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More personal values, better soft skills:
An explorative study with a group of Italian university students

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Abstract

We live in a complex social world characterized by high levels of job insecurity and ever-changing work trends. In this context, hard skills alone are not enough to be hired and promoted, and soft skills have become a "must-have" for students and job seekers. Several research highlighted the positive role of some active learning methods in developing soft skills such as service-learning. However, personal characteristics might make people prone to be more skilled in specific areas than others. Thus, the present study aims to investigate the association between personal values and soft skills in a group of Italian university students. Two hundred forty-eight university students (women = 79.0%; Mage = 22.96, SD = 3.23) took part in the study. Participants completed the Portrait Values Questionnaire and the ERASMUS+K2 eLene4work Scale. Path analysis findings show several associations between the study's variables. Personal-focused values are mainly associated with intrapersonal soft skills, while social-focused values are primarily related to interpersonal soft skills.

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Further significant relationships between values and soft skills emerge, especially in the case of openness to change and self-transcendence values. Limitations of the study, future research developments, and practical implications of the results are discussed.

Keywords: soft skills; personal values; university students; path analysis

Introduction

We live in a world characterized by high levels of interconnection and interdependency among people, institutions, and cultures, and high levels of complexity, insecurity, and tensions (UNESCO, 2015). These conditions have led to an ever-changing society in which people are required to exhibit a never-ending adjustment (Nagy et al., 2019; Russo et al., 2021a). Not surprisingly, the workforce trends are also changing significantly, leading to a job market that is becoming increasingly competitive (Chirumbolo et al., 2021; Schulz, 2008). In this scenario, employers are likely to hire, retain, and promote people who demonstrate a positive attitude towards changes, who are dependable, willing to keep on learning, well-organized, are good communicators, and so on (Majid et al., 2012; Wats & Wats, 2009). This is especially true in the Italian context, where the present study was carried out, because high levels of unemployability among young adults have made it necessary for them to acquire new skills to be more appealing than other candidates (Gavriluță et al., 2022). Thus, compared to the past when technical and professional skills were considered the only skills that mattered, hard skills alone are no longer enough to reach high-status careers today (Mitchell et al., 2010; Schulz, 2008). Moreover, economists state that hard abilities like intelligence quotient account for only 20% of employment outcomes and other skills drive job success (Kyllonen, 2013; Levin, 2012). Consistently, research has shown that success in life depends not on the "general knowledge" achieved through school, but rather on other factors such as conscientiousness and curiosity (see Heckman & Kautz, 2012 for a review). Based on this evidence, the European Commission (2018) has recently recommended reforming school and university curricula to find teaching strategies that may effectively educate students in both knowledge-based disciplines and the so-called soft skills (Cinque, 2016).

To date, there is not clear definition of what soft skills are and what they are not, so much so that their meaning has been extensively debated in educational research (Chamorro-Premuzic et al., 2010). According to many scholars, the main challenge in finding a common definition is that some skills might be considered soft or hard based on specific areas of the job. For example, communication might be viewed as a soft skill for an electrical engineer but a technical skill for a journalist (Schulz, 2008). Moreover, during the last decade, soft skills have been termed "transversal skills" or "life skills" by several institutions such as the European Union (EU), the Organization for Economic Cooperation and Development (OECD), and the World Health Organization (WHO), leading to great confusion in the field. Touloumakos (2020) conducted a literature review and found that the term "soft skills" generally falls into one of 10 categories. These categories include, but are not limited to, elements ranging from qualities and values to other areas such as cognitive abilities or processes. Due to the lack of a clear and unique definition, soft skills have often been confused with or considered as part of other related constructs, such as personality traits, attitudes, beliefs, and values. However, soft skills represent individual competencies, and, as such, they require a "share of execution". Indeed, the element of action is implicitly or explicitly embedded into all the various definitions of soft skills found in the literature (Matteson et al., 2016). Moreover, although many personality features are significantly related to soft skills (e.g., Ciappei, 2015; Riggio et al., 2003), the correlation coefficients are always far from perfect, empirically suggesting that soft skills represent a unique construct.

Despite these issues, soft skills have truly gained traction in educational and work contexts (Cimatti, 2016) because studies show that highly soft-skilled individuals exhibit more energy, passion in their job, and career engagement (Aryani et al., 2021), as well as seem to be more protected from work-related diseases (e.g., burnout; Valieva, 2020).

According to the eLene4Work framework (2015-2018), which has been employed in the present study, soft skills could be defined as a combination of cognitive (e.g., skills related to the "general knowledge" a person has achieved; Heckman & Kautz, 2014) and metacognitive skills (e.g., skills related to grit, consciousness, trust, openness to experience, etc.; Kautz et al., 2014) that help people to adapt to the context in which they interact, managing personal, educational, and professional challenges (Cinque, 2016). Moreover, soft skills are essential to exercise an active and engaged citizenship, namely a citizenship based on democratic involvement that promotes social cohesion and sustainable behaviors (Arnold et al., 2020). The decision to adopt the eLene4Work framework for defining and measuring soft skills is based on two main reasons: first, this framework was developed starting from a comparative analysis of the state of the art. Second, it has been better defined by employing a multi-informant and cross-cultural perspective. Indeed, the authors investigated the meaning and the importance of soft skills relying on the point of view of university students, workers, teachers, and employers from 9 European Member States. Then, a related instrument to measure soft skills based on the final conceptualization has been developed (Uggeri et al., 2019). The eLene4Work framework clustered soft skills into three main categories: intrapersonal, interpersonal, and methodological. The first category includes the following basic skills: leadership (the ability to motivate and guide other persons), self-evaluation (the ability to be self-critical), adaptability, and flexibility (the ability to adapt quickly to new situations and contexts, exhibiting a flexible attitude). The second category includes communication (the ability to express one's ideas and opinions assertively, without prevaricating the views and opinions of others), teamwork (the ability to develop cooperative relationships, share knowledge and resources with others, and actively contribute to reaching the group's goals), conflict management (the ability to manage and resolve conflicts), and negotiation (the ability to conciliate different opinions in order to find a compromise). Finally, the third category includes learning to learn (the ability to evaluate own's knowledge and keep on learning by maintaining an open attitude), analytical skills (the ability to draw conclusions after getting an amount of information, establishing causal relationships), creativity and innovation (the ability to contribute with new improving ideas), and problem-solving (the ability to evaluate, select and implement solutions to solve problems).

Several studies have been carried out to assess the factors associated with the acquisition and strengthening of soft skills. Most of this research focuses on educational processes (e.g., Ahmad et al., 2019; Zhang et al., 2021) and teaching methods (e.g., England et al., 2020; Khan et al., 2017; Martin, 2019). Within formal education, Yorke and Knight (2004) explore two main approaches (parallel and embedded) to fostering the development of soft skills within educational institutions. The *parallel approach* provides students with activities focused on the development of specific soft skills, in the form of a parallel offering to the program curriculum (workshops, seminars, research, laboratory activities, group work, project work, etc.). On the other hand, the *embedded approach* is based on the premise that there is no difference between the way disciplinary content and soft skills are taught. The basic assumption of this approach is that the development of soft skills cannot be separated from the processes of acquiring other knowledge or disciplinary competencies.

Among teaching methods, one that has demonstrated particularly efficacy in developing students' soft skills is service-learning (Bootsma et al., 2021; Culcasi et al., 2021; McNatt, 2020; West, 2017). This educational approach combines the learning dimension with community service to apply academic knowledge to address societal needs (Albanesi et al., 2023; Culcasi et al., 2021). Thus, students put what they learn in class into practice by engaging in community service activities, strengthening their knowledge, and acquiring personal, relational, and methodological skills that they otherwise could hardly learn in ordinary lectures (Culcasi & Venegas, 2023).

Moreover, previous findings have pointed out the critical role played by teachers' attitudes and their classroom management styles (Blazar & Kraft, 2017). However, as Schultz (2008) previously theorized, the development of some soft skills rather than others might also depend on personal characteristics. Accordingly, some studies have highlighted the existence of gender and age differences in soft skills, although the results are often inconsistent. Specifically, girls seem to be more prone to develop interpersonal skills than boys (Groves, 2005). Aryani et al. (2021) have pointed out that soft skills improve with age, even if their impact on psychological capital (i.e., internal resources that aid in managing challenging situations and enhancing wellbeing; Luthans et al., 2006) is stronger among high school and university students than employees. However, on the other side, some studies have shown that age does not have a consistent role in shaping soft skills (e.g., Garcia et al., 2020).

In line with Schultz's (2008) theorization, it is possible to hypothesize that personal values might represent another personal characteristic able to shape soft skills. Values are abstract concepts of what people hold to be worthy (Kluckhohn, 1951), and thus, they influence human choices, inclinations, and actions (Allport, 1961). Consistently, Evers et al. (1998) pointed out that soft skills are strongly associated not only with knowledge but also with values. More recently, the Portuguese Ministry of Education published 'Learner Profile', a document providing guidelines for teachers and educators that describe the 'portfolio' that the country wishes its students to achieve through education (Directorate-General for Education/Ministry of Education, 2018). This report focuses on several soft skills, such as communication and flexibility, but more interestingly, the Ministry of Education recognized that the core of these skills are values (Murcia Alvarez et al., 2021). According to the Theory of Basic Human Values (Schwartz, 1992), which is the most well-known evidence-based theory on values (Brosch & Sander, 2015; Roccas & Sagiv, 2017), values are defined as relatively stable, trans-situational principles of what people consider important and desirable in their lives (Rokeach, 1973; Schwartz, 1992). Thus, values are considered a central aspect of people's identity (Barni, 2009; Hitlin & Piliavin, 2004), representing ideals deemed worthy of commitment as much as people depicting themselves in accordance with their value priorities (Hitlin, 2011). Values are the core of people's motivational system, guiding their perceptions, attitudes, inclinations, and behaviors (Roccas & Sagiv, 2017; Russo et al., 2019; Russo et al., 2022). Schwartz (1992, 2012) identified ten basic values. Each value is characterized by a specific motivational goal: (i) *power* (social status, dominance over people and resources), (ii) *achievement* (personal success according to social standards), (iii) *hedonism* (pleasure or sensuous gratification), (iv) *stimulation* (excitement, challenge, and novelty), (v) *self-direction* (independence of thought and action), (vi) *universalism* (understanding, tolerance, and concern for the welfare of all people and nature), (vii) *benevolence* (preserving and enhancing the welfare of people to whom one is close), (viii) *tradition* (respect and commitment to cultural or religious customs and ideas), (ix) *conformity* (restraint of actions that may harm others or violate social expectations), and (x) *security* (safety and stability of society, relationships, and the self). These values are interrelated, and their relations can be organized into a circular structure based on the congruence and the conflict among their underlying motivational goals (Fig. 1).

