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## Chapter

# Teaching with What you Are: The Importance of Teachers' Positive Resources and of the Neuropsychopedagogical Training Envisioning the Future on Adolescents' Well-Being. A Correlational and Analysis of Variance Study

*Giulia Perasso, Grazia Serantoni, Carmela Lillo,  
Alessandro Maculan, Francesca Vianello and Tania Di Giuseppe*

## Abstract

The literature shows that teachers' psychological characteristics can influence adolescents' mental health. Additionally, neuropsychopedagogical interventions, like the Envisioning the Future (EF) training, can positively impact wellbeing. The study aims at: (i) exploring the relationships between teachers' and students' characteristics and (ii) investigating the impact of EF on students' wellbeing. The sample consists of  $N = 113$  Italian adolescents, whose data were matched with their teachers' ( $N = 12$ ). Participants completed validated self-report questionnaires on self-compassion, emotion regulation, resilience, and an ad-hoc scale of frequency of bullying episodes. Correlational analyses highlight that: teachers' avoidance, social isolation, and self-judgment negatively correlate with the frequency with which students perceive bullying episodes; teachers' self-kindness, optimism, and self-efficacy in regulating emotions positively correlate with the frequency with which the students' perceive bullying; teachers' cognitive focus positively correlates with students' self-determination toward future decisions; students' self-judgment negatively correlates with teachers' resilience and self-efficacy in managing positive emotions, while it positively correlates with teachers' avoidance. In addition, after EF training, students had improved in negative emotion regulation, frequency of perceiving bullying, common humanity, and self-determination. The study underscores the importance of the relationship between teachers' and students' resources and the impact of EF training on adolescents' wellbeing.

**Keywords:** adolescents, teachers, neuropsychopedagogy, positive resources, school

## **1. Introduction**

Adolescence is a fundamental period for the definition of personal and social identity [1–3]. The adolescent prepares for adulthood, which will require him/her to take an active role in his/her social community. This phase of life involves balancing the affective investment in social relationships: this is made possible by the development of adaptive cognitive and emotional resources [4, 5]. The family is no longer the unique source of support and socio-emotional nourishment: the peer group and other adults (e.g., teachers) gain in importance as the task of constructing one's identity is carried out in various life domains (e.g., educational, recreational, and relational domains). The young person's social horizon widens, and interpersonal connections are enriched [6–9].

School is the main socialization context during adolescence, where adolescents spend, daily, most of their time learning notions, interacting with peers, developing interests in extracurricular activities, and preparing for the future [10]. In other words, the school influences every aspect of adolescents' development, from cognition to psychosocial well-being [3, 11]. The literature has shown that teachers who are endowed with personal resources (e.g., motivation and self-efficacy), relational resources (e.g., worth of trust relationships with leaders, fellow teachers, and students), and soft skills (problem-solving, work-life balance, self-care, mindfulness) are resilient, experience well-being, and can support students in their growth [12].

In the frameworks of Social Learning Theory [13], Life Skills Education [14], and Pedagogy for the Third Millennium [15], educators and teachers are role models for behavior and moral reasoning, given the imitative learning by students [16]. Thus, the well-being of teachers is closely linked to that of the younger generation.

In this sense, neuroscience, through the identification of mirror neurons [17], describes the influence between the characteristics of individuals as central [15, 18]. Mirror neurons are activated not only when an individual is performing an action but also when the individual observes someone else while performing it: in this way, as an observer, we mirror the same neurological activity as if we were doing the action in the first person [17]. The discovery of mirror neurons poses interesting implications for the theory and practice of education and psychological well-being [19]. Indeed, the scientific literature points out that teachers' emotions, and not only their teaching behavior [20], can influence—in a direct, indirect, and recursive sense [21]—their students emotionally [22], in social behavior, emotional competence, and emotional regulation and motivation [23]. Furthermore, the psycho-emotional background of the teacher plays a major role in the student-teacher relationship as the more self-efficacious teachers perceive themselves, the more students perceive closeness and low conflict [24]. Keller & Becker [25] also point out that teachers' emotional authenticity can impact the student's emotional experience in the classroom.

It is crucial to promote three characteristics of the teacher such as: an authentic commitment to education, positive management of classroom dynamics, and high motivation to strengthen the adolescent as a student and as a person [26].

