

Emotional epigenetics in educational support of hate speech and violence.

Epigenetica emozionale nell'affiancamento educativo ai discorsi d'odio e di violenza.

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ABSTRACT ITALIANO

Il rischio educativo rappresentato dal Social web si materializza spesso nell'introduzione diretta o indiretta di contenuti fortemente odiosi e violenti nell'immaginario infantile, che seminano e alimentano sentimenti di discriminazione, oppressione, espulsione e dissocialità reattiva al trauma. Si chiarisce la necessità di consapevolezza che le emozioni veicolate dalle immagini mentali messe a disposizione inducono sollecitazioni epigenetiche. Attraverso meccanismi genetici mettono ciascun individuo nella condizione di attingere al patrimonio genetico della Specie attivando l'espressione fenotipica di comportamenti imprevedibili. Un'adeguata e necessaria consapevolezza può orientare i Professionisti della relazione educativa verso un suo utilizzo formativo efficace. La conoscenza e la diffusione di modelli teorici efficaci per prevenire il *trauma da odio* deve necessariamente partire da una proposta pedagogica di impianto sperimentale che viene delineata con metodologica trasversale e trans-disciplinare ed osservazione sistemica e trans-generazionale.

ENGLISH ABSTRACT

The educational risk represented by the Social Web often materializes in the direct or indirect introduction of highly hateful and violent content in the children's imagination, which sow and feed feelings of discrimination, oppression, expulsion and dissociality responsive to trauma. The need for awareness is clarified that the emotions conveyed by the mental images made available induce epigenetic solicitations. Through genetic mechanisms they put each individual in the condition of drawing on the genetic heritage of the Species by activating the phenotypic expression of unpredictable behaviors. An adequate and necessary awareness can guide the Professionals of the educational relationship towards an effective its formative use. The knowledge and dissemination of effective theoretical models to prevent hate trauma must necessarily start from a pedagogical proposal of experimental structure that is outlined with a transversal and trans-disciplinary method for a systemic and trans-generational observation.

Introduction

The Social web among Primary training Agencies contributes in a prevalent way to providing the collective imagination with heterogeneous contents compared to what one would like, often becoming an educational risk. What arrives in the developmental age, also mediated by significant adults and the bearer of the categorical hierarchy constituted by the transmissible identity models of values, constitutes the prerequisite and semantic basis for triggering feelings of hatred, discrimination, violence which then feed into the flows of opinion. In fact, the mental image built since childhood as a narrative reality (Borruso, 2019) and in Video Games too (Dipace, 2015) is learned through sense-perceptions

and elaborated by the imaginative functions, taking on the same value as what is present in reality. What is evoked represents the interface between two biological truths. One is that of the external natural and relational world, in its vastness, complexity and plurality, the other is that of the individual, in the fragility of his neuro-development.

The emotions that accompany the act in the environmental immersion (environment) solicit, through epigenetic evocation mechanisms, the modulation of the phenotypic expression response of the neuronal cellular heritage but above all the variation of the synaptic banks both at the pre-frontal level, seat of the higher cognitive functions, such as ideational and volitional attention and predictive and decision-making faculties and of the onto-genetically older, sub-cortical and limbic structures, especially the amygdala, which presides over the ability to orient behaviors towards those with a greater percentage of reinforcement.

An educational relationship is created between the significant adult in his function of transmitting identity models of values and those who are growing in their emotional and affective maturation, characterized by the mediative function, according to vector gradients on an emotional basis, created by the powerful and overbearing but uncontrollable interaction with the web (Bonaiuti G., Dipace A., 2021). In fact, among the primary education agencies involved, i.e. the family with the delegation of alliance towards the school, the places of social, cultural and religious aggregation, the same State in which one lives through its shared values and the comparison of this with the other foreign states, social and mass media are those that get out of hand the most and contribute to the processes of profound evocation, from the depths of the Genome of the human species, of what can then be transformed into social hatred and violence.