Fig. 1 - *Schwartz's Model of Values (1992, 2003, 2012)*

Values located close to each other in the circular structure share motivational goals (e.g., universalism and benevolence). Likewise, values located far away pursue conflicting motivational goals (e.g., benevolence and power). The relationships between values can also be summarized into a two-dimensional structure (Schwartz, 1992, 2012). The first dimension contrasts conservation values (i.e., tradition, conformity, and security), that emphasize self-restraint, preservation of traditional practices, and safeguarding of stability, as opposed to openness to change values (i.e., stimulation, hedonism, and self-direction), which instead emphasize the relevance of change, independence, and freedom. The second dimension opposes self-transcendence values (i.e., benevolence and universalism), that emphasize concern for the welfare and interests of others, to self-enhancement values (i.e., achievement and power), that emphasize the pursuit of one's interests, relative success and dominance over others. Finally, Schwartz (2012) categorizes these value dimensions based on their focus (personal *vs* social) and orientation (self-protective *vs* self-expansive). Accordingly, self-enhancement and openness to change values share a personal focus because they are mainly centred on achieving personal interests; while self-transcendence and conservation values share a social focus because they are mainly focused on managing relationships with others. Furthermore, self-enhancement and conservation share a self-protective orientation; while conservation values are oriented to avoid conflicts and maintain social order, self-enhancement values are oriented to actively achieve significant personal aims, looking over one's shoulder. On the other hand, openness to change and self-transcendence share a self-expansive orientation because they express anxiety-free motivations, promoting positive human development (Schwartz et al., 2012).

Several studies have highlighted that people in different occupations tend to prioritize different values (Ariza-Montes et al., 2017; Knafo & Sagiv, 2004; Tartakovsky & Cohen, 2014), and personal values are found to influence vocational interests and career choices (Knafo & Sagiv, 2004; Sagiv, 2002). Holland (1997) theorized the existence of six vocational interests: conventional interests (i.e., the preference for systematic and unambiguous tasks); artistic interests (i.e., the preference for free, ambiguous, unsystematic activities); investigative interests (i.e., the preference for systematic, symbolic, and creative investigation for abstract phenomenons); social interests (i.e., the preference for activities aimed at helping and guiding others); enterprising interests (i.e., the preference for activities aimed at leading and convincing others); and realistic interests (i.e., the preference for systematic manipulation of objects, instruments or machines). Values and vocational interests are associated based on their compatibilities in terms of motivational goals (Arieli et al., 2020; Sagiv, 2002). For example, conservation values are more compatible with conventional vocational interests, whereas openness to change values are more related to artistic interests (Arieli et al., 2020).

Based on this evidence, it is possible to speculate that values might influence career paths, via their impact on specific soft skills that make people more self-efficacy in particular job roles than others. Previous studies have investigated the association between personal values and specific soft skills in employees, although the results are sometimes inconsistent. For example, a study by Sosik (2005) on interpersonal soft skills that involved 1,381 full-time corporate employees found that self-enhancement and self-transcendence values were positively related to leadership, in turn promoting managerial performance. However, a study by Prada-Ospina et al. (2020), that involved a group of 5,000 employees, did not find any significant association between values and leadership. In another study, Corneliussen et al. (2017) explored the link between values, intraindividual, and interindividual soft skills (based on adaptability and conflict resolution) in a group of 10 Danish soldiers deployed to stations in Greenland. Findings from this study showed that openness to change was related to adaptability, while self-transcendence values were positively associated with conflict management. Nevertheless, Sverdlik and Oreg (2009) pointed out that the link between values and adaptability following organizational changes is not unconditional, but depends on whether the change was chosen individually or imposed by the organization. In the former case, openness to change and conservation were positively and negatively associated with adaptability, respectively. In the latter case, however, the pattern was reversed: adaptability was more likely to be observed when conservation values were more important. In the category of interindividual soft skills, several studies focused on the link between personal values and teamwork, showing that cooperating attitudes and behaviors at the job were more compatible with self-transcendence values (Anjum et al., 2014; Arieli et al., 2020; Bond et al., 2004; Sagiv et al., 2011). It is also noteworthy that, in these studies, competition was mainly associated with self-enhancement values. Finally, considering the category of methodological skills, a recent study involving a group of 2,046 Russian and North Caucasians highlighted that openness to change and conservation values were positively and negatively related to creativity, respectively (Lebedeva et al., 2019).

The present study

Based on the above considerations, the purpose of this study is to extend the earlier findings, analyzing the association between the personal values system and all the soft skills (intrapersonal, interpersonal, and methodological) in a group of university students, controlling for students' sex and age.

University students are trained to become future professionals. They make decisions on career paths during their years in education and reach the necessary abilities to be hired in that sector. Thus, understanding the links between values and soft skills could allow counselors to better orient students to jobs in line with their goals, vocations, and inclinations.

Although the present study adopts an explorative approach, it is possible to claim some hypotheses relied on motivational goals expressed by values. We hypothesize a positive association between self-enhancement, openness to change, and intrapersonal soft skills (H1). We also expect a positive association between conservation, self-transcendence, and interpersonal soft skills (H2). Based on Schwartz's (1992, 2012) statements, self-enhancement and openness to change values have a personal focus as they mainly regulate personal interests and desires. On the other hand, conservation and self-transcendence values share a social focus as they regulate the way people are socially related to others, relying on the principle of cooperation (Russo et al., 2022). Furthermore, we hypothesize that openness to change and self-transcendence values are also associated with methodological skills, that enable problem-solving through an approach of openness and flexibility (H3). Indeed, openness to change and self-transcendence are both considered "growth" values because they underlie self-expansive motivations (Russo et al., 2022; Russo et al., 2021b; Schwartz, 2012).

Materials and Methods

Participants and Procedure

Participants were two hundred forty-eight university students (79.0% women), aged from 18 to 38 years (M = 22.96, SD = 3.23), all living in Italy. Most of them were born in Italy (92.6%) and lived in the Center of Italy (77.5%). The majority of students attended a bachelor's degree in Human Nutrition Sciences (40.6%) or a master's degree in Psychology (44%).

Participants were recruited through the collaboration of their universities. Students were informed about the main objectives of the research and were advised that participation would be free and voluntary.

Informed consent was also obtained from all participants involved in the study. Students who consented to take part in the study were asked to complete an anonymous questionnaire. The research protocol followed the ethical principles of the Declaration of Helsinki (1964) in its latest version (2013). The present study has been approved by the Ethical Committee of LUMSA University and follows the ethical guidelines for human research of the Italian Psychological Association (AIP; https://aipass.org/wp-content/uploads/2023/02/Codice-Etico_luglio-2022.pdf, consulted in May 2022). Additionally, one member of the research team had previously completed a training course 'Protecting Human Research Participants' by the National Institute for Health (Certification Number: 2868994).

Measures

Personal values. The Portrait Values Questionnaire–Short version (PVQ-21; Schwartz, 2003; Italian adaptation by Capanna et al., 2005) was used to assess students' personal values. The scale includes 21 portraits of a person, with his/her aspirations and goals that indirectly reflect the importance that people attribute to each basic value. The respondents' values are then inferred from their self-reported similarity (from 1 = "not like me at all" to 6 = "very much like me") to the people described. We computed four scores assessing the importance of the four higher-order value dimensions, namely: (i) conservation ($\alpha = 0.68$), (ii) openness to change ($\alpha = 0.68$), (iii) self-transcendence ($\alpha = 0.62$), and (iv) self-enhancement ($\alpha = 0.76$). An example of item is "Thinking up new ideas and being creative is important to him/her. He/She likes to do things in his/her own original way" (openness to change).

Soft skills. The ERASMUS+K2 eLene4work Scale (2015-2018) was used to assess students' perception of their soft skills. The scale is composed of 91 items set into 11 subscales which cover specific skills, such as (i) leadership ($\alpha = 0.83$), (ii) self-evaluation ($\alpha = 0.82$), (iii) adaptability and flexibility ($\alpha = 0.63$), (iv) communication ($\alpha = 0.73$), (v) teamwork ($\alpha = 0.79$), (vi) conflict management ($\alpha = 0.76$), (vii) negotiation ($\alpha = 0.71$), (viii) learning to learn ($\alpha = 0.84$), (ix) analytical skills ($\alpha = 0.87$), (x) creativity and innovation ($\alpha = 0.86$), and (xi) problem solving ($\alpha = 0.81$). Participants were asked to rate how capable they felt in each of the areas of competence on a scale ranging from 1 (not able at all) to 4 (very able). An example of item is: "During an argument, I always try to find a compromise" (conflict management).

Data Analysis

Preliminarily, we described the study's variables in terms of means, standard deviations, range, skewness, kurtosis, and linear correlational associations (Pearson's coefficients). A path analysis was then employed to explore the associations between personal values and soft skills. In the path analysis, the four value dimensions were treated as independent variables, the participant's age and sex (1 = males; 2 = females) as covariates, and soft skills as dependent variables (Fig. 2).

