

# Multi-Parametric Analysis of Aggressive Communication and Motivation Climate in Physical Education

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## Abstract

The purpose of this study was to examine verbal aggressiveness, argumentativeness and motivation climate in a multi-parametric context. Nine hundred and three (903) students (448 males, 455 females), whose age varied from 10 to 17 years old ( $M = 13.8$ ,  $SD = 2.3$ ), participated in this study. The findings revealed that instructors' verbal aggressiveness was positively related to performance climate and negatively to argumentativeness and mastery climate, while argumentativeness was positively related to mastery climate. Additionally, the multiple regression analysis presented that argumentativeness and the created motivational climate were negative predictors of verbal aggressiveness. High school students perceive their instructor more argumentative and reported the lower score on performance climate. Urban schools presented higher levels on verbal aggressiveness and performance climate. Students from 9<sup>th</sup> grade proved to have higher score in verbal aggressiveness, 7<sup>th</sup> grade in argumentativeness and mastery climate. Finally, students from 6<sup>th</sup> grade perceived that their instructors created performance climate in higher levels. Furthermore, Mancova indicated that the covariates, mastery and performance climate explained a statistically significant proportion of variance of verbal aggressiveness and argumentativeness between classes. Moreover, instructors who use low level of verbal aggressiveness proved to have higher score in argumentativeness and mastery climate. Also, high level of verbal aggressiveness was presented in performance climate. Finally, Ancova reported that argumentativeness was a significant covariate of verbal aggressiveness on performance climate.

## Keywords

Verbal Aggressiveness, Argumentativeness, Motivational Climate, Perceptions, PE Teachers, Students

## 1. Introduction

### 1.1. Aggressive Communication

Aggressive communication composes a natural component of social behavior, aiming at satisfying the needs and goals (Hrázská, 2011). It violates social norms, reducing rights and people's integrity (Vagnerova, 2002). Aggressive communication is defined as an individual's effort to assail another person's self-esteem or positions on communicational matters (Infante, 1987). Aggressive behavioral attitudes predominate in human relations (Bekiari & Hasanagas, 2015; 2016a; 2016b; 2016c). Verbal aggressiveness and argumentativeness are aggressive communicational variables and are related to people's predispositions (Infante, 1987). These traits affect individual's behavior concerning disagreements and controversies, or advocacies and refutations (Infante & Rancer, 1993; Infante & Rancer, 1996). Verbal aggressiveness is a destructive behavioral trait, whereas argumentativeness is a constructive one. A constructive behavior contributes to improving interpersonal communication and relationship, while the outcomes of a destructive one are damaging and hurtful among relationships and people's feelings (Avtgis, Rancer, Kanjeva, & Chory, 2008; Infante, 1988; Infante & Rancer, 1996; Rancer & Avtgis, 2014). Argumentativeness predisposes an individual to adopt a firm position upon debatable subjects and contradict against the statements of arguers (Infante & Rancer, 1982; 1996; Rancer & Avtgis, 2014). It has been stated that it composes an important predictor of the actual dialectical behavior (Infante & Rancer, 1996; Rancer & Avtgis, 2006). On the other hand, a person's disposition to deprive of someone's dignity using inflictive expressions, leads to verbal aggressiveness (Infante & Rancer, 1996; Infante & Wigley, 1986). An individual's personality may reveal such element (Aloia & Solomon, 2016; Goodboy & Myers, 2012), although it is also resulted from the environmental conditions where the individual acts (Infante & Rancer, 1996). Verbal aggressiveness imposes psychological pain and negative feelings on the receiver via attacks on the character, the ability, in appearance and in the background, contempt, ridicule, threats, profanity, curses, loud voices, teasing gestures (Avtgis & Rancer, 2010; Coyne & Archer, 2004; Infante 1987; Infante, Sabourin, Rudd, & Shannon, 1990; Infante, Riddle, Horvath, & Tumlin, 1992; Infante & Wigley, 1986; Neuman & Baron, 1997; Rancer & Avtig, 2006) and additionally through work ethic attacks and nonverbal behaviors (Myers, Brann, & Martin, 2013). Verbal aggressiveness negative consequences persevere apart from the form of interlocutors' relationship (Aloia & Solomon, 2016; Bekiari, 2012; Edwards & Myers, 2007; Hasanagas & Bekiari, 2017a, 2017b; Hasanagas, Bekiari, & Vasilos, 2017; Infante & Rancer, 1996; Martin, Anderson, & Horvath, 1996; Myers & Buerkel, 1994; Theoharis & Bekiari, 2017; 2018; Theoharis, Bekiari, & Koustelios, 2017). Teachers who engage in aggressive behaviors may lack argumentative skills because they are not capable of approaching arguments (Bekiari, 2016; Deliligka, Bekiari, & Syrmipas, 2017; Infante & Rancer, 1996; Syrmipas & Bekiari, 2015). These individuals defend themselves by aggressive attacks against the other (Infante, 1995).

