	0.07	0.35
W3	−0.30	**0.86**	−0.11	0.17	−0.34	0.10	0.16	0.46
W4	−0.37	**0.83**	−0.09	0.16	−0.19	0.14	0.25	0.43
CO	0.00	−0.11	**0.86**	−0.36	0.29	−0.06	0.12	−0.20
EI	0.19	−0.13	**0.93**	−0.57	0.40	−0.19	0.03	−0.27
AS	−0.31	0.24	−0.41	**0.88**	−0.27	0.31	0.30	0.51
SS	−0.19	0.16	−0.57	**0.90**	−0.41	0.38	0.12	0.41
TI	−0.13	0.09	−0.39	**0.80**	−0.16	0.09	0.36	0.32
F-AUT	0.47	−0.25	0.40	−0.27	**0.84**	−0.44	−0.22	−0.57
F-COM	0.39	−0.27	0.26	−0.23	**0.80**	−0.34	−0.17	−0.49
F-REL	0.25	−0.14	0.21	−0.32	**0.69**	−0.31	−0.06	−0.33
I4	−0.46	−0.10	0.10	0.08	−0.31	**0.82**	0.34	0.28
I1	−0.39	−0.08	0.14	0.08	−0.28	**0.84**	0.32	0.29
I5	−0.37	0.11	−0.32	0.40	−0.42	**0.80**	0.20	0.45
I2	−0.37	0.41	−0.31	0.43	−0.42	**0.70**	0.30	0.49
I3	−0.26	0.25	−0.34	0.41	−0.46	**0.75**	0.06	0.37
IDEN	−0.65	0.26	0.03	0.29	−0.32	0.43	**0.90**	0.66
INTE	−0.41	0.17	0.09	0.20	−0.08	0.19	**0.88**	0.51
INTR	−0.40	0.04	0.09	0.23	−0.07	0.18	**0.78**	0.42
S-AUT	−0.60	0.40	−0.37	0.52	−0.65	0.48	0.51	**0.87**
S-COM	−0.66	0.40	0.02	0.32	−0.38	0.42	0.61	**0.86**
S-REL	−0.70	0.55	−0.34	0.47	−0.60	0.35	0.56	**0.91**

Legend: EMP—empowering; DIS—disempowering; PNT—psychological-needs thwarting; BNS—basic-needs satisfaction; AM—autonomous-motivation; NM—non-motivation; WB—well-being; IKP—intention to keep playing eSports; TI—task-involving; SS—socially-supportive; AS—autonomy-supportive; CO—controlling-coaching; EI—ego-involving; S-AUT—autonomy-satisfaction; S-COM—competence-satisfaction; S-REL—relatedness-satisfaction; F-AUT—autonomy-thwarting; F-COM—competence-thwarting; F-REL—relatedness-thwarting; INTR—intrinsic motivation; IDEN—identified regulation; INTE—integrated regulation. Note: The values in bold are the factor loadings of the variables observed in their respective latent variables. All factor loadings are significant at 1% (source: research results).

Adequate convergent validity was confirmed, given that the AVE values all exceeded the recommended threshold of 0.5 (Fornell and Larcker, 1981) [69], which indicates that the LV of the model explained on average more than 50% of the variance of their corresponding indicators, as shown in Table 3. The internal consistency of the measures was assessed through the composite reliability values. In Table 3 it can be observed that all CR values exceeded the recommended value of 0.70. The square root of each variable's AVE values (in bold on diagonal—Table 3) was greater than the highest correlation between the variable in question and all other latent variables in the model, confirming the discriminant validity [26].

With the guarantee of discriminant and convergent validity, the adjustments of the measuring models were completed, and then we began to analyse the structural model.

Table 3. Matrix of correlations between latent variables.

