Master thesis

Title:
Aggressiveness networks at school classes: Dynamic analysis and comparison of structures

Δίκτυα επιθετικότητας σε σχολικές τάξεις: Δυναμική (διαχρονική) ανάλυση και σύγκριση δομών

Aikaterini Vasilou

SUPERVISOR: Prof. Athanasios Kallimanis, Professor A.U.Th.

Thessaloniki, September 2020
Master thesis

Title:

Aggressiveness networks at school classes: Dynamic analysis and comparison of structures

Δίκτυα επιθετικότητας σε σχολικές τάξεις: Δυναμική (διαχρονική) ανάλυση και σύγκριση δομών

Aikaterini Vasilou

SUPERVISOR: Prof. Athanasios Kallimanis, Professor A.U.Th.

Approved by the Three-Member Examination Committee on September 1, 2020.

A. Kallimanis
Professor
Aristotle University of
Thessaloniki

E. Papadopoulou
Professor
Aristotle University of
Thessaloniki

Dr N. Hasanagas
Aristotle University of
Thessaloniki

Thessaloniki, September 2020
Acknowledgement: I thank my supervisor Prof A. Kallimanis, Prof E. Papadopoulou and Dr N. Hasanagas for the creative comments and their interest in the improvement of this thesis. I am also grateful to the school instructors and to the students who collaborated in this research project.
## Content

Abstract.................................................................................................................. 6  
Περίληψη............................................................................................................. 8  
1. Introduction.................................................................................................................. 10  
   1.1 Literature review....................................................................................................... 10  
      1.1.1 The general phenomenon of aggressiveness.................................................. 10  
      1.1.2 Aggressiveness in education environment..................................................... 11  
      1.1.3 Verbal aggressiveness networks................................................................. 16  
   1.2 The expected innovation of the study...................................................................... 18  
2. Method....................................................................................................................... 19  
   2.1 Sample.................................................................................................................. 19  
   2.2 Questionnaire....................................................................................................... 20  
   2.3 Statistical analysis............................................................................................... 20  
3. Results...................................................................................................................... 22  
   3.1 Anatomy of verbal aggressiveness......................................................................... 22  
   3.2 Visualization of verbal aggressiveness hierarchies............................................. 30  
   3.3 Synergies of verbal aggressiveness dimensions............................................... 34  
   3.4 Hierarchy-specific typology of verbal aggressiveness....................................... 39  
4. Discussion................................................................................................................ 41  
5. Conclusion................................................................................................................. 48  
References................................................................................................................. 50  
Annex......................................................................................................................... 64
Abstract

The aim of this research is to analyze diachronic evolvements of verbal aggressiveness, to examine the relations among different dimensions of aggressive behaviors (rudeness, offense, mockery, irony) and to depict distinct types of aggressive behaviors comparing the results of indegree (occasional hierarchy) with those of katz (accumulative hierarchy). Various parameters of indegree and katz centrality have been measured for these purposes (maximal and minimal values, average, density, oligarchy, monopoly). Standardized questionnaires containing network variables applied on 12 classes (networks) (from the 5th class of primary school to the 3rd class of high school) totally consisting of 246 nodes (127 male, 119 female). The software Visone (for network analysis) and SPSS (for Spearman test and Principal Component Analysis-PCA) were used. Selected results: The students seem to start a new life cycle of verbal aggressiveness from the early secondary school age until the late high school age, where they start seriously worrying about their future (entering university or working) and they abandon provoking each other. Mockery seems to be the most varying and also oligarchized dimension of verbal aggressiveness as it can be started and abandoned without further implications, because it can be perceived both as devaluing action and as painless kidding. Irony is the dimension of verbal aggression which is maximized in the 3rd class of high school as it needs experience or intellectual skills. The rest dimensions (rudeness and offense) seem to be not strongly differentiated through the age. Moreover, in the late adolescence (high school) students tend to seek dominance not in behavioral arenas where it is relatively easy to arrogate and concentrate the links of aggressive actions, but in more antagonistic behavioral forms (irony) necessitating supposedly a settled system of challenging values such as mental and intellectual readiness. In general, students tend to abandon verbal aggressiveness in the course of time. Diachronically the occasional hierarchy (indegree) of verbal aggressiveness may be slightly differentiated while accumulative hierarchy (katz) remains unchanged which indicates a stability of idiosyncrasy. In the occasional (indegree) verbal aggressiveness patterns, the offense seems to be complemented with irony or balanced with mockery. As for the accumulative patterns (katz) of verbal aggressiveness, irony, rudeness and offense appear to shape a more cohesive
behavioral core but without any regular involvement of mockery. Maximal verbal aggressors try to achieve a wide synergy of all dimensions of aggressiveness both in occasional and in accumulative hierarchies while the minimal ones are more inhibited or selective. The “distinguished” type either in indegree or katz tends to maximally and extensively exert and monopolize verbal aggression. The “selective” type uses rudeness as a core combined with irony and offense occasionally or accumulatively, respectively. A “reserved” type tends to be restrained at minimal level using mockery.

**Keywords:** rudeness, mockery, offense, irony, school networks, structures, typology
Περίληψη

Ο στόχος αυτής της έρευνας είναι να αναλύσει τη διαχρονική εξέλιξη της λεκτικής επιθετικότητας, τις σχέσεις μεταξύ επιμέρους διαστάσεων αυτής (αγένεια, προσβολή, εμπαιγμός, ειρωνεία) και να απεικονίσει τύπους επιθετικών συμπεριφορών συγκρίνοντας τα αποτελέσματα του indegree (περιστασιακή ιεραρχία) με αυτά του katz (σωρευτική ιεραρχία). Παράμετροι της κεντρικότητας indegree και της κεντρικότητας katz υπολογίστηκαν για το σκοπό αυτό (μέγιστες και ελάχιστες τιμές, μέσος όρος, πυκνότητα, ολιγαρχία, μονοπώλιο). Τυποποιημένα δικτυακά ερωτηματολόγια εφαρμόστηκαν σε 12 τάξεις (5η δημοτικού έως 3η γυμνάσιου), οι οποίες αναλύθηκαν ως δίκτυα και αποτελούνταν συνολικά από 246 κόμβους (127 άνδρες, 119 γυναίκες). Χρησιμοποιήθηκαν το λογισμικό Visone (για ανάλυση δικτύων) και SPSS (για έλεγξη Spearman και Ανάλυση κυρίων συνιστωσών-PCA). Κυρίοτερα αποτελέσματα: Οι μαθητές φαίνεται να ξεκινούν έναν νέο κύκλο λεκτικής επιθετικότητας από την πρώιμη δευτεροβάθμια σχολική ηλικία έως την ηλικία του λυκείου, οπότε και αρχίζουν να ανησυχούν σοβαρά για το μέλλον τους (εισαγωγή στο πανεπιστήμιο ή εργασία) και παύουν να επενδύουν χρόνο σε αλληλοπροκλήσεις. Ο εμπαιγμός μπορεί να ξεκινήσει και να εγκαταλείφει χωρίς περαιτέρω επιπτώσεις, αλλά αποτελεί σπουδαίο πολιτικό ελεγχός. Η ειρωνεία είναι η διάσταση της λεκτικής επιθετικότητας που μεγιστοποιείται στην 3η γυμνασίου καθώς χρειάζεται εμπειρία ή πνευματικές δεξιότητες. Οι άλλες διαστάσεις (αγένεια και προσβολή) δεν διαφοροποιούνται έντονα κατά την ωρίμανση. Επιπλέον, οι μαθητές στα τέλη της εφηβείας (γυμνάσιο) τείνουν να αναζητούν κυριαρχία όχι στο κομμάτι της συμπεριφοράς, όπου είναι σχετικά εύκολο να συγκεντρώσουν τους δεσμούς των επιθετικών ενεργειών, αλλά σε πιο ανταγωνιστικές συμπεριφορές (ειρωνεία) που υποτίθεται ότι απαιτούν ένα σταθερό σύστημα από απαιτητικές αξίες όπως η ψυχική και πνευματική ετοιμότητα. Γενικά, οι μαθητές τείνουν να εγκαταλείπουν τη λεκτική επιθετικότητα στην περιοχή του χρόνου. Διαχρονικά, η περιστασιακή ιεραρχία (indegree) του λεκτικού επιθετικού μπορεί να διαφοροποιηθεί ελαφρά, ενώ είναι η σωρευτική ιεραρχία (katz) που μεταβλητής ομοιόμορφη, κάτι που δείχνει σταθερότητα στην ιδιοσυγκρασία. Στα μοτίβα της περιστασιακής (indegree) λεκτικής επιθετικότητας, η προσβολή φαίνεται να συμπληρώνεται με ειρωνεία ή να ισορροπείται με εμπαιγμό. Όσον αφορά τα σωρευτικά μοτίβα (katz) της λεκτικής επιθετικότητας, η
ειρωνεία, η αγένεια και η προσβολή φαίνεται να διαμορφώνουν περισσότερο συνεκτικό συμπεριφορικό πυρήνα, αλλά χωρίς τακτική συμμετοχή του εμπαιγμού. Οι άκρως λεκτικά επιθετικοί προσπαθούν να επιτύχουν μια ευρεία συνέργεια όλων των διαστάσεων επιθετικότητας τόσο σε περιστασιακές όσο και σε συσσωρευμένες ιεραρχίες, ενώ οι ελάχιστα επιθετικοί είναι πιο ανασταλτικοί ή εκλεκτικοί. Ο «διακεκριμένος» τύπος τείνει τόσο στο indegree όσο και στο katz να μεγιστοποιήσει και να ασκεί μονοπωλιακή λεκτική επίθεση. Ο «επιλεκτικός» τύπος χρησιμοποιεί την αγένεια ως πυρήνα σε συνδυασμό με την ειρωνεία και προσβάλλει περιστασιακά ή σωρευτικά, αντίστοιχα. Ένας «επιφυλακτικός» τύπος τείνει να συγκρατείται σε ελάχιστο επίπεδο χρησιμοποιώντας εμπαιγμό.