Aggressive communication in a classroom, derived from teachers, can affect incomparably the teaching and learning environment, as well as the students' commitment and absorption (Bekiari, 2012; Bekiari, Kokaridas, & Sakellariou, 2006; Rancer & Avtgis, 2006; Myers & Rocca, 2001; Rocca, 2004; Myers, Edwards, Wahl, & Martin, 2007). Verbal aggressiveness has widespread considerably in educational context (Bekiari, Koustelios, & Sakellariou, 2000). In such conditions students become less motivated, less satisfied, less interested and concentrated (Bekiari, 2014; 2016; Bekiari, Deliligka, & Hasanagas, 2017; Bekiari, Kokaridas, & Sakellariou, 2005; 2006; Bekiari & Tsiana, 2016; Manoli & Bekiari, 2015; Mazer & Stowe, 2016; Myers, 2002; Snyder, Forbus, & Cistulli, 2012; Weiss & Houser, 2007), more Machiavellian, having more anxiety and using bullying (Bekiari & Pachi, 2017; Bekiari, Pachi, & Hasanagas, 2017; Bekiari, et al, 2006; Bekiari & Spanou, 2018). Teachers' verbal aggressiveness towards their students is negatively related to affective learning (Bekiari, 2012; Bekiari & Tsaggopoulou, 2016), interpersonal attraction and sympathy (Bekiari & Petanidis, 2016; Bekiari & Spyropoulou, 2016; Bekiari & Sakellariou, 2003; Syrmpas & Bekiari, 2015). The most common aggressive messages that are used by verbally aggressive teachers are attacks on students' character, competence attacks, irony, cursing, swearing, threats, ridicule, teasing and nonverbal emblems (Bekiari, Kokaridas, & Sakellariou, 2005; Deliligka, Bekiari, & Syrmpas, 2017; Infante et al., 1992; Infante et al., 1990; Infante & Rancer, 1993). Argumentativeness is considered a beneficial and effective social practice, comparing to verbal aggressiveness, in order to negotiate differences (Bekiari, Deliligka, & Koustelios, 2016; Bekiari & Ntakou, 2018; Johnson, Becker, Wigley, Haigh, & Craig, 2007). Argumentative teachers promote unity between students, motivation, cognitive learning, satisfaction and excitement during the learning process (Bekiari & Balla, 2017; Bekiari, Nikolaidou, & Hasanagas, 2017; Bekiari & Pylarinou, 2017; Hamilton & Hample, 2011). Assertiveness, intimacy, competence (Myers, 1998), efficiency concerning the teaching process, amiability (Syrmpas & Bekiari, 2015) and reliability (Schrodt, 2003) form characteristics of argumentative teachers as they are perceived by their students. Argumentativeness is positively correlated with social, physical and learning attractiveness (Syrmpas & Bekiari, 2015), intrinsic reasons for discipline (Bekiari & Pylarinou, 2017) and affective learning (Bekiari & Manoli, 2016). Practicing in argumentativeness based on the theory of argumentative skill deficiency model (Infante, Chandler, & Rudd, 1989), encourages young people to use it in conversations, as a result to promote argumentativeness and avoid verbal aggressiveness, reducing thereby the prevalence of physical aggression in society (Infante, 1987; Infante et al., 1992; Infante, Trebing, Shepherd, & Seeds, 1984; Rancer, Avtgis, Kosberg, & Whitecap, 2000).

## 1.2. Motivational Climate

Motivational climate can be defined as a communicative environment which addresses the targets of a process in the direction of attainment situations and it

is regulated by circumstantial effects (Ames, 1992a), such as “significant others” (e.g. teachers, parents, peers) (Duda & Ntoumanis, 2005; Roberts & Treasure, 1992). The concept of motivational climate has derived from the Achievement Goal Theory and its distinction is twofold, that is mastery or task-involving climate and performance or ego-involving climate (AGT; Ames, 1992b; Ames & Archer, 1988; Maehr & Nicholls, 1980, Nicholls, 1984, 1989; Roberts, Treasure, & Conroy, 2007). Teachers’ impact is significant and involves many sides because they can inspire and reassure the students’ effective engagement both during the learning process and furthermore (Granero-Gallegos, Baena-Extremuera, Gómez-López, & Abraldes, 2014). Studies have reported that attitudes and intercommunications are elements which are engaging in motivational climate, for instance interactive motivation between peers, based on the intention to foster competition, encouragement, collaboration and endearment (Beltman & Volet, 2007; Bengoechea & Streat, 2007; Keegan, Harwood, Spray, & Lavalley, 2009; Keegan et al., 2010; Vazou, Ntoumanis, & Duda, 2005; Weiss, Amorose, & Wilko, 2009). The positive outcomes of mastery climate are numerous, because its main emphasis is given to learning and cooperation (Bortoli, Bertollo, Vitali, Filho, & Robazza, 2015). The students are emboldened with advanced abilities, cooperative learning, personal enrichment and commending for each endeavor (Ames, 1992a; Roberts et al., 2007). Furthermore through mastery climate, intrinsic motivation (Bryan & Solmon, 2012; Ommundsen & KvalØ, 2007; Papaioannou, 1995; Spittle & Byrne, 2009; Standage & Gillison, 2007), self-assessment and contentment are stimulated (Atkins, Johnson, Force, & Petrie, 2015; Kavussanu & Harnisch, 2000; Le Bars, Gernigon, & Ninot, 2009). Moreover, expanded research has indicated mastery’s climate positive relation with accomplishments, satisfaction, importunity in every attempt, flexibility (Ntoumanis & Biddle, 1999; Roberts, 2012; Van De Pol, Kavussanu, & Ring, 2012), as well as decreased anxiety, commitment, engagement, enthusiasm, assurance, integrity (Atkins et al., 2015; Braithwaite, Spray, & Warburton, 2011; Cunningham & Xiang, 2008; Kavussanu & Roberts, 1998; Mouratidis, Vansteenkiste, Lens, & Vanden Auweele, 2009; Smith, Smoll, & Cumming, 2007). Performance motivational climate is based essentially on social comparison and competition, arousing negative emotions on students such as nervousness and distraction (Bortoli et al., 2015; Liukkonen, Barkoukis, Watt, & Jaakkola, 2010). Throughout the course that focuses on performance motivational climate, teachers emphasize on regulative assessment, display of students’ abilities and praising their best efficiency (Ames, 1992b; Ames & Archer, 1988; Keegan et al., 2010; Murcia, Camacho, & Rodríguez, 2008). Therefore, performance motivational climate cultivates students’ dissatisfaction, lack of interest and endeavor, commitment incongruity, as well as disengage as results of amotivation (Braithwaite et al., 2011; Cumming, Smoll, Smith, & Grossbard, 2007; Granero-Gallegos et al., 2014; Liukkonen et al., 2010; Nerstad, Roberts, & Richardsen, 2013; Ntoumanis & Biddle, 1999; Ommundsen & KvalØ, 2007; Van De Pol et al., 2012).