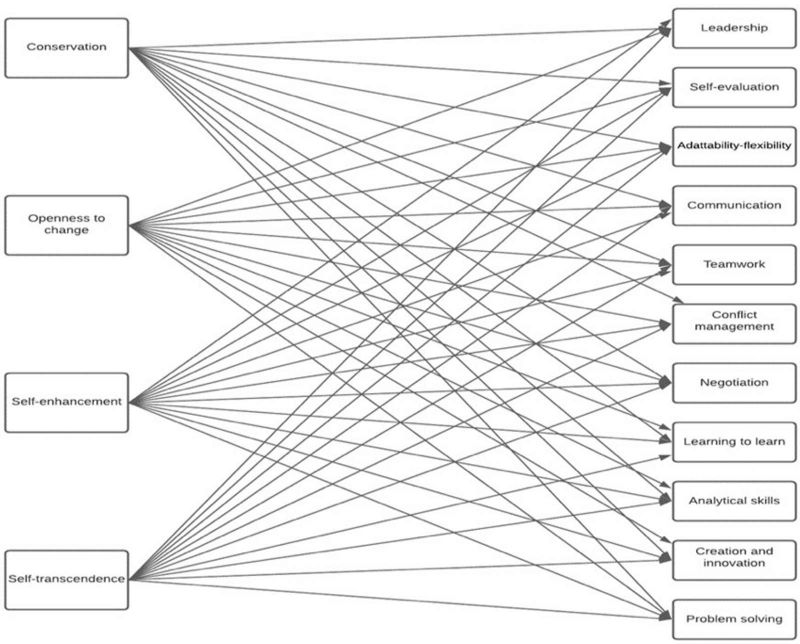

Fig. 2 - *Conceptual path model*

Since the data followed a normal distribution (see Tab.1) the Maximum Likelihood (ML) estimation was used. To verify the goodness-of-fit of the model, the following fit indices were used: The Chi-squared test (p-value > 0.05 indicates a good fit), the Comparative Fit Index (CFI), and the Non-normed Fit Index (TLI) (values > 0.90 indicate a good fit; values > 0.95 indicate a very good fit), the Root Mean Square Error of Approximation (RMSEA), and the Standardised Root Means Square Residual (SRMR) (values < 0.08 indicate a good fit, values < 0.05 indicate a very good fit) (Kenny, 2015). Moreover, to explore the replicability of our results, we employed the standard bootstrap, whit a 95% confidence interval. Parameter estimates were based on 5000 bootstrap samples.

For descriptive and correlational analysis, we used SPSS-23. For the path analysis, we used Mplus-6.

Results

Descriptive statistics are reported in Table 1.

Tab 1 - *Descriptive statistics of the study's variables*

	Mean	Standard Deviation	Range	Skewness	Kurtosis
Personal values					
Conservation	3.71	0.84	1.50 – 5.83	-0.06	-0.44
Openness to change	4.29	0.78	2.17 – 6.00	-0.16	-0.33
Self-enhancement	3.32	1.03	1.25 – 6.00	0.18	-0.39
Self-transcendence	5.01	0.65	3.00 – 6.00	-0.67	0.18
Soft skills					
Leadership	3.07	0.49	1.38 – 4.00	-0.27	0.00
Self-evaluation	3.37	0.49	1.60 – 4.00	-0.51	-0.20
Adaptability and Flexibility	3.22	0.56	1.00 – 4.00	-0.32	0.03
Communication	3.17	0.35	2.17 – 4.00	0.05	-0.22
Teamwork	3.25	0.34	2.29 – 4.00	0.12	-0.37
Conflict management	3.29	0.35	2.20 – 4.00	-0.09	-0.57
Negotiation	3.14	0.46	1.50 – 4.00	-0.14	0.24
Learning to learn	3.34	0.38	2.33 – 4.00	-0.08	-0.86
Analytical skills	3.03	0.46	1.75 – 4.00	-0.02	-0.02
Creating and Innovation	2.98	0.57	1.20 – 4.00	-0.11	-0.11
Problem solving	3.22	0.42	2.13 -4.00	0.24	-0.76

Among personal values, the highest mean scores were recorded for self-transcendence and openness to change values. Among soft skills, the highest mean scores were recorded for self-evaluation and learning to learn.

Table 2 shows the Pearson correlation coefficients between the study's variables.Strong associations emerge between values and soft skills in this study. Specifically, conservation is significantly and positively correlated with communication, teamwork, conflict management, learning to learn, and problem-solving. Openness to change and self-transcendence are significantly and positively associated with all the soft skills we analyzed. Finally, self-enhancement is significantly and positively associated with communication, leadership, self-evaluation, negotiation, and analytical skills.

The results of the path analysis are reported in Table 3.

Tab 2 - *Bivariate correlations matrix of the study's variables*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Conservation	-	0.09	0.17**	0.32**	0.09	0.07	0.09	.30**	0.25**	0.28**	0.07	0.17**	0.11	-0.01	0.13*
2. Openness to change		-	0.37**	0.25**	0.37**	0.29**	0.32**	0.31**	0.31**	0.21**	0.16**	0.30**	0.25**	0.38**	0.23**
3. Self-enhancement			-	-0.05	0.35**	0.15*	0.06	0.23**	0.07	-0.05	0.13*	0.11	0.18**	0.11	0.03
4. Self-transcendence				-	0.13*	0.22**	0.31**	0.35**	0.45**	0.40**	0.20**	0.24**	0.16**	0.18**	0.26**
5. Leadership					-	0.47**	0.27**	0.37**	0.47**	0.36**	0.35**	0.48**	0.55**	0.49**	0.43**
6.Self-evaluation						-	0.27**	0.38**	0.41**	0.35**	0.24**	0.63**	0.42**	0.30**	0.41**
7.Adattability-flexibility							-	0.30**	0.29**	0.31**	0.19**	0.41**	0.32**	0.39**	0.36**
8. Communication								-	0.52**	0.47**	0.32**	0.42**	0.43**	0.39**	0.44**
9. Teamwork									-	0.65**	0.49**	0.49**	0.42**	0.48**	0.51**
10.Conflict management										-	0.40**	0.50**	0.42**	0.35**	0.56**
11. Negotiation											-	0.30**	0.20**	0.45**	0.39**
12. Learning to learn												-	0.60**	0.43**	0.52**
13. Analytical skills													-	0.49**	0.51**
14.Creation and innovation														-	0.43**
15. Problem solving															-

Note. ** p<0.01; *p<0.05

Tab 3 - *Path model results*

	Intrapersonal skills			Interpersonal skills				Methodological skills			
	Leadership	Self-evaluation	Adaptability and flexibility	Communication	Teamwork	Conflct management	Negotiation	Learning to learn	Analytical skills	Creation and innovation	Problem solving
Sex	0.05	0.14*	-0.07	-0.07	0.01	-0.04	-0.06	0.08	-0.03	-0.09	-0.04
	(-0.04, 0.14)	(0.04, 0.23)	(-0.17,0.04)	(-0.19, 0.03)	(-0.070.09)	(-0.13, 0.04)	(-0.16,0.03)	(-0.01, 0.18)	(-0.14,0.07)	(-0.20, 0.00)	(-0.13, 0.05)
Age	0.04	-0.12*	0.01	0.07	0.15**	0.09	0.00	-0.01	0.01	0.05	-0.09
	(-0.07, 0.14)	(-0.22,-0.02)	(-0.10, 0.11)	(-0.01, 0.17)	(0.06,0.24)	(-0.15, 0.18)	(-0.11, 0.11)	(-0.09, 0.07)	(-0.08, 0.11)	(-0.06, 0.16)	(-0.02, 0.20)
Conservation	-0.00	-0.01	-0.03	0.17**	0.12*	0.18**	-0.01	0.09	0.04	-0.05	0.07
	(-0.09, 0.09	(-0.11, 0.11)	(-0.14, 0.08)	(0.07, 0.26)	(0.02, 0.21)	(0.08, 0.29)	(-0.11, 0.09)	(-0.01,0.20)	(-0.07, 0.15)	(-0.16, 0.04)	(-0.03, 0.17)
Openness to change	0.28**	0.21**	0.26**	0.20**	0.25**	0.21**	0.08	0.26**	0.19*	0.37**	0.22**
	(0.17, 0.37)	(0.08, 0.33)	(0.14, 0.36)	(0.08, 0.30)	(0.16, 0.34)	(0.11, 0.31)	(-0.03, 0.19)	(0.14, 0.37)	(0.06, 0.31)	(0.26, 0.46)	(0.10, 0.33)
Self-enhancement	0.24**	0.07	-0.03	0.14*	-0.02	-0.15*	0.09	-0.00	0.10	-0.02	-0.07
	(0.15, 0.34)	(-0.04, 0.19)	(-0.13,0.08)	(0.03, 0.24)	(-0.11, -0.07)	(-0.25, -0.24)	(-0.02, 0.21)	(-0.10, 0.11)	(-0.00, 0.21)	(-0.13, 0.09)	(-0.19, 0.04)
Self-transcendence	0.09	0.19*	0.25**	0.24**	0.33**	0.26**	0.18**	0.15*	0.13	0.10	0.17**
	(-0.02, 0.19)	(0.06, 0.31)	(0.14,0.37)	(0.13, 0.35)	(0.24, 0.44)	(0.15, 0.36)	(0.06, 0.28)	(0.03, 0.25)	(0.00,0.25)	(-0.01, 0.21)	(0.06, 0.27)

Note. In the Table the β coefficients and 5.000 bootstrap 95% IC are reported; $**p<0.01$, $*p<0.05$; Sex: 1 = males, 2 = females

Overall, the path model showed a satisfactory fit to the data. Specifically, $\chi 2/df=13.87/8$, $p=0.08$; RMSEA=0.05; CFI =0.99; TLI=0.93; SRMR=0.02.