Λέξεις-κλειδιά: αγένεια, εμπαιγμός, προσβολή, ειρωνεία, σχολικά δίκτυα, δομές, τυπολογία
1. Introduction

1.1 Literature review

1.1.1 The general phenomenon of aggressiveness

Aggression is one of the most figurative issues afflicting modern society (Busching & Krahé, 2018; Bushman et al., 2016; Jung, Busching & Krahé, 2019; Santos et al., 2019). Aggression also appears in communication (Bekiari & Hasanagas, 2016; Coyne et al., 2019). Verbal aggressiveness emerges as a distinct form of aggressiveness and can be defined as a person’s inclination to attack the interlocutor’s self-awareness (Infante & Wigley, 1986; Infante & Rancer, 1996). Verbal aggressiveness may co-exist with or evolve in physical aggression (Mumford et al., 2019). Myers, Brann, and Martin (2013) have identified nine types of verbally aggressive communication used in educational context: competence attacks, work ethic attacks, swearing, threats, character attacks, nonverbal behaviours, teasing, background attacks, and physical appearance attacks. Theocharis, Bekiari, and Koustelios (2017) proposed further distinct types of verbal aggressiveness depending on the combination of the behavioral forms used (teasing, mocking, etc.). Synoptically, aggressive behaviour is defined as a behaviour aiming to harm others who do not want to be harmed (Bushman et al., 2016) and it consists of two different forms: a) physical aggression which aims at harm using or threatening physical force and b) relational aggression that intends to harm through damage and manipulation of the social relationships (Crick, Ostrov, & Werner, 2006). These two forms may co-occur as both are characterized by the underlying motivation to harm (Krahé & Busching, 2014).

Verbal aggressiveness is a person’s inclination to attack the interlocutor’s self-perception (Infante & Wigley, 1986). Many types of verbally aggressive communication have been identified: competence attacks, work ethic attacks, swearing, threats, character attacks, nonverbal behaviours, teasing, background attacks, and physical appearance attacks (Rancer & Avtgis, 2006; Avtgis & Rancer, 2010; Myers, Brann & Martin, 2013). Those making use of verbally aggressive messages mostly consider their behaviour reasonable and even justifiable (Infante, Bruning, & Martin, 1994; Martin, Anderson & Hovarth, 1996). Four main reasons of verbal aggressiveness
were identified by Infante and Rancer (1996): psychopathology, contempt, social learning and argumentative deficiency, while other studies indicate the interactive character of verbal aggressiveness, suggesting that verbal aggressiveness arises in a certain context, under certain conditions which interact with one’s personality traits (Infante, 1995).

1.1.2 Aggressiveness in education environment

Verbal aggressiveness has negative effects on self-confidence and gives rise to the appearance of anxiety in education (Bekiari et al., 2006; Crick, Ostrov, & Werner, 2006; Jung et al., 2018; Khurana et al., 2019; Miller & Tolan, 2019; Nelson & Evans-Stout, 2019; Rohlf, Krahé, & Busching, 2016; Quan et al., 2019). Verbal aggressiveness was examined in sports context through a contrast of team sport coaches’ behaviour, in terms of communication in classroom (Bekiari, Digelidis, & Sakellariou, 2006). Verbal aggressiveness appears to affect students’ intrinsic motivation, lesson satisfaction and discipline (Bekiari, Kokaridas, & Sakellariou, 2005; 2006; Syrmpas & Bekiari, 2018) as well as students’ perception of the course satisfaction and their behaviour towards the instructor (Bekiari, 2012).

Several studies indicated a positive significant relationship that verbal aggressiveness has with external regulation and amotivation (Bekiari, Perkos, & Gerodimos, 2015), and the detrimental effects of instructors’ verbal aggressiveness on students’ task and ego orientation as well as discipline (Kokaridas, Bekiari, & Sakellariou, 2005). Besides the aforementioned insightful research of Infante and Wingley (1986) or Infante and Rancer (1996) and Myers et al. (2013) who have focused on definitions and descriptive typologies in USA environment, Bekiari, Deliligka, and Koustelios (2017) tried to pass from the descriptive in explanatory approaches in European environment through quantitative analysis of the determinants of motivation and verbal aggressiveness as well as the latter’s relation to bullying, interpersonal attraction, socio-communicative style and machiavellian tactics (Bekiari & Pachi, 2017; Bekiari, 2016; 2017). Moreover, aggressive communication parameters were examined in Deliligka, Bekiari, and Syrmpas (2017) reveal in connection of motivation climate with verbal aggressiveness and argumentation. Additionally, Bekiari and Petanidis (2016) investigated the relationship between verbal aggressiveness, interpersonal attraction and intrinsic
motivation in physical education context, suggesting distinct types of relations between student and instructors (Bekiari & Spyropoulou, 2016). Verbal aggressiveness was also examined in relation to argumentativeness from both the viewpoint of students and teachers, indicating that the lack of argument enhances the presence of verbal aggression (Bekiari, Nikolaidou, & Hasanagas, 2017).

Age has been studied as a factor affecting the levels of verbal aggressiveness (Zsolnai et al., 2009; Englert et al., 2011; Zsolnai et al., 2012) which reaches its peak during adolescence. Sex was studied as another factor for the emergence of verbal aggressiveness, with male appearing more verbally aggressive than female (Nicotera & Rancer, 1994; Johnson et al., 2007; Jordan-Jackson et al., 2008). Verbal aggressiveness has been studied in the context of multicultural communication, indicating differences between cultures (Sanders et al., 1992; Bresnahan et al., 2002; Santibáñez & Hample, 2015; Pratama & Ertina, 2019) and that local culture may explain different forms of communication behaviour (Fishman, 1965).

Detrimental effects are mentioned for those experiencing verbal aggressiveness (Infante, 1995; Aloia & Solomon, 2016; Samp, 2016) and it may lead to the emergence of physical violence as well (Infante, Sabourin et al., 1990; Sabourin et al., 1993; Schumacher & Leonard, 2005). Verbal aggressiveness may affect one’s reliability especially when their role is based on the efficient use of argumentativeness (Infante et al., 1992; Wrench & Punyanunt-Carte, 2005). It negatively affects interpersonal relations (Segrin & Fitzpatrick, 1992; Rancer & Avtgis, 2006) and is negatively related to interpersonal attractiveness (Syrmpas & Bekiari, 2015; Bekiari & Spyropoulou, 2016).

Family and marriage have long been fields to examine verbal aggression and its effects. An argumentative spouse is more likely to be accepted and cause higher levels of satisfaction to their partner (Rancer et al., 1986). Hample and Cionea (2016) suggest that partners’ argument orientation determines the level of satisfaction of long-term relationships and marriages. Low levels of verbal aggressiveness increase the levels of satisfaction in married couples (Payne & Sabourin, 1990). Lack of time for discussion has been positively related to the emergence of domestic violence (Laheeem, 2016). Verbal aggression in current romantic relations may be mediated by a history of family verbal aggression (Aloia, 2018), while the latter can be positively related to negative
relational effects as well (Aloia & Worley, 2019). Verbal aggression has been mentioned as the first stage before the slow emergence of abuse in military marriages (Kern, 2017) confirming the argumentative deficiency skill model (Infante et al., 1989) that suggests a close-knit relationship between anger, verbal aggressiveness and physical violence.

Assertive and low in verbal aggressiveness form of communication can establish a constructive communication relationship between parents and children (Infante, 2000). Autocratic parents, who rarely use logical arguments and do not encourage the verbal expression of their children, are less argumentative and more verbally aggressive (Bayer & Cegala, 1992). The quality of communication between parents and children determined by a low degree of verbal aggressiveness use can predict the healthy development of children (Appel et al., 2014). Parents’ previous physical aggression can predict their resorting to verbal aggression (Margolin & Baucom, 2014) and even mixed use of verbal aggression and affection by the same parent cannot counterbalance the negative effects that verbal aggression has (Polcari et al., 2014). Parents implementing harsh verbal discipline negatively affect the development of their children behaviorally and emotionally (Wang & Kenny, 2014). Kiewitz et al. (2012) state the potential relationship between exposure to family undermining and abusive supervisory behaviour later in life. Verbal abuse was a more predicting factor of conduct problems than corporal punishment (Evans et al., 2012). Applying shaming/disappointment, erratic emotional behavior, and love withdrawal as dimensions of psychological control is most likely to associate with physical rather than relational aggression to children (Nelson et al., 2013).

Many studies have been conducted to examine the effects of verbal aggressiveness in the workplace. Workplace aggression may be defined as behaviour within a work-related context that aims to harm workers physically or psychologically (Schat & Kelloway, 2005). Infante and Gorden (1991) state that, in fact, one of the most crucial factors that affects communication in a workplace is verbal aggressiveness. Managers’ verbal aggressiveness is negatively related to the employees’ satisfaction and dedication to a company, while low levels of managers’ verbal aggressiveness confirms employees’ self-perception (Gorden et al., 1988; Martin & Anderson, 1996; 1997; Madlock & Kennedy-Lightsey, 2010; Madlock & Dillow, 2012). Abusive
supervision is correlated to negative climate in the workplace and deviant relationships developed in the work context or even the appearance of organization-based aggressiveness (Michel et al., 2016). Verbally aggressive employees, even those who manifest verbal aggressiveness indirectly, familiarize less with co-workers and display difficulties in role negotiations (Sollitto & Cranmer, 2015). Disagreements in the workplace characterized by high levels of verbal aggressiveness have disastrous effects (Infante et al., 1994) with verbal aggression directly increasing the employee turnover intention (Song et al., 2015). Employees appreciate managers who respect their self-perception (Gorden & Infante, 1987) and this makes the role of argumentativeness and constructive communication in the workplace obvious. Managers with argumentativeness ability have been positively confronted by employees (Gorden et al., 1988) on the contrary to those with low levels of argumentativeness (Infante & Gorden, 1991; Lybarger et al., 2017; Cole & McCroskey, 2003; MoleroJurado et al., 2018; Teven, 2007).