### 1.3. Innovation and Questions of Study

Allowing for the above literature review, the present study aimed at exploring relations among the perceived factors of instructors' aggressive communication (verbal aggressiveness, argumentativeness) and motivational climate during the physical education lessons in a multi-parametric approach. Thus, by examining these factors a more complete picture could be obtained concerning instructors' behavior and influential aspects, comprising an academic added value. The practical added value is expected to detect behaviors that restrain the effectiveness of the learning process and therefore to encounter such spreading educational parameters. In particular, this study intends to answer the following research questions:

- Is there a positive or negative relationship between perceived instructors' verbal aggressiveness, their argumentativeness and motivational climate in physical education classes?
- To what extent the perceived instructors' argumentativeness and motivational climate could be significant predictors of their use of verbal aggressiveness?
- Are there any differences noted between schools' region and students' school level, regarding verbal aggressiveness, argumentativeness and motivational climate?
- Are there any differences noted between gender and class, regarding verbal aggressiveness, argumentativeness and motivational climate?
- Are there any differences noted between gender and class, regarding verbal aggressiveness and argumentativeness, if only the motivational climate was perceived by the same?
- Are there any differences noted between low verbal aggressiveness, moderate and high verbal aggressiveness, regarding argumentativeness and motivational climate?
- Are there any differences noted between low verbal aggressiveness, moderate and high verbal aggressiveness, regarding performance climate, if only argumentativeness was perceived by the same way?

## 2. Method

### 2.1. Participants and Procedure

Nine hundred and three (903) students (448 males, 455 females) participated in this study. They were aged from 10 to 17 years old ( $M = 13.8$ ,  $SD = 2.3$ ). Those participants studied in five primary schools at 5<sup>th</sup> and 6<sup>th</sup> grade, from 7<sup>th</sup> to 9<sup>th</sup> grade in five secondary schools and from 10<sup>th</sup> to 12<sup>th</sup> grade in five high schools. Their social and economic status varied. Those particular fifteen schools were randomly chosen from a wide range of schools listed in Central Greece. The location of schools belonged to urban, suburban and rural areas.

The completion of the questionnaires was referring to PE teachers' verbal aggressiveness, argumentativeness and motivational climate during the physical education lessons. The participants were informed thoroughly about the research. Their anonymous as well as voluntary engagement was also emphasized.

Students' parents were asked to fill in a consent form. The researcher during the process was willing to assist and answer to any questions. Permission from the Greek Ministry of Education was obtained, prior to the research.

## 2.2. Instruments

The Greek version of the *Verbal Aggressiveness* questionnaire was applied (Bekiari & Digelidis, 2015). It is based on the theoretical structure and Infante's and Wigley's (1986) Verbal Aggressiveness Questionnaire. Students' perceptions regarding physical education instructors' verbal aggressiveness, are determined through this instrument. There are eight items in the scale (e.g., "instructor derogates students", "instructor makes students feel bad"). Exploratory examination (Bekiari & Digelidis, 2015) supported the psychometric properties of the instrument. Specifically, the fit indices were set in a satisfied level at the confirmatory factor analysis (CFI: 0.97, SRMR: 0.02), and there was also a high level of reliability ( $\alpha = 0.96$ ). The responds were valued in a 5-point Likert-type scale ranging through 1: Strongly disagree to 5: Strongly agree.

The Greek version of the *Argumentativeness* questionnaire was applied in this study (Syrmpas & Bekiari, 2015), which relies on Myers and Rocca (2000) questionnaire. Instructors' argumentativeness is detected through students' perceptions. The scale consists of ten items (e.g., "my instructor is excited every time he/she tries to solve disagreements with the students", "my instructor enjoys defending his/her opinions on an issue"). Initial examination of the instrument confirmed the psychometric properties (Syrmpas & Bekiari, 2015). Specifically, the fit indices were set in a satisfied level at the confirmatory factor analysis (CFI: 0.98, SRMR: 0.05), and there was also a high level of reliability ( $\alpha = 0.87$ ). The responds were valued in a 5-point Likert-type scale ranging through 1: Strongly disagree to 5: Strongly agree.

The short version of the Learning and Performance Orientations in Physical Education Classes Questionnaire (LAPOPEQ) was used in order to value the *Motivational climate* (Papaioannou, 1994; 1998; Papaioannou, Marsh, & Theodorakis, 2004). The questionnaire consists of two scales regarding students' perceptions about the motivational climate created by their instructors. The first-seven items are referring to mastery climate (e.g., "My instructor is mostly satisfied when every student learns something new") and the other six-items are referring to performance climate (e.g., "My instructor reinforces competition among his/her students"). It was found that through CFA (CFI = 0.98, RMSEA = 0.06) the motivational climate model adapted the data (Hu & Bentler, 1999), and there was also a satisfied level of reliability ( $\alpha =$  between 0.74 and 0.87). The responds were rated in a 5-point Likert-type scale ranging through 1: Strongly disagree to 5: Strongly agree.

## 2.3. Data Analysis

The Statistical Package for Social Sciences (SPSS 21.0) was used for the data ana-

lyses. The internal consistency of the factors was examined through Cronbach's  $\alpha$  reliability analysis. The Pearson correlation coefficient was used to measure the correlation between the subscales of the questionnaires. A multiple hierarchical regression analysis was conducted in order to explore the extent to which the perceived instructors' argumentativeness and motivational climate could be significant predictors of their use of verbal aggressiveness. Argumentativeness which is considered as instructors' personality trait was used as the first predictor. Then mastery and performance motivational climate were included in the second stage of analysis aiming at predicting instructors' verbal aggressiveness. Through two-way MANOVAs analyses were examined differences in students' perceptions concerning their PE teachers' verbal aggressiveness, argumentativeness and motivational climate between schools' region and students' school level, as well as between students' gender and class. Moreover, differences in argumentativeness and motivational climate between the perceived level of verbal aggressiveness (low, moderate and high) were researched by performing one-way MANOVA analysis. Furthermore, after differences were indicated with prior findings, Univariate Analysis of Covariance (ANCOVA) was assessed having as covariate the argumentativeness and finally Multivariate Analysis of Covariance (MANCOVA) was performed using motivational climate as covariate. Due to the existing differences in MANOVAs, ANCOVA and MANCOVA were conducted to examine the differences with some variables being "partialled-out" of the procedure (Cohen & Cohen, 1983) by taking the role of covariance, in order to assess the induction procedures. Statistical significance was set at 0.05 and Post hoc analyses were performed using Bonferroni test.