The inspection of β coefficients reveals that sex was positively related to self-evaluation; this suggests that women are more prone to report higher levels of self-evaluation than men. Moreover, age is negatively associated with self-evaluation and positively with teamwork. Among personal values, conservation is significantly and positively related to communication, teamwork, and conflict management. Openness to change is significantly and positively related to all soft skills except for negotiation. Self-enhancement is significantly and positively related to leadership and communication, and significantly and negatively associated with conflict management. Finally, self-transcendence was significantly and positively related to all intraindividual and interpersonal soft skills, except for leadership. Self-transcendence values are also significantly and positively related to learning to learn and problem-solving.

Discussion and Conclusion

Living in today's complex social world has made it essential for people, especially university students, to acquire sophisticated skills to be firstly hired after graduation, and then maintained and promoted for work (Majid et al., 2012; Schultz, 2008; Wats & Wats, 2009). Moreover, the uncertainties in the job market and evolving work trends have led to high levels of competition to the extent that hard and technical skills are considered "must-haves" but not sufficient to be noticed by employers (Gavriluță et al., 2022). In this context, soft skills have assumed more and more importance (Mitchell et al., 2010; Schultz, 2008). Indeed, the European Commission (2018) promoted a change in higher educational policies, requiring universities to pursue an integral education of students, including the teaching of soft skills. Consistently, several studies have investigated the factors that promote or are associated with soft skills (e.g., Ahmad et al., 2019; England et al., 2020; Khan et al., 2017; Martin, 2019; Zhang et al., 2021). Schultz (2008) observed that beyond teaching methods, personal characteristics might make people more prone to developing specific soft skills than others. Among these personal characteristics, a significant role is played by personal values (Directorate-General for Education/Ministry of Education, 2018; Evers et al., 1998), which represent the core of an individual's motivational system (Rokeach, 1973; Schwartz, 1992). On this basis, the present study aims to analyzed the relationships between personal values and soft skills in a group of Italian university students.

This study's findings partially confirmed the initial hypotheses. Personal-focused values (e.g., self-enhancement and openness to change) are positively associated with some intrapersonal soft skills (H1). Specifically, self-enhancement is positively linked with leadership. People who endorse these values are typically driven by the need for power and success, likely making them more comfortable in leadership roles (Sosik, 2005). In the university context, professors often encourage students to show leadership in several ways. For example, they might be encouraged to assume a guiding role in group work and discussions or become a graduate representative (Wong et al., 2022). These roles are coherent with the motivational forces that underline self-enhancement values, namely the demonstration of one's own competencies and the attainment of a prestigious social status (Schwartz, 1992). Once they enter the world of work, these students may be more inclined to take on a leadership role. Considering work contexts, most leaders should pursue organizational interests first, even if it means going against the employees' needs. Leaders are also expected to influence the effectiveness of their employees and their organization (Yue et al., 2021). Thus, the motivational goals expressed by self-enhancement values (e.g., ambition, success, and power) are congruent with the tasks a leader is usually expected to manage (Sosik et al., 2005).

Interestingly, self-enhancement values are also positively and negatively related to communication and conflict management, respectively, which are defined as interpersonal skills. Effectively, leadership and communication are strongly related to each other, as much as some scholars state that leaders might be viewed as communication agents (Yue et al., 2021). Assuming a leadership style means being able to influence others. Thus, leaders, either in an educational or work context, are expected to be skilled communicators in order to strengthen relationships, build a common vision, and be acknowledged by others as leaders. Thus, communication can be viewed as a means to become a leader, reaching self-enhancement goals (i.e., power and success). On the other hand, conflict management skill entails that people handle and solve conflicts (Corneliussen et al., 2017), and, as such, it is in contrast with the competitive motivations expressed by self-enhancement values.

Considering openness to change values, they were positively related to all the soft skills we considered, except for negotiation (H1, H3). Openness to change values share with self-enhancement values the personal focus, but, contrary to these latest, they foster self-expansion and growth orientation (Schwartz et al., 2012). The defining motivational goals of openness to change values are the independence of thought and action (e.g., choosing, creating, exploring), the excitement, the challenges, and the novelties (Schwartz, 1992, 2012). As such, students who endorse these values might be more prone to be flexible and creative, solve problems quickly (maybe relying on innovative thinking or exploring all the possible solutions), assemble, work, and lead a team. Thus, being what scholars define as "transformative leader". (Yue et al., 2019). On the other hand, negotiation demands being open, friendly, and assertive about one's arguments. This implies having the ability to prioritize a compromise that may suit the welfare of the group, even at the expense of personal opinions and interests (Schneider, 2012). Thus, negotiation represents a skill that might conflict with the independence of thought and action emphasized by openness to change values.

Considering conservation and self-transcendence values, they are positively associated with all interpersonal soft skills (H2), except for the link between conservation and negotiation. Conservation and self-transcendence values are both conceptualized as social-focused values because they mainly regulate the way people socially interact and are related to others, complying with the basic need for relatedness (Russo et al., 2021b). Thus, students who endorse these values are naturally inclined to communicate assertively, without prevaricating the ideas and opinions of others, to develop cooperative relationships, and to manage and solve conflicts. However, contrary to self-transcendence values, conservation adheres to the need to avoid conflicts on one side, and the need to avoid unpredictability and changes on the other side (Barni et al., 2022). Students who attach great importance to these values might thus be unable to negotiate with others as it implies being open to uncertainty. Self-transcendence values are also positively linked with two intrapersonal (self-evaluation and flexibility) and methodological (learning to learn and problem-solving) skills (H3). Self-transcendence values promote a mindset that focuses on the wellbeing of others, transcending the self (Schwartz, 1992). Students who endorse these values tend to be more prone to engage in self-evaluation reflections through which they evaluate their actions based on the benefits brought to others. Moreover, they tend to be flexible in order to enhance the wellbeing of their ingroup or other people in need, as they are themselves more prone to struggle in uncomfortable circumstances (Pask, 2005). Finally, previous findings have shown that self-transcendence motivations are positively linked with wisdom (Koltko-Rivera, 2006). Self-transcendence values are conceptualized as growth values, and wisdom is considered the highest form of human development (Sternberg, 2003), which requires constantly finding new ways to learn, and opening to the worldview. This worldview leads to finding alternative solutions to small and big problems, adopting an altruistic perspective (Koltko-Rivera, 2006).

Despite the promising results discussed above, four main limitations of the present study must be acknowledged. Firstly, its cross-sectional nature does not allow us to assume the causality of the relationships between personal values and soft skills. Thus, future studies should adopt a longitudinal design to solve this gap. However, several previous studies have shown that values represent guiding principles, shaping attitudes, inclinations, and behaviors (see Roccas & Sagiv, 2017). Although statistical causalities among variables were not assumed, it is theoretically plausible that personal values represent precursors of soft skills. Secondly, the study's sample size is relatively small. To face this limit, we use the bootstrap method to compute confidence intervals, a statistical technique that tests effects that emerge from a given population while simulating samples out of a larger dataset (Schoemann et al., 2017). Thirdly, the study adopts a convenience sample with more female students than male students, resulting in a need to control the results for sex (and age). Finally, the study sample is unbalanced by the participants' course of study. The study adopts a convenience sample that allows to mostly reach students with a bachelor's degree in Human Nutrition Sciences or a master's degree in Psychology. Thus, future studies should involve students from different courses and analyze the possible differences among them. Indeed, certain degree courses may train students in specific soft skills rather than others (e.g., psychology students are often taught to be good communicators and work in a team).

Despite these limitations, this is the first study that addresses the association between personal values and soft skills in a group of university students, highlighting how values are related to inclinations and skills. The present findings pave the way for two potential practical implications. Firstly, orientation interventions should also considering value assessment. This includes (i) counselors making students aware of the skills they have (ii) making students aware of the interconnections about their value priorities, skills, and vocational interests, and (iii) which values are to be prioritized to make students more likely to be hired, and compatible with their goals and vocations. Secondly, educational and psychological interventions (e.g., service-learning and value affirmation) should be refined (and even combined) to strengthen soft skills in students, also considering their value priorities. On the one hand, service-learning is an active learning method effective for developing soft skills in students through a pragmatic progressive learning process (Culcasi et al., 2021, Culcasi & Venegas, 2023). On the other hand, value affirmation interventions foresee three main activities: 1. Enhancing awareness of one's core values; 2. Taking ownership of own one's important values; 3. Putting these values into action. We believe that combining service-learning approach with value affirmation interventions can benefit students (Bradley et al., 2015; McQueen & Klein 2006; Rapa et al., 2020). Affirming values before students become involved in service-learning programs gives them the opportunity to implement what they are studying through community actions, aligning with their value priorities. In this way, there would be an enhancement of soft skills and a promotion of positive development in terms of personal flourishing (Culcasi et al., 2021). It would be valuable for future studies to refine a psychoeducational approach that combines service-learning with value affirmation for university students and examine its effects on academic performance and positive developmental dimensions, such as engagement, self-efficacy, and overall wellbeing.

Data Availability Statement: The data presented in this study are available on reasonable request from the corresponding author.

Conflicts of Interest: The authors declare no conflict of interest.

References

Ahmad, A.R., Chew, F.P., Zulnaidi, H., Sobri, K.M. (2019). Influence of school culture and classroom environment in improving soft skills amongst secondary schoolers. *International Journal of Instructions, 12*, 259-274, DOI: 10.29333/iji.2019.12217a.

Albanesi, C., Bergamin, M., Cecchini, C., Compare, C., Culcasi, I., De Piccoli, N., & Di Masi, D. (2023). The Manifesto of Italian Universities Network for Service-Learning. *Form@re - Open Journal Per La Formazione in Rete, 23*(2), 7-12. DOI: 10.36253/form-14780.

Allport, G. W. (1961). *Values and our youth*. Teachers College Record.

Anjum, M.A., Karim, J., & Bibi, Z. (2014). Relationship of values and conflict management styles. *IBA Business Review*, *9*(1), 92-103.

Arieli, S., Sagiv, L., & Roccas, S. (2020). Values at work: The impact of personal values in organisations. *Applied Psychology*, *69*(2), 230-275. DOI: 10.1111/apps.12181.