Studies have identified ample use of verbal aggressiveness in educational contexts (Bekiari et al., 2006) stating mainly the negative effects it has on the self-confidence and the appearance of anxiety in students. Teachers may offend students’ character, skills, background and / or physical appearance (Rocca, 2002; Myers et al., 2013). Teachers’ verbal aggressiveness may affect students’ lesson attendance and interaction in classroom (Rocca, 2002, 2004). Verbal aggressiveness does not seem to provide a suitable learning environment that can contribute to students’ personal development (Bekiari, 2012). Such a context does not motivate students (Bekiari & Sakellariou, 2003) who lose interest in the lesson and concentrate less on the learning process (Bekiari, 2014; Bekiari & Syrmpas, 2015; Manoli & Bekiari, 2015; Snyder et al., 2017).

Teachers’ verbal aggressiveness can lead to unattractive communicative relationships with students (Avtgis & Rancer, 2008; Myers & Knox, 1999; Myers & Rocca, 2000; Rancer & Avtgis, 2006). This is attributed to the fact that ideas’ exchange is not encouraged in such a defensive classroom affect (Myers & Rocca, 2001) and that verbal aggressiveness in classroom directly affects motivation levels and lesson-related stress (Lin et al., 2016). Students’ perception about their instructors is affected as well (Bekiari, 2012; Bekiari & Tsaggopoulou, 2016; Bekiari & Tsiana, 2016; Syrmpas &
Bekiari, 2015; Wrench & Punyanunt-Carter, 2005) since desire for interaction with teachers and academic commitment are decreased (Myers et al., 2013). Verbally aggressive teachers in universities are considered non-supportive (Mazer & Stowe, 2015) leaving sentiments of dissatisfaction to students (Goodboy, 2011; Madlock & Kennedy-Lightsey, 2010) who may achieve low academic performance (Uludag, 2013), while verbal aggression is related to sentimental burnout as well (Yaratan & Uludag, 2012).

Many other studies focus on the effects of verbal aggressiveness in physical education and sports context. Some of them examined the relationship between the type of sport and the use of verbal aggressiveness, stressing the importance of physical contact in the emergence of the latter (Lemieux et al., 2002). The negative effects of teachers’ verbal aggressiveness on students’ task and ego orientation as well as discipline in physical education classes were identified (Bekiari & Tsiana, 2016). Verbal aggressiveness was examined in sports context through a contrast of basketball and volleyball coaches’ verbal aggression, in terms of communication in classroom (Bekiari, Digelidis, & Sakellariou, 2006), and it appears to affect students’ intrinsic motivation, lesson satisfaction and discipline (Bekiari, Kokaridas, & Sakellariou, 2006) as well as students’ perception of the course satisfaction and their behaviour towards the instructor (Bekiari, 2012). Several studies indicated a significant positive relationship that verbal aggressiveness has with external regulation and amotivation (Bekiari et al., 2015) and the appearance of physical and cognitive stress (Bekiari et al., 2006). There has been a correlation between sports instructors’ verbal aggressiveness and autocratic teaching style and non-democratic class climate (Hassandra et al., 2007; Bekiari, 2014) while Bekiari and Petanidis (2016) investigated the relationship between teachers’ verbal aggressiveness, interpersonal attraction and students’ intrinsic motivation in physical education context, suggesting distinct types of relations between student and instructors. Instructors’ reliability seems to be affected negatively by verbal aggressiveness (Mazer et al., 2013). The issue of instructors’ argumentativeness, socio-communicative style and students’ discipline was also investigated in Bekiari and Pylarinou (2017). Verbal aggressiveness use aims at inflicting the target of attack (Gorden, & Infante, 1987). It is negatively related to positive educational climate, the development of interpersonal relationships and causes the appearance of negative feelings to its victims. Practices that assist the limitation of verbal aggressiveness by
giving prominence to constructive forms of communication seem necessary in order to handle conditions brimming with verbally aggressive interlocutors.

1.1.3 Verbal aggressiveness networks

However, all studies mentioned above were based on the interviewees self-perception disregarding the structural-systemic nature of the verbal aggressiveness. The Source – Message – Channel - Receiver (SMCR) model suggests that communication’s result is the transmission of the message from the source to the receiver (Berlo, 1960; Byron, 2008). Interaction, therefore, is the basis of human existence and the cornerstone of human culture (Stangor, 2004) as it turns an aggregate of people who are in the same location but not meaningfully related to each other, into a social network (Leary, 2010). Thus, social network analysis is a much promising method in the exploration of such behaviours, as it examines behaviours through cross-assessment (Bekiari & Spanou, 2018; Spanou, Bendiari, & Theocharis 2019; Bendiari et al, 2019a,b). Thereby, network analysis enables both the quantification and the visualization of such structures (hierarchies) emerging from behaviors, which are de facto real and not formal ones.

The principal conclusion of research on verbal aggressiveness is that it has negative, destructive and not constructive effects (Bekiari & Hasanagas, 2015) also in communicational arena (Bekiari & Hasanagas, 2016). The relationship between instructors’ verbal aggressiveness, socio-communicative style and students’ machiavellian tactics have been an object of study as well (Bekiari & Spanou, 2018; Spanou & Bendiari, 2020). Verbal aggressiveness was examined in relation to argumentativeness from both the viewpoint of students and teachers, indicating that the lack of argument enhances the presence of verbal aggression (Deliligka et al, 2017).

Verbal aggressiveness in education contexts has been studied in the regard of social network analysis through the examination of verbal aggressiveness networks, the application of centrality algorithms and the detection of correlations in these structures. Bendiari and Hasanagas (2015) studied directed verbal aggressiveness networks of physical education students in University of Thessaly proving that verbal aggressiveness is a destructive communication trait. The study has also suggested five distinct types of verbal aggressiveness victims: a) “general black sheep” who is attacked
almost for every reason b) “contemptible type” who gets others’ irony c) “bagger type” who is attacked due to their background, d) “victim of mockers” who is aimed mainly by degrading comments και e) “victim of serial criticizers” who are the victim of those using verbal aggressiveness in all aspect of their communication. In Bekiari and Hasanagas (2016), through the application of social network analysis, indicators of three different types of aggressiveness (superficial, idiosyncratic and strategic aggressiveness) were suggested. In prison student-inmate social networks, the potential relationship between beaviour to animals and verbal aggressiveness was examined, proving that suppressed feelings may lead to verbally aggressive inmate profiles (Hasanagas et al., 2017). In addition, two types of aggressive behaviour: the “personal attack” which aims at the victim’s personality and the “social exclusion” which equals to the victim’s exclusion from their social surrounding were indicated in the typology suggested by Theocharis and Bekiari (2017).

Bekiari and Spyropoulou (2016) have studied verbal aggressiveness and interpersonal attractiveness networks in university physical education students. In Theocharis et al. (2017) secondary education verbal aggressiveness social networks of students and teachers have been analyzed. Five types of practicing verbal aggressiveness have been identified: a) “the mocker”, making negative comments, b) “the scowler” who excludes their target – victim from the social environment, c) “the insulter” who threat and insult, d) “the teaser” who like teasing and criticizing e) “the ridiculer” who use harsh comments to afflict their opponent. In Theocharis and Bekiari (2018), a dynamic analysis of verbal aggressiveness social networks indicates the gradual increase of verbal aggressiveness in the pass of time. Bekiari, Deliligka & Koustelios (2017) analyzed the determinants of motivation and verbal aggressiveness through network analysis, while aggressive communication parameters were examined in Bekiari et al. (2016). A connection of motivation climate with verbal aggressiveness and argumentation networks was reveled (Bekiari, Deliligka & Hasanagas, 2017; Vasilou, Bekiari & Hasanagas, 2020). Verbal aggressiveness was also examined in correlation to bullying networks (Bekiari, Pachi, & Hasanagas, 2017; Spanou & Bekiari, 2020; Spanou, Bekiari & Hasanagas, 2020). Finally, instructors’ verbal aggression and a positive significant relationship to autocratic teaching style and students’ machiavellianism in physical education university networks was revealed in Bekiari and Spanou (2018).
1.2 The expected innovation of the study

The problem which triggered the current study consists in the diachronic and deeper understanding of verbal aggressiveness as a structural phenomenon using more and multi-faceted network indicators on the basis of a larger sample composed of these of Bekiari and Spyropoulou (2016) and of Bekiari and Spanou (2018) and Bekiari et al. (2019a,b).

Aim of this research is:

i) to analyze the diachronic evolvement of verbal aggressiveness (from the 5th class of primary school to the 3rd class of high school),

ii) to examine possible interrelations among different dimensions of aggressive behaviors, and

iii) to depict distinct types of aggressive behaviors comparing the results of indegree (occasional hierarchy) with these of katz (accumulative hierarchy).