Through the evolution of the Species, the genetic heritage has been imported into the nucleotide sequence of DNA the encodings, present but not expressed, of characteristics that were useful in the past for adaptation to the environment, therefore not only of exploratory curiosity and prosociality, care for others, but unfortunately also of oppression, aggression, impulsiveness, hypervigilance, persecution and repulsion. Once upon a time, these thinking characteristics were congenial for obtaining food and defending oneself from the threats of a wild and inhospitable environment. Today those silenced genes, if activated by the emotions aroused by the speeches and mental images of the Media (Dipace A., Fornasari A., De Angelis M., 2023), can express phenotypically (i.e. which appear out in the behavior acted out) genotypic characteristics (i.e. which are written in the DNA but are not expressed) even relating to the modification of noetic expression curve, i.e. of the scale of values and above all of the expression of Thought (Ideation). The conscious support action on the web should therefore take into account the fact that Informing means training and therefore Educating (Harari Y.N., 2024) not only the single individual or a group but the entire Species in its ability to adapt to the environment.

Emotions and Epigenetics

The mode of adaptation to the environment that changes for the survival of the Species according to a Lamarckian and no longer Darwinian mode of compliance, where it is not

the strongest who prevail but those who are most capable of changing. For this reason, sensitivity to environmental stimuli is greatest, especially in the most sensitive individuals and in particular moments in the history of the Human Species, characterized by impending uncertainties and threats of both an economic and cultural Nature (news of wars, conflicts, continually repeated crime news, broadcasts trash for commercial purposes, etc.). These cognitive stimuli are activators of drives towards a rancorous and hateful reaction (*Hate Speeches*) the maturational direction of the noetic curve takes on xenophobic, expulsive, hostility (Pasta S., 2021), dissociality dimensions, extremism, fundamentalism, uncriticality and prejudice, an obstacle to acceptance, integration, inclusion, often causing "exclusion within exclusion" (Zizioli E., 2021). Which then become violence as a conduct-symptom and a crime-fact as crime, sanctioning the failure of every good intention and effort, human and financial, of an educational nature on the individual and at a social level, and training. With respect to the Professionals of the educational and help relationship who should support risk situations in unsuspecting times (Primary Prevention or Risk reduction).

All characteristics which certainly do not help the reshuffling of the hereditary characteristics of the Species itself, indeed they run the risk of leading it to genetic drift and the specter of endogamy with all the cognitive and somatic consequences that this entails. The social relational experience at an educational level therefore begins fully already at an imaginative level in its neuro-biology of epigenetic activation with respect to the Genome of origin of the human species through all the emotional and artificial scenarios of learning and teaching that continuously arise with capacity of phenotypic modulation. Sensory activation evokes, through mechanisms of epigenetic modulation, the capacity for gene expression through the emotions conveyed by the educational environment. The awareness of this direct contribution between the input of content by the significant Adult and the response obtained in its users should represent in the shared social pedagogical competence to be modulated in the best directions of reinforcement with respect to affective-cognitive and emotional-relational and social development of each individual in their right to affective, sexual and social maturation (Lopez A.G., 2018). All confirming a holistic vision that brings the individual back to a global epistemological dimension through the relationship between educational practices and the body through the effects of PNEI, *Psycho-neuro-endocrine-immunology* on the same.

Taking into account the epigenetic interaction (Yang BZ, Zhang H, Ge W, Weder N, Douglas-Palumberi H, Perepletchikova F, Gelernter J, Kaufman, 2013) through emotions and ACEs (*Adverse Childhood Experiences*, Felitti V, Anda R, Nordenberg D, et al., 1998) as life events or traumas and the individual genetic heritage of the Person in subject of *Neuro-Pedagogy* and *Bio-Education* (Villanova M., 2016). An effective *educational action* therefore requires the modulating contribution of a narrative order in the categorical perspective, both of primary prevention or risk reduction which can only be implemented through effective educational practices and of care in its dimension of narrative pedagogy. Early, effective and profound support is essential to build autonomy of thought and freedom

from any Dependence, as in the risk of Substances for recreational use and any other method of fraudulent recruitment. On the web, aggressive marketing and the pervasiveness of influencers fill the educational spaces left empty by coaching, with indoctrination in the values of belonging and manipulation in the illusion of life choices (Villanova M., 2006, 2021).