Ariza-Montes, A., Arjona-Fuentes, J.M., Han, H., & Law, R. (2017). Employee responsibility and basic human values in the hospitality sector. *International Journal of Hospitality Management*, *62*, 78-87. DOI: 10.1016/j.ijhm.2016.12.001.

Arnold, D., Cinque, M., Uggeri, M., & Mazalu, M. (2020, November). *Mix and match: University-corporate cross-fertilisation in active learning approaches for soft skills development* [Paper presentation]. ICDE World Conference on Online Learning, Dublin, Ireland.

Aryani, F., Wirawan, H., Saman, A., Samad, S., & Jufri, M. (2021). From high school to workplace: Investigating the effects of soft skills on career engagement through the role of psychological capital in different age groups. *Education+ Training, 63*(9), 1327-1345, DOI: 10.1108/ET-03-2021-0087.

Barni, D. (2009). *Trasmettere valori. Tre generazioni familiari a confronto*. Unicopli.

Blazar, D., & Kraft, M. A. (2017). Teacher and teaching effects on students' attitudes and behaviors. *Educational Evaluation and Policy Analysis*, *39*(1), 146-170. DOI: 10.3102/0162373716670260.

Bond, M.H., Leung, K., Au, A., Tong, K.-K., & Chemonges-Nielson, Z. (2004). Combining social axioms with values in predicting social behaviours. *European Journal of Personality*, *18*(3), 177-191. DOI: 10.1002/per.509.

Bootsma, M., Jeffrey, C., Perkins, J.D. (2021). Is there learning in Service Learning? Measuring the extent to which vita participation improves student technical competence and soft skills VITA participation improvement of technical and soft skills. *Issues in Accounting Education, 36*(2), 21-42. DOI: 10.2308/ISSUES-19-113.

Bradley, D., Crawford, E., & Dahill-Brown, S.E. (2015). *Fidelity of implementation in a large-scale, randomized, field trial: Identifying the critical components of values affirmation*. The Society for Research on Educational Effectiveness.

Brosch, T. & Sander, D. (2015) (Eds). *Handbook of values: Perspective from economics, neuroscience, philosophy, and sociology*. Oxford University Press.

Capanna, C., Vecchione, M., & Schwartz, S. H. (2005). La misura dei valori. Un contributo alla validazione del Portrait Values Questionnaire su un campione italiano [The measurement of values. A contribution to the validation of the Portrait Values Questionnaire on an Italian sample]. *Bollettino di Psicologia Applicata*, *246*, 29-41.

Chamorro-Premuzic, T., Arteche, A., Bremner, A. J., Greven, C., & Furnham, A. (2010). Soft skills in higher education: Importance and improvement ratings as a function of individual differences and academic performance. *Educational Psychology*, *30*(2), 221-241. DOI: 10.1080/01443410903560278.

Chirumbolo, A., Callea, A., & Urbini, F. (2021). The effect of job insecurity and life uncertainty on everyday consumptions and broader life projects during COVID-19 pandemic. *International Journal of Environmental Research and Public Health*, *18*(10), 5363. DOI: 10.3390/ijerph18105363.

Ciappei, C. (2015). *Soft skills to govern action*. Speech presented at "Soft skills and their role in employability-New perspectives in teaching, assessment and certification" Workshop in Bertinoro, FC, Italy.

Cimatti, B. (2016). Definition, development, assessment of soft skills and their role for the quality of organizations and enterprises. *International Journal for Quality Research*, *10*(1), 97-129. DOI: 10.18421/IJQR10.01-05.
Cinque, M. (2016). “Lost in translation”. Soft skills development in European countries. *Tuning Journal for Higher Education*, *3*(2), 389-427. DOI: 10.18543/tjhe-3(2)-2016pp389-427
Corneliussen, J. G., Leon, G. R., Kjærgaard, A., Fink, B. A., & Venables, N. C. (2017). Individual traits, personal values, and conflict resolution in an isolated, confined, extreme environment. *Aerospace Medicine and Human Performance*, *88*(6), 535-543. DOI: 10.3357/AMHP.4785.2017.
Culcasi, I., & Venegas, R. P. F. (2023). Service-Learning and soft skills in higher education: A systematic literature review. *Form@re-Open Journal per la Formazione in Rete*, *23*(2), 24-43. DOI: 10.36253/form-14639.
Culcasi, I., Romano, L., & Cinque, M. (2021). *Aprendizaje-servicio virtual 100% online* [Virtual Service-Learning 100% online]. Edutec. Revista Electrónica de Tecnología Educativa, (78), 180-195. DOI: 10.21556/edutec.2021.78.2255.
Directorate General of Education/ Ministry of Education Portugal (2017). *Students'profile by the end of compulsory schooling*. Retrieved from: https://dge.mec.pt/sites/default/files/Curriculo/Projeto_Autonomia_e_Flexibilidade/perfil_dos_alunos.pdf.
England, T. K., Nagel, G. L., & Salter, S. P. (2020). Using collaborative learning to develop students' soft skills. *Journal of Education for Business*, *95*(2), 106-114. DOI: 10.1080/08832323.2019.1599797.
European Commission (2018). *The European higher education area in 2018: Bologna process implementation report*. Publications Office of the European Union.
European Project eLene4work (2015-2018). Available at: http://elene4work.eu.
Evers, F. T., Rush, J. C., & Berdrow, I. (1998). *The bases of competence: Skills for lifelong learning and employability*. Jossey-Bass.
Garcia, R., Dante Tan, R., Florendo, J., & Santos, N. (2020). 21st century soft skills in student-centered learning among first-year college students: A comparative study. *International Journal of Recent Advances in Multidisciplinary Research, 7*(10), 6338-6341.
Gavriluță, N., Grecu, S. P., & Chiriac, H. C. (2022). Sustainability and employability in the time of COVID-19. Youth, Education and entrepreneurship in EU countries. *Sustainability*, *14*(3), 1589. DOI: 10.3390/su14031589.
Groves, K. S. (2005). Gender differences in social and emotional skills and charismatic leadership. *Journal of Leadership & Organizational Studies*, *11*(3), 30-46. DOI: 10.1177/107179190501100303.
Heckman, J. J., & Kautz, T. (2012). Hard evidence on soft skills. *Labour Economics*, *19*(4), 451-464. DOI: 10.1016/j.labeco.2012.05.014.
Heckman, J. J., & Kautz, T. (2014). Fostering and measuring skills: Interventions that improve character and cognition. In J.J. Heckman, J.E. Humphries, & T. Kautz (Eds.). *The myth of achievement tests: The GED and the role of character in American life* (pp. 341-430). University of Chicago Press.

Hitlin, S. (2011). Values, personal identity, and the moral self. In S. J. Schwartz, K. Luyckx & V.L. Vignoles (Eds). *Handbook of identity theory and research* (pp. 515-529). Springer.
Hitlin, S., & Piliavin, J. A. (2004). Values: Reviving a dormant concept. *Annual Review of Sociolology*, *30*, 359-393. DOI: 10.1146/annurev.soc.30.012703.110640.
Holland, J. L. (1997). *Making vocational choices: A theory of vocational personalities and work environments* (3rd ed.). Psychological Assessment Resources.
Kautz, T., Heckman, J. J., Diris, R., Ter Weel, B., & Borghans, L. (2014). *Fostering and measuring skills: Improving cognitive and non-cognitive skills to promote lifetime success*. Cambridge.
Kenny, D.A. (2015). *Measuring Model fit*. Available online: http://davidakenny.net/cm/fit.htm.
Khan, A., Egbue, O., Palkie, B., & Madden, J. (2017). Active learning: Engaging students to maximize learning in an online course. *Electronic Journal of E-Learning*, *15*(2), 107-115.
Kluckhohn C.K.M. (1951). Values and value Orientations in the theory of action. In T. Parsons, E. Sils (Eds.), *Toward a General Theory of Action* (pp. 388-433). Harvard University Press.
Knafo, A., & Sagiv, L. (2004). Values and work environment: Mapping 32 occupations. *European Journal of Psychology of Education*, *19*(3), 255-273. DOI: 10.1007/bf03173223.
Koltko-Rivera, M. E. (2006). Rediscovering the later version of Maslow's hierarchy of needs: Self-transcendence and opportunities for theory, research, and unification. *Review of General Psychology*, *10*(4), 302-317. DOI: 10.1037/2F1089-2680.10.4.302.
Kyllonen, P. C. (2013). Soft skills for the workplace. *Change: The Magazine of Higher Learning*, *45*(6), 16-23. DOI: 10.1080/00091383.2013.841516
Lebedeva, N., Schwartz, S. H., Van De Vijver, F. J., Plucker, J., & Bushina, E. (2019). Domains of everyday creativity and personal values. *Frontiers in Psychology*, *9,*2681. DOI: 10.3389/fpsyg.2018.02681.
Levin, H. M. (2012). More than just test scores. *Prospects*, *42*(3), 269-284. DOI: 10.1007/s11125-012-9240-z.
Luthans, F., Avey, J. B., Avolio, B. J., Norman, S. M., & Combs, G. M. (2006). Psychological capital development: toward a micro-intervention. J*ournal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, *27*(3), 387-393. DOI: 10.1002/job.373.
Majid, S., Liming, Z., Tong, S., & Raihana, S. (2012). Importance of soft skills for education and career success. *International Journal for Cross-Disciplinary Subjects in Education*, *2*(2), 1037-1042. DOI: 10.20533/ijcdse.2042.6364.2012.0147.

Martin, T. (2019). Review of student soft skills development using the 5Ws/H approach resulting in a realistic, experiential, applied, active learning and teaching pedagogical classroom. *Journal of Behavioral and Applied Management*, *19*(1), 41-57. DOI: 10.21818/jbam.19.1.3.

Matteson, M. L., Anderson, L., & Boyden, C. (2016). "Soft skills": A phrase in search of meaning. *Portal: Libraries and the Academy, 16*(1), 71-88. DOI: 10.1353/pla.2016.0009.