Recent studies show a link between the mental health of teachers and adolescents [27]: higher psychological well-being of teachers predicts the psychological well-being of their students, while high depressive symptoms by teachers predict higher psychological distress in adolescents.

During the COVID-19 pandemic, teachers with higher levels of self-esteem, hope, and the ability to make sense of events showed more resilient profiles [28], thus acting as a direct example of crisis and uncertainty management in the eyes of their

students [29]. A study by Ye et al. [30] pointed out that during health emergencies, relating positively to teachers was a protective factor for adolescents against bullying and cyberbullying [31]. Bullying, as a systematic prevarication among peers [32], increased during the pandemic among adolescents who experienced a high level of social isolation and mental health problems [33] and constitutes an emergency to be addressed at the psycho-pedagogical level, for the protection of the new generations.

As argued by White and Kern [34], positive education is an increasingly relevant theoretical and empirical strand for pedagogical practice, as it allows for the best teaching and learning techniques to be explored and evaluated in a relational context. With the intent not only to apply the best teaching methods but also to draw out of himself and cultivate positive resources, the teacher is predisposed to educate himself/herself to educate the other [35], constituting a model for students (e.g., in terms of global learning, cognition, social relationships). Given these premises, the present study aims to detect correlations between teachers' and students' psychological variables linked to well-being (e.g., coping, self-determination, self-compassion) and the impact of the neuropsychopedagogical intervention *Envisioning the Future* (EF) on the psychological, social, emotional, and behavioral life domains of adolescents.

## 2. Envisioning the future

Despite its importance for the cognitive, emotional, and social development of adolescents [3, 11], schools have been massively impacted by the COVID-19 pandemic in recent years. Schools have adapted to a new normal [36] where the promotion of positive individual and interpersonal resources (e.g., resilience, self-determination, coping, self-compassion) has become a priority [37, 38] and it is possible through specific educational training [39–41]. *Envisioning the Future* (EF) is a neuropsychopedagogical training designed by Fondazione Patrizio Paoletti (FPP) and implemented in Italy for educators in the juvenile penal circuit [37, 38], prisoners [42], earthquake survivor communities [43], and Ukrainian refugee parents [44]. The 2022 edition of EF for schools was run from March to May 2022, lasting a total of 9 weeks for a total of 17.5 training hours. The training offered adolescents and their teachers a course intending to foster individual and school community well-being after the discontinuity caused by the COVID-19 pandemic. Born on the theoretical basis of the Sphere Consciousness Model (SCM) [45, 46] and Pedagogy for the Third Millennium (PTM) [15], EF offers a pathway that integrates theoretical notions on the resilient brain's functioning and techniques to manage stress, face adversity, and cultivate self-determination, promoting individual well-being and a sense of belonging to humanity. The project also included participation in live webinars with FPP trainers, who were certified in the PTM method, and access to a free digital platform.

EF training provides interdisciplinary theoretical-practical content, entitled “The 10 Keys to Resilience” [40], consisting of 10 thematic keys, equivalent to 11 sessions (delivered in a blended mode). Each session draws on interdisciplinary knowledge in the field of educational neuropsychopedagogy [15, 47] to promote the development of executive functions like inhibitory control skills, planning, problem-solving, emotion regulation, attention enhancement, and willpower in adolescents and adults [15, 48–52] even in situations of adversity such as pandemics, social and economic crises, wars, and climate change [41].

The keys/themes presented are: (1) start with what you can control and make small decisions; (2) identify an attainable, challenging, and measurable goal; (3)

several times a day, become aware of your posture; (4) be inspired by stories; (5) ask yourself what is really important; (6) cultivate gratitude; (7) appreciate the other as a resource to cultivate and expand your social network; (8) cultivate curiosity; (9) practice a few minutes of silence; (10) welcome and transform: before going to sleep generate your own tomorrow today.

Each session included three specific moments: dialogical reflection on the topic illustrated by the trainer; sharing the main neuroscientific and psycho-pedagogical discoveries on the topic, highlighting their implications on the well-being of individuals; the practice of resilience through self-training experiences related to the thematic key. In the time between the lessons, the student is invited to practice the theoretical-practical exercises independently. The training sessions are accompanied by relaxation and meditation techniques, training of the mind, guided visualizations to foster self-programming, training in proactive and non-self-judging storytelling, and the enhancement of pro-social behavior, to experience a common, positive, and generative resilience matrix.