Always relevant studies in the field of the interaction between traumatic events and individual genetic heritage (Yang BZ, Zhang H, Ge W, Weder N, Douglas-Palumberi H, Perepletchikova F, Gelernter J, Kaufman, 2013) we can observe how trauma and epigenetic expression are closely related to the point of causing significant, negative changes in individual and social attitudes and behaviours. A minor who experiences a trauma, if he is not helped to process it, takes defensive and/or contrasting positions which are contrary to the expected epigenetic development with effects of destructuring the personality and social relationships. With healthy care interventions and educational support the subject enters into his trauma and then detaches himself from it and resumes the path of life full of positive planning. Epigenetics shows how the development of trauma can go in a direction that worsens the violence suffered, subjecting the person himself to dependency on fear, or the development of trauma can be governed by the person who manages it, freeing himself from fear. Distancing oneself from violence required education to re-appropriate the will of the individual who is strengthened through education and is able to positively redesign the future. Zanetti M. (2018) speaks of the problematic nature of the "radicalization phenomenon" in young people defined as foreign fighters and lone wolves, and of the need for preventive measures with adequate preparation of teachers and mothers (Biagioli R. González-Montegudo J., Silva C., 2021).

Education acts on neuronal plasticity

In our era the need for a pedagogical system is the centrality that the mental image assumes in its educational value. At the same time when in the continuous and transversal basic training of Educational Professionals and the helping relationship the need to build Theoretical reference models that allow them to transfer the ability to consciously use and not in a passive and casual way. From here the importance of contents to use in coaching, in childhood (Montessori M., 1926), adolescence, in parental construction and in any neuronal fragility (Iavarone M.L., 2022), from socio-cultural disadvantages without an adequate inclusion: immaturity, disability, post-traumatic, interculturality (Fiorucci M., 2020). The purpose of this training need relating to the educational consequences regarding the conscious use of the Symbols and Signs which constitute as Semiotic elements a constructive Syntax of the mental image is to be able to achieve a holistic synergy of transversal support.

The objective is to solicit the phenotypic dimension of each individual in the best possible way, albeit starting from their basic genetics. That is, knowing the pragmatic relationship of the interaction between exposure to the web and impact on the Person during his emotional, affective and social maturation. If "DNA does not have the last

word" (Feuerstein R., Rand Y., Rynders J.E. (2011), one can in fact receive modulating emotional stimuli from the environment of value immersion, even Outdoors (Pizzigoni G., 1930). the affective response that allows us to prevent and repair previous traumas present in the Genome and preserve from the unwanted expression of those deriving from previous generations and which also have not expressed themselves phenotypically but are lurking, indeed we can say that *what is not expressed is imprinted* in DNA (Lipton B., 2009). Transmitting content useful for conservatively modifying the epigenetic component of each individual's thought and emotional response should become the objective of each individual personalized project but also the one to adhere to in order to lay the useful epistemological foundations. to create an "educational environment" (Gramigna A., 2023). The accumulated experiences thus become shareable as products of the knowledge of each generation. Furthermore, the need for a wise alliance with the social web is increasingly felt. *Artificial Intelligence* (AI) (McCarthy J., 1998; Rocchi A., 2022) which passes through the awareness that every sensory stimulus that reaches the pre-frontal cortex and that through emotions induces perceptual modifications which then act at an ideational, somatic and visceral level.