The theoretical added value of the current paper is expected to emerge from comparing the results of indegree and katz centrality regarding parameters such as maximal and minimal values, average, density, oligarchy and monopoly while the expected practical added value lies in the formulation of a behavioral typology which may enable the instructors to recognize possible patterns of susceptibility to aggression.
2. Method

Network analysis is a method based on algebraic formulas indicating structures. Thereby, it is expected to detect and quantify the whole hierarchies (aggressors-victims) shaped by aggressive behaviors. The indicators were calculated by appropriate software (Visone) and normalized (%) and can be interpreted as follows. Formulas are omitted, as they are easily to find in several websites and other sources (e.g. https://en.wikipedia.org/wiki/Social_network_analysis): 1) In-degree (number of first contacted nodes) is interpreted as a position of occasional (and superficial) hierarchy. It is calculated as the percentage of relations (aggressive behaviors) received by a certain node. 2) Katz status (1953) may be perceived as a position not at a superficial level but in an accumulative hierarchy. It is defined as a power series depicting successive relations chains, namely a much deeper-rooted than indegree. Nevertheless, katz does not indicate the direct control intensity (of a certain node on the first contacted nodes). Katz is also expressed as percentage. 3) Maximal value of indegree and katz in every behavioral dimension (rudeness, offense, irony, mockery) was calculated. 4) Similarly, the minimal value and 5) the average of these four dimensions were calculated. 6) Oligarchy is calculated as difference of minimal from maximal value divided by average in indegree and katz. Oligarchy describes the sharpness of the pyramid of hierarchy and thereby the possible concentration of the aggressiveness on few students and it is scaled not as a percentage but from 0 to indefinite. 7) Monopoly is a measure of similar meaning to this of oligarchy and is used in this paper as an indicator auxiliary and complementary to oligarchy. It is calculated as the sum of the squares of the percentages of the indegree and katz in each of the four behavioral dimensions and it is scaled from almost 0 up to 10000. 8) Finally, density of each behavioral form in each class has also been calculated as percentage of the existent links of the total possible links. Density is supposed to indicate the general intensity of aggressiveness.

2.1 Sample

Network sample is de facto a non-random sample. This is not a weakness, as the aim of this paper is not to make descriptive statistics concerning a whole
population, but to provide analytical statistics (namely correlations). A random sample in each class of students could not depict the whole class as a complete network and would make the full detection of structures (hierarchies) among them impossible. Twelve networks were collected from school classes in Trikala region, Central Greece in previous projects (Bekiari & Spyropoulou, 2016; Bekiari et al., 2017) and reprocessed: two 5th classes of primary school (17 and 19 nodes), two 6th classes of primary school (20 and 21 nodes), two 1st classes of secondary school (19 and 24 nodes), two 2nd class of secondary school (17 and 25 nodes), a 3rd class of secondary school (20 nodes), a 1st class of high school (25 nodes), a 2nd class of high school (18 nodes) and a 3rd class of high school (21 nodes). Totally, the sample included 246 nodes (127 male, 119 female). All nodes (students) were familiar as classmates within the same class. They have answered to the researchers who have used standardized questionnaires regarding aggressive behaviors (rudeness, offense, irony, mockery) practiced among them. These questionnaires were not anonymously answered, as the nodes should be recognizable in order to implement complete network analysis. It was emphasized to the students that only the researchers would know the names. So, the students were expected to give sincere answers.

2.2 Questionnaire

The questionnaire contained network variables (for measuring structures of verbal aggressiveness). It was based on questionnaires which were used in previous research (Hasanagas & Bekiari, 2015; 2017; Spanou, Bekiari, & Theoharis, 2020). Ethics, particularly discretion and personal data protection, were observed. Survey permission was received from the Ministry of Education.

2.3 Statistical Analysis

Visone 1.1 has been used for calculating network variables (indegree, katz, density) and excel for calculating minimal and maximal values, average as well as oligarchy and monopoly. Both network and non-network variables were entered in SPSS. Based on normality control (implementing Kolmogorov-Smorinov and Shapiro-Wilk), it was decided to use Spearman test \( p \leq 0.05 (** \text{ and } p \leq 0.01 (*) \)). Moreover, Spearman test was preferred to a multivariate analysis, as this is a non-
parametric one (overcoming the obstacle of possible outliers) and because it offers an overview of all relations. It should be clarified that permutation techniques (ERGM, QAP etc.) examining dependencies of network data detect possible ties and between matched links of different networks (considering the whole networks as variables (not the centralities of the nodes). This is not the case in this paper, where centrality (indegree and katz) values (not ties) were correlated. Furthermore, this analysis does not aim at estimating whether a network comes up from another, but rather whether a student with high indegree tends to be also an accumulative influential node (high Katz). Such relations can only be calculated by conventional statistics (Spearman for the interrelations and PCA for depicting typology), which was already used in multidisciplinary research and the findings seem to be supported by previous research.
3. Results

3.1 Anatomy of verbal aggressiveness

The density and synthesis of aggressive behaviors seem to be strongly differentiated through age (Diag. 1). In the 1st class of secondary school all four dimensions seem to be quite restricted (even more restricted than in the primary school), as the students feel not familiar with the new school environment. Gradually the dimensions tend to be intensified until 2nd class of high school, as the students are more and more familiarized with each other while in the 3rd class of high school their aggressiveness become drastically restricted again due to their occupation with exam preparation for entering university.

*Diagram 1: Densities of verbal aggression networks.*
Indegree max appears mockery until 2nd class of high school as this is the most simplistic approach of devaluing a class mate (Diag. 2). The irony is maximized only in the 3rd class of high school, as this is a rather intellectually challengeable aggressive behavior.

Diagram 2: Maximal values of verbal aggression indegree.
The minimal indegree appears again in mockery in most classes as this is the most flexible aggressive behavior which may easily start and easily stop without further implications (Diag. 3). Mockery may be considered both as aggressiveness and as kidding.

Diagram 3: Minimal values of verbal aggression indegree.
The oligarchy (Diag. 4) is maximized in mockery as this is a relatively easy way out for those who desire to exert verbal aggressiveness. Only in the 3rd class of high school the oligarchy is maximized in irony as it is an intellectual challengeable aggressive behavior, requiring experience and skill.

*Diagram 4: Oligarchization of verbal aggression indegree.*
Monopoly (Diag. 5) is maximized once again in the dimension of mockery in most classes, indicating that this dimension of aggressiveness is an easy solution of devaluing a class mate without great experience or intellectual skills in the part of the aggressor, and without too severe implications.

Diagram 5: Monopolization of verbal aggression indegree.
The katz max (Diag. 6) seems to be maximized in the dimension of mockery, but not as absolute as in the case of indegree. On the one hand, the mockery is an easy option of verbal aggressiveness. On the other hand, the accumulative course of action (expressed by katz indicator) seems to be more complicated and unpredictable than the superficial effect (expressed by indegree).

Diagram 6: Maximal values of verbal aggression katz.
The katz min (Diag. 7) appears to be mostly minimized again in the case of mockery (as it happens in indegree). This could be once again attributed to the fact that the mockery can be abandoned easily (without further implications).

**Diagram 7: Minimal values of verbal aggression katz.**
Due to the simplicity of the mockery, this is the dimension which is mainly concentrated (oligarchized) even in accumulative effect (katz) (Diag. 8). There is actually no differentiation than the oligarchy of indegree. The only exception is the irony in the 3rd class of high school also in katz, as this necessitates more experience and intellectual skills than mockery.

Diagram 8: Oligarchization of verbal aggression katz.
Katz (as indegree) is monopolized also in the dimension of mockery (Diag. 9), due to the easiness of adopting mocking behavior and presenting it either as aggression or as kidding, without further implications.

![Diagram 9: Monopolization of verbal aggression Katz.](image)

### 3.2 Visualization of verbal aggressiveness hierarchies

In figure 1, examples of comparative descriptive results of the four dimensions of verbal aggression networks at the lowest age class (5th class of primary school) are presented. The densest one (density=27,2%) is the irony and the thinnest one (density=16,1%) is mockery. Offense and rudeness are at a middle level (density=23,5% and 20,5%, respectively). The maximal indegree (27,27%) and oligarchy (4,63) appear in mockery while quite low values of maximal indegree and oligarchy occur in offense (indegree=20,28%; oligarchy=3,20) and in irony (indegree=20,27%; oligarchy=3,21). The average oligarchy remains constant (5,88) in all four dimensions of verbal aggression. Additionally, katz presents
similar results. Mockery is again the most concentrative and peaked behavior (oligarchy=4.17) with the maximal occurrence (indegree=24.51%) while the most moderate indegree and oligarchy are depicted in the offense (indegree=17.22%; oligarchy=2.58) and irony (indegree=17.65%; oligarchy=2.67).

<table>
<thead>
<tr>
<th></th>
<th>Offense</th>
<th>Irony</th>
<th>Rudeness</th>
<th>Mockery</th>
</tr>
</thead>
<tbody>
<tr>
<td>(links)</td>
<td>(links=69, nodes=17)</td>
<td>(links=74, nodes=17)</td>
<td>(links=56, nodes=17)</td>
<td>(links=44, nodes=17)</td>
</tr>
<tr>
<td><strong>Density</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>=69/(17*17-17)=23.5%</td>
<td>=74/(17*17-17)=27.2%</td>
<td>=56/(17*17-17)=20.5%</td>
<td>=44/(17*17-17)=16.1%</td>
</tr>
<tr>
<td><strong>Indegree oligarchy</strong></td>
<td>max=20.28, min=1.44, average=5.88</td>
<td>max=20.27, min=1.35, average=5.88</td>
<td>max=23.21, min=1.79, average=5.88</td>
<td>max=27.27, min=0, average=5.88</td>
</tr>
<tr>
<td></td>
<td>=(20.28-1.44)/5.88=3.20</td>
<td>=(20.27-1.35)/5.88=3.21</td>
<td>=(23.21-1.79)/5.88=3.64</td>
<td>=(27.27-0)/5.88=4.63</td>
</tr>
<tr>
<td><strong>Katz oligarchy</strong></td>
<td>max=17.22, min=2.05, average=5.88</td>
<td>max=17.65, min=1.96, average=5.88</td>
<td>max=19.49, min=2.56, average=5.88</td>
<td>max=24.51, min=0, average=5.88</td>
</tr>
<tr>
<td></td>
<td>=(17.22-2.05)/5.88=2.58</td>
<td>=(17.65-1.96)/5.88=2.67</td>
<td>=(19.49-2.56)/5.88=2.88</td>
<td>=(24.51-0)/5.88=4.17</td>
</tr>
</tbody>
</table>

*Figure 1: Example of verbal aggressiveness networks: 5th class of primary school.*
In figure 2, certain comparative network examples of the four dimensions of verbal aggression at a middle age class (2nd class of secondary school) are described. The densest dimension (19.5%) is the offense and the thinnest one (16.2%) is rudeness. Irony and mockery are at a middle level (18.4% and 18.8%, respectively). The maximal indegree (22.73%) and oligarchy (3.87) appear in rudeness while relatively low values of indegree peak and oligarchy occur in the other three dimensions of verbal aggressiveness (maximal values: 16.98%, 18%, 17.65% and oligarchy: 2.89, 3.06 and 3, respectively). The average is constant (5.88) in all four dimensions of verbal aggression. Regarding katz, similar situation occurs. Rudeness is once again a quite concentrative and peaked behavior (oligarchy=3.85) with the maximal occurrence (22.63%), while quite moderate peaks and oligarchy values appear in the rest offense (maximal values: 16.38%, 14.94%, 14.98%) and (oligarchy: 2.79, 2.54, 2.55).