VL	NM	WB	DIS	EMP	PNT	IKP	AM	BNS
NM	**0.86**							
WB	−0.36	**0.78**						
DIS	0.13	−0.13	**0.89**					
EMP	−0.26	0.20	−0.54	**0.86**				
PNT	0.49	−0.29	0.39	−0.34	**0.78**			
IKP	−0.49	0.12	−0.15	0.33	−0.47	**0.78**		
AM	−0.59	0.20	0.07	0.29	−0.21	0.34	**0.86**	
BNS	−0.75	0.51	−0.27	0.49	−0.61	0.47	0.64	**0.88**
α	0.82	0.80	0.75	0.83	0.69	0.84	0.82	0.86
CR	0.89	0.86	0.89	0.90	0.82	0.89	0.89	0.91
AVE	0.73	0.61	0.80	0.74	0.61	0.61	0.73	0.78

Legend: VL—latent variables; AVE—average variance extracted; CR—composite reliability; α—Cronbach's alpha; EMP—empowering; DIS—disempowering; PNT—psychological-needs thwarting; BNS—basic-needs satisfaction; AM—autonomous-motivation; NM—non-motivation; WB—well-being; IKP—intention to keep playing eSports. Note: The values in bold on diagonal are the square root of the AVE, while the off-diagonal values are correlations. All correlations are significant at 1%. Reference values: AVE > 0.5; CR > 0.7; $\sqrt{}$AVE > rvl. (source: search results).

4.3. Structural Model Evaluation

Before assessing the structural model and its predictive accuracy and relevance, we checked for collinearity issues by examining the VIF values of predictor variables in the structural model (Table 4). No collinearity issues were found, as all VIF values were < than 5 [26].

Table 4. Structural-model path coefficients and hypotheses testing.

Effects	Structural Relation	H	β	SD	VIF	f^2	*p*	Hypothesis Decision
Direct	EMP → BNS	H1a (+)	0.490	0.101	1.4	0.230	0.000	Supported
Direct	EMP → PNT	H1b (−)	−0.195	0.133	1.4	0.033	0.148	No supported
Direct	BNS → AM	H2a (+)	0.817	0.096	1.6	0.772	0.000	Supported
Direct	BNS → NM	H2b (−)	−0.717	0.088	1.6	0.732	0.000	Supported
Direct	AM → WB	H3a (+)	−0.013	0.171	1.5	0.000	0.940	No supported
Direct	NM → WB	H3b (−)	−0.364	0.142	1.5	0.101	0.012	Supported
Indirect	EMP → BNS → AM	H4 (+)	0.402	0.101	–	–	0.000	Supported
Direct	DIS → PNT	H5a (+)	0.289	0.122	1.4	0.071	0.012	Supported
Direct	DIS → BNS	H5b (−)	−0.005	0.102	1.4	0.000	0.959	No supported
Direct	PNT → NM	H6a (+)	0.048	0.087	1.6	0.000	0.654	No supported
Direct	PNT → AM	H6b (−)	0.296	0.111	1.6	0.102	0.006	No supported
Direct	AM → IKP	H7a (+)	0.074	0.163	1.5	0.012	0.652	No supported
Direct	NM → IKP	H7b (−)	−0.444	0.132	1.5	0.173	0.000	Supported
Indirect	DIS → PNT → NM	H8 (+)	0.014	0.027	–	–	0.633	No supported

Legend: VIF—variance inflation factor; H—hypothesis; β—structural coefficient; SD—standard-deviations; *p*—*p*-value; EMP—empowering; DIS—disempowering; PNT—psychological-needs thwarting; BNS—basic-needs satisfaction; AM—autonomous motivation; NM—non-motivation; WB—well-being; IKP—intention to keep playing eSports. Note: p-values estimated by bootstrapping with 5000 repetitions; f^2 = effect size. Reference values: f^2 = 0.02, 0.15, and 0.35 are small, medium, and large, respectively (source: research results).

Pearson's coefficient (R^2) suggests that the path model was well supported by the data. The R^2 values for non-motivation and autonomous motivation were rather substantial with 56% and 46% of the variance explained by the structural model. All R^2 values can be visualized in Figure 3 inside the circles. The Stone–Geisser indicator (Q^2) evaluates the accuracy of the adjusted model and ranged from 0.05 (well-being) to 0.39 (non-motivation). The R^2 and Q^2 values of the predictors on the endogenous variables demonstrated very good predictive accuracy and relevance of the model.

