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Research and analysis of data on perceived self-efficacy in professional educators and in the change of *organizational structures in pedagogical emergencies*.

Ricerca e analisi dei dati sull'autoefficacia percepita dall'educatore professionale e nel mutamento degli assetti *organizzativi in emergenza pedagogica.*

di
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Abstract
The purpose of this contribution is to evaluate the self-efficacy perceived by the educator who operates in contexts of disability in the management of complex problems (Bandura, 2006) such as

those characterizing the period of health and social emergency derived from COVID-19, where educational deprivation amplifies the risk of new poverty. The research has been conducted through the administration to a sample of 100 professional educators through the platform Google Modules during the lockdown of the Perceived Self-Efficacy scale in the management of complex problems (Farnese, Avallone, Pepe, Porcelli, 2007). The results obtained allow us to analyse the convictions of self-efficacy perceived by educators and also to identify an indispensable device of educational work in pedagogical supervision (Bouchamma, Giguère, April, 2019), for which a permanent, non-emergency space must be presided and contingent (Nickson, Carter, Francis, 2020).

Keywords: Educators, Disabilities, Emergency Pedagogy, Educational Poverty, Pedagogical Supervision

Abstract

Lo scopo del presente contributo è quello di valutare l'autoefficacia percepita (Bandura, 2006) dall'educatore che opera nei contesti di disabilità, nella gestione di problemi complessi come quelli caratterizzanti il periodo di emergenza sanitaria e sociale derivato dal COVID-19, dove la deprivazione educativa amplifica il rischio di nuove povertà. La ricerca è stata condotta attraverso la somministrazione della Scala di Autoefficacia Percepita nella gestione di problemi complessi (Farnese, Avallone, Pepe, Porcelli, 2007) ad un campione di 100 educatori professionali attraverso la piattaforma di Google Moduli durante il lockdown. I risultati ottenuti consentono di analizzare le convinzioni di autoefficacia percepita dagli educatori e identificare, inoltre, nella supervisione pedagogica un dispositivo irrinunciabile del lavoro educativo (Bouchamma, Giguère, April, 2019), per il quale deve essere presidiato uno spazio di carattere permanente, non emergenziale e contingente (Nickson, Carter, Francis, 2020).

Parole chiave: Educatori, Disabilità, Pedagogia dell'emergenza, Povertà educativa, Supervisione pedagogica

1. Introduction[1]

The beliefs of personal effectiveness are the closest indicators of the human agency and provide a measure of the ability to better coordinate one's conduct and relationships with reality in the different contexts in which individual activity takes place (Caprara, 2001), even in highly complex and adverse situations. The COVID-19 pandemic activated an emergency approach on a health, political, economic and social level and, as for each sector involved, also for the educational one, emergency work has been activated. The lockdown phase imposed the interruption of face-to-face educational actions and the implementation of online operational strategies also for educators working with disability, who have always been engaged in activities mainly carried out in presence. The management of the educational experience online requires a distinct assessment of the beliefs about whether educators managed the activities, relationships, and challenges in the specific context in which they have operated. The purpose of this research is thus to evaluate the perceived self-

[1] The manuscript is the result of a collective work of the authors, the specific contribution of which is to be referred to as follows: introduction (1), paragraph 2 and conclusions are attributed to Cristiana Cardinali; paragraphs n. 3; 4 and conclusions are attributed to Stefania Morsanuto.

efficacy (Bandura, 2006) of educators working in contexts of disability in the management of complex problems such as those characterizing the period of health and social emergency due to COVID-19, where educational deprivation amplifies the risk of new poverty. Unicef (2008) reminds us that education in emergency situations should be read as a fundamental right of minors, and, therefore, as a form of protection, an opportunity for psychological recovery, a tool for social integration, thanks to the emancipatory potential that education itself can offer. This is even more true for special education: analysis of the results of rehabilitation and educational programmes with and for people with disabilities indicates that education is the best way to promote personal growth. The educational field is the way for the disabled individual to develop their potential and enjoy a more fulfilling life. The research was conducted through the administration of the Perceived Self-efficacy Scale in the management of complex problems (Farnese, Avallone, Pepe, Porcelli, 2007). The scale allows to obtain four distinct scores for each subject in relation to each of the factors that emerged: emotional maturity, the finalization of the action, relational fluidity and context analysis. The sample analysed is of 100 professional educators active in educational organizations engaged in the management of pupils with cognitive disabilities in schools of different levels. The test was administered through Google Modules platform during the lockdown, in compliance with the Code of Ethics of the University Niccolò Cusano. The results obtained allow to analyse the beliefs of self-efficacy perceived by educators and identify in the pedagogical supervision[2] an indispensable device of educational work (Bouchamma, Giguère, April, 2019), for which a permanent, non-emergency, and contingent space must be provided (Nickson, Carter, Francis, 2020). This tool, underestimated during the pandemic, is able to stimulate and support the search for meaning of educational actions, encouraging educators to relocate the events in a design framework for the construction of a wealth of skills useful for the reorganization of educational spaces in a post-emergency.