McNatt, D. B. (2020). Service-learning: An experiment to increase interpersonal communication confidence and competence. *Education & Training, 62*(2), 129-144. DOI: 10.1108/ET-02-2019-0039.

McQueen, A., & Klein, W. M. (2006). Experimental manipulations of self-affirmation: A systematic review. *Self and Identity*, *5*(4), 289-354. DOI: 10.1080/15298860600805325.

Ministry of Education (2018). Essential Learning: Basic Education. Retrieved from http://www.dge.mec.pt/aprendizagens-essencial-ensino-basico.

Mitchell, G. W., Skinner, L. B., & White, B. J. (2010). Essential soft skills for success in the twenty-first century workforce as perceived by business educators. *Delta Pi Epsilon Journal*, *52*(1), 43-53.

Murcia Alvarez, E., Ramos, A., Tendais, I., & Rodrigues, R. B. (2021). Integrating children´ s values in policymaking: Challenges and opportunities in a diverse society. In *VIII Congreso de la Red Española de Política Social (REPS) REPS 2021 Bilbao Cuidar la vida, garantizar la inclusión, convivir en diversidad: consensos y retos. Actas de Congreso* (pp. 1029-1043). Universidad del Pais Vasco.

Nagy, N., Froidevaux, A., & Hirschi, A. (2019). Lifespan perspectives on careers and career development. In B. Baltes, C.W. Rudolph, & H. Zacher (Eds). *Work across the lifespan* (pp. 235-259). Academic Press.

Pask, E. J. (2005). Self-sacrifice, self-transcendence and nurses' professional self. *Nursing Philosophy*, *6*(4), 247-254. DOI: 10.1111/j.1466-769X.2005.00215.x.

Prada-Ospina, R., Zarate-Torres, R. A., & Rey, F. (2020). Relationship between leadership, behaviour and values. *Revista Espacios, 41*(36), 47-60.

Rapa, L. J., Diemer, M. A., & Roseth, C. J. (2020). Can a values-affirmation intervention bolster academic achievement and raise critical consciousness? Results from a small-scale field experiment. *Social Psychology of Education*, *23*(2), 537-557. DOI: 10.1007/s11218-020-09546-2.

Riggio, R. E., Riggio, H. R., Salinas, C., & Cole, E. J. (2003). The role of social and emotional communication skills in leader emergence and effectiveness. *Group Dynamics: Theory, Research, and Practice, 7*(2), 83-103. DOI: 10.1037/1089-2699.7.2.83.

Roccas, S., & Sagiv, L. (2017). *Values and behavior: Taking a cross cultural perspective*. Springer.

Rokeach, M. (1973). *The nature of human values*. Free press.

Russo, C., Barni, D., Zagrean, I., & Danioni, F. (2021). Value consistency across relational roles and basic psychological needs satisfaction: The mediating role of self-concept clarity. *Social Sciences*, *10*(8), 291-307. DOI: 10.3390/socsci10080291.

Russo, C., Barni, D., Zagrean, I., Lulli, M. A., Vecchi, G., & Danioni, F. (2021). The resilient recovery from substance addiction: The role of self-transcendence values and hope. *Mediterranean Journal of Clinical Psychology*, *9*(1), 1-20. DOI: 10.6092/2282-1619/mjcp-2902.

Russo, C., Dell'Era, A., Zagrean, I., Danioni, F., & Barni, D. (2022). Activating self-transcendence values to promote prosocial behaviors among adolescents during the COVID-19 pandemic: The moderating role of positive orientation. *The Journal of Genetic Psychology*, *183*(3), 263-277. DOI: 10.1080/00221325.2022.2058352.

Russo, C., Zagrean, I., Mangialavori, S., Danioni, F., Cacioppo, M., & Barni, D. (2019). Comportamenti di uso problematico in adolescenza: il ruolo dei valori personali come fattori di protezione e di rischio [Problem use behaviors in adolescence: the role of personal values as protective and risk factors]. *Psicologia Sociale*, *14*(3), 385-404. DOI: 10.1482/94941.

Sagiv, L. (2002). Vocational interests and basic values. *Journal of Career Assessment*, *10*(2), 233-257. DOI: 10.1177%2F1069072702010002007.

Sagiv, L., Sverdlik, N., & Schwarz, N. (2011). To compete or to cooperate? Values' impact on perception and action in social dilemma games. *European Journal of Social Psychology, 41*(1), 64-77. DOI: 10.1002/ejsp.729.

Schneider, A. K. (2012). Teaching a new negotiation skills paradigm. *Journal of Low and Policy, 39*(1), 1-13.

Schoemann, A. M., Boulton, A. J., & Short, S. D. (2017). Determining power and sample size for simple and complex mediation models. *Social Psychological and Personality Science, 8*(4), 379-386. DOI: 10.1177/2F1948550617715068.

Schulz, B. (2008). The importance of soft skills: Education beyond academic knowledge. *Journal of Language and Communication, 2*(1), 146-154.

Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. *Advances in Experimental Social Psychology, 25*, 1-65. DOI: 10.1016/S0065-2601(08)60281-6.

Schwartz, S. H. (2003). A proposal for measuring value orientations across nations. [Chapter 7 in the Questionaire Development Report of the European Social Survay] http://www.europeansocialsurvey.org/.

Schwartz, S. H. (2012). An overview of the Schwartz theory of basic values. *Online Readings in Psychology and Culture, 2*(1). DOI: 10.9707/2307-0919.1116.

Schwartz, S. H., Cieciuch, J., Vecchione, M., Davidov, E., Fischer, R., Beierlein, C., Ramos, A., Verkasalo, M., Lönnqvist, J. E., Demirutku, K., Dirilen-Gumus, O., & Konty, M. (2012). Refining the theory of basic individual values. *Journal of Personality and Social Psychology, 103*(4), 663-688. DOI: 10.1037/a0029393.

Sosik, J. J. (2005). The role of personal values in the charismatic leadership of corporate managers: A model and preliminary field study. *The Leadership Quarterly, 16*(2), 221-244. DOI: 10.1016/j.leaqua.2005.01.002.

Sternberg, R. J. (2003). *Wisdom, intelligence, and creativity synthesized*. Cambridge University Press.

Sverdlik, N., & Oreg, S. (2009). Personal values and conflicting motivational forces in the context of imposed change. *Journal of Personality, 77*(5), 1437-1466. DOI: 10.1111/j.1467-6494.2009.00588.x.

Tartakovsky, E., & Cohen, E. (2014). Values in the bank: Value preferences of bank frontline workers and branch managers. *European Journal of Work and Organizational Psychology, 23*(5), 769-782. DOI: 10.1080/1359432X.2013.794933.

Tischler, L., Giambatista, R., McKeage, R., & McCormick, D. (2016). Servant leadership and its relationships with core self-evaluation and job satisfaction. *The Journal of Values-Based Leadership, 9*(1), 1-20.

Touloumakos, A. K. (2020). Expanded yet restricted: A mini review of the soft skills literature. *Frontiers in Psychology, 11*, 2207. DOI: 10.3389/fpsyg.2020.02207.

Uggeri, M., Barlassina, L., & Arnold, D. (2019). *Transnational analysis of the transferability to higher education of corporate active learning on soft skill*. eLene4Life consortium.

UNESCO (2015). *Replantear la educación: ¿Hacia un bien común mundial?* [*Rethinking education: Towards a global common good?*]. Organización de las Naciones Unidas para la Educación.

Valieva, F. (2020, March). *Soft skills vs professional burnout: the case of technical universities* [Paper presentation]. In Conference of Integrating Engineering Education and Humanities for Global Intercultural Perspectives. Springer, Cham.

Wats, M., & Wats, R. K. (2009). Developing soft skills in students. *International Journal of Learning*, *15*(12), 1-10. DOI: 10.18848/1447-9494/CGP/v15i12/46032.

West, C. W. (2017). A service learning project on aluminum recycling - Developing soft skills in a material and energy balances course. *Chemical Engineering Education*, *51*(4), 155-162.

Wong, B., Chiu, Y. L. T., Copsey-Blake, M., & Nikolopoulou, M. (2022). A mapping of graduate attributes:What can we expect from UK university students?. *Higher Education Research & Development, 41*(4), 1340-1355. DOI: 10.1080/07294360.2021.1882405.

Yorke, M., & Knight, P. (2004). Self-theories: Some implications for teaching and learning in higher education. *Studies in Higher Education, 29*(1), 25-37. DOI: 10.1080/1234567032000164859.

Yue, C. A., Men, L. R., & Berger, B. K. (2021). Leaders as communication agents. In L.R. Men & A.T. Verčič (Eds). *Current Trends and Issues in Internal Communication* (pp. 19-38). Palgrave Macmillan.

Yue, C. A., Men, L. R., & Ferguson, M. A. (2019). Bridging transformational leadership, transparent communication, and employee openness to change: The mediating role of trust. *Public Relations Review*, *45*(3), 101779. DOI: 10.1016/j.pubrev.2019.04.012.
Zhang, Q., Lin, S., Liu, J., & Zhang, J. (2021). Role of college environment on students' soft skills: Achievement goal structure. *College Teaching*. DOI: 10.1080/87567555.2021.1971603.

Time Perspective and Motivation to Protective behaviours against Covid-19 in Italian young people

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Abstract

Introduction

Health Psychology highlights the complexity of factors that influences the individual decision to adopt one, or more, protective behaviours for avoiding diseases and adverse health outcomes. One of the most relevant theory is the Protection Motivation Theory (Rogers, 1975), which has been adopted for identifying the psychological factors involved in many protection behaviours. Another relevant construct for healthy behaviours is represented by the Time Perspective (Zimbardo & Boyd, 1999).

This study analysed the relationships between the Protection Motivation Theory applied on Covid-19 and Time Perspective in Italian young people.