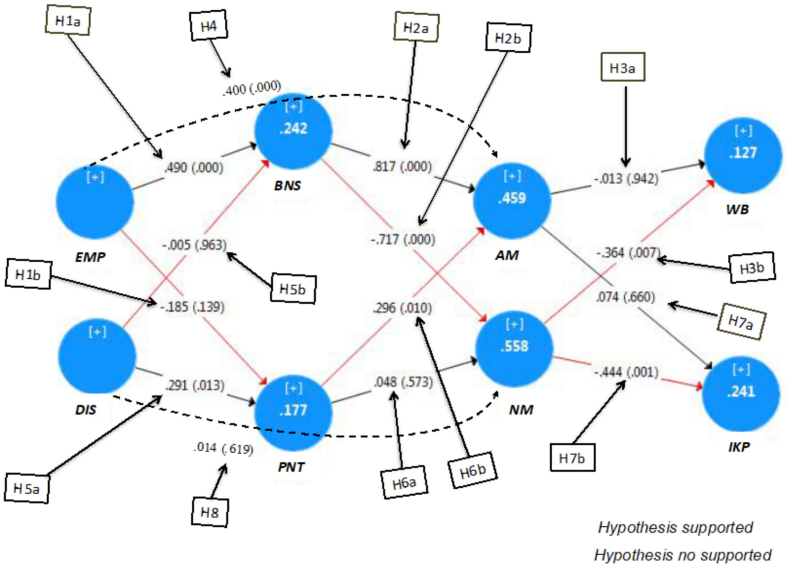

Figure 3. Structural model results (path coefficients, *p*-value, and hypothesis decision). Legend: EMP—empowering; DIS—disempowering; PNT—psychological-needs thwarting; BNS—basic-needs satisfaction; AM—autonomous motivation; NM—non-motivation; WB—well-being; IKP—intention to keep playing eSports; Note 1: Inside the circles are R^2 values (reference values: R^2 = 2%, 13%, and 26% refer to a small, a medium, and a large effect, respectively). Note 2: EMP, DIS, BNS, PNT, and AM are higher-order latent variables (source: research results).

The bootstrapping method of 5000 iterations provided the statistical significance of the proposed direct and indirect effects. The path coefficients of the hypothesized model and their significance, effect size (f^2) and the conclusion drawn for each hypothesis testing are reported in Table 4.

Among the fourteen hypotheses tested, seven were confirmed. The results from path analyses revealed that the empowering climate had a positive impact on needs-satisfaction (H1a), and disempowering had a positive impact on needs-thwarting (H5a). Needs-satisfaction was a strong predictor of both (H2a) autonomous motivation and (H2b) non-motivation. The path coefficient between needs-satisfaction and non-motivation had a negative sign, meaning a negative influence (e.g., if the needs-satisfaction increased, non-motivation decreased). Non-motivation negatively predicted well-being (H3b) and the intention to keep playing (H7b).

Mediation was evidenced when the independent variable and the mediator had significant direct effects on the dependent variable; the direct effect of the independent variable on the dependent variable was not significant after controlling the effect of the mediator, and the indirect effect of the independent variable on the dependent variable was significant. The empowering climate had no direct effect on autonomous motivation ($\beta = -0.137$; DP = 0.157; $p = 0.383$). We confirm that needs-satisfaction acted as a full mediator of the relationships between empowering and autonomous motivation (H4).

The following hypotheses were rejected: empowering climate was not a negative predictor of needs-thwarting (H1b); the disempowering climate was not a negative predictor of needs-satisfaction (H5b); needs-thwarting was not a significant predictor of non-motivation (H6a); neither well-being nor intention to keep playing were predicted by autonomous motivation (H3a and H7b); and, finally, the disempowering climate had no direct effect on non-motivation ($\beta = -0.085$; DP = 0.139; $p = 0.541$), and needs-thwarting did not act as a mediator of the relationships between disempowering and non-motivation (H8). Despite H6b being statistically significant, it was rejected for being positive. For a better visualization of the model results, the main results are repeated in Figure 3.