2. Framework

2.1 Self-efficacy in Special education

Perceived self-efficacy corresponds to the belief that the individual is capable of dominating specific activities, situations, or aspects of his/her psychological and social functioning. These are therefore convictions that reflect the properties of the mind working as a self-referential system, as well as the person's ability to reflect on himself and learn from experience (Caprara, 2001). Bandura (1997) observed that "self-efficacy is concerned not with the number of skills you have, but with what you believe you can do with what you have under a variety of circumstances" (p. 37). He indicated that "Self-efficacy beliefs affect patterns that may be self-aiding or self-hindering" (1997, p. 1175). Self-efficacy is thus the key factor in personal agency. The concept of human agency places responsibility on the individual for making change (Bandura, 1986). Individuals' beliefs about their own abilities determine three important areas of their activity: the choice of the

[2] Supervision consists of a consultancy that is aimed at individuals, groups or team work, who decide to tackle concrete issues drawn from everyday professional life. Supervision setting as objectives the overcoming of impasse deadlock, the improvement of the organization and work' effectiveness. The Association of National Organizations for Supervision in Europe (ANSE) defines supervision as an eclectic tool, which is based on interdisciplinary knowledge: it draws on the sciences of communication and organization, sociology, adult education, teaching and to psychology. It is a permanent training tool, aimed at the acquisition of professional skills that cannot be reduced to individual theoretical or methodological approaches. It is applicable to any professional context.

activities in which they engage, the degree of effort and perseverance they show, the degree of resistance to stressful situations in the activities they have chosen. This trend can also be seen in organisational contexts as self-efficacy is intimately involved in the work. Convictions about effectiveness have an effect on some important variables depending on the work context (Judge et al., 2007): job satisfaction; organisational commitment; and individual and group. Among various work contexts, teaching is considered a high stress profession. In-depth research showed that teachers endure demanding working conditions, thus predicting a low level of job satisfaction (Skaalvik et al., 2014). A factor that may have some influence on job satisfaction is teacher self-efficacy (Caprara et al., 2006). Teachers with high levels of perceived self-efficacy believe that their personal and professional skills can lead to positive results in their students' performance and can overcome the effects of any negative environmental influences (Coladarci et.al, 1997). Similarly, teachers with a high sense of self-efficacy set higher goals for their personal development than teachers with a low sense of self-efficacy (Ross et al., 2007). Moreover, many studies have shown the positive correlation of job satisfaction with teacher self-efficacy (Skaalvik et al., 2016), but also the function of their beliefs as determinants of their job satisfaction. Currently, self-efficacy has been cited as one of the most important variables also in special education research. Several studies have focused on self- efficacy beliefs of special educators who have an increased attrition rate. Important researches indicate that efficacy beliefs of special educators has a direct effect on job satisfaction (Viel-Ruma et al. 2010). Some studies suggest that educators with a higher level of self-efficacy use better strategies and are more effective in motivating learners with a low level of interest in educational activities. Conversely, educators with a lower level of self-efficacy inhibit learners' learning by using educational methods that have proven ineffective (Sharma, et al., 2012). According to other studies (Dimitrios et al., 2020), special educators found that they had a high sense of self-efficacy concerning their ability to respond to the tasks of their educational role in different contexts and in the relationships they develop with the educational team.

Special Education is a demanding field of training where strong beliefs are of principal importance so that, educators' self-efficacy beliefs are among the most important factors determining the success of an inclusive practice (Reichenberg et al., 2019).

Some studies show a connection between the high self-efficacy of educators and a more positive attitude towards inclusion and their sensitivity to students with special needs (Weisel et al., 2006).

2.2 Special Educators' self-efficacy in on-line contexts

Beliefs of personal effectiveness can measure one's ability to better coordinate one's own conduct and one's relations with reality in different contexts in which individual activity takes place. As they always relate to particular forms of being, knowing, and doing, specificity is an element that distinguishes self-assessments of one's own convictions of effectiveness. The wider the sphere of activities to which a personal judgement of effectiveness refers, the less can one rely on this judgement to predict the specific conduct produced in the different contexts: it is unlikely that a person can invariably produce the same levels of performance or be able to cope with situations in the same way (Caprara 2001). In lockdown months, the shift of the educational intervention in an online environment, specific compared to the traditional face-to-face one, requires a distinct evaluation of the educators' convictions of being able to dominate the activities, relationships, and challenges that actually characterize the context in which they operated. The management of the educational experience on the web, connected to perceived beliefs of self-efficacy, implies thus a