### 3. Study's aim

The present study has two aims: (i) to explore the correlations between students and teachers in terms of resilience, coping, emotion regulation, self-determination, and self-compassion; (ii) to investigate the impact of the EF neuropsychopedagogical training on emotion regulation, the dimensions of self-compassion and self-determination, and the frequency with which bullying episodes among peers are reported at a bullying frequency questionnaire.

## 4. Method

### 4.1 Participants

The sample was constituted of: N = 113 adolescents with a mean age of 13.94 years (aged between 12 and 18 years; n = 58 females, n = 42 males) who came from different Italian cities (Assisi N = 10; Acerra N = 22; San Benedetto del Tronto N = 3; Oristano N = 2; Rome N = 76); N = 12 teachers with a mean age of 48.5 years (100% female) who taught in the classes attended by the adolescents.

### 4.2 Measures

Both adolescents and teachers completed the Self-Compassion Scale [53, 54] and some *ad-hoc* items on the frequency of bullying and cyberbullying. The Self-Compassion Scale (SCS) consists of 26 items on a Likert scale (from 1 = almost never to 5 = almost always). The scale investigates 6 dimensions, ordered in 3 different polarities: kindness toward oneself vs. self-judgment, common humanity vs. isolation, and mindfulness vs. over-identification. Similarly, both pupils and teachers completed the scales APEN/A - APEP/A (Scales of personal self-efficacy in expressing negative and positive emotions) [55] to assess the level of personal self-efficacy in expressing negative and positive emotions. These dimensions are assessed through 15 items answered on a 5-point Likert scale (from "Not at all capable=1" to "Completely capable = 5").



Students and teachers were administered an *ad-hoc* scale on bullying, preceded by a definition of the construct, rating the frequency of bullying episodes in their school (e.g., “Can you tell us how frequently bullying occurs?”). Participants could answer using a time-frequency scale (from 0 = never to 4 = every day). In addition, they answered two dimensions of the Self-Determination Questionnaire by Soresi et al. [56], which measures, on a 7-point Likert scale, how confident the adolescent feels about his or her choices. In particular, items relating to the young person’s sense of security concerning future decisions and their own perceived abilities were examined.

Teachers’ resilience was measured with the CD-RISC-10 scale (Connor-Davidson Resilience Scale with 10 items; [57, 58]): a self-administered questionnaire consisting of 10 items answered on a 5-point Likert scale (from “Not at all true = 1” to “Almost always true = 5”), which allows the measure of flexibility, self-efficacy, emotion regulation, optimism, and cognitive attention. Finally, the teachers’ coping strategies were assessed through the administration of the COPE-NVI questionnaire (Coping Orientation to the Problems Experienced-New Italian Version) [59], consisting of 60 items answered on a 4-point Likert scale (from “I usually don’t = 1” to “I almost always do = 4”) that measures five fundamental coping modalities: social support, avoidance, orientation to the problem, transcendent orientation, positive attitude.

### 4.3 Procedure

The research, developed by the Research Institute for Neuroscience Education and Didactics (RINED) of the Fondazione Patrizio Paoletti (FPP), and conducted in collaboration with the University of Padua, received the approval of the Ethics Committee of the same university (protocol number: 2023-UNPDD04–001636).

The participants (teachers and students) were recruited through convenience sampling. Teachers come from institutions that had participated in FPP online events, accredited by the Italian Ministry of Education and Research, between February 2021 and January 2022. The students participated, with informed consent from their families, in the EF training (2022 edition) between March and May 2022. The administration of the questionnaires to the students took place at two times (t1, March 2022; t2, May 2022); the administration to the teachers took place only at t1. In order to associate data longitudinally (administration to students at t1 and t2), a pseudonymization was required (e.g., first two letters of the municipality of birth and the last four digits of the mobile phone number). The pseudonymization process made it possible to conduct statistical comparisons over time while protecting the anonymity of the participants.

### 4.4 Statistical analysis

To explore the first research aim, correlation analyses (Pearson’s  $r$ ) were carried out to understand statistically significant associations between teachers’ and students’ scores on the coping, emotion regulation, self-determination, and self-compassion scales. Correlation analyses have been conducted associating students’ scores in t1 (i.e., before EF) and teachers’ scores in t1 (i.e., before EF). Concerning the second research aim, analyses of variance within subjects (ANOVA) were carried out to compare negative emotion regulation, self-determination, perception of a sense of common humanity, and perception of bullying in a group of adolescents, before and after (e.g., t1,t2) the EF neuropsychopedagogical training.