<table>
<thead>
<tr>
<th>Offense</th>
<th>Irony</th>
<th>Rudeness</th>
<th>Mockery</th>
</tr>
</thead>
<tbody>
<tr>
<td>(links=53, nodes=17)</td>
<td>(links=50, nodes=17)</td>
<td>(links=44, nodes=17)</td>
<td>(links=51, nodes=17)</td>
</tr>
</tbody>
</table>

**Density**

<table>
<thead>
<tr>
<th>Offense</th>
<th>Irony</th>
<th>Rudeness</th>
<th>Mockery</th>
</tr>
</thead>
<tbody>
<tr>
<td>=53/(17*17-17)=19.5%</td>
<td>=50/(17*17-17)=18.4%</td>
<td>=44/(17*17-17)=16.2%</td>
<td>=51/(17*17-17)=18.8%</td>
</tr>
</tbody>
</table>

**Indegree oligarchy**

<table>
<thead>
<tr>
<th>Offense</th>
<th>Irony</th>
<th>Rudeness</th>
<th>Mockery</th>
</tr>
</thead>
<tbody>
<tr>
<td>max=16.98, min=0, average=5.88</td>
<td>max=18, min=0, average=5.88</td>
<td>max=22.73, min=0, average=5.88</td>
<td>max=17.65, min=0, average=5.88</td>
</tr>
<tr>
<td>=(16.98-0)/5.88=2.89</td>
<td>=(18-0)/5.88=3.06</td>
<td>=(22.73-0)/5.88=3.87</td>
<td>=(17.65-0)/5.88=3</td>
</tr>
</tbody>
</table>

**Katz oligarchy**
In figure 3, examples of the four dimensions of the verbal aggression at a high age class (3rd class of high school) are described. The densest dimension (19.76%) is irony and the thinner one (7.1%) is mockery. Offense and rudeness are at the middle and low level (12.38% and 9%, respectively). The maximal indegree (16.87%) and oligarchy (3.29) appear in the behavioral arena of irony while relatively low values of indegree peak and oligarchy occur in the other three dimensions of verbal aggressiveness (maximal values: 9.62%, 10.53%, 13.33% and oligarchy: 1.62, 2.21, 2.8, respectively). The average is constant (4.76) in all four dimensions of verbal aggression. Regarding katz, similar situation occurs. Irony is once again a quite concentrative and peaked behavior (oligarchy=3.01) with the maximal occurrence (15.71%) while moderate peaks and oligarchy values appear in the rest offense (maximal values: 9.62%, 10.65%, 11.8% and oligarchy: 1.63, 2.24, 2.48, respectively).

<table>
<thead>
<tr>
<th></th>
<th>Offense (links=52, nodes=21)</th>
<th>Irony (links=83, nodes=21)</th>
<th>Rudeness (links=38, nodes=21)</th>
<th>Mockery (links=30, nodes=21)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>=52/(21*21-21)=12.38%</td>
<td>=83/(21*21-21)=19.76%</td>
<td>=38/(21*21-21)=9%</td>
<td>=30/(21*21-21)=7.1%</td>
</tr>
<tr>
<td>Indegree</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oligarchy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 2: Example of verbal aggressiveness networks: 2nd class of secondary school.**
<table>
<thead>
<tr>
<th></th>
<th>Max</th>
<th>Min</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Katz oligarchy</td>
<td>9.52</td>
<td>1.77</td>
<td>4.76</td>
</tr>
<tr>
<td></td>
<td>15.71</td>
<td>1.39</td>
<td>4.76</td>
</tr>
<tr>
<td></td>
<td>10.65</td>
<td>0.00</td>
<td>4.76</td>
</tr>
<tr>
<td></td>
<td>11.80</td>
<td>0.00</td>
<td>4.76</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Max</th>
<th>Min</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>max=9.62, min=1.92, average=4.76</td>
<td>max=16.87, min=1.2, average=4.76</td>
<td>max=10.53, min=0, average=4.76</td>
<td>max=13.33, min=0, average=4.76</td>
</tr>
</tbody>
</table>

|                        | = (9.62-1.92)/4.76 = 1.62 | = (16.87-1.2)/4.76 = 3.29 | = (10.53-0)/4.76 = 2.21 | = (13.33-0)/4.76 = 2.8 |


**Figure 3**: Example of verbal aggressiveness networks: 3rd class of high school.

### 3.3 Synergies of verbal aggressiveness dimensions

In tables 1a and 1b the evolvement of the verbal aggressiveness through the eight school classes (from the 5th class of primary school to the 3rd class of high school) are presented. The density (table 1a) seems not to vary depending on the age (insign. coefficients). In table 1b, the concentration of verbal aggressiveness indegree (in terms of oligarchy or monopoly) tends to decline (-.609 to -.602) in any dimension of verbal aggressiveness. The maximum of verbal aggressiveness indegree also tends to decrease (-.683 to -.589) in the course of school life in all dimensions. However, the indegree average and the minimum of the aggressiveness remain uninfluenced through the time. Particularly in katz, more parameters
particularly offense monopoly, rudeness max and monopoly- appear to be statistically insignificant (insign. -.560, -.560 and -.567, respectively).

**Table 1a: Evolvement of verbal aggressiveness dimensions densities through time.**

<table>
<thead>
<tr>
<th>Spearman test</th>
<th>Class (5&lt;sup&gt;th&lt;/sup&gt; p.s. to 3&lt;sup&gt;rd&lt;/sup&gt; h.s.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offense</td>
<td>.056</td>
</tr>
<tr>
<td></td>
<td>.862</td>
</tr>
<tr>
<td>Irony</td>
<td>.187</td>
</tr>
<tr>
<td></td>
<td>.561</td>
</tr>
<tr>
<td>Rudeness</td>
<td>.222</td>
</tr>
<tr>
<td></td>
<td>.488</td>
</tr>
<tr>
<td>Mockery</td>
<td>.238</td>
</tr>
<tr>
<td></td>
<td>.456</td>
</tr>
</tbody>
</table>

**Table 1b. Evolvement of verbal aggressiveness through time (parameters of centralities)**

<table>
<thead>
<tr>
<th>Spearman test</th>
<th>Class (5&lt;sup&gt;th&lt;/sup&gt; p.s. to 3&lt;sup&gt;rd&lt;/sup&gt; h.s.)</th>
<th>Indegree</th>
<th>Katz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offense</td>
<td>Max</td>
<td>-.683(*)</td>
<td>-.725(**)</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>.014</td>
<td>.008</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>.366</td>
<td>.134</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.242</td>
<td>.679</td>
</tr>
<tr>
<td></td>
<td>Oligarchy</td>
<td>-.277</td>
<td>-.274</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.384</td>
<td>.388</td>
</tr>
<tr>
<td></td>
<td>Monopoly</td>
<td>-.609(*)</td>
<td>-.595(*)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.036</td>
<td>.041</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.029</td>
<td>.058</td>
</tr>
<tr>
<td>Irony</td>
<td>Max</td>
<td>-.609(*)</td>
<td>-.599(*)</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>.036</td>
<td>.040</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>.028</td>
<td>.122</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.931</td>
<td>.705</td>
</tr>
<tr>
<td></td>
<td>Oligarchy</td>
<td>-.173</td>
<td>-.257</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.590</td>
<td>.421</td>
</tr>
<tr>
<td></td>
<td>Monopoly</td>
<td>-.391</td>
<td>-.405</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.209</td>
<td>.192</td>
</tr>
<tr>
<td>Rudeness</td>
<td>Max</td>
<td>-.602(*)</td>
<td>-.560</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>.038</td>
<td>.058</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>.043</td>
<td>.027</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.894</td>
<td>.932</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-.242</td>
<td>-.296</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.448</td>
<td>.351</td>
</tr>
</tbody>
</table>
**Correlation is significant at the 0.01 level (2-tailed).**
*Correlation is significant at the 0.05 level (2-tailed).*

In table 2 the densities of all dimensions of verbal aggressiveness seem to be interrelated. This indicates a tendency of generalized adoption of aggressive behavior. If irony appears, then rudeness is also expected to appear. The strongest relation appears between rudeness and irony (.909) while the weakest between irony and mockery (.620).