reflection on the use of information technologies, Web 2.0 tools, and social media by educators working with disabilities, who have always been involved in activities mainly carried out in presence. Technological innovations have led to an increasing use of ICTs in all areas of human activity, including the growing educational sector worldwide. Moreno (2020) provided further evidence on the importance of professional training among educators and their integration of technology, especially when working with students with disabilities. Taylor (2016), in a study conducted in Georgia on teachers' beliefs of self-efficacy regarding the implementation of computers for teaching, reported that the majority (76%) of educators have a positive belief of self-efficacy about the integration of computers, so they are likely to integrate PCs into their activities. Opposite is the finding of research by Gbemu et al. (2020). According to this study, the lack of trust in the ability to use ICTs in educational activity has been translated into a lack of use of such tools by educators. This could probably be attributed to the lack of pedagogical training on ICTs, resistance to change by educators, lack of access to appropriate technologies in facilities and lack of accessibility to the Internet. It is certain that, if a person's self-efficacy belief towards a task influences the decision to take on a task, the amount of effort used on the task and the persistence in accomplishing the task can decrease (Miura, 1987). This would suggest that one's choice, effort, and persistence in using ICTs is influenced by one's level of self-efficacy in the use of ICTs. Equally significant is the issue of the use of social media. Many studies showed that educators found social media useful to meet the challenges they faced in their work (Greenhalgh et al., 2017). A variety of online spaces allows educators to share resources and ideas and create communities (Hur & Brush, 2009). While these studies focus on the potential of social media to support educators' professional learning, the research conducted by Carpenter and Green (2018) explored how social networks can support the growth of educators' self-efficacy, i.e., how educators perceive that the professional use of social networks can impact their self-efficacy. The findings suggest that these new media can actually make educators believe they can succeed in their challenging and complex work. Bandura (1997) stated that "Efficacious people are quick to take advantage of opportunity structures and figure out ways to circumvent institutional constraints or change them by collective action. Conversely, inefficacious people are less apt to exploit the enabling opportunities provided by the social system and are easily discouraged by institutional impediments" (p. 6). Effective educators, who have stronger beliefs of self-efficacy, could be those who use social media. As Reamer (2019) argues, there is no doubt that technology is prevalent in educational work today in a wide variety of contexts, but whether it is used to replace or complement face-to-face educational action, educators must keep pace not only with rapidly developing standards of practice, but also with related ethical standards. This involves adequate training on pedagogical aspects of the use of technology for vocational training, knowing the potential *pro* and *contra* (Sawrikar et al., 2015), anticipating the possibility that some students have special needs requiring the use of technology-based adaptive devices.

2.3 Educators' self-efficacy in pedagogical emergencies

The COVID-19 pandemic triggered an emergency approach in health, political, economic and social terms. As happened in each of the sectors involved, emergency work has been activated in the educational sector, too. The lockdown phase suspended face-to-face educational actions implementing online operational strategies, putting the emotional aspect was to the test. Conversely,

dealing with education within a community affected by an exceptional event always means taking an interest in everything people experience in terms of stress, trauma, fear management, weakening of social, professional and learning skills, and therefore the strengthening of individual resilience, i.e. the ability to cope with adverse situations in search of new balances (Vaccarelli, 2016).

Concerning our study, it therefore is crucial to highlight how beliefs on effectiveness also have an impact on resistance to adversity in highly complex situations. The literature shows that those who believe they can deal with potential stress factors, and manage them in the best possible way, succeed; ‘‘but if they believe they cannot control aversive events they distress themselves and impair their level of functioning’’ (Bandura 1989, p. 1175-1184). Thus, the regulation of an individual’s behaviour with respect to choices and actions is strongly influenced by the belief in their ability to increase their level of motivation, to draw on cognitive resources, and to take actions to exercise control. Those with high levels of self-efficacy tend to consider difficulties and obstacles with less apprehension and, in some cases, even see them as opportunities to put themselves to the test, unlike those with low levels of self-efficacy who feel more at risk, exacerbating adversity, and underestimating possible opportunities for success (Rutter, 2006).

Even if theoretical analyses and emerging empirical data have established the significance of educators’ self-efficacy in stressful life events (D’Amico et al., 2013), educational issues (especially in contexts of disability), which emergencies bring, refer to a plethora of problems and food for thought., the term emergency seems to be a custom. As Traverso (2018) argues, in today’s society, an alarmist model prevails, in which the emergency, conceived as an unknown entity that self-produces and self-determines itself, occupies an apical position, where everything is precarious, present oriented and uncertain. If what guides the educator is the alarmist representation of the emergency, he or she will go towards the belief that he or she cannot transform things, but only suffer them or at most compulsively control them from an organizational and procedural point of view. It is therefore essential to redefine the emergency-education relationship. The educational work in whichever context it takes place, responds to specific needs of individuals or communities in conditions of distress or difficulty and the inclusive professions live a “pedagogy of difficulties and challenges”. (Canevaro 2007, p. 20). Regardless of the situation, ordinary or extra-ordinary, in normal times or in times of crisis, the educator daily manages the emergency in the complexity of educational challenges. “It is difficult to imagine that the aid professions [...] do not have to do with what we call exceptional situations. It is a matter, however, of reflecting whether this exceptionality should become the dominant feature of an emergency, or whether it could become the occasion for the institutionalizing party to become structural and structuring” (Canevaro 2001, p. 19). Thus, one runs the risk of interpreting the specificity of the aid professions by anchoring it to the logic of need and emergency, of the special request of the moment, considering the emergency an independent construct, endowed with a dimension of autonomy, with characteristics of speed, unpredictability, and uncertainty. But in the educational field you cannot act to prevent or resolve the emergency, as there is not only the situation-problem under discussion, but the entire educational project that becomes the tool for comparison, analysis, and study. According to the transformative model, the emergency is the result of the logics and choices that the various systems make (Smith, 2013) and that are made in the various systems (Minati, 2010). The emergency therefore occupies a basic position as it is the result of all previous choices that have been made, professionally thought and pedagogically designed. Therefore, the present research starts from the consideration that “Emergency is not (and in education should not be) only an urgent situation needing an organized

and effective professional planning; emergency is education and education is emergency" (Traverso 2018, p.11).