Method

A group of 130 young people (m. age 26.4; 40 males and 90 females) participated in the study, filling in the Swedish Zimbardo Time Perspective Inventory and the Motivation to Protect against Covid-19 Questionnaire. Three single items furthermore explored the prevailingly sources of information for Covid-19 (social media such as Facebook; traditional media such as TV; specialistic magazines such as Le Scienze) used and a single item tested the level of mistrust in Political Institutions and mass-media and its association with protection motivation, beliefs and perceived vulnerability to Covid-19.

Results. Perceived vulnerability to Covid-19 and use of protections and perceived efficacy of protections, show positive correlations with Future Positive; beliefs on Covid-19 vaccine resulted as negatively correlated with Present Fatalistic; a positive correlation between mistrust in political institutions

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and Present Fatalistic has been found. Social media (such as Facebook, Instagram) and traditional mass media (such as TV) as preferred systems of information are both positively correlated with beliefs on Covid-19 vaccine, perceived vulnerability and use of protections, highlighting the role of new forms of circulation of information, but also the relevance of traditional ones for young people. Perceived vulnerability to Covid-19, perceived efficacy of protections give a positive contribution to the intention to get vaccinated; mistrust in political institutions and media on the contrary reduces the intention to take the vaccine.

Conclusions. Results are discussed in relations to preventive interventions on the young population for the improvement of self-awareness of persistence of this virus and consequently the necessity of adopting self-protection, with special attention to vaccination. The relevance of time perspective dimensions for protection suggests to include it in the programs devoted to reduce the risk of contagion.

Keywords: time perspective; Covid-19; motivation to protect; young people; vaccine

Introduction

The Protection Motivation Theory and its role in Coronavirus disease protection

For several decades, Health Psychology had, among its theoretical research's objectives, the development of effective models for modifying behaviours that can cause damage to health, emphasizing the importance of primary prevention to promote the health of everyone. These theoretical models form the basis on which to develop intervention projects for the population at an individual, group or social level (Gremigni, 2013).

The SARS-CoV-2 (from here on in the text: Covid-19 and in some cases, when indicating the planetary diffusion of it, Covid-19 pandemic; but, for the complex question of denomination of this virus and this critical event, see Agnelli & Capua, 2022) has brought to the forefront, due to its dramatic spread worldwide and the serious or potentially fatal complications for the most fragile population, the theme of primary prevention, or in any case the theme of protection from infection or from its most serious consequences. Among the models used by international research in this regard, the Protection Motivation Theory (PTM, Rogers, 1975) represents one of the most widely used models, due to its predictive efficacy demonstrated for the reduction of health risks such as cigarette smoking (Milne et al., 2006; Yan et al., 2014), the lack of physical activity, (Plotnikoff et al., 2009), risk driving (Harbek et al., 2018).

PTM assumes that adopting a protective behaviour against health threats is related to personal motivation for self-protection and that this is explained by threat and coping appraisal. On the basis of PTM assumptions, individuals will be incentivized and motivated to protect their health if the following factors are satisfied. The first factor concerns personal beliefs on the severity of the problem (perceived severity of the problem); after, the personal estimation of the chance of being affected by the disease (perceived vulnerability), the perceived efficacy of the protective actions/behaviours and, the personal beliefs in own capability of utilizing it and the personal estimation of their costs and efforts in Coping appraisal. Coping appraisal involves personal evaluation of the efficacy of the protective behaviour, personal belief in own capability of utilizing it, personal estimation of costs (eg. money, time, energy..) and efforts to perform the protective behaviour.

Fear-based models, such as the PTM, identify in fear the mediator between perceived severity, perceived vulnerability and threat appraisal. If an individual feels vulnerable to a serious health threat (in this case the Covid-19) the level of fear is expected to increase; than also the motivation to avoid this threat and consequently the willingness to adopt the protective behaviours.

PTM has been already utilized for investigating the protective behaviours against H1H1 Influenzae epidemic (Sharifirad et al., 2014), confirming its predicting value.

In the Covid-19 pandemic context, PTM has been utilized by researchers for identifying the factors involved in the motivation to protect against it through protective behaviours such as use of facial masks, sanitizing hand gel, social distancing and vaccines.

AL-Raasheed (2020) evaluated the intention to adopt behaviours against Covid-19 in 679 Kuwaitian subjects, and its association with the constructs of PTM, self-reported assessment of trust in informations coming from the government.

Results confirm that participants who reported high severity perception of infection and perceived vulnerability were more likely to protect themselves through recommended behaviours (mask, gel, social distancing). Also trusting in government for information has been associated with the adoption of protective behaviours.

Ezati et al., (2021) have utilized the PTM for predicting protective behaviours in the city of Hormozogan, Iran, with a sample of 2032 subjects. The study shows significant positive correlations between the perceived vulnerability and the preventive behaviours. On the contrary, the perceived costs of adopting these behaviours are negatively associated with their adoption.

In European countries PTM has also been used for Covid-19 prevention research.

Gallmaister et al., (2021) tested the predictive power of PTM for vaccination in a sample of 133 Dutch adult people. They found that vaccine skepticism is causally related to a lower level of intention to get vaccinated, while the response efficacy partially mediates this link between skepticism and intention. Also, people believing in conspiracy theories do not have higher threat appraisal than people who do not possess these beliefs.

Another study (Eberdartd & Ling, 2021) evaluates, in a sample of 382 people of the United Kingdom, the predicting power of PTM on the intention to get vaccinated, and the relevance of conspiracy beliefs for vaccination. Results confirm that the higher perceived severity of Covid-19 and individuals' perceived susceptibility to the disease, the higher their intention was to get vaccinated. Also the presence of high level of conspiracy beliefs negatively predict the intention to be vaccinated. In this study, the younger show higher intention to be vaccinated, confronted with the older respondents.

Zambianchi (2022) in a pilot-study that involved 126 young people and aimed at testing a questionnaire on the motivation to protect against Covid-19, found that the perception of vulnerability to it was associated positively with the use of protective behaviours such as facial mask, social distancing and vaccines. In this study it has also been explored the association between sources of information on the pandemic and the PTM factors. This study confirms the interconnection among the factors of PTM theory taken into account in this study: the beliefs on severity of the pandemic; the perceived vulnerability to it; the perceived efficacy of protective behaviours: facial masks, gel, social distancing, vaccinations. The questionnaire revealed, through Factor Analysis, a specific, autonomous factor which collects items about the vaccine. This result seems to indicate that the vaccine is represented as a different type of protection, perhaps perceived as an inner protection, outside of personal control, due to the fact that the vaccine is inside the blood, and we cannot perceive the impact on the immune system.

Another Italian study (Zanin & Zambianchi, 2022) that evaluates the predicting power of PTM factors on protection behaviours against Covid-19 in a group of 133 old people, found the relevance of perceived severity of the pandemic and the perceived vulnerability to it as strongly connected to the adoption of protective behaviours and to the intention to get vaccinated again in the future if sanitary situation will request it. The traditional mass-media such as newspapers and TV resulted in association with a positive evaluation of protection. Lower level of mistrust in political institutions and mass-media for information on the pandemic has been found to be associated with higher protection and higher willingness to get vaccinated again in the future. The model has been tested also in its association with Time Perspective Theory (Zimbardo & Boyd, 1999; Carelli et al., 2011), finding a positive correlation between Present Fatalistic and positive beliefs on Covid-19 vaccination. This unexpected result (considering the international literature highlighting Present Fatalistic as negatively associated with protection behaviours, eg. Zimbardo & Boyd, 1999; Zimbardo, Keough & Boyd, 1997) allows us to hypothesize that old people perceive the spread of Covid-19 as out of personal, individual control, and for this reason identifying in mass vaccination the only effective route for beating Covid-19 and for reducing its dramatic effects.

Grano, Solorzano & Di Pucchio (2021), evaluating in a longitudinal design the predictive power of PTM for the adoption of protection against Covid-19 in 352 Italian people, found that perceived severity has a strong impact on the intention to adopt protective behaviours, recommending the construction of preventive health programs based also on PTM model.

The international literature on this topic highlights the relevance of gender for the adoption of protective behaviours. As other previous research on health protection and prevention have already shown (Finucane et al., 2000; Duncan et al., 2009), men are less concerned about their susceptibility to diseases, and evaluate risk for health outcomes as less relevant for their life.

A recent review (Lewis & Duch, 2021) examined 16 studies on risk beliefs and behaviours aimed at protecting against Covid-19 in men and women, finding consistent differences: men indeed resulted in having less concern for contagion and its health consequences than women. Another study (Zambianchi, 2020) on a group of more than 300 old people has highlighted a substantial difference between men and women on fear and anxiety related to Covid-19 and travelling for tourism. Women perceive more risk for adverse health outcomes than men during tourism travel.

Tàn et al. (2022) evaluated, in a sample of 1990 Taiwanese participants, using as theoretical models the Protection Motivation Theory (Rogers, 1975) and the Planned Behavior Theory (Ajzen, 1991), the differences for gender in the perception of pandemic and health, protective behaviours. Female gender was positively associated with health protective factors. But, in this research, being female was negatively associated with intention to receive vaccines. Another study, involving 8 Countries, among which Italy (Galasso et al., 2020) in a multicentric perspective, highlighted that women were more compliant with protective measures against contagion and spread of Covid-19.

Ottenbring & Festila (2022) investigated the gender differences in compliance with preventive health behaviours about Covid-19, introducing personality traits as potential mediators. They found women to score higher than men on agreeableness and conscientiousness, personality traits that mediate, in this study, the gender compliance link. Researches hypothesized that woman's greater compliance with protective behaviours could be, in part, attributed to these dimensions.

Gender differences have also been emerged, in international literature, for adherence to vaccine, were, on the contrary respect to other protective behaviours such as gel, facial mask, women appear to be less compliant to get vaccinated. Ishimaru et al. (2021) in a study on gender differences for vaccination found that women were less willing to take the vaccine than men and that higher levels of school education corresponds in women to lower intention to take the vaccine. This result emerged also in other research. Toshkov (2023), hypothesized that women are less willing to take vaccine because they consider it too much quickly developed to be safe, with not well clear long-term effects.