5. Discussion

The main purpose of this study was to investigate the impact of the coach-created climates perceived by professional LoL players on psychological-needs satisfaction/thwarting, motivation regulations underlying intention to keep playing, and well-being using the concepts and principles of SDT [3,4] and AGT [1,2,73]. Therefore, a model based on the sequence of relationships proposed by Duda (2013) [7] was tested. It was argued that the pro-player perception of the empowering coach's climate would facilitate the needs-satisfaction, which would be positively related to autonomous motivation, with consequent positive implications for the intention to keep playing and for well-being (or satisfaction with life). It was also hypothesized that the perception of the disempowering coach's climate would have negative consequences, leading to the needs-thwarting, which would be related to a lack of motivation (non-motivation), with negative implications for the well-being and intention to keep playing. Lastly, it was checked if there are significant relationships between undesirable and desirable variables (e.g., disempowering and needs-satisfaction; empowering and needs-thwarting).

Before testing the hypothetical model, the composite reliability, average variance extracted, and discriminant validity of our measurement model were confirmed. In addition to providing support for the psychometric properties of the measures used, we also observed a strong predictive adequacy of the model. The hypothetical structural model was partially confirmed. The path analysis demonstrated that perceptions of an empowering climate positively predicted needs-satisfaction but not needs-thwarting and that a disempowering climate positively predicted needs-thwarting but not needs-satisfaction. Consistent with SDT, positive social environments more strongly predict needs-satisfaction, and negative social environments more strongly predict needs-thwarting [36].

In line with the past studies, the empowering coach climate positively predicted athletes' basic-needs satisfaction. The need satisfaction significantly impacted both autonomous motivation and lack of motivation, which, in turn, explained 56% of the variance of well-being and the intention to keep playing eSports. The variance explained by similar structures in previous studies ranged between 48 and 59% [10,19,40,51,54]. Our results indicated strong positive relationships between the perception of an empowering climate and needs-satisfaction of competence, autonomy, and relatedness. When professional LoL players perceive that their coach offers task-oriented training and supports their choices, they are more likely to feel protagonists of their actions and satisfy their psychological-needs autonomy. Additionally, needs-satisfaction acted as a facilitator for autonomous motivation, preventing the pro-player from feeling unmotivated.

If, on the one hand, the needs-satisfaction had a strong impact on motivation/non-motivation, on the other hand, the needs-thwarting did not significantly influence them. The number of variables related to the model can explain this result, which seems to be contradictory. When inserting predictor variables into a SEM, whose structure of interrelationships resembles a series of multiple-regression equations, a suppressor situation can occur because all variables control each other's effects [74]. The estimated relationship between a predictor and a criterion while controlling for other predictors is a "surprise," given the bivariate correlations. The predictor responsible for the suppressor effect enhances the importance of the other predictor because it suppresses variance that is "irrelevant" to the prediction [75]. Suppression effects include all situations where predictors change their predictive validity when entered together in predicting an outcome, for example, by changing signs (a significant positive predictor becomes a significant negative predictor and vice versa) as it happened in H6b. Thus, it is no surprise that here the needs-thwarting is neither predicted by nor predictive of the hypothesized variables. The needs-satisfaction is the variable that explains the relationships, as its large effect size has important implications for the athlete and, therefore, should be considered in future interventions.

Among the direct predictors of well-being and intention to keep playing, contrary to the hypotheses, autonomous motivation did not act as a facilitator for these variables; however, non-motivation acted as an impediment to both well-being and intention to

keep playing. In a study of LoL players who participated in tournaments but were not professionals found that autonomously motivated players had consistently more positive experiences, as evidenced by high pleasure scores. In contrast, non-motivation was related to reduced fun and increased tension, indicating that eSport's environmental climate was being detrimental to the well-being of these players [49]. For the authors, highly competitive game environments such as LoL provide complex and sometimes uncomfortable social interactions. The toxic behaviour of players is among the main sources of negative experiences. Tyack and Mekler (2020) [76] identified toxic behaviour as one of the reasons for abandoning the activity. In professional environments, these discomforts can be maximized or added to the demands inherent in professional eSport such as stress and burnout, which are very common in high-performance athletes [77,78].