3. Research

3.1 Research hypotheses

The present study aims to investigate the correlation between pedagogical supervision and the sense of self-efficacy experienced by professional educators during lockdown who developed mediated and distance educational interventions.

The research hypotheses are: (1) possible correlation differences between the sense of self-efficacy perceived by educators and their ability to solve complex problems even in emergency situations. (2) The correlation between educators who were given training on the mode of educational relationship mediated and those who did not and the perception of self-efficacy. (3) Correlation between the evaluation of effectiveness (or not) of the multimedia tool and perceived self-efficacy. (4) The variable "time" of use as not relevant to self-efficacy. (5) Correlation between the level of training and evaluation of the mode of intervention and the estimation of effectiveness of the tools.

The question of research is therefore to understand if a period of sudden and prolonged blockage has led to significant changes related to the perception of the sense of self-efficacy experienced by social educators in children. school.

(5) Correlation between the level of training and evaluation of the mode of intervention and the estimation of effectiveness of the tools.

The question of research, therefore, is to understand if a period of sudden and prolonged blockage has led to significant changes related to the perception of the sense of self-efficacy experienced by social educators in children.

3.2 Method and tools

During the Covid-19 lockdown, two tests have been administered: (1) General Self- Efficacy Scale by Schwarzer (Jerusalem and Schwarzer, 1981, in its Italian version of Sibilia, Schwarzer and Jerusalem, 1995), which evaluates through ten items the general sense of self-efficacy and provides for the indication of the answer the reference to a five-point Likert scale, from 1 (maximum disagreement) to 5 (maximum agreement). The description of the score gives the respondent, for each category of the question, the possibility to internalize their feelings on the subject and decide which label best represents their opinion. Word labels also allow respondents to know exactly how their answers will be interpreted. (2) Ad-hoc questionnaires designed to collect information about gender, age, educational qualifications, role, use of tools, and time spent on educational interventions both daily and during the week.

Given the lockdown situation imposed by the Covid-19 pandemic, the choice to use a technologically mediated administration was natural, also in the light of studies that demonstrate the non-influence of the medium on the reliability and validity of online questionnaires (Riva et al; Buchanan, 2003; Vallejo et al, 2007). Moreover, the scale with words describes each category and allows the researcher to present the results in a way that is absolutely faithful to the respondents' opinions. A search tool containing the tests was then built through the Google Modules platform and reached educators through the web. The test was disseminated and administered at the

beginning of the so-called “phase 2”, when, however, the reopening of services had not yet affected services aimed at the disability.
Informed consent was negotiated with the children involved and re-negotiated while the research was carried out. Pseudonyms replaced proper names of participants, who were also given the opportunity to withdraw from the study at any time.

3.3 Sample

In this study, attention will be given to the sample “Professional Educators”. The sample is made up of 103 Educators from the Italian territory. The educators involved are all part of the 60 cfu high education path of the University of reference of the authors. They were contacted through e-mails. Gender difference between the participants is not a relevant variable because the male sample is not statistically significant.

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	15	14,6	14,6	14,6
	Female	88	85,4	85,4	100,0
	Total	103	100,0	100,0	

Fig. 1 Gender

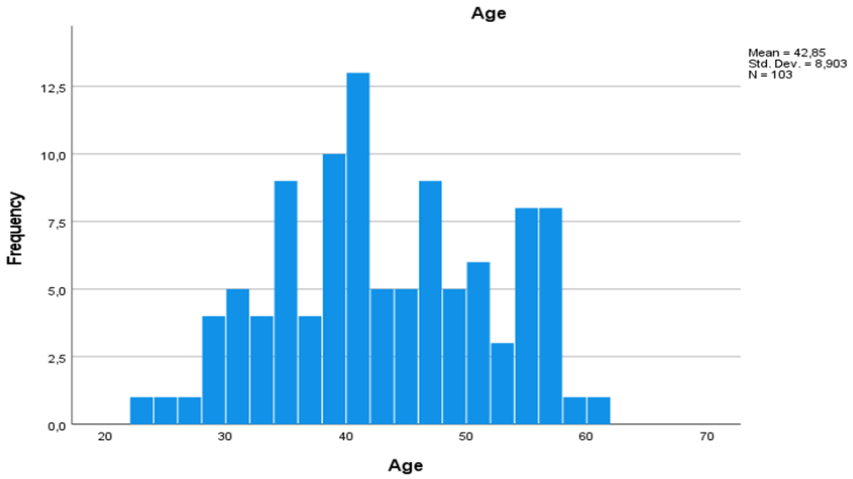

Fig. 2 Age

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Secondary School	1	1,0	1,0	1,0
	High School	58	56,3	56,3	57,3
	Bechelor's degree	22	21,4	21,4	78,6
	Master's degree/PhD	22	21,4	21,4	100,0
	Total	103	100,0	100,0	

Fig. 3 Education

As specified, the sample obtained the intensive qualification course for the exercise of the profession of socio-pedagogical professional educator (course valid according to Law 205/2017, paragraphs 594-601). Therefore, more than half of the sample has a higher education qualification. The remaining has a non-professionalizing degree.