**Table 2: General interrelation of verbal aggressiveness dimensions densities.**

<table>
<thead>
<tr>
<th></th>
<th>Irony</th>
<th>Rudeness</th>
<th>Mockery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offense</td>
<td>.790**</td>
<td>.818**</td>
<td>.792**</td>
</tr>
<tr>
<td></td>
<td>.002</td>
<td>.001</td>
<td>.002</td>
</tr>
<tr>
<td>Irony</td>
<td></td>
<td>.909**</td>
<td>.620(*)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.000</td>
<td>.032</td>
</tr>
<tr>
<td>Rudeness</td>
<td></td>
<td></td>
<td>.774**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>.003</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed).**
*Correlation is significant at the 0.05 level (2-tailed).*

Table 3 depicts a situation similar to that of table 2. However, in case of maximal aggression the strongest relation occurs between mockery and offense both in the case of indegree and katz (.960 and .937 respectively) while the weakest between irony and offense in indegree (.664) and between irony and rudeness (.643) in katz.
Table 3: Interrelation of maximal behaviors of verbal aggressiveness.

<table>
<thead>
<tr>
<th></th>
<th>Indegree</th>
<th>Katz</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Irony</td>
<td>Rudeness</td>
</tr>
<tr>
<td>Offense</td>
<td>.664(∗)</td>
<td>.846(∗∗)</td>
</tr>
<tr>
<td></td>
<td>.018</td>
<td>.001</td>
</tr>
<tr>
<td>Irony</td>
<td>.685(∗)</td>
<td>.718(∗∗)</td>
</tr>
<tr>
<td></td>
<td>.014</td>
<td>.009</td>
</tr>
<tr>
<td>Rudeness</td>
<td>.816(∗∗)</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.000</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed).**
*Correlation is significant at the 0.05 level (2-tailed).

In the case of minimal aggression (table 4), the interrelation is not as holistic as in table 3. In the occasional hierarchies (indegree) only offense seems to be significantly related with irony (.617) and mockery (.583). All other relations (among irony, rudeness and mockery) are insignificant. In the accumulative hierarchies (katz), a more cohesive core of behavioral patterns appears. Irony seems to be complementary to offense (.899), while rudeness appears to enhance offense (.678) and complemented with irony (.583) which makes the behavior (of rudeness) less abrupt. It is noticeable that rudeness is not significantly involved in the behavioral patterns of occasional hierarchies and the mockery is seemingly insignificant to the aggressive behaviors of accumulative hierarchies.

Table 4: Interrelation of minimal behaviors of verbal aggressiveness.

<table>
<thead>
<tr>
<th></th>
<th>Indegree</th>
<th>Katz</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Irony</td>
<td>Rudeness</td>
</tr>
<tr>
<td>Offense</td>
<td>.617(∗)</td>
<td>.431</td>
</tr>
<tr>
<td></td>
<td>.032</td>
<td>.161</td>
</tr>
<tr>
<td>Irony</td>
<td>.404</td>
<td>.419</td>
</tr>
<tr>
<td></td>
<td>.193</td>
<td>.175</td>
</tr>
<tr>
<td>Rudeness</td>
<td>.372</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.234</td>
<td></td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed).**
*Correlation is significant at the 0.05 level (2-tailed).

In contrast to table 4, which presents noticeable differences between occasional (indegree) and accumulative (katz) hierarchy of verbal aggressiveness, table 5 shows a holistic significant interrelation among all aggressive behavior dimensions (from .966 to .996 in indegree and from .986 to 1 in katz). Namely, when the average value of each particular a form of verbal aggression increases, the average of the
other dimensions also increases. Although table 4 presents differentiated coefficients (insignificant and significant ones), table 5 reveals a quite similarly strong relation (.966 and more) among the averages of the aggression dimensions just like the coefficients among all densities (varying from .620 to .909 in table 2).

**Table 5: Interrelation of average verbal aggressiveness.**

<table>
<thead>
<tr>
<th></th>
<th>Indegree</th>
<th>Katz</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Irony</td>
<td>Rudeness</td>
</tr>
<tr>
<td>Offense</td>
<td>.966(**)</td>
<td>.996(**)</td>
</tr>
<tr>
<td></td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>Irony</td>
<td>.974(**)</td>
<td>.966(**)</td>
</tr>
<tr>
<td></td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>Rudeness</td>
<td>.996(**)</td>
<td>.000</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed).**

*Correlation is significant at the 0.05 level (2-tailed).

In table 6, the oligarchies in the occasional hierarchy (indegree) in most dimensions of aggression seem to be quite interrelated, except between rudeness and irony, where there is no significant relation (.538). On the contrary the aggressor who is distinguished in offense, tends also to be distinguished in mockery (.923). The oligarchies in the accumulative hierarchy (katz) are similarly strong as in occasional hierarchy. Additionally, a significant and strong relation appears between rudeness and irony (.776) in the accumulative hierarchy.

**Table 6: Interrelation of oligarchy of verbal aggressiveness.**

<table>
<thead>
<tr>
<th></th>
<th>Indegree</th>
<th>Katz</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Irony</td>
<td>Rudeness</td>
</tr>
<tr>
<td>Offense</td>
<td>.580(*)</td>
<td>.874(**)</td>
</tr>
<tr>
<td></td>
<td>.048</td>
<td>.000</td>
</tr>
<tr>
<td>Irony</td>
<td>.538</td>
<td>.622(*)</td>
</tr>
<tr>
<td></td>
<td>.071</td>
<td>.031</td>
</tr>
<tr>
<td>Rudeness</td>
<td>.881(**)</td>
<td>.000</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed).**

*Correlation is significant at the 0.05 level (2-tailed).

In table 7, the monopoly reveals a more extensive and stronger relation among all dimensions of verbal aggressiveness in the occasional hierarchies (indegree). The strongest coefficient however (.944) appears between rudeness and offense,
indicating that rudeness seems to be perceived as offense in the antagonism of imposition through verbally aggressive behaviors. The weakest coefficient (.727) appears between irony and offense. A similarly slight differentiation (relatively weak coefficient .776) appears between rudeness and irony. In the accumulative hierarchies (katz) stronger coefficients (from .874 to .944) appear than in the occasional ones.

**Table 7: Interrelation of monopoly of verbal aggressiveness.**

|             | Indegree |                | Katz              |                |
|-------------|----------|----------------|-------------------|
|             | Irony    | Rudeness       | Mockery           | Irony          |
| Offense     | .727(**) | .944(**)       | .895(**)          | .874(**)       |
|             | .007     | .000           | .000              | .000           |
| Irony       | .776(**) | .874(**)       | .909(**)          | .888(**)       |
|             | .003     | .000           | .000              | .000           |
| Rudeness    | .923(**) |                |                   |                |
|             | .000     |                |                   |                |

**Correlation is significant at the 0.01 level (2-tailed).**  
*Correlation is significant at the 0.05 level (2-tailed).*

### 3.4 Hierarchy-specific typology of verbal aggressiveness

In table 8, three types of networks are depicted: a) the “distinguished”, b) the “selective” and c) the “reserved”. Each of these types presents two variants: the occasional (indegree) and the accumulative (katz). The occasional variant of “distinguished” is depicted from .943 to .905 and its accumulative variant from .905 to .878, the occasional variant of the “selective” type from .735 to .508 while its accumulative variant from .740 to .393 and the variant of the “reserved” type from .540 to .482 while its accumulative from .648 to .403.

The “distinguished” type tends to maintain a maximal and distinct aggression in all four dimensions (offense, rudeness, irony and mockery), particularly when the density is low and the conditions for oligarchization and monopolization are appropriate. The “selective” type tends to select which of the four behavioral dimensions is appropriate to be maximally or minimally practiced or monopolized under conditions of high average and density and depending on whether the position of the aggressor is occasional or accumulative. The “reserved” type tends
to exert at a minimal level in all oral most all four dimensions, depending on the occasional or the accumulative position of the aggressor.

**Table 8: Typology of verbal aggressiveness.**

<table>
<thead>
<tr>
<th></th>
<th>Type a: The “distinguished”</th>
<th>Type b: The “selective”</th>
<th>Type c: The “reserved”</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indegree</td>
<td>Katz</td>
<td>indegree</td>
</tr>
<tr>
<td><strong>Density</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offense</td>
<td>-.631</td>
<td>-.624</td>
<td>.735</td>
</tr>
<tr>
<td>Irony</td>
<td>-.826</td>
<td>-.796</td>
<td>.413</td>
</tr>
<tr>
<td>Rudeness</td>
<td>-.803</td>
<td>-.785</td>
<td>.494</td>
</tr>
<tr>
<td>Mockery</td>
<td>-.695</td>
<td>-.675</td>
<td>.533</td>
</tr>
<tr>
<td>Offense</td>
<td>.943</td>
<td>.905</td>
<td>.181</td>
</tr>
<tr>
<td>Irony</td>
<td>.562</td>
<td>.807</td>
<td>.561</td>
</tr>
<tr>
<td>Rudeness</td>
<td>.789</td>
<td>.846</td>
<td>.440</td>
</tr>
<tr>
<td>Mockery</td>
<td>.888</td>
<td>.840</td>
<td>.263</td>
</tr>
<tr>
<td>Offense</td>
<td>-.683</td>
<td>-.499</td>
<td>-.118</td>
</tr>
<tr>
<td>Irony</td>
<td>-.575</td>
<td>-.575</td>
<td>.083</td>
</tr>
<tr>
<td>Rudeness</td>
<td>-.673</td>
<td>-.645</td>
<td>.339</td>
</tr>
<tr>
<td>Mockery</td>
<td>-.476</td>
<td>-.516</td>
<td>-.291</td>
</tr>
<tr>
<td>Offense</td>
<td>-.110</td>
<td>.286</td>
<td>.975</td>
</tr>
<tr>
<td>Irony</td>
<td>-.173</td>
<td>-.035</td>
<td>.965</td>
</tr>
<tr>
<td>Rudeness</td>
<td>-.140</td>
<td>-.040</td>
<td>.973</td>
</tr>
<tr>
<td>Mockery</td>
<td>-.106</td>
<td>-.033</td>
<td>.975</td>
</tr>
<tr>
<td>Offense</td>
<td>.948</td>
<td>.950</td>
<td>-.072</td>
</tr>
<tr>
<td>Irony</td>
<td>.823</td>
<td>.769</td>
<td>-.062</td>
</tr>
<tr>
<td>Rudeness</td>
<td>.906</td>
<td>.933</td>
<td>.163</td>
</tr>
<tr>
<td>Mockery</td>
<td>.920</td>
<td>.886</td>
<td>-.021</td>
</tr>
<tr>
<td>Offense</td>
<td>.925</td>
<td>.895</td>
<td>.063</td>
</tr>
<tr>
<td>Irony</td>
<td>.683</td>
<td>.776</td>
<td>.508</td>
</tr>
<tr>
<td>Rudeness</td>
<td>.834</td>
<td>.851</td>
<td>.262</td>
</tr>
<tr>
<td>Mockery</td>
<td>.905</td>
<td>.878</td>
<td>.252</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed).**