5. Results

Pearson correlation analyses show that several teachers’ variables correlate with the frequency with which the student reports episodes of peer bullying. Avoidance ( $r = -0.281, p < 0.05$ ), social isolation ( $r = -0.475, p < 0.05$ ), and self-judgment ( $r = -0.385, p < 0.05$ ) on the part of the teacher correlate negatively with the frequency with which students report bullying episodes at the bullying questionnaire. Conversely, teacher’s self-kindness ( $r = 0.481, p < 0.05$ ), optimism ( $r = 0.250, p < 0.05$ ), self-efficacy in regulating negative ( $r = 0.344, p < 0.05$ ) and positive ( $r = 0.246, p < 0.05$ ) emotions positively correlated with the frequency with which the students reported bullying responding to the questionnaire. The results also show that the teachers’ cognitive focus correlates positively with the students’ self-determination toward future decisions ( $r = 0.189, p < 0.05$ ). Students’ self-judgment is negatively correlated with characteristics such as teachers’ resilience ( $r = -0.200, p < 0.05$ ), teachers’ general self-efficacy ( $r = -0.208, p < 0.05$ ), and teachers’ self-efficacy in managing positive emotions ( $r = -0.194, p < 0.05$ ). Similarly, students’ self-judgment is positively correlated with teacher avoidance ( $r = 0.202, p < 0.05$ ). Finally, teacher avoidance emerges to have a negative correlation with students’ self-judgment ( $r = -0.194, p < 0.05$ ).

Analyses of variance show the effects of the neuropsychoeeducational training EF on adolescent students (**Table 1**). From pre- to post-training, there is a statistically significant increase in students’ self-efficacy in the regulation of negative emotions  $F(1,112) = 4.56, p < 0.05, \eta^2 = 0.01$ , sense of common humanity  $F(1,112) = 11.28, p < 0.01, \eta^2 = 0.81$ , self-determination for future decisions  $F(1,112) = 45.05, p < 0.001, \eta^2 = 0.86$ , and frequency of reported bullying  $F(1,112) = 14.85, p < 0.001, \eta^2 = 0.32$ .

6. Discussion

6.1 Correlation analyses between students’ and teachers’ characteristics

Correlation analyses highlight that teacher characteristics are correlated with the frequency with which students report bullying episodes, with their levels of self-determination toward future decisions, and with their levels of self-judgment and self-kindness. The findings emphasize the importance, for adolescents, of the relationship with adults outside the family [3, 7], in the framework of socialization and cognitive, psychological, and social development offered by the school context [10, 11, 60].

	Mean (t1)	Mean (t2)	F	p
Self-efficacy in the regulation of negative emotion	23,58	24,81	4.56	0.035*
Common Humanity	2,63	2,97	11.28	0.001**
Self-determination toward future decisions	24,38	28,12	45.05	0.000***
Frequency of reported bullying	0,85	1,315,227	14.85	0.000***

*\*=significance level in statistics.  
Note: \*= $p < .05$ ; \*\*= $p < .01$ ; \*\*\*= $p < .001$ .*

**Table 1.**  
*The effects of envisioning the future on adolescents (N = 113).*

Furthermore, as teachers' avoidance, social isolation, and self-judgment increase, the frequency with which their students report bullying episodes decreases. The result concerning avoidance could be read in the framework of the Social Learning Theory [13] and in the neuropsychopedagogical framework of the Pedagogy for the Third Millennium, which examines the educational and social implications of the discovery of mirror neurons [15]. Adolescents exposed to the example of adults who avoid dealing with problems imitate this behavior concerning the bullying issue, even when it concerns the peer group. In addition, it must be taken into account that teachers are fundamental examples for the development of their students' social and moral behavior [4, 16]: teachers who are poorly embedded in a supportive social network and at risk for developing work-related stress may not convey the construction of a sense of community and responsibility toward their group. Finally, as self-judgment is associated with depressive symptoms and rumination [61], teachers who are strongly marked by negative self-judgment might be less attentive to the social context and fail to catalyze their students' attention toward the bullying issue.