There is a small percentage of educators who have already used the online mode as a type of educational intervention.

Is this the first time you use this type of work?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	91	88,3	88,3	88,3
	no	12	11,7	11,7	100,0
	Total	103	100,0	100,0	

Fig. 4 Smartworking

3.4 Data analysis[3]

Tests' Total score

Fig. 5 Total score general efficacy

[3] The data analysis was carried out with the SPSS software

The Total Score - General Self Efficacy histogram shows a Normal distribution pattern. This means that most of the sample felt effective in performing their educational intervention during lockdown.

T-Test:
Null hypothesis: the two populations (those who did supervision and those who did not) have equal averages on some metric variables.

Conditions

1. Independent observations: This often applies if each case in SPSS represents a different person or another statistical unit. This apparently applies to our data.
2. Normality: the dependent variable must follow a normal distribution in the population. This is only necessary for samples less than about 25 units. We will see the actual size of the samples used for our T-Test after running it, so we will not worry about normality until then.
3. Homogeneity: the standard deviation of our dependent variable must be equal in both populations. We need this hypothesis only if the dimensions of our sample are (clearly) unequal.

SPSS verifies if this applies when we perform our test t. If not, we can still report the correct test results.

Test 1
Null Hypothesis: Those who had Pedagogical Supervision and those who did not have it have equal averages on Total Score - General Self Efficacy

Group Statistics

	Were you supported by Pedagogical supervision during quarantine?	N	Mean	Std. Deviation	Std. Error Mean
Total Score - General Self Efficacy	Yes, pedagocical Supervision during the quarantine	30	30,27	4,370	,798
	No, pedagocical Supervision during the quarantine	73	28,33	5,817	,681

Fig. 6 Tot. score general efficacy – Ped. Supervision

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	Upper
Total Score - General Self Efficacy	Equal variances assumed	3,379	,069	1,642	101	,104	1,938	1,180	-,403	4,279
	Equal variances not assumed			1,848	71,362	,069	1,938	1,049	-,153	4,029

Fig. 7 Tot. score general efficacy – Ped. Supervision

The observations are independent and the samples are greater than 25 (1), thus the Normal verification can be overlooked. From Levene's test (2) on the equality of variances I obtain a Sig. value higher than 0.05, so the hypothesis of equal variances is valid and , consequently, I shall consider the first line of the test.
Since the p-value - Mr. (2-tailed) - is greater than 0.05 (3), we cannot reject the null hypothesis and thus we conclude that the difference between the averages is not statistically significant (4).
It is however interesting to note what follows.
In the three specific questions related to problem solving, there is a statistically significant difference in the averages of the scores between those who had pedagogical supervision and those who did not. Essentially, pedagogical supervision gives greater confidence in dealing with problems, even if they are unforeseen.
8. When I am confronted with a problem, I can usually find several solutions.
9. If I am in trouble, I can usually think of a solution.
10. I can usually handle whatever comes my way.

Group Statistics

	Were you supported by Pedagogical supervision during quarantine?	N (1)	Mean (4)	Std. Deviation	Std. Error Mean
8. When I am confronted with a problem, I can usually find several solutions.	Yes, pedagocical Supervision during the quarantine	30	3,20	,551	,101
	No, pedagocical Supervision during the quarantine	73	2,77	,808	,095

Fig. 8 problem solving - test 1

Independent Samples Test

		Levene's Test for Equality of Variances: F	Levene's Test for Equality of Variances: Sig. (2)	t-test for Equality of Means: t	df	Sig. (2-tailed) (3)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference: Lower	95% Confidence Interval of the Difference: Upper
8. When I am confronted with a problem, I can usually find several solutions.	Equal variances assumed	8,925	,004	2,684	101	,008	,433	,161	,113	,753
	Equal variances not assumed			3,135	78,325	,002	,433	,138	,158	,708

Fig. 9 problem solving - test 1

Group Statistics

	Were you supported by Pedagogical supervision during quarantine?	N	Mean	Std. Deviation	Std. Error Mean
9. If I am in trouble, I can usually think of a solution.	Yes, pedagocical Supervision during the quarantine	30	3,23	,568	,104
	No, pedagocical Supervision during the quarantine	73	2,84	,782	,092

Figure 10 problem solving - test 2

Independent Samples Test

		Levene's Test for Equality of Variances: F	Sig.	t-test for Equality of Means: t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference: Lower	Upper
9. If I am in trouble, I can usually think of a solution.	Equal variances assumed	3,272	,073	2,522	101	,013	,398	,158	,085	,711
	Equal variances not assumed			2,875	73,710	,005	,398	,138	,122	,673

Fig. 11 problem solving - test 2

Group Statistics

	Were you supported by Pedagogical supervision during quarantine?	N	Mean	Std. Deviation	Std. Error Mean
10. I can usually handle whatever comes my way.	Yes, pedagocical Supervision during the quarantine	30	2,93	,691	,126
	No, pedagocical Supervision during the quarantine	73	2,58	,725	,085