*Correlation is significant at the 0.05 level (2-tailed).
4. Discussion

The aim of the present research is to analyze the diachronic evolvement of verbal aggressiveness (from the 5th class of primary school to the 3rd class of high school), to examine the relations among different dimensions of aggressive behaviors and to depict distinct types of aggressive behaviors by comparing the results of indegree (occasional hierarchy) with those of katz (accumulative hierarchy). This comparison which takes place regarding various parameters of indegree and katz centrality such as maximal and minimal values, average, density, oligarchy and monopoly constitute the main academic added value of this research. The formulation of a behavioral typology is the main practical added value. Both the diachronic analysis and the comparison between indegree and katz constitute the main innovation of this research, which have not been carried out in previous research.

In general, the students tend to start a new life cycle of verbal aggressiveness from the early secondary school age until the late high school age, as then they begin to seriously think of their future (studying at higher education or finding a job). Thereby they have no time to provoke each other. Mockery is the most varying and also oligarchized form of verbal aggression as it is an easy solution (starting and stopping without implications, as it can be perceived both as a provoking devaluation and as innocent kidding. Irony is maximized in the 3rd class of high school, because it necessitates experience or intellectual capacity. Rudeness and offense are strongly differentiated through the age. Considering the selected examples of class networks from the lowest, middle and highest age, at the lowest age class, irony appears to be the densest dimension of aggression, as it is a behavior which does not necessitate much courage and often it is not even clearly separated from the friendly humoristic manner. Thus, irony is expected to be the most dominant aggressive behavior. Offense and rudeness are the least dominant dimensions, as they tend to appear only in particular cases of serious conflicts or of strong impulsiveness (in any case, these are not the most usual behavior), which are in accordance with previous findings (Bekiari et al, 2019a,b). As for the oligarchy, an aggressiveness dimension which presents the maximal value is reasonably expected to be the most concentrative one. Simultaneously, an oligarchic behavior also tends to present a
restricted density, as the concentration of links of behavior on few nodes is most possible under conditions of rare networks, where not too many nodes dare to exert such a behavior, and this is compatible with results of previous research (Spanou, Bekiari, & Hasanagas, 2020; Theocharis & Bekiari, 2017). Mockery appears to be the most appropriate field for those students who seek to be most dominant in aggressiveness while the other three dimensions (offense, irony and rudeness) seem to be behavioral arenas which are more difficult to arrogate, which support previous findings (Bekiari, Deliligka, & Hasanagas, 2017). This can reasonably be attributed to the fact that mockery is a dimension of aggressive behavior which is not as mild as irony so as to become sometimes over subtle and not so harsh as rudeness or offense so as to become too risky for a severe conflict. In other words, when the students of this age (late childhood) are interested in seeking dominance, they tend to prefer testing their capacity of imposition in the behavioral arena of mockery, as it constitutes a relatively easy way to claim and simultaneously perceptible and also not risky arena. This seems to be an appropriate behavioral choice in the late childhood, as in this age one has not yet acquired enough self-awareness nor developed enough courage in social interactions.

Regarding the synthesis of verbal aggressiveness in the middle age class (2nd class of secondary school) seems to be quasi differentiated from the synthesis in the lowest age class. Here, not irony, but offense appears to be the densest dimension of aggression, which is not identical but complementary to findings of previous research (Bekiari, Deliligka, & Koustelios, 2017). This could be attributed to the fact that the students at adolescent age class try their capacity of imposition. This antagonism easily leads to offensive behaviors. However, it is remarkable that the rudeness presents the lowest density and thereby tends to be differentiated from rudeness even in a slight degree. In other words, though one could expect the students at this age class to be quite impulsive due to adolescence, they seem to have adopted a behavioral code (value system) which is elaborated enough to enable them to perceptually differentiate “offense” from “rudeness”. If this differentiation would not exist in this age class, then there would possibly not exist any retention of the antagonistic behavior and the offensive actions would be converted in completely unacceptable rudeness. Simultaneously, the behavioral dimension of the lowest density (which is rudeness in this age class) provides a
capacity of greatest concentration of such behavioral links by few students which
tend to be less adaptive to the aforementioned behavioral code and thereby to be
distinct in (or “stigmatized” due to) rudeness. Nevertheless, all four dimensions of
verbal aggressiveness are relatively equally important without too high variance or
differences among each other. This might indicate a tendency of the students at this
age class to equally intensively try all possible dimensions of verbal
aggressiveness. This susceptibility to the greatest possible variety of behavioral try
might be understood as an interest in exploring their own selves and thereby to
develop self-awareness within the school micro-community. This tendency of
individual self-exploration (which in this study can practically be perceived as self-
awareness in the depicted hierarchy of aggressive interactions) is a regular and
well-known characteristic of the early adolescence (Jung et al., 2018). From the
aspect of dominance, rudeness seems to be the preferable arena in the early
adolescence (in contrast to mockery which is the most popular way of dominance
in the late childhood). This can be attributed to the fact that in early adolescence,
students who want to easily dwarf others chose the behavioral arena of rudeness,
as this is a quite noticeable imposing behavior and they have just started to be aware
of all their emotional impulses and courage, being, however, still unaware of the
possible risks and further implications of rudeness (e.g. social exclusion, violence).
Thus, pomposity-oriented students of 2nd class of secondary school tend to be
pompous by being rude.

The synthesis of verbal aggressiveness in the 3rd class of high school (late
adolescence) seems to be quite different from the balanced importance of the four
dimensions appearing in figure 2 (early adolescence) and rather similar to the
synthesis of figure 1 (late childhood, where irony is also the densest aggressive
behavior). In the late adolescence a behavioral “return” to late childhood seems to
take place (after an all-over self-exploration, which has taken place in the early
adolescence). In the late adolescence, students who chose to be aggressive more
roughly than just being ironic, mostly prefer to be offensive (density=12.38%) and
noticeably less rude, showing a clearer differentiation between offense and
rudeness than the differentiation appearing in early adolescence. This indicates a
strengthening of the value system consisting of criteria which discriminate the
acceptable or unacceptable social behavior in the course of time. Mockery seems
to be much less important as aggressive behavior in the late adolescence. This minimal importance of mockery can be attributed to the fact that self-awareness and thereby self-confidence has been enhanced at this age. Thus, one can hardly feel disdained through mockery. Apart from that, mockery can easily be depreciated, as it is not as intellectually challenging form of verbal aggressiveness as irony.

Through the diachronic analysis, most aggressive students seem to abandon verbal aggressiveness in the course of time. Nevertheless, as described, this evolvement is slightly more discernible in the case of occasional (indegree) than in the case of accumulative (katz) hierarchy of verbal aggressiveness. This can reasonably be attributed to the fact that the occasional behavior is more superficial and, thus, can more easily be differentiated in the course of time. On the other hand, it is expectable that the accumulative hierarchy is more stable, as it is shaped not superficially but through chain interactions. In other words, the social order of verbal aggressiveness at the school may be only slightly (and occasionally) differentiated through the age. The accumulative hierarchy (katz) remains diachronically more stable indicating the existence of a deeper-rooted state of verbal aggressiveness. This can be interpreted as a stability of idiosyncrasy in the course of time. In general, totally verbal aggressiveness is maintained within each class and distributed to the other students while the least aggressive ones do not tend to become more aggressive. Thus, verbal aggressiveness is becoming more smoothed and individually balanced, but remains constant at group level through time. The diachronic evolvement can reasonably let conclude that verbal aggressiveness could be regarded as a single and entire behavioral tendency, which appears in different forms (possibly depending on the idiosyncrasy or the situation). As for the relations appearing among irony, mockery and rudeness, these can be understood as a tendency of identical perception of rudeness and irony. These two behavioral patterns seem to impinge the same values or cause similar emotional reactions. On the other hand, mockery seems to differ qualitatively from irony.

Considering the interrelation among the different dimensions of verbal aggressiveness, both in the occasional and the accumulative hierarchy of verbal aggressiveness mockery is involved strongly and the irony relatively weakly. The
strong involvement of mockery can be regarded as an effort of an offender to smooth the conflicting situation with mockery, when necessary for achieving a more effective imposition. As for the involvement of irony, it is weaker as successful and acceptable irony necessitates intellectual sharpness, which is not a skill which everyone possesses. In the occasional (indegree) verbal aggressiveness patterns, the offense seems to be complemented with irony or balanced with mockery, even at lowest level (minimal values) of aggression and not only at the highest level (maximal values). This can be attributed to the fact that superficial (re)actions emerging from accidental incidents (which often take place in occasional context), an ironic comment which might not be clearly distinguished from an intellectual challenge or a mocking behavior not easily distinguishable from acerbic wit, is a simple practice which can mitigate the offense of an occasional aggressor of lowest level who naturally not tactically desire to attack. Such an aggressor avoids a regular enhancing of offense with rudeness. As for the accumulative patterns (katz) of verbal aggressiveness at the lowest level, the cohesive core of irony, rudeness and offense appears to shape a more cohesive behavioral core but without any regular involvement of mockery. This is a reasonable behavioral profile of a deep-rooted aggressor, as one is interested in entrenching one’s position in the accumulative hierarchy of verbal aggressiveness by achieving a synergy among irony, rudeness and offense. Irony is preferable, as this dimension of verbal aggressiveness constitutes an imperative intellectuality making offense and even rudeness nobler or at least not immediately censurable. Simultaneously, one avoids mockery, as this would be regarded as a confusing wit, and especially in case of a lowest level aggressor would severely decrease his capacity of imposition. Comparing the behavioral tactics of maximal and minimal verbal aggressors, it is observable that the former try to achieve a wide synergy of all dimensions of aggressiveness or just to be totally intemperate both in occasional and in accumulative hierarchies while the latter seem to be also qualitatively more inhibited or much more selective in which forms of aggression they should use and combine with its other.