### 3. Results

Cronbach's  $\alpha$  reliability analysis for the 8-items verbal aggressiveness scale (Bekiari & Digelidis, 2015) was 0.96, and for argumentativeness scales (Syrmpas & Bekiari, 2015) was 0.89. The factors of mastery climate ( $\alpha = 0.94$ ) and performance climate ( $\alpha = 0.96$ ) for the motivational climate scale (Papaioannou, 1994; 1998; Papaioannou, Marsh, & Theodorakis, 2004) showed a high level of reliability as well. In addition, a correlation analysis was conducted, the results of which are presented in "Table 1". As it can be seen, there was a positive significant relationship between instructors' verbal aggressiveness and performance climate ( $r = 0.592$ ), as well as between instructors' argumentativeness and mastery climate ( $r = 0.479$ ). Moreover, instructors' verbal aggressiveness was negatively related to argumentativeness ( $r = -0.766$ ) and mastery climate ( $r = -0.627$ ). Also a negative significant relationship was showed between instructors' argumentativeness and performance climate ( $r = -0.415$ ), as well as mastery climate and performance climate ( $r = -0.792$ ). At the same time, "Table 1" presents the Cronbach's alpha, mean scores and standard deviations of the variables.

As "Table 2" indicates, a multiple hierarchical regression analysis was conducted to predict verbal aggressiveness from argumentativeness in the first step.

**Table 1.** Reliabilities, Means, Standard Deviations and Pearson Correlations among variables.

| Factors                  | $\alpha$ | M    | SD   | 1        | 2        | 3        | 4 |
|--------------------------|----------|------|------|----------|----------|----------|---|
| 1) Verbal aggressiveness | 0.96     | 2.84 | 1.17 | -        |          |          |   |
| 2) Argumentativeness     | 0.89     | 2.74 | 0.42 | -0.766** | -        |          |   |
| 3) Mastery climate       | 0.94     | 3.46 | 0.97 | -0.627** | 0.479**  | -        |   |
| 4) Performance climate   | 0.96     | 2.77 | 1.13 | 0.592**  | -0.415** | -0.792** | - |

\* $p < 0.05$ , \*\* $p < 0.001$ ,  $\alpha$  = Cronbach's alpha.

**Table 2.** Hierarchical regression analysis for variables predicting verbal aggressiveness.

| Variables                     | $R^2$ | $\Delta R^2$ | B     | SE B | $\beta$ |
|-------------------------------|-------|--------------|-------|------|---------|
| <b>Step 1</b>                 |       |              |       |      |         |
| Argumentativeness             | 0.59  |              | -1.14 | 0.03 | -0.77** |
| <b>Step 2</b>                 |       |              |       |      |         |
|                               |       | 0.10         |       |      |         |
| Argumentativeness             |       |              | -0.89 | 0.03 | -0.60** |
| Mastery climate               |       |              | -0.22 | 0.04 | -0.18** |
| Performance climate           |       |              | 0.21  | 0.03 | 0.20**  |
| <b>Total <math>R^2</math></b> | 0.47  |              |       |      |         |

\* $p < 0.05$ , \*\* $p < 0.001$ ,  $\alpha$  = Cronbach's alpha.

Furthermore, mastery and performance climate were included in the second step. The first outcome indicated that the total variance of verbal aggressiveness explained by argumentativeness was 59%,  $F_{\text{cha}}(1, 902) = 1279.07$ ,  $p < 0.001$ . The results from the second step showed that mastery and performance climate predicted for an additional 10% of verbal aggressiveness variance  $F_{\text{cha}}(2, 899) = 148.25$ ,  $p < 0.001$ . In the final model all measures were statistically significant, concluding that argumentativeness ( $\beta = -0.60$ ,  $t = -28.02$ ,  $p < 0.001$ ), mastery climate ( $\beta = -0.18$ ,  $t = -5.82$ ,  $p < 0.001$ ) and performance climate ( $\beta = 0.20$ ,  $t = 6.53$ ,  $p < 0.001$ ) raised statistically significant verbal aggressiveness prediction. This pattern of results suggests that instructors' verbal aggressiveness is negatively predicted by argumentativeness which recorded a higher beta value, while mastery and performance climate contribute the least to that prediction.

Moreover two-way MANOVA, presented on "Table 3", was performed to examine differences existed in verbal aggressiveness, argumentativeness, motivational climate between schools' region and students' school level (primary, secondary and high school). The findings according to Wilks'  $\lambda$  showed statistically significant multivariate effect on school level,  $\lambda = 0.69$ ,  $F(8, 1784) = 46.11$ ,  $p < 0.001$ , schools' region,  $\lambda = 0.65$ ,  $F(8, 1784) = 52.92$ ,  $p < 0.001$  and the interaction between school level and schools' region,  $\lambda = 0.79$ ,  $F(12, 2360) = 18.85$ ,  $p < 0.001$ .

The examination of the univariate effects revealed significant effect of students' school level on verbal aggressiveness  $F(2, 895) = 95.85$ ,  $p < 0.001$ ,  $\eta^2 =$

0.18, argumentativeness  $F(2, 895) = 108.07, p < 0.001, \eta^2 = .20$ , mastery  $F(2, 895) = 31.56, p < 0.001, \eta^2 = 0.07$  and performance climate  $F(2, 895) = 81.72, p < 0.001, \eta^2 = 0.15$ . An examination of the mean scores indicated that secondary schools ( $M = 2.94, SD = 1.21$ ) proved to have higher score in verbal aggressiveness than high schools ( $M = 2.73, SD = 1.22$ ), as well as primary schools indicated higher score ( $M = 2.91, SD = 1.16$ ) compared to high schools. Concerning argumentativeness high schools presented the higher score ( $M = 2.63, SD = 0.83$ ) and secondary schools the lower ( $M = 2.38, SD = 0.71$ ). Furthermore, primary schools were rated by higher levels ( $M = 3.44, SD = 1.00$ ) of mastery climate, than high schools ( $M = 3.42, SD = 0.96$ ). Finally, students' from primary schools perceived that their instructors created performance climate in higher levels ( $M = 3.26, SD = 1.05$ ) than the other school levels, while high schools showed the lower score ( $M = 2.61, SD = 1.12$ ) ("Table 3(a)").