Fig. 12 problem solving - test 3

Independent Samples Test

		Levene's Test for Equality of Variances: F	Sig.	t-test for Equality of Means: t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference: Lower	Upper
10. I can usually handle whatever comes my way.	Equal variances assumed	2,902	,092	2,307	101	,023	,358	,155	,050	,666
	Equal variances not assumed			2,354	56,471	,022	,358	,152	,053	,663

Fig. 13 problem solving - test 3

The observations are independent and the samples are greater than 25 (1), and therefore I can neglect the verification of Normality. From Levene's test (2) on the equality of variances I get a Sig value higher than 0.05 for questions 9 and 10, while for question 8, the value is lower than 0.05. So the assumption of equal variances is valid, and consequently I will consider the first line of the test

for questions 9 and 10; for question 8 the equality is rejected and therefore I will consider the second line of the test.
Since the p-value - Sig. (2-tailed) - is less than 0.05 (3), in all three cases, I can reject the null hypothesis (there is no difference between the averages in the problem solving questions between those who have carried out the pedagogical supervision and those who have not), concluding that the difference between the averages is statistically significant (4).

Test 2
Null Hypothesis: People who have had training and those who have not had training present equal averages on Total Score - General Self Efficacy

Group Statistics

	Have you received the necessary training in protection and safety systems?	N (1)	Mean (4)	Std. Deviation	Std. Error Mean
Total Score - General Self Efficacy	Yes, I received the necessary training	67	29,16	5,290	,646
	No, I didn't receive the necessary training	36	28,39	5,876	,979

Fig. 14 Training/self efficacy

Independent Samples Test

		Levene's Test for Equality of Variances (2)		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed) (3)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	Upper
Total Score - General Self Efficacy	Equal variances assumed	,777	,380	,682	101	,497	,775	1,137	-1,480	3,030
	Equal variances not assumed			,661	65,533	,511	,775	1,173	-1,568	3,118

Fig. 15 Training/self efficacy

The observations are independent and the samples are greater than 25 (1), so I can overlook the verification of Normality. From Levene's test (2) on the equality of variances I obtain a value of Sig. greater than 0.05, therefore, the hypothesis of equal variances is valid and consequently I will consider the first line of the test.
Since the p-value - Sig. (2-tailed) - is greater than 0.05 (3), so we cannot reject the null hypothesis and we conclude that the difference between the averages is not statistically significant (4).

Test 3
Null Hypothesis: Those who find the tools efficient and those who do not have equal averages on the Total Score - General Self Efficacy

Group Statistics

	How do you perceive the tools you have used?	N	Mean	Std. Deviation	Std. Error Mean
Total Score - General Self Efficacy	Tools Efficient	77	29,22	5,541	,631
	Tools Inefficient	26	27,92	5,306	1,041

Fig. 16 Self efficacy/Tools efficiency

Independent Samples Test

		Levene's Test for Equality of Variances: F	Levene's Test for Equality of Variances: Sig.	t-test for Equality of Means: t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference: Lower	95% Confidence Interval of the Difference: Upper
Total Score - General Self Efficacy	Equal variances assumed	,583	,447	1,043	101	,299	1,298	1,244	-1,170	3,765
	Equal variances not assumed			1,066	44,802	,292	1,298	1,217	-1,154	3,750

Fig. 17

The observations are independent and the samples are greater than 25 (1), so I can overlook the Normality check. From Levene's test (2) on the equality of variances I obtain a value of Sig. greater than 0.05, so the hypothesis of equal variances is valid and, consequently, I shall consider the first line of the test. Since p-value - Sig. (2-tailed) - is greater than 0.05 (3), so we cannot reject the null hypothesis and we conclude that the difference between the averages is **not** statistically significant (4).

Test 4

We now analyze the hours per day spent working with the remote intervention. From the analysis of the frequencies, it results an average of about 4 hours per day.

How many hours a day did you spend working from home? (Please indicate number of hours per day)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	15	14,6	14,6	14,6
	2	11	10,7	10,7	25,2
	3	16	15,5	15,5	40,8
	4	27	26,2	26,2	67,0
	5	10	9,7	9,7	76,7
	6	8	7,8	7,8	84,5
	7	5	4,9	4,9	89,3
	8	6	5,8	5,8	95,1
	more than 8	5	4,9	4,9	100,0
	Total	103	100,0	100,0	

Fig. 18 Hours x day

Fig. 19 Hours x day

Test 5

We analyse whether there is a significant statistical difference for the Total Score - General Self-Efficacy averages and the level of education.