What happens in the Imagination is as if it were happening in reality and the provenance of every acquired data and every rational, albeit usable, decision-making process takes on secondary relevance when it is in cognitive competition with the global supply systems present in the seduction of the web, with the its *magic pighers of Hamelin* and *Influencers* driven by commercial purposes and certainly not pedagogical awareness. The Genome of the Species becomes the repository of every individual experience (Kellermann N.P., 2013), including and above all those implemented through virtual reality and AI. DNA can then be considered the Algorithm (Pancioli C., Rivoltella P. C., 2023) on which the expression of the entire phenotypic modulation is based through epigenetic mechanisms, in turn modified by the environment through emotions. Sensation, Perception, Emotion affect the psycho-neruro-endocrine-immune modulation but above all on the response of the limbic system. The expression curve of Ideation is modulated depending on the decoding that the genomic algorithm provides.

But DNA can change through epigenetic mechanisms of evolutionary genomics which in turn cause the sequence of nucleic acids bases to vary and therefore modify the phenotypic reading of what was originally a heritage deriving from the common genome of the species. However, the psychic function of Consciousness can self-regulate towards gradual awareness through constant and gradual integration processes that concern the adaptation of the human species to the biological environment. Here is the centrality and importance of pedagogical awareness well before and beyond any other form of subsequent intervention, whether healthcare or legal. This phase of the evolution of the human species is increasingly characterized by the possibility of building media tools as an increasingly versatile even if apparently complex aid for modulating the individual response. These aids can prove, if well used, to be excellent reducers of complexity with respect to the resolution of repetitive and recurring problems, both on an educational and training level.

The sensorial experience of imaginative permanence in artificially created perceptive scenarios (*Metaverse, Incel, Manosphere, ecc.*) (Lavanga F., Mancaniello, M. R., 2022) but although real from the point of view of subjective experience becomes a precious aid for engaging maturational learning.

Educational support for *hate speech and Violence*

Emotional activation acts through stresses that implement epigenetic modifications with neuobiological mechanisms of gene stress and silencing such as methylation, acetylation and ubiquitylation (Mulder RH, Walton E, Neumann A, Houtepen LC, Felix JF, Bakermans -Kranenburg MJ, Suderman M, Tiemeier H, van IJzendoorn MH, Relton CL, Cecil CAM., 2020) establishing the centrality of the educational relationship in the effectiveness of accessibility to *Algorithms* as an element of usability of each resource. This systemic opportunity however represents the biological part of Education in accordance with the neuronal plasticity of childhood, adolescence and in the construction of parenthood. Constantly overcoming the dualism of cognitive provision deriving from Emotional Intelligence (EI) of human origin and AI of cybernetic origin towards a transversal integration in Neuroscience according to a global medical-pedagogical model becomes increasingly a sustainable objective for the benefit of emotional, affective and sexual.

The traumas deriving from genomic inheritance (PTSD, *Post-Traumatic Stress Syndrome* (Youssef N.A., 2022) and Aces, Adverse Childhood Experiences (Felitti V, Anda R, Nordenberg D, et al., 1998) and those accumulated over time of early life ("first habits", Piaget J., 2016) of an *allochronic, allomorphic, allovalue* and *allonomic order* as a consequence of the types of child maltreatment (*physical, emotional, sexual, pathology of care, assisted violence*) can be reprocessed through the right calibration of direct support, mediated by the example of the *significant adult*. Also it becomes important the wise contribution of the supporting of Artificial Intelligence (Luckin, R., 2017) to the Emotional Intelligence of spontaneous, improvised and unpredictable human subsistence in its emotional authenticity.

In this context, we can explain the effectiveness at the level of synaptic enrichment of the neuronal banks which can be implemented through the modification of the State of Consciousness which can be implemented through neuro-motor activity, processing and restitution through acting practice on stage and in theatre, Spirituality, reaching through Awareness that amount of Transcendence necessary to "look at everything outside" and connect with the Whole, feeling an active and indispensable part of it. To teach Democracy it is therefore necessary to cultivate a "Science of Consciousness" (Gramigna A., 2010), that is, to also implement practices that can intervene on starting substrates, or algorithms that can interact with other already existing ones and through the educational process, which it must be gradual, delicate, made of sensitivity and slow assimilations made of attention and constancy, nuances and very slight changes, and certainly not of constraint and drastic changes. You start to change things in motivation and so you start to get the proposal for

action. In fact, before every cognitive act comes the mental image, then the imagination with the hope and dream, then the motivation, and finally the action. To interest, to amaze, to amaze to induce hope, to dream to motivate (Chirico A., Gaggioli A., 2021).