Differently, when teachers' self-kindness, self-efficacy in regulating positive and negative emotions, and optimism increase, the frequency with which students report bullying increases. In a broader sense, people with greater self-kindness—defined by Neff [53] as the ability to be tolerant with oneself even when making mistakes— and the ability to regulate their emotions—meant as the ability to monitor and control the intensity and frequency of emotional states [62]—are more likely to feel empathy toward others [63]. Furthermore, optimism is positively associated with individual interpersonal skills [64]. Therefore, teachers with such characteristics could convey to their students the example of greater sensitivity toward themselves, others, and interpersonal relationships, which is necessary to notice and report bullying episodes and, more generally, to strengthen young people's interpersonal skills [9].

Plus, adolescents' level of self-determination toward future decisions increases as their teachers' cognitive focus increases. In Connor and Davidson's [13] resilience model, the cognitive focus is a key component of resilience, which allows persons to remain focused on their tasks without being reminded of adversity. In the significant correlation that emerged, the exposure to this characteristic teachers can work as an example for the student to imitate [13], conveying the ability to focus on personal characteristics and make decisions for the future [56].

During adolescence, a delicate phase for identity construction [1, 2, 5], self-judgment can lead boys and girls to psychological distress and depression [65]. However, the more their teachers are resilient and self-efficacious in maximizing their positive emotions, the less the adolescents seem prone to self-judgment. The relationship with a teacher who is resilient, self-efficacious, and able to regulate emotions appropriately could transmit to the adolescents the idea that difficulties can catalyze improvement. Moreover, it can help them to understand their own characteristics and appreciate their lives, reducing self-judgment and, indirectly, increasing an attitude of self-compassion toward themselves [53].

In summary, the findings highlight that teachers' characteristics are central to adolescents' psychological well-being, since positive adult resources can generate positive outcomes for adolescents [27, 30, 66, 67]. Teachers with positive characteristics (e.g., resilience, self-efficacy, emotion regulation) can convey several positive examples to their students, such as: the ability to emerge strengthened from adversity [68], the ability to identify and achieve goals [69], and the ability to maximize joy and appreciation in everyday life [70]. At the same time, in line with previous studies [20, 24, 25] negative characteristics, related to the behavioral, emotional, and psychosocial life domains of teachers, can negatively influence adolescents [3, 39].



Exposure to the example of an adult who tends to flee from stressors using avoidance as a coping [71] could lead students to question whether they can face adversity (or not), with a risk of greater self-judgment, and—consequently—depressive symptoms and rumination [61].

## **6.2 The impact of the neuropsychopedagogical training “Envisioning the Future” on adolescent students**

Deepening the impact of the EF training on adolescents, the results of the analyses of variance show an increase in adolescents’ self-efficacy in managing negative emotions, sense of common humanity, self-determination toward future decisions, and the frequency with which bullying is reported at the questionnaire after the training.

Specifically, perceiving oneself as self-efficacious in managing emotions refers to two constructs: self-efficacy, defined by Bandura as the individual’s perception of the ability to achieve specific goals (1995), and emotion regulation, as the ability to regulate the intensity and frequency of emotional states [62, 70]. Managing negative emotions implies, for adolescents who have participated in EF, not being overwhelmed by anger, irritation, despondency, and discouragement. This capacity acquires fundamental importance in adolescence, theorized by Erikson [1] as crucial for identity development. Since adolescence can be a particularly difficult period, permeated by the polarization between ego-definition and role confusion, not being overwhelmed by negative emotions makes adolescents able to deal with complex crises and life transitions [5, 39].

Similarly, EF seems to foster adolescents’ sense of self-determination in the making of future decisions: according to Soresi et al. [56], this process allows people to actively engage in and control the direction of their lives. It is an active and continuous process that involves making decisions and taking actions that reflect personal values, beliefs, and goals, assuming responsibility. This variable is a key factor in promoting well-being and overall quality of life [56]. Stimulating this capacity through a neuropsychopedagogical training can help adolescent boys and girls to positively catalyze their commitment, resources, and motivation toward future choices for healthy identity development [2]. The two constructs (e.g., self-efficacy in expressing negative emotions and self-determination in future choices), enhanced by EF, refer to an individual emotional and cognitive domain; however, the training also positively influences adolescents at a socio-relational level.