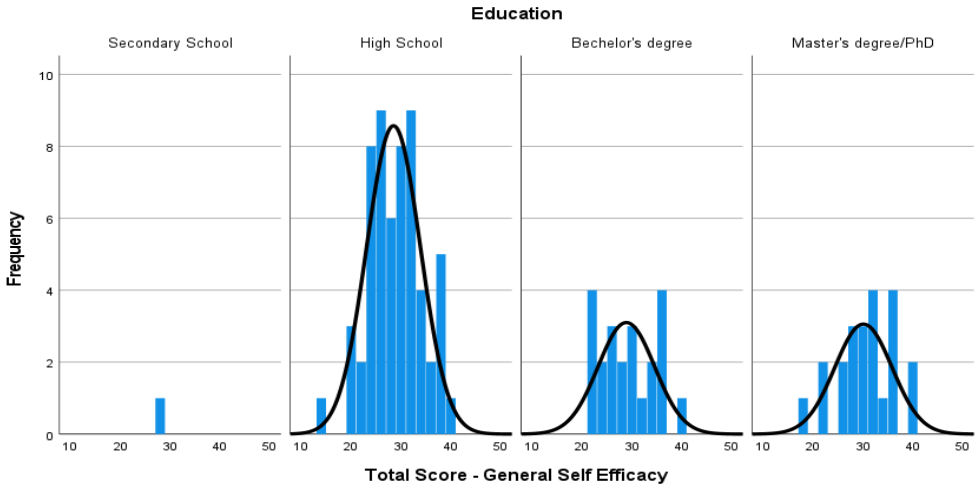

Fig. 20 Education

ANOVA

Total Score - General Self Efficacy

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	44,933	3	14,978	,490	,690
Within Groups	3024,892	99	30,554		
Total	3069,825	102			

1

Fig. 21 education and Score - General Self-Efficacy

Sig. is greater than 0.05, so I can not reject the null hypothesis that there is a difference between the level of education and Score - General Self-Efficacy

Test 6

There is a statistically significant positive correlation between how educators perceived the effectiveness of the tools used and the results of the General Self Efficacy test. Essentially, the higher the score given to the effectiveness of the instruments, the higher the score in the General Self-Efficacy test.

Correlations

		How do you perceive its effectiveness through these tools?	Total Score - General Self Efficacy
How do you perceive its effectiveness through these tools?	Pearson Correlation	1	,213*
	Sig. (2-tailed)		,030
	N	103	103
Total Score - General Self Efficacy	Pearson Correlation	,213*	1
	Sig. (2-tailed)	,030	
	N	103	103

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

Fig. 22 Effectiveness through tolls and S.E.

Test 7

Even more marked is the positive correlation between educators who perceived the effectiveness of their educational efforts and the results of the General Self Efficacy test. This confirms that the results obtained in the test are already perceived by the educator, who therefore self-evaluates correctly.

Correlations

		Total Score - General Self Efficacy	How do you perceive your educational commitment with this way of working?
Total Score - General Self Efficacy	Pearson Correlation	1	,266**
	Sig. (2-tailed)		,007
	N	103	103
How do you perceive your educational commitment with this way of working?	Pearson Correlation	,266**	1
	Sig. (2-tailed)	,007	
	N	103	103

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

Fig. 23 Self efficacy & Ed. Commit.

Test 8

There is also a strong positive correlation between the number of hours worked per day and how the educational commitment is perceived with the new way of working. People who have worked more,

albeit remotely, perceive their educational work as more effective than those who have worked fewer hours.

Correlations

		How do you perceive your educational commitment with this way of working?	How many hours a day did you spend working from home? (Please indicate number of hours per day)
How do you perceive your educational commitment with this way of working?	Pearson Correlation	1	,256**
	Sig. (2-tailed)		,009
	N	103	103
How many hours a day did you spend working from home? (Please indicate number of hours per day)	Pearson Correlation	,256**	1
	Sig. (2-tailed)	,009	
	N	103	103

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

Fig. 24 Self efficacy & time spent

Test 9

There is also a strong positive correlation between the number of hours worked per day and how the effectiveness of the intervention is perceived through these new tools. People who use these tools more often feel more comfortable and perceive that they are more effective.

Correlations

		How many hours a day did you spend working from home? (Please indicate number of hours per day)	How do you perceive its effectiveness through these tools?
How many hours a day did you spend working from home? (Please indicate number of hours per day)	Pearson Correlation	1	,260**
	Sig. (2-tailed)		,008
	N	103	103
How do you perceive its effectiveness through these tools?	Pearson Correlation	,260**	1
	Sig. (2-tailed)	,008	
	N	103	103

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

Fig. 25 Self efficacy & Tools

Test 10

It is interesting to notice that the level of education has no correlation on how the intervention and the tools are considered effective or not.

Correlations

		Education	How do you perceive the use of this tool?	How do you perceive its effectiveness through these tools?	How do you perceive your educational commitment with this way of working?	How do you perceive the tools you have used?
Education	Pearson Correlation	1	-,035	,053	,064	,016
	Sig. (2-tailed)		,723	,598	,520	,872
	N	103	103	103	103	103

Fig. 26 Education

4. Discussion

As previously stated, this study sought to investigate the correlation between pedagogical supervision and the sense of self-efficacy experienced by professional educators during lockdown, who developed mediated and distance educational interventions with disabled users.

The first hypothesis formulated is related to the possible correlation between self-efficacy and pedagogical supervision (fig. 6/7). People who have performed Pedagogical Supervision and those who have not obtained equal averages on Total Score - General Self Efficacy. This indicates that, according to the self-assessment skills of the sample, supervision does not affect the self-efficacy of educators. Despite this first assessment, in the three specific questions related to problem solving, there is a statistically significant difference in the averages of scores between those who had pedagogical supervision and those who did not (fig. 8/9/10/11/12/13). We can, therefore, argue that Pedagogical Supervision offers greater confidence in dealing with problems, especially if they are unforeseen, and this relevant characteristic considerably increases the perception of self-efficacy. The recent research of Zambianchi (2018) confirms the relationship between problem solving, perceived self-efficacy, and eudaimonia, i.e. the actualisation of talents (Ryff and Singer, 2008).