Also, the examination of the univariate effects revealed significant effect of schools' region on verbal aggressiveness  $F(2, 895) = 168.56, p < 0.001, \eta^2 = 0.27$ , argumentativeness  $F(2, 895) = 107.92, p < 0.001, \eta^2 = 0.19$  mastery climate  $F(2, 895) = 122.42, p < 0.001, \eta^2 = 0.22$  performance climate  $F(2, 895) = 77.21, p < 0.001, \eta^2 = 0.15$ . An examination of the mean scores indicated that urban schools presented higher levels ( $M = 3.17, SD = 1.15$  and  $M = 2.93, SD = 1.19$ ) and rural schools the lower ( $M = 2.03, SD = 0.70$  and  $M = 2.22, SD = 0.85$ ) on verbal aggressiveness and performance climate. Moreover, rural schools revealed the higher scores ( $M = 2.87, SD = 0.83$  and  $M = 4.05, SD = 0.57$ ) and the urban the lower scores ( $M = 2.33, SD = 0.68$  and  $M = 3.13, SD = 1.03$ ) on argumentativeness and mastery climate ("Table 3(b)").

Finally, the examination of the univariate effects presented significant effect of

**Table 3.** (a) Students' school level differences; (b) Schools' region differences.

| (a)                   |                 |           |                   |           |              |           |          |                  |
|-----------------------|-----------------|-----------|-------------------|-----------|--------------|-----------|----------|------------------|
| Variables             | Primary schools |           | Secondary schools |           | High schools |           | <i>p</i> | partial $\eta^2$ |
|                       | <i>M</i>        | <i>SD</i> | <i>M</i>          | <i>SD</i> | <i>M</i>     | <i>SD</i> |          |                  |
| Verbal aggressiveness | 2.91            | 1.16      | 2.94              | 1.12      | 2.73         | 1.22      | 0.001    | 0.18             |
| Argumentativeness     | 2.55            | 0.79      | 2.38              | 0.71      | 2.63         | 0.83      | 0.001    | 0.20             |
| Mastery climate       | 3.44            | 1.00      | 3.53              | 0.96      | 3.42         | 0.96      | 0.001    | 0.07             |
| Performance climate   | 3.26            | 1.05      | 2.64              | 1.10      | 2.61         | 1.12      | 0.001    | 0.15             |

  

| (b)                   |          |           |            |           |          |           |          |                  |
|-----------------------|----------|-----------|------------|-----------|----------|-----------|----------|------------------|
| Variables             | Urban    |           | Semi-urban |           | Rural    |           | <i>p</i> | partial $\eta^2$ |
|                       | <i>M</i> | <i>SD</i> | <i>M</i>   | <i>SD</i> | <i>M</i> | <i>SD</i> |          |                  |
| Verbal aggressiveness | 3.17     | 1.15      | 2.87       | 1.20      | 2.03     | 0.70      | 0.001    | 0.27             |
| Argumentativeness     | 2.33     | 0.68      | 2.61       | 0.83      | 2.87     | 0.83      | 0.001    | 0.19             |
| Mastery climate       | 3.13     | 1.03      | 3.60       | 0.85      | 4.05     | 0.57      | 0.001    | 0.22             |
| Performance climate   | 2.93     | 1.19      | 2.90       | 1.07      | 2.22     | 0.85      | 0.001    | 0.15             |

the interaction between school level and schools' region on verbal aggressiveness  $F(3, 895) = 20.00, p < 0.001, \eta^2 = 0.06$ , argumentativeness  $F(3, 895) = 31.86, p < 0.001, \eta^2 = 0.10$  mastery climate  $F(3, 895) = 15.31, p < 0.001, \eta^2 = 0.05$  performance climate  $F(3, 895) = 6.01, p < 0.001, \eta^2 = 0.02$ . On verbal aggressiveness higher scores revealed the primary schools on urban areas ( $M = 4.31, SD = 0.55$ ), than the other school levels and the secondary schools on semi-urban ( $M = 3.38, SD = 1.22$ ) and rural regions ( $M = 2.18, SD = 0.72$ ). As far as argumentativeness is concerned higher scores on urban ( $M = 2.44, SD = 0.73$ ) and semi-urban ( $M = 3.60, SD = 0.60$ ) were presented by the high schools comparing to primary and to secondary schools, while primary schools showed the higher score on rural regions ( $M = 3.28, SD = 0.75$ ), than the other school levels. Furthermore, mastery climate on high ( $M = 3.30, SD = 0.97$ ) and secondary schools ( $M = 3.11, SD = 1.12$ ) from urban areas revealed the higher score compared to primary schools, also high schools on semi-urban regions ( $M = 4.03, SD = 0.65$ ) showed higher score than primary and then secondary schools. Finally, concerning perceived performance climate, on urban regions' primary schools higher score was revealed ( $M = 4.15, SD = 0.72$ ) than secondary and then high schools, as well as primary schools from semi-urban ( $M = 3.37, SD = 0.79$ ) and rural areas ( $M = 2.52, SD = 0.95$ ) presented the higher score than the other school levels.

Moreover one-way MANOVA, was performed to examine differences existed in argumentativeness and motivational climate between the perceived level of verbal aggressiveness (low, moderate and high). The findings according to Wilks'  $\lambda$  showed statistically significant multivariate effect on argumentativeness,  $\lambda = 0.46, F(6, 1796) = 143.90, p < 0.001$ .

The examination of the univariate effects revealed significant effect of verbal aggressiveness on argumentativeness  $F(2, 900) = 158.26, p < 0.001, \eta^2 = 0.37$ , mastery  $F(2, 900) = 111.31, p < 0.001, \eta^2 = 0.38$  and performance climate  $F(2, 900) = 195.07, p < 0.001, \eta^2 = 0.34$ . An examination of the mean scores indicated that instructors who use low level of verbal aggressiveness proved to have higher score in argumentativeness ( $M = 2.95, SD = 0.76$ ) and mastery climate ( $M = 3.93, SD = 0.57$ ). Instructors' who show high level of verbal aggressiveness presented the higher score in performance climate ( $M = 3.78, SD = 1.02$ ).