Affectivity and Ideation, the World of Ideas, are closely linked and correlated in their consecutiveness as is the Will. Everything else remains an action that is not understood and not shared, therefore experienced as constraint, or violence. Violence is returned as such or alternatively according to the constitutional premises of each person in the interaction with the relational environment, it becomes somatization, mental illness or is engraved again in the DNA. This reaction, for example, is typical in legislative provisions that are not shared and motivated, and cannot be considered the founding basis of a pedagogical project which can be followed by a shared and comparable educational path. This is why prison always fails and many legislative measures, perhaps based on a legislative measure created in an emergency, have never had real effectiveness. The law of Biology is DNA and it is considered the biological legislative reference Algorithm of a Species but still susceptible, like all Laws, to interpretations (Epigenetics) and modifications (Evolutionary Genomics).

Experimenting to prevent *hate trauma*

In the presence of a harassing situation with a trauma value, let's think about the *minority stress* constantly generated for example by *homo-* and *trans-phobia*, even internalized (Phillip A., Pellechi A., Desilva R., Semler K., Makani R., 2022), the first response of an individual who expresses moral pain is the state of suffering and discomfort as *Somatization*. The body through psycho-neuro-endocrine-immune reverberations, increases the possibility for organs and systems to be identified as the target of individual suffering and the most frequent response is illness. Another response modality can be the structuring of an emotional symptom such as anxiety, anguish, phobias, obsessions up to a psychotic productivity of a delusional or hallucinatory type. Another very likely response modality is the Abused-Abuser Syndrome in which one reacts to the trauma not by becoming ill in body or mind but by expressing a tendency to dissocial behaviors to the point of deviance (Di Gennaro G., Iavarone M.L., 2023) by attacking people and things to compensate for what has been suffered.

The best response we can hope to trauma in affective pedagogical support can materialize in scientific and artistic passion and the spiritual dimension as elements of channeling that energy negatively suffered but which can be returned to the world with productivity and loving kindness. What is not visible outside, in behavior or in the body, affects the genetic heritage of the individual, then moving on to that of the Species in terms of Evolutionary Genomics (Lipton B., 2020).

In order to understand which of the responses to hate trauma can become more probable for each individual and therefore build a theoretical model of evolutionary reference, it can be helpful, through a specific questionnaire, to collect data from a population with respect to the type of trauma suffered and study its development over time. The transversal recruitment of the population sample to be analyzed and the trans-disciplinary collaboration in a medical-pedagogical model is significant for understanding

not only the cause-effect relationship on what is detected but above all the dimension of systemic and trans-generational circularity of the observable phenomena, for the effective construction of an inclusion network (Dainese R., 2020).

Relating the entity and nature of the vexatious and afflictive discourse with the developments that derive from it becomes a necessary experimental contribution that in addition to understanding what not to do and what not to have done, also the aspects deriving from an educational responsibility of which all those who contribute to building mental images that constantly act on neural plasticity.

To prevent *dissociality (bullying, omo-trans-phobia) mismanagement* it is necessary as well take charge, learning to use Marketing according to principles of pedagogical experimentation for modern *Neuro-Pedagogy* (Gomez Paloma F., Damiani P., 2021) and *Bio-Education*.