Therefore, a possible explanation for the non-significant results between autonomous motivation and well-being may be related to the specifics of LoL pro-players. One of the interesting peculiarities of professional LoL players is that, when they become professionals, they live in a gaming house, which, according to Lee (2015) [79], are apartments (or houses) with several semi-private cubicles equipped with PCs, whose purpose is to maximize hours playing games and minimizing unproductive "distractions" including contact with family, friends, and girl/boyfriends. Professional players need to train 14 to 16 h a day to improve their skills and should prioritize training regimens over interpersonal relationships, recognizing that temporal demands, such as girlfriends and hobbies, are harmful to the focus necessary for success [80]. It is possible that even motivated LoL players do not reach high levels of well-being due to these specificities [81].

Another possibility is that needs-satisfaction may serve as mediators for outcomes related to the psychological aspect. Although it was not part of our hypotheses, we found that there is an indirect relationship between the empowering climate both in well-being and in the intention to keep playing through the needs-satisfaction. These results are consistent with studies that suggest needs-satisfaction could act as a mediator between the empowering climate and the athlete's well-being [16,38,82].

In studies that assessed well-being, in Portuguese usually translated as "bem-estar," the latent variables identified to assess it differed considerably. Subjective vitality [29,41] positively affects [16] satisfaction with life [27,83,84], self-acceptance, positive relationships, and purpose in life [85]. It is possible to consider several methods to assess well-being. An important distinction between these measures is the contrast between more cognitive and judgment-focused assessments, such as life satisfaction, and affective assessments, which are obtained by asking about emotional experiences [86–88]. For all these reasons, researchers should pay close attention to verifying the extent to which measures of well-being behave as the theory predicts [61].

In short, the generated findings provide evidence that the quality of the coach–athlete relationship characterized by the empowering climate is a strong predictor of motivation via the satisfaction of psychological needs. Successful coach–athlete relationships can take many different forms as what one athlete wants from a coach can be very different from what another athlete wants [38]; however, the coach climate must be meaningful if they are to promote optimal motivational processes and needs-satisfaction [5,29].

6. Conclusions

The results obtained through the theoretical models with the sample of professional players of League of Legends allowed us to reach four main conclusions: (1) empowering climates predicted needs-satisfaction but not needs-thwarting, (2) disempowering climates predicted needs-thwarting, (3) needs-satisfaction have a strong impact on the motivational processes of competitive athletes, and (4) non-motivation acted as an impediment to both well-being and intention to keep playing.

This research carried out with a sample of professional eSport players showed similar results to those found in studies carried out with traditional sports, indicating that the coach-motivational-climate model applies not only to traditional sports but also to profes-

sional eSports. With the support of previous research, it can be assumed that environmental demands and their consequences are similar among competitive athletes, regardless of the type of sport they refer to. This study is the first to show research evidence on the importance of the coach-created climate in competitive electronic sport, and the results obtained demonstrate the importance of the social context in the positive development of the pro-player eSports and provide empirical support for coaches to optimize the motivational environment.

7. Limitations and Suggestions

The main limitation of this study was the assessments made exclusively through self-report measures. These measures can be influenced by social-desirability biases. Thus, future research may include observational tools to assess the performance of athletes, as well as objective measures of the coach's behaviour. More objective assessments can help to clarify the extent to which needs-satisfaction, motivation, well-being, and intention to keep playing are influenced by the coach. Sports-psychology scientists can include tests of personality, resilience, perfectionism, and mental toughness in models based on the coach-created motivational climate. This would help coaches and sports psychologists gain a deeper insight into the problem.

Although this study only featured 75 participants, our sample size was considerably large concerning the number of professional LoL players in the country (about 70% of them were evaluated). Researchers interested in evaluating larger samples of professional eSport players should include a variety of games.

Finally, if possible, implementing an experimental project to examine the effects of motivational interventions with coach training strategies in order to make them more empowering would make a major contribution to the area.

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Informed Consent Statement: Written informed consent was obtained from all subjects involved in the study.

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