Because of those differences, as "Table 4" displays, Univariate Analysis of Covariance (ANCOVA) was conducted with independent variable the perception of low, moderate or high verbal aggressiveness. The dependent variable consisted of performance climate and covariate was the variable of argumentativeness. Preliminary checks were conducted to ensure that there was no violation of the assumptions of normality, linearity, homogeneity of variances, ho-

**Table 4.** The results of ANCOVA for determining of effects of verbal aggressiveness on performance climate.

| Variables             | df | Mean square | <i>p</i> | partial $\eta^2$ |
|-----------------------|----|-------------|----------|------------------|
| Verbal aggressiveness | 2  | 100.24      | 0.000    | 0.21             |

mogeneity of regression slopes, and reliable measurement of the covariate.

After adjusting the covariate, there was significant interaction effect of verbal aggressiveness on performance climate  $F(2, 899) = 120.16, p < 0.001$ , with a large effect size  $\eta^2 = 0.21$ . The adjusted means show that higher levels of performance climate come from high use of verbal aggressiveness ( $M = 3.78, SD = 1.02$ ). The covariate argumentativeness, adjusted statistically significant the score of verbal aggressiveness for performance climate  $F(1, 899) = 10.41, p < 0.05$ . The adjustment of argumentativeness decreased drastically the relationship power of verbal aggressiveness with performance climate, the initial  $\eta^2 = 0.46$  decreased in  $\eta^2 = 0.21$ .

Two-way MANOVA, presented on “Table 5”, was performed to examine differences existed in verbal aggressiveness, argumentativeness, motivational climate between students’ gender and class. The findings according to Wilks’  $\lambda$  showed statistically significant multivariate effect on gender,  $\lambda = 0.99, F(4, 884) = 3.23, p < 0.05$  and class,  $\lambda = 0.77, F(28, 3189) = 8.73, p < 0.001$ , but no significant interaction between them.

The examination of the univariate effects revealed significant effect of students’ class on verbal aggressiveness  $F(7, 887) = 5.39, p < 0.001, \eta^2 = 0.04$ , argumentativeness  $F(7, 887) = 8.53, p < 0.001, \eta^2 = 0.06$ , mastery  $F(7, 887) = 4.23, p < 0.001, \eta^2 = 0.03$  and performance climate  $F(7, 887) = 10.09, p < 0.001, \eta^2 = 0.07$ . An examination of the mean scores indicated that 9<sup>th</sup> grade ( $M = 3.22, SD = 0.88$ ) proved to have higher score in verbal aggressiveness. Concerning argumentativeness ( $M = 2.73, SD = 0.81$ ) and mastery climate ( $M = 3.75, SD = 0.88$ ), 7<sup>th</sup> grade presented the higher score. Finally, students’ from 6<sup>th</sup> grade perceived that their instructors created performance climate in higher levels ( $M = 3.27, SD = 1.05$ ).

Differences of verbal aggressiveness and argumentativeness between gender and class were assessed using a Multivariate Analysis of Covariance (MANCOVA). Mastery and performance climate were entered as covariates in the analysis. Results indicated that the covariates, mastery climate Wilks’  $\lambda = 0.904, F(2, 884) = 46.97, p < 0.001$  and performance climate Wilks’  $\lambda = 0.953, F(2, 884) = 21.82, p < 0.001$ , explained a statistically significant proportion of variance of verbal aggressiveness and argumentativeness. After the removal of covariates’ main effect significant statistical differences existed in verbal aggressiveness and argumentativeness between classes Wilks’  $\lambda = 0.927, F(14, 1768) = 4.86, p < 0.001$ . Subse-

**Table 5.** The results of two-way MANCOVA for determining of effects of the perception of verbal aggressiveness and argumentativeness.

| Variables             | Gender  |          | Class   |          |
|-----------------------|---------|----------|---------|----------|
|                       | F-value | $\eta^2$ | F-value | $\eta^2$ |
| Verbal aggressiveness | 3.58    | 0.004    | 5.25**  | 0.040    |
| Argumentativeness     | 0.28    | 0.000    | 9.39**  | 0.069    |

\* $p < 0.05$ , \*\* $p < 0.001$ .

quent univariate analyses were computed for each dependent variable. Each covariate, mastery  $F(1, 885) = 88.89, p < 0.001$  and performance climate  $F(1, 885) = 36.44, p < 0.001$ , provided a significant adjustment to verbal aggressiveness. Also, mastery  $F(1, 885) = 63.78, p < 0.001$  and performance climate  $F(1, 885) = 4.11, p < 0.05$ , provided a significant adjustment to argumentativeness. Afterwards, differences emerged in class for the two dependent variables, verbal aggressiveness  $F(7, 885) = 5.25, p < 0.001$  and argumentativeness  $F(7, 885) = 9.39, p < 0.001$ . The 8<sup>th</sup> grade students indicated higher scores on verbal aggressiveness (adjusted  $M = 3.16$ ), while 12<sup>th</sup> grade students showed lower scores on verbal aggressiveness. Moreover, 12<sup>th</sup> grade students indicated higher scores on argumentativeness (adjusted  $M = 2.76$ ), while 9<sup>th</sup> grade students presented higher scores on argumentativeness (adjusted  $M = 2.20$ ). During the adjustment, students in 8<sup>th</sup> and 12<sup>th</sup> grade, as well as in 9<sup>th</sup> and 12<sup>th</sup> grade slightly decreased their difference in verbal aggressiveness and argumentativeness.

#### 4. Discussion and Challenges for Future Research

The aim of this study was to: a) explore the relationship between perceived instructors' verbal aggressiveness, argumentativeness and motivational climate in physical education classes, b) investigate the influence of instructors' argumentativeness and motivational climate on their use of verbal aggressiveness, c) examine differences in verbal aggressiveness, argumentativeness and motivational climate between schools' region and students' school level (primary, secondary and high schools), as well as between gender and class, d) explore differences in verbal aggressiveness and argumentativeness between gender and class, using motivational climate as covariate, e) investigate differences in argumentativeness and motivational climate between low verbal aggressiveness, moderate and high verbal aggressiveness, f) research the differences in performance climate between low, moderate and high verbal aggressiveness using argumentativeness as covariate.