Conclusions

If then in the continuous and transversal basic training of Educational Professionals, of the helping relationship and often increasingly also of Security, the construction of theoretical reference models becomes increasingly important, it becomes important to understand the modulating action of the educational activity (Malavasi P., 2019). What is introduced by the educational reference figures in a truly holistic dimension of shared and synergistic institutional parenting, which must not implement an uncritical and coercive censorship but must effectively support and support in the understanding and assimilation of positive contents by creating a principle of self-learning of the Educational media system, although highly compliant, limited by what is introduced into it even with the prospect of artificial use. The need for a wise alliance between Emotional Intelligence (EI) and Artificial Intelligence (AI) (Turin A.M., 1950) passes through the awareness that every sensory stimulus that reaches the pre-frontal cortex through emotions induces perceptual modifications that act at an ideational level, somatic and visceral. This systemic opportunity however represents the *biological aspects of Education* in accordance with the neuronal plasticity of childhood, adolescence and in the construction of parenthood.

Constantly overcoming the apparent cognitive difference deriving from Emotional Intelligence (EI) of human origin and AI of cybernetic origin towards a transversal integration in Neuroscience.

According to a global medical-pedagogical model becomes increasingly towards sustainable objective for the benefit of emotional, affective and sexual maturation in a holistic epistemology of knowledge gathering under the great dome of universal and ethnographically codifiable and transmittable knowledge (Gramigna A. Poletti G., 2021).

There may then exist, beyond the just and justified fears that hover in our era, the concrete possibility of self-programming of natural algorithms according to the educational needs of the human species, where instead of a threat they can be a useful and precious resource. The cascade of neuro-educational events that lead to the effective reworking of the natural algorithms linked to the laws of genetic transmission, starting

from Education as a precept, should establish a pedagogical liturgy of which to be aware and on which to converge the training objectives *as well as Knowledge, Knowing how to be, Knowing how to do, Knowing how to become* (Villanova M., 2021) and which could be summarized in the following points:

- The Example (matter educates matter);
Attention to the quality of emotions (*consciously evoke mental images*);
- Emotional intelligence (arises from the relationship with the significant adult and in institutional parenting);
- Artificial intelligence (it is a precious tool); with its
- Algorithms (*DNA as a biological Algorithm* can be modulated precisely through educational work);
- Epigenetics (through mechanisms of *phenotypic activation* on the individual, the expression of the *gene memory* of the Species is improved through mechanisms of evolutionary genomics).

So the interface between Education and Biology through epigenetic understanding and the understanding of how advanced pedagogical tools can be built through wise management of algorithmic infrastructures represents a reality of real comparison and precious synergy for pedagogical knowledge.

Bringing back to a holistic training epistemological dimension, overcoming the trap of training fragmentation and disinvestment due to the illusion of shortcuts, is the great mission that should unite all recruitment backgrounds in training for educational professions, of the report (Mariani A., 2021) of help and also of safety. A teacher, a doctor, a jurist or a guardian of the Order should have full awareness, and responsibility, that each of his actions through what is poured into the epigenetic heritage of the Species through interaction, even at a distance, however creating mental images, with the individual individual, contributes to modifying the Algorithm that structures the behavior of the Species itself. The frontiers of social pedagogy go beyond the Person and Society but extend to the entire human species and to the Phylum itself, impacting the logic and memory of the living.

The close connection between mental image and corporeality also allows us to anticipate, simulate and delude ourselves about the body scheme (Gomez Paloma F., 2013) where fragility and trauma may not fully allow this and a lot of educational training is needed so that the Mind (Bateson, G., 1989) of the individual supported continues in a project of social belonging, experiencing feelings of union and inclusion deriving from the evocation of awareness and transcendence (Villanova M., 2022), of Extended Mind (Sheldrake R. 2018) and of Quantum Mind (Mc Taggart L. 2017) to explain the traces of emotions on the memory of life experiences (Masaru E., 2004). The Whole is much more than its scattered parts and emotional-affective reconsolidation is a fundamental element for reuniting with the dimension of the past to understand the future. The environmental education, in *Outdoor* (Pizzigoni G.,1930) and *Ethnographic* (Gramigna A., 2023) component are fundamental to understanding ourselves and continuing to adapt as a Species through a universal pedagogical project shared in educational programs that arise

from identity models shared values of emotional and social maturation despite and despite the risk of theft of the social web, to be used as a resource and never as a threat, a true advantage of permanent and transversal education for an effective *Long Life Learning* aimed at *Sentimental Education*.