As Mancini et All (2013) emphasize, perceived self-efficacy can be defined as the belief of individuals to be able to provide a certain level of performance and, therefore, to know how to adequately manage problematic and stressful situations. It also influences the way individuals feel, think, find motivation, and behave. The authors, in their survey, have emphasized how the perception of self-efficacy changes and finds confirmation in the development of a training path. This research could partially explain the differences of statistically significant averages on Total Score - General Self Efficacy between those who have had specific training of DaD and those who have not (fig. 14-15). Both groups were in training in the 60 cfu path or had just completed it: this probably developed the sense of self-efficacy even in those who did not receive specific training.

However, the positive correlation between the educators who perceived the effectiveness of their educational commitment and the results of the General Self Efficacy test is marked (fig. 23). This confirms that the results obtained in the test are already perceived by the educator, who therefore self-evaluates correctly. Therefore, to greater commitment corresponds greater results that directly affect the perception of self-efficacy, confirming Zambianchi's thesis on eudaimonia. It is also

interesting to note that the level of education has no correlation on the modalities of intervention and the evaluation of effectiveness of the instruments.
A positive correlation is that relating to how educators have perceived the effectiveness of the tools used and the results of the General Self Efficacy test (fig. 22). Essentially, the higher the score given to the effectiveness of the tools, the higher the score in the General Self-Efficacy test. Therefore, we can argue that our hypothesis has been confirmed, since the use of the tools, their management, and mastery were considered so effective as to be directly proportional to Self-efficacy.
There is a strong positive correlation between the number of hours worked per day and how the effectiveness of intervention is perceived through these new tools (fig. 25). People who use the tools more often feel more comfortable and sense to be more effective. Therefore we can deduce that not only the constancy in the administration of the educational intervention is effective, but probably also the constant use by the educator improves the practice making the intervention more effective and consequently also the perception of self-efficacy.
Moreover, there is a strong positive correlation between the number of hours worked per day and how the educational commitment is perceived with the new way of working (fig. 24). Educators who have worked more, even if in remote mode, perceive their educational work as more effective than those who have worked less hours, even though scientific research on online educational and training interventions suggests, in a normo-typical situation, interventions of limited duration. In this case, the duration of the educational intervention on the individual user should be investigated in order to understand the distribution of the educator's working hours.
It would have been interesting to differentiate the type of user and the duration of the single educational intervention.

Conclusions

The management of complex problems, necessary in an emergency context, requires problem solving skills that in our research have positively correlated with the experience of educational supervision and a high level of self-efficacy (fig. 8/9/10/11/12/13). Unfortunately, there is little direct empirical support for the posited relationship between supervision and educators' self-efficacy (Glickman, 1990; Coladarci & Breton 1997). Actually, the current emergency scenario reinforces the importance of pedagogical supervision in both educational actions and research. Every educator expresses his or her own being through a potential thoughtfulness; without a clear intentionality, the result of this reflection would be the risk of superficiality. This educational force is expressed with greater energy in contexts where urgency or emergency prevails over circumstances in which planning and control dominate. The educational relationship overwhelms situations giving rise to new, unforeseen phases that, even before they are planned, must be studied and analysed in detail (Traverso, 2018). Educational professionalism, aimed at consolidating an identity and a professional role, is achieved through tools of a reflexive, dialogic, self-evaluating and transformative nature, both conceptually and operationally. Experience and practical activity become professionalizing, according to a now common and widely shared thought, only when they turn into a reflective moment that leads to a theory through the continuous re-reading and sharing of different practices and theories that allow to activate a circular dimension. Supervision in this sense can become an opportunity to activate processes of connection between theory and praxis, shared reflection, research of meanings, capable of translating into coherent operational strategies. Despite

the formal and institutional recognition of the importance of lifelong learning, in organizational realities these spaces are drastically reduced with the non-recognition of supervision considered a luxury or an occasional performance. On the contrary, pedagogical supervision must be recognized as an indispensable tool of educational work that can stimulate and support the search for meaning of educational actions, encouraging educators to place events in a planning framework and for which a permanent, non-emergency and contingent space must be manned.

In this first phase of the research, an attempt was made to undertake a cognitive path on a professional sample (the educational one) that has been little taken into consideration by scientific research. This work must be viewed, therefore, as the first stage of a broader and more complex process of analysis. The basic idea is to build a new investigative tool that allows educators to develop self-assessment skills starting from Vygotsky's concept of learning, i.e. the transition from the potential development zone, to the actual one through proximal one. The self-assessment, therefore, must be calibrated by evaluating the scaffolding necessary or not to the user.
The test will be administered, to the same sample, before and after a training course of educational supervision carried out ad hoc and in mediated mode, which allows the development of self-assessment skills and mentalization of educational processes. In this way the educator has the possibility to know the tool "supervision" and to evaluate if its use can change his self-assessment competence (T).
From the analysis of the results obtained, it is also essential to develop support paths related to e-learning in order to develop its accessibility (Guglielman, 2011) methodological-educational, improve the educational offer, involving, where possible, all the figures anchored to the user.

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