The results of the study indicated that perceived instructors' verbal aggressiveness was positively related to performance climate, while was negatively related to argumentativeness and mastery climate. Furthermore, instructors' argumentativeness was positively related to mastery climate, while was negatively related to performance climate. Finally, there was a negative relationship between mastery climate and performance climate. The findings of the present study are in accordance with these of previous research indicating that instructors' verbal aggressiveness was negatively related to argumentativeness (Bekiari, 2017a; Infante & Rancer, 1996; Sympas & Bekiari, 2015). Furthermore, previous studies (Bekiari, 2016; Bekiari & Sympas, 2015), argued that there is a positive relationship between verbal aggressiveness and performance climate, as well as a negative one with mastery climate. As it is also verified by Infante and Rancer (1996) verbal aggressiveness is attacking the interlocutor's personality while argumentativeness focuses on the statements about an issue, then arguably argu-

mentativeness is positively related to mastery climate and negatively to performance climate. It is showed that verbally aggressive instructors may not have the ability to use arguments and they adopt a motivational climate focused on performance but not individual growth, whilst argumentative instructors promote thinking, effort, self-confidence and learning (Bekiari, 2016; Bekiari, 2012; 2014; Bekiari & Hasanagas, 2015; Bekiari & Syrmipas, 2015; Bekiari, Perkios, & Gero-dimos, 2015; Hamilton & Hample, 2011; Hasanagas & Bekiari, 2015; Hassandra, Bekiari, & Sakellariou, 2007; Manoli & Bekiari, 2015; Myers, 2002; Myers & Rocca, 2001; Syrmipas & Bekiari, 2015).

In this study it was, also, revealed that instructors' verbal aggressiveness was influenced by their use of argumentativeness and the created motivational climate. The trait of argumentativeness emerged as the most important negative predictor of verbal aggressiveness, while motivational climate contribute the least to that predictor. Low skills on argumentativeness lead to inadequacy in debating, consequently the immediate reaction of such an instructor is to attack verbally to students (Infante et al., 1984). Moreover, a reasonable explanation of this finding could be the fact that the created classroom environment induces the adoption of a specific behavior by the instructor. For instance in physical education context, efficacy and accomplishments consist prevalent goals, hence instructors conduce to apply a verbally aggressive behavior due to tensity heightened by such conditions.

The findings of this research suggest that secondary and primary school students perceive their instructors as more verbal aggressive compared to high school students who perceive them as more argumentative and less verbal aggressive. These results parallel Roach's (1992) research. A reasonable explanation for this finding could be the fact that students in high schools are more mature and are more capable of getting in a productive conversation with their instructors by using arguments. On the other hand in primary and secondary schools, instructors' approach is considered verbally aggressive because students at those ages are quite intractable, less cooperative and less compliant, hence instructors are endeavoring to reinstate discipline through verbal aggressiveness, and also the lessons' concept are more knowledge-based, thus instructors may be less inclined to argumentativeness. In addition, younger students have not the abilities to debate through arguments, hence argumentativeness is not promoted as a learning activity, contrary to students from higher grade level. Furthermore, primary school students ranked their instructors higher in mastery climate, compared to high school students. Also, performance climate was presented at a higher level in primary schools, compared to secondary and high schools, where the latest reported the lower level on performance climate, findings consistent with the research of Theodosiou, Mantis, and Papaioannou (2008). Moreover, high scores both of mastery and performance climate are revealed in primary schools and this finding is in accordance with Deliligka, Syrmipas, and Bekiari (2018) where it was found that both conditions of motivational climate can be

derived in a PE lesson as instructors in some cases tend to create a mastery climate, while they point out students' performance in other circumstances. In addition, Taking into consideration that instructors in primary schools tend to use traditional competitive games (Konstantinidou, Michalopoulou, Aggelousis, & Kourtesis, 2011) it can be assumed that may foster students' perception of performance climate in PE lesson. Furthermore, urban schools presented higher levels on verbal aggressiveness and performance climate, while rural schools the lower. Also, concerning argumentativeness and mastery climate rural schools revealed the higher scores and the urban the lower. This finding may be interpreted by the fact that in urban areas the students are numerous and the relationship between them and their instructors is more impersonal, consequently instructors' verbal aggressiveness is enhanced in order to be imposed on their students. Furthermore, in urban areas competition is heightened because of peers', parents', other schools' pressure and the demands are increased as well, so there is an emphasis on performance and exceeding others. Whereas, in rural areas such tension is eliminated due to diverse conditions, so the goals are emphasized effectively and are directed through discussion and stating opinions, cooperative learning and effort. Moreover, primary schools on urban areas and secondary schools on semi-urban, as well as on rural regions revealed higher scores on verbal aggressiveness. As far as argumentativeness is concerned, higher scores on urban and semi-urban were presented by high schools, while primary schools on rural regions showed the higher score. Furthermore, mastery climate on high and secondary schools from urban areas revealed the higher score compared to primary schools, and high schools on semi-urban regions showed higher score than primary and then secondary schools. Finally, concerning perceived performance climate, on urban regions' primary schools higher score was revealed than secondary, and then high schools as well as primary schools from semi-urban and rural areas presented the higher score than the other school levels. In similar direction the findings of Bekiari (2014), Bekiari, Kokaridas, and Sakellariou (2006), Bekiari and Petanidis (2016) have revealed that students from suburban and rural areas presented great effort and interest, while students from urban areas had stress, pressure, lack of interest during the course of physical education.