References

- Bateson, G. (1989). *Verso un'ecologia della mente*. Adelphi.
- Biagioli, R., González-Monteagudo, J., Silva, C. (2021). Il ruolo delle madri nella prevenzione della radicalizzazione dei giovani. *Prospettive internazionali di ricerca educativa*, 18, 5-16.
- Bonaiuti, G., Dipace, A. (2021). *Insegnare e apprendere in aula e in rete. Per una didattica blended efficace*. Carocci Editore.
- Borruso, F. (2019). *Infanzie. Percorsi storico-educativi fra immaginario e realtà*. Franco Angeli.
- Catarci, M. (2016). *Le forme sociali dell'Educazione*. Franco Angeli.
- Chirico, A., Gaggioli, A. (2021). *La profonda meraviglia*. San Paolo Edizioni.
- Dainese, R. (2020). *La rete di relazioni a sostegno della didattica per l'inclusione*. Franco Angeli.
- Di Gennaro, G., Iavarone, M.L. (2023). *Ragazzi che sparano. Viaggio nella devianza grave minorile*. Franco Angeli.
- Dipace, A. (2015) *Videogiochi, scuola e salute*. Progedit.
- Dipace, A., Fornasari, A., De Angelis, M. (2023). *Il post digitale. Società, culture, didattica*. Franco Angeli.
- Feuerstein, R., Rand Y., Rynders, J.E. (2011). *Non accettarmi come sono*. Bur.
- Felitti, V, Anda, R, Nordenberg, D., et al. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: the adverse childhood experiences (ACE) study. *Am J Prev Med*. 1998; 14: 245- 258.
- Fiorucci, M. (2020). *Educazione, formazione e pedagogia in prospettiva interculturale*. Franco Angeli.
- Gomez Paloma, F. (2013). *Embodied Cognitive Science. Atti incarnati della didattica*. Nuova Cultura Editore.
- Gomez Paloma, F., Damiani, P. (2021). *Manuale delle Scuole ECS. The Neuroeducational Approach. La sfida del cambiamento educativo per il benessere e l'apprendimento*. Scholè
- Gramigna, A. (2010). *Democrazia dell'educazione*. Unicopli Editore.
- Gramigna, A., Poletti, G. (2021). Narrare la Scienza: Strategie per la formazione (Tell the science: Training strategies). *Formazione e Insegnamento European Journal of Research in Education and Teaching; The Facets of Sustainability as a Pedagogical proposal: insights from school and educational services*, v. 19 n. 1 tomo II, Venezia.
- Gramigna, A. (2023). *L'educazione immaginativa. Ambienti meta-narrativi per l'infanzia*. Unicopli Editore.
- Iavarone, M.L. (2022). *Educare nei mutamenti. Sostenibilità didattica nella transizioni tra fragilità e opportunità*. Franco Angeli Editore.
- Harari, Y.N. (2024). *Nexus - Breve Storia delle reti di informazione dall'età della pietra all'IA*. Giunti Editore.