The parallel evolvement of average in all dimensions of verbal aggressiveness indicates that despite the differentiation of behavioral choices of maximal and much more of minimal aggressors, the tendency of all these behavioral forms to increase
(or to decrease) simultaneously as a collective behavior (average level) in a student class is strongly generalized (Infante & Wingley, 1986). Such a generalized tendency of exerting aggression indicates a strong collectivity of aggressiveness and that all four aggressive behavioral dimensions rather tend to enhance or trigger each other than to replace or outbalance each other. For example, if irony appears, then rudeness, mockery or offense should also be expected.

As for the oligarchy, the strong relations among almost all dimensions of aggressive behavior in the occasional hierarchies show that even under conditions of superficial (re)actions almost all dimensions tend to be triggered or produced from each other. Exceptionally, the insignificance between irony and rudeness means that trying to impose through irony and trying to impose through rudeness seem to be two independent ways of aggressive reacting. Thereby, irony and rudeness seem to be of qualitatively different nature. On the other hand, the strong relation between mockery and offense supports the assumption that mockery is a mitigating means for offense. As long as mutual triggering or producing appears among (almost) all behavioral dimensions in superficial aggressiveness, similar mutuality is expected to occur among all dimensions in the accumulative aggressiveness, even between rudeness and irony. This complete extension of correlations constitutes an evidence that an aggressor who is distinguished in accumulative aggressiveness tend to strategically use all forms of aggressive behaviors, even those which he doesn’t consider necessary to use in occasional reactions.

In monopoly, the relatively weak coefficient between irony and offense shows a slight tendency to perceive these two dimensions as qualitatively different. The fact that the correlation coefficients among monopolies of all dimension of aggression both in occasional and accumulative hierarchies shows that monopoly is an indicator slightly characterized by different sensitivity from the indicator of oligarchy. However, once again it supports the hypothesis that a generalized tendency of distinction in all forms of aggression appears (Infante & Rancer, 1996).

Regarding the typology, the two variants of the “distinguished” type are substantially identical (matched significant coefficients with only negligible differences between them). This similarity can be attributed to the fact that this type
is totally dedicated to enhance its capacity of imposition through verbal aggressiveness. So, either occasionally or in a deep-rooted accumulative hierarchy such a type tends to exert maximally, to concentrate and to monopolize verbal aggression in all four dimensions. Similar typologies have been proposed in older research (Bekiari, Nikolaidou, & Hasanagas, 2017; Bekiari & Spyropoulou, 2016). The “selective” type has rudeness as a core feature, while its two variants are differentiated from each other on the basis of irony and offense depending on whether the position of the aggressor is occasional and accumulative, respectively. This differentiation can be understood as an effect of the fact that under occasional conditions the imposition capacity is not so strongly stabilized so that the aggressor can exert the rudeness alone. One rather needs to combine it with irony so as to mitigate it. On the contrary, under conditions of accumulative hierarchy, the imposition capacity of the aggressor is well enough stabilized so as not to need irony as a complementary means to mitigate rudeness, but far from it, the aggressor feels comfortable enough to strengthen rudeness with offense. Finally, the aggressive behavior of a “reserved” type tends to be restrained at minimal level, where the only difference between the occasional and the accumulative hierarchy lies in the additional use of mockery in the former. This can be attributed to the need of mitigating the other three forms of aggressiveness under occasional conditions, in contrast to the accumulative conditions, where exerting just the three abrupt behaviors alone (without humor-like mockery) is safe enough.
5. Conclusion

Having examined the verbal aggressiveness in eight school classes (from the 5th class of primary school to the 3rd class of high school) various conclusions regarding the diachronic evolvement and the function of the verbal aggression have been produced. In the late adolescence there is a tendency to seek dominance not in behavioral arenas where it is relatively easy to arrogate and concentrate the links of aggressive actions but in a behavioral arena where the challenging claimants are quite many. This choice of a difficult (and not of the easiest) way of dominance is an evidence that a settled system of challenging values exists in the late adolescence. This apparently includes values of mental and intellectual readiness, which are required for achieving challenging irony.

In general, students seem to abandon verbal aggressiveness in the course of time. The social order of verbal aggressiveness at the school may be only slightly (and occasionally) differentiated through the age. This can be interpreted as a stability of idiosyncrasy. In total, verbal aggressiveness is maintained within each class while the least aggressive ones do not tend to become more aggressive. In the occasional (indegree) verbal aggressiveness patterns, it can be concluded that irony and mockery (being qualitatively differentiated) are implemented as tactical tools and not so much as autonomous dimensions of aggressiveness (they complement or balance offense). As for the accumulative patterns (katz) of verbal aggressiveness, there is a quite cohesive core of rudeness and offense, wherein irony seems to take place relatively constantly without any regular involvement of mockery. Thus, one can reasonably conclude that irony contributes as tactical tool to the shaping and/or maintenance of such a behavioral core (rudeness and offense). The co-existence of rudeness and offense with the intellectual tool of irony in accumulative hierarchy of verbal aggressiveness implies that a stable situation of aggression (as depicted by the notion of accumulation) tends to be a choice not of everyone or just of students with abrupt behavior but rather of those who consider themselves intellectual enough to maintain accumulative aggression and to cope with it. It was also indicated that the quantitative enhancement of aggression (maximal values) is also based on its qualitative enhancement (synergy among different dimensions of aggression). Thereby, it may reasonably be concluded that
such enhancements can be either attributed to strategy or to string impulsiveness (in contrast to minimalization which is connected with selectiveness). Finally, the typology indicates three different tendencies of managing verbal aggressiveness: the tendency of distinction, of selectiveness and of being reserved. Methodologically, in the research of verbal aggressiveness monopoly seems to be an indicator which is slightly characterized by different sensitivity from the indicator of oligarchy.

On the basis of the conclusions mentioned above, the ironic students are more susceptible to seek informal leadership and influence through extensive and accumulative verbal aggressiveness than the mockers. Thus, it could be recommended to instructors and class mates to strongly draw their attention to ironic individuals and be preventive against their aggression.

Limitations of this study consist in the restriction of network sampling to the primary and secondary schools of a particular region (urban and rural Trikala, central Greece). A subsequent issue for future research is to extend sampling to bigger urban centers. Additionally, extensive in-depth interviews can be conducted with students of low, middle and high layers of verbal aggressiveness. The de facto non-randomness of the network sampling may be regarded as limitation for the generalizability of descriptive statistics but not for extracting correlations.
References


Sanders, J., Gass, R., Wiseman, R., & Bruschke, J. (1992). Ethnic comparison and measurement of argumentativeness, verbal aggressiveness, and need for cognition. *Communication Reports, 5*(1), 50-56. [https://doi.org/10.1080/08934219209367543](https://doi.org/10.1080/08934219209367543)


School Class as an Illustration. *Sociology Mind, 7*(2), 27-43. 
https://doi.org/10.4236/sm.2017.72003

https://doi.org/10.1016/j.sbspro.2013.08.963

https://doi.org/10.18848/2327-011X/CGP/v15i02/1-22

https://doi.org/10.1111/cdev.12143

https://doi.org/10.1080/000368105000317599

https://doi.org/10.1016/j.sbspro.2012.05.064


https://doi.org/10.1080/03004430.2011.623779
Annex

Network questionnaire

Complete the following table marking with “X”

(The questions are addressed to the students)

Original: Συμπλήρωστε τον ακόλουθο πίνακα, βάζοντας Χ στις αντίστοιχες στήλες στα άτομα από την παρακάτω λίστα
(οι ερωτήσεις απευθύνονται σε μαθητές)

<table>
<thead>
<tr>
<th>Class mates/ Ατομα στην τάξη</th>
<th>...who are offensive to you/ ...τα οποία είναι προσβλητικά απέναντί σας</th>
<th>...who have commented your abilities negatively/ ...τα οποία μίλησαν ερωτικά για τις ικανότητές σας</th>
<th>...who speaks ironically to you/ ...τα οποία έκαναν αρνητικά σχόλια για σας</th>
<th>...who are rude to you/ ...τα οποία έχουν αρνητική απάντηση σας</th>
<th>...who have disdaining attitude to you/ ...τα οποία έχουν απέναντί σας υποτιμητική/ μειωτική στάση</th>
<th>...who make many others feel badly/ ...τα οποία κάνουν πολλά άτομα γενικά να αισθάνονται άσχημα</th>
<th>...who present a mockery behavior/ ...τα οποία συμπεριφέρονται κοροϊδευτικά</th>
<th>...who show that they debase your intelligence with their behavior/ ...τα οποία με αυτά που κάνουν υποτιμούν τη νοημοσύνη σας</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>......</td>
<td>......</td>
<td>......</td>
<td>......</td>
<td>......</td>
<td>......</td>
<td>......</td>
<td>......</td>
<td>......</td>
</tr>
</tbody>
</table>