The results of this study indicated no differences on verbal aggressiveness, argumentativeness and motivational climate between students' gender. This finding is in accordance with the research of Bekiari and Balla (2017), Bekiari, Digelidis, and Sakellariou (2006), Theodosiou, Mantis, and Papaioannou (2008). However, the finding in this specific case is in contrast with Bekiari (2014), Bekiari (2017b), Bekiari et al. (2015), Bekiari and Petanidis (2016), Bekiari and Syrmipas (2015), Infante and Gorden (1989). Furthermore, 9<sup>th</sup> grade proved to have higher score in verbal aggressiveness, 7<sup>th</sup> grade in argumentativeness and mastery climate. Finally, students from 6<sup>th</sup> grade perceived that their instructors created performance climate in higher levels and relational findings have been

mentioned in other studies as well (Bekiari & Tsiana, 2016; Bekiari & Pylarinou, 2017).

Results of the multivariate analysis of covariance showed that mastery and performance climate significantly contributed to the explanation of those differences, confirming the general assumption that there is a relation between the learning environmental factors and perceived instructors' behavior. This was also highlighted from correlation analysis where all variables demonstrated significant relations. As Treasure and Roberts (1995) indicated, the preponderant mastery or performance climate affects directly behavioral characteristics, which get in alignment with the prevalent motivational climate. Interestingly, it can be justified that through motivational climate created in PE lessons, instructors' authority role is emphasized. Consequently, the goals of a mastery climate may promote a communicative and argumentative instructor. On the other hand, in a performance climate the instructors' behavior can be interpreted as aggressive, because verbally aggressive individuals are considered less responsive (Martin & Anderson, 1996; Myers, 1998), less cognitively and communicatively flexible (Martin, Anderson, & Thweatt, 1998), and less likely to engage in verbal praise (Wigley, Pohl, & Watt, 1989), thus causing negative effects on students' affective learning. These findings not only corroborate the claims advanced by Wrench and Punyanunt-Carter (2005), but support the growing amount of research that demonstrates how verbal aggressiveness has a negative impact on the learning environment.

The findings of this study reveal that differences exist between the levels of verbal aggressiveness, concerning argumentativeness and motivational climate. Particularly, students reported that instructors who use low level of verbal aggressiveness proved to have higher score in argumentativeness and mastery climate. Also, high level of verbal aggressiveness was presented in performance climate. Aggressive communicational traits such as verbal aggressiveness and argumentativeness, coincide on a person's behavior as has been verified in other studies as well (Edwards & Myers, 2007; Infante et al., 1984; Infante et al., 1994; Infante & Rancer, 1993; Kim & Yang, 2013; Myers, 2002). Similarly, the findings of previous studies suggested that there are five communicational PE teachers' profiles and more precisely, "high argumentativeness-low verbal aggressiveness", "moderate argumentativeness and verbal aggressiveness", "moderate argumentativeness-low verbal aggressiveness", "low argumentativeness-high verbal aggressiveness", "low argumentativeness-moderate verbal aggressiveness" (Deliligka et al., 2017; Infante & Rancer, 1982; 1996). According to the profiles when instructors are capable of arguing, they are less likely to expose a verbally aggressive behavior (Bekiari, 2016; Infante et al., 1984; Infante & Rancer, 1996; Syrm-pas & Bekiari, 2015). Moreover, it can be concluded that instructors' usage of verbal aggressiveness, does not lead to mastery motivational climate and also the outcome is negative for their students (Martin, Rocca, Cayanus, & Weber, 2009). Taking under consideration that verbal aggressiveness attacks the interlocutor's

self-perception (Infante & Wingley, 1986), it is expected that students do not have positive feelings about the created motivational climate (Bekiari, 2012). As results from previous study has shown, verbal aggressiveness leads to an increased anxiety and is strictly related to autocratic style of teaching (Bekiari, 2014).

Finally, in this study it was revealed the role of argumentativeness in PE class, as it was found to be a significant covariate of verbal aggressiveness on performance climate. Interestingly, students' perceptions and affective learning reflections confirm the assertions that high argumentative are more task oriented and socially experienced (Infante, 1981; Onyekwere, Rubin, & Infante, 1991; Roach, 1995). The positive outcomes derived from instructors' argumentative behavior are numerous. It contributes to the accomplishment of students' personal goals, heightened cognitive motivation, promoting the learning process, and improved interpersonal relations at class level, as instructors facilitate students by arguing (Infante & Rancer, 1996; Myers, 1998; Myers, 2002; Rancer & Infante, 1985).

There are a few limitations that should be mentioned in this research. First and foremost, participants belonged to a restricted area and so students from a wider spread of regions in Greece should be recruited in a similar future study in order to increase findings' generalization. Furthermore, a more balanced sampling between urban, semi-urban and rural participants could take place. Another aspect is the fact that relations and influences are predominant in the results and causality is not directly supported. In addition, other factors have not been taken into account, such as possible students' and instructors' cultural differences and instructors' teaching experience. Implications for further research could lead to in depth interviews with students in order to add any additional influential factors and to evaluate the results from a qualitative approach. Moreover, peer and parents influence could be included in motivational climate. Finally, there is limited research of social network analysis in the field of argumentativeness and motivational climate.

## 5. Conclusion

The present study concludes that verbal aggressiveness consists a destructive communicational trait, while argumentativeness is a constructive one as has been proved to various previous studies as well (Avtgis et al., 2008; Infante, 1988; Infante & Rancer, 1996; Martin & Myers, 2006; Rancer & Avtgis, 2014). Students' perceptions about verbal aggressiveness as an improper classroom behavior, justify the fact that they pay attention to classroom environment's relevance for the performance climate. As had been confirmed, verbal aggressiveness was positively related to performance climate, whereas argumentativeness was positively related to mastery climate. Additionally, the preponderant mastery or performance climate affects directly behavioral characteristics. The results provided valuable knowledge, so that instructors who teach lower grades and in urban areas should tend to be more argumentative and create a mastery climate.

The findings of the study arouse an awareness of the relations among instructors' aggressive behavior and motivational climate. Specifically, the afore-mentioned results can effectively incite introspective reflection, in order for instructors to maintain positive adaptive behavior and a supportive learning environment, because the majority of them may be unaware of the communication they are engaging in during class. If they can become more aware of these behaviors and the perceptions they are creating in the students' minds, then positive outcomes will be enhanced in the learning process.

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