- Kellermann, N.P. (2013). Epigenetic transmission of Holocaust trauma: can nightmares be inherited? *Isr J Psychiatry Relat Sci.* 33-9.
- Youssef, N.A. (2022). Potential Societal and Cultural Implications of Transgenerational Epigenetic Methylation of Trauma and PTSD: Pathology or Resilience? *Yale J Biol Med.* 31: 95(1): 171-174. PMID: 35370497
- Lopez, A.G. (2018). *Pedagogia delle Differenze Intersezioni tra Genere ed Etnia.* Feltrinelli Editore.
- Lavanga, F., Mancaniello, M. R. (2022). *Formazione dell'adolescente nella realtà estesa: la pedagogia dell'adolescenza nel tempo della realtà virtuale, dell'intelligenza artificiale e del metaverso.* Libreria Universitaria.
- Lipton, B. (2009). *La biologia delle credenze. Come il pensiero influenza il DNA e ogni cellula.* Macro edizioni.
- Luckin, R. (2017). The implications of Artificial Intelligence for teachers and schooling. *Education for a Changing World: the implications of AI for Education*, November 8, 2017.
- Malavasi, P. (2019). *Educare robot?: Pedagogia dell'Intelligenza artificiale.* Vita e pensiero.
- Masaru Emoto (2004). *La risposta dell'acqua.* Edizioni Mediterranee.
- McCarthy, J. (1998). *What is artificial intelligence?*
- Mariani, A. (a cura di) (2021). *La relazione educativa. Prospettive contemporanee.* Carocci Editore.
- Montessori, M. (1926). *La Mente del Bambino,* Libreria Editrice.
- Mc Taggart, L. (2017). *Il Campo Quantico Connetti la Mente Quantica alla forza dell'Universo.* My Life Editore.
- Mulder, R.H., Walton, E., Neumann, A., Houtepen, L.C., Felix, J.F., Bakermans-Kranenburg, M.J., Suderman, M., Tiemeier, H., van IJzendoorn, M.H., Relton, C.L., Cecil, CAM. (2020). Epigenomics of being bullied: changes in DNA methylation following bullying exposure. *Epigenetics.* 2020 Jun-Jul;15(6-7):750-764.
- Pasta, S. (2021). Ostilità. Vecchi e nuovi bersagli, vecchi e nuovi virus. *Scholé. Rivista di educazione e studi culturali,* LIX.
- Phillip, A., Pellechi, A., Desilva, R., Semler, K., Makani, R. (2022). Una spiegazione plausibile dell'aumento dei comportamenti suicidi tra i giovani transgender basata sulla teoria interpersonale del suicidio (IPTS): serie di casi e revisione della letteratura *J Psichiatra Pract* 6 gennaio 2022; 28(1): 3-13.
- Piaget, J. (2016). *Logica e conoscenza scientifica.* Edizioni Studium.
- Sheldrake, R. (2018). *La mente estesa Il senso di sentirsi osservati ed altri poteri inspiegati della mente umana Universale economica.* Oriente Feltrinelli.
- Panciroli, C., Rivoltella, P. C. (2023). Pedagogia algoritmica: per una riflessione educativa sull'intelligenza artificiale. *Scholé,* [ISBN] :978-88-284-0500-9
- Pizzigoni, G. (1930). *La Scuola Rinnovata secondo il metodo sperimentale,* Croce Rossa Italiana. Comitato Centrale, n. 31, Tipografia di Ettore Ferraboschi.
- Rocchi, A. (2022). Prolegomeni a una pedagogia dell'intelligenza artificiale. *Orientamenti pedagogici, Rivista bimestrale per gli Educatori,* V. 69, n. 1 (gen.-mar. 2022), p. 29-44.
- Sheldrake, R. (2018). *La Mente estesa.* Feltrinelli.
- Turing, A.M. (1950). *Computing Machinery and Intelligence Mind,* 49: 433-460

Villanova, M., (2006). *Introduzione alle Scienze della Prevenzione primaria e formativo-forensi in età evolutiva e nell'adolescenza*. Edizioni Universitarie Romane.

Villanova, M. (2016). *Epigenetica e medicine integrate funzionali per la Neuropedagogia e la Bioeducazione in età evolutiva*. La Sapienza Editore.

Villanova, M., (2021). *Affiancamento educativo alle Sostanze per uso voluttuario*. La Sapienza Editore.

Villanova, M. (2022), *Emotional, affective and sexual inclusion for Childhood, Adolescence and Parenting*. *Italian Journal of Health Education, Sports and Inclusive Didactis*, 6(1): 2532-3296.

Zanetti, M. (2018). Il fenomeno della radicalizzazione nei giovani: vulnerabilità ambientali, individuali e strategie di prevenzione. *Formazione & Insegnamento*, 16(3), 171-181.

Zizioli, E. (2021) *Donne detenute. Percorsi educativi di liberazione*. Franco Angeli Editore.