Indeed, there is an increase in the perception of a sense of common humanity and in the frequency with which bullying is reported by adolescents after EF. The sense of common humanity is a dimension of self-compassion [53] that implies the perception of belonging to a community and, in a broader sense, to the human species or ‘family.’ Bullying, on the other hand, includes a broad constellation of verbal, physical, and psychological, recursive and deliberate behaviors toward subjects perceived as more fragile, enacted by an individual or a group [32, 72]. The spread of the phenomenon among adolescents is increasingly widespread [72, 73], also thanks to social networks [31], and has not been halted by the COVID-19 pandemic [33, 74], representing a psychological emergency among the new generations. EF seems to counteract bullying by improving adolescents’ sense of common humanity and their ability to notice the frequency of peer bullying episodes. EF effects could indirectly increase prosocial behaviors [75–79] that positively influence the processes of decision-making, moral choice, advocacy of the other, compassion and understanding of the other, and improving the socio-relational climate in the school context, and, in particular, in relationships with peers. It is important to specify that the positive effect of the training emerged in a group of adolescents who were supported by their teachers in the acquisition of the notions

and techniques offered by the EF training. This contextual data corroborates scientific evidence regarding the role of the teacher-student relationship in the psychological [27, 67] and emotional well-being of adolescents [20–25, 66], especially in the pandemic and post-pandemic periods [30]. Furthermore, starting from the premise that school massively and multidimensionally influences adolescent development [10, 11], research highlights how positive psychology can play a key role in the pedagogical practice [34], especially in the form of the neuropsychopedagogical approach [15].

### 6.3 Limits and future directions

The research presents methodological limitations. Firstly, the use of self-report questionnaires may have induced social desirability bias in the questionnaire responses [80]. The compilation by pseudonymization (e.g., through the use of identifying acronyms), which was adopted to ensure the correspondence between the t1 and t2 responses, may have given the respondents a greater sense of spontaneity. It is also important to notice that this research presents limits in data generalizability: (i) as regards the students, the study has a limited geographic representation, with the majority of students from a school in Rome; (ii) as regards teachers, the gender imbalance among the participants (i.e., all teachers were females) may not fully represent the perspectives and experiences of the overall teachers population. Future editions of the project will furtherly expand the samples to guarantee results' generalizability on a national level. A further limitation is the lack of longitudinal data on teachers, which hindered the possibility of implementing regression models to investigate the interactions (e.g., mediations and moderations) between the measured variables [81]. Further studies could investigate these aspects by collecting teachers' data on t1 and t2. Finally, future research could implement a follow-up data collection (t3, at least 3 months after t2) to assess the long-term duration of EF benefits and compare the training outcomes with a control group [82]. Despite these limitations, the study is innovative since: (1) it investigated in-depth the relationship between teachers and adolescent students in the light of some of the principal constructs of cognitive and socio-emotional psychology; (2) it analyzed the positive impact of a neuropsychopedagogical (EF) training on adolescents' well-being on multiple levels (e.g., emotion regulation, self-determination, and social relations).

## 7. Conclusion

The present study offers insights into the relationship between teachers' and adolescent students' characteristics. The research shows that specific teachers' resources are related to the frequency with which students report bullying episodes, their levels of self-determination toward future decisions, and their levels of self-judgment and self-kindness. Moreover, the study analyzed the impact of a neuropsychopedagogical (EF) training on the same sample of adolescents, identifying positive effects of the program in terms of: an increase in self-efficacy in managing negative emotions, in the perception of a sense of common humanity, in the adolescents' self-determination toward future decisions, and in the frequency with which adolescents report peer bullying. The results draw the attention of teachers, psychologists, educators, and researchers to the interdisciplinary practices that integrate neuroscientific knowledge about brain functioning. Teaching practices can protect and increase the well-being of adolescents since teachers' well-being can improve adolescent students' quality of life on multiple levels (e.g., emotions, cognition, relationships).

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## **Author details**


Giulia Perasso<sup>1\*</sup>, Grazia Serantoni<sup>1</sup>, Carmela Lillo<sup>1</sup>, Alessandro Maculan<sup>2</sup>, Francesca Vianello<sup>2</sup> and Tania Di Giuseppe<sup>1</sup>

1 Fondazione Patrizio Paoletti, Assisi, Italy

2 University of Padua, Padua, Italy

\*Address all correspondence to: [g.perasso@fondazionepatriziopaoletti.org](mailto:g.perasso@fondazionepatriziopaoletti.org)

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