The relevance of suspicious representations about vaccine and/or the mistrust in institutions for the intention to get vaccinated have been demonstrated by several research (Bieper et al., 2021; Murphy et al., 2021). High level of suspiciousness or paranoid ideation about the outbreak of Coronavirus (born in a Wuhan lab, or due to the 5G digital technologies with human implantations of devices for controlling behaviours and thinks of vaccine adopters) has to be traced to personality characteristics or disorders (Simione et al., 2021) and contribute to vaccine refusal. These results can be linked also to the central and strategic role played by mass-media and social media in communicating the development, the trend and the scientific discoveries about the Covid-19 pandemic. As Anwar et al. (2020) highlights, mass-media such as TV, newspapers, and social media such as Facebook, Twitter, become crucial in spreading new information, but also the so called "fake news"

(Riva, 2017), and, for these reasons, they contribute in creating or shaping the beliefs about the severity of this new virus in individuals, age-cohorts, groups and communities.

The beliefs and the evaluation of severity of Covid-19 for health are fundamental, as PTM claims, for the subsequent adoption of protective behaviours. Previous studies examined the role of media during the other epidemic of H1N1 in 2009 and MERS in 2012, reporting the positive influence on the adoption of prevention measures (Sharifirad et al., 2014; Jiang et al., 2009). On the other hand, the growing diffusion of social media such as Facebook, Twitter, Instagram creates new challenges, among which the difficulty in reducing the circulation of non rigorous scientific information and fake news about the virus and the efficacy of medicine, with the emergence of websites and social groups which are in clear opposition to it, being the vaccine a system of protection with groups historically contrary to its inoculation (Tognotti, 2020). The beliefs and the evaluation of severity of this virus for health are fundamental, as PTM claims, for the subsequent adoption of protective behaviours, but as stated Moscovici (2000), mass-media play a central role in shaping beliefs and attitudes towards anxious or threatening situations, contributing in the diffusion of social representations of them among specific social groups.

The centrality of motivations for the adoption of a protective behaviour against contagion has been recognized in other research. Moore et al., (2022) explored, in a sample of 1475 adult persons the motivations to vaccinate among the hesitant adopters of the Covid-19 vaccine. They found two specific categories of motivations: extrinsic and intrinsic. The most relevant extrinsic motivation to get vaccinated were the desire to protect the community, the protection of the family and friends; the most relevant intrinsic motivations was the desire to protect themselves, especially from the complications due to the infection. Among the structural motivators have been found the desire to travel and work.

As noted above, nowadays, the relevance of time perspective in protection motivation and intention for reducing the risk of contagion and adverse health outcome due to Covid-19 disease is understudied. Very few studies indeed have approached the issue of safety and health protection taking into consideration the perception and representation of time, although time perspective has been widely studied in its relationships with other risk behaviours.

Time perspective and protective behaviours. Can Time perspective contribute to the knowledge of the protecting factors against Covid-19?

We can trace back to Frank (1939) the first definition of Time Perspective, which was configured as "a lived temporal dimension, in which an individual inserts his behaviour, the extension of his representation of the past or future events of his existence". The time perspective becomes one of the determining factors in the energy mobilized towards a purpose, both in the direction of the future and in the direction of the past. Inserting themselves in the wake of the Lewinian tradition, Zimbardo & Boyd (1999) proposed a conceptualization of the time perspective conceived as a basic process in the functioning of the individual and society. Time perspective is seen by the authors as a process, often unconscious, through which personal and social experiences "are placed in certain categories, or temporal frames that help to assign order, coherence and meaning to events themselves" (p. 1271). Time Perspective is conceptualized by Zimbardo & Boyd (1999) as constituted by five temporal dimensions: Past Positive, Past Negative, Present Hedonistic, Present Fatalistic, Future. The Positive Past reflects a positive emotional attitude towards the past and experiences of nostalgia. This time is perceived as a time that bears traditional values, which the individual looks to as a point of reference for the construction of his/her current life. The Past Negative, on the other hand, reflects a painful vision of the past, in which unprocessed traumatic events build up a very critical and problematic temporal dimension with the implementation of non-functional ego-defensive strategies by the individual. The Present Hedonistic contains a double attitude: on the one hand there is the search for strong emotions with the implementation of potentially harmful behaviours and activities for oneself and for others, on the other it indicates the ability to enjoy emotional and social relationships. Present Fatalistic is characterized by the belief that the present time escapes the control of individuals, for whom there is no possibility of making plans due to events or situations that can break into the life of the individual, distorting its course. The Future reflects an orientation towards objectives, desires and important goals placed in the future with the use of strategies, plans and intermediate objectives in order to achieve these important goals. A further dimension of the future has recently been added, the Future Negative, which is defined as empty or threatening time, and therefore anxiogenic (Carelli et al., 2011).

Several research have deepened the association between time perspective dimensions and healthy or risk behaviours.

Zimbardo, Keough & Boyd (1997) found positive associations between Present Hedonistic and risky driving, while Future dimension highlighted a positive influence, reducing the risk of involvement in it. Henson et al., (2006) studied health behaviours such as alcohol, drug, tobacco, and seat belt use, sex behaviours, and exercise in their association with time perspective dimensions in young people. Future time perspective was related to increased protective and decreased risky health behaviours, whereas hedonism exhibited an opposite pattern though was a stronger predictor; fatalism was related only to health-destructive behaviours.

Zambianchi, Ricci Bitti & Gremigni (2010) found that present orientation improves the involvement in risk behaviours such as cigarette smoking, drug assumption, reckless driving, while future orientation reduces the involvement and the exposure to such risks.

Przepjorka & Blachnio (2015) found that Internet Addiction is positively predicted by Past Negative and Present Fatalistic, while Future constitutes a negative predictor of this maladaptive use of ICTs.

Laghi et al. (2012) examined the relationship between binge drinking and eating, Time Perspective and psychological functioning on a sample of 1350 adolescents. Findings suggested that adolescents engaged in both binge eating and binge drinking behaviours reported negative experiences in the past, and they showed a lower future orientation and a greater inclination to present fatalistic than did the other students.

Zancu et al., (2022) in a longitudinal study on a sample of 844 students found that the Past Negative, Past Positive and Future Negative time dimensions are positively associated with preventive behaviours against COVID-19 at Time 1, confirming the idea that people who worry more for future and anticipate adverse outcomes may adopt more preventive behaviours to avoid future detrimental consequences.

Considering the international research attesting the relevance of Time Perspective for risk and protective behaviours it is reasonable to expand studies evaluating the role that Time Perspective may play in the willingness to protect against the Covid-19 disease, or, on the contrary, a role in adopting risks behaviours such as gatherings, refusal of vaccination. For these reasons, research that take into account the issue of Time Perspective could give a contribution to the crucial challenge of reducing the contagion of Covid-19 and safeguarding health, or in some cases, the life itself.

Objectives and hypotheses

The first objective of the study was to evaluate the relationships between PTM factors for the protection against Covid-19, Time Perspective, mistrust in political Institutions and media, sources of information on the evolution of the pandemic.

A second objective was to evaluate the gender differences and age differences for the factors of PTM, Time Perspective, sources of information on Covid-19 and mistrust in political Institutions and media.

A third objective was to explore the contribution offered by PTM dimensions, Time Perspective, together with the evaluation of the role exerted by mistrust in political institutions on the intention to get vaccinated in the future, being this latter among the most important variable for reducing the spread of Covid-19 and for reducing the most adverse health outcomes. Structural variable gender and age has been also evaluated for their contribution to protective behaviours and future vaccination.

On the basis of previous literature discussed above, the following hypotheses has been posed:

H1. Negative correlations are expected between Present Fatalistic, Present Hedonistic, Future Negative and the components of PTM protective behaviours and perceived vulnerability, beliefs on Covid-19 vaccine, use of protection. Positive correlations are expected between Future Positive and the components of PTM protective behaviours and perceived vulnerability, beliefs on Covid-19 vaccine, use of protections. Positive correlations are expected between risk behaviours involvement and Present Fatalistic.

H2. Social media and traditional mass-media as systems for information about the evolution of the pandemic are expected to correlate significantly with the factors of PTM questionnaire and with the mistrust in political Institutions and mass-media for the Covid-19 pandemic. More specifically, mistrust in political Institutions and media is expected to correlate negatively with all factors of PTM; social media are expected to correlate positively with mistrust in political institutions and mass-media; traditional mass-media are expected to correlate positively with PTM factors.

H3. Gender is supposed to influence the perception of vulnerability and the use of protection; females are expected to have higher scores on vulnerability and on the protection use than males. Age is supposed to influence the involvement in risk behaviours for contagion: as age increases, the involvement is expected to decrease.

H 4 . Perceived vulnerability to Covid-19, perceived efficacy of protective behaviours are expected to give a positive contribution to the PTM factor positive beliefs about the vaccine; Present Fatalistic and mistrust in political institutions and mass-media on the contrary are expected to give a negative contribution to it.

Method

Participants

130 young people (m. age: 26.4, S.D. = 3.16; 40 males and 90 females; 1 with Middle School Diploma; 46 with High School Diploma; 82 with Degree; 1 with PhD) took part in this cross-sectional study. They were recruited through personal contacts and through social media such as Facebook and Instagram. Data were collected during the year 2022, after the first acute phase of the Covid-19 pandemic, and when medical resources such as vaccine were available to the population. They were informed about the main aim of the study and of its anonymity, in compliance to the Italian privacy law. The questionnaire was filled out exclusively online, and it was not possible, precisely because of its unique recruitment system, to trace the persons who filled it out. These information were posited at the top of the online Questionnaire. After these informations, they can continue filling in it or close the application.

Measure

The following self-report instruments have been utilized:

- *Questionnaire on Motivation to Protect Against Covid*-19 (Zambianchi, 2022). This Questionnaire is based on the Motivation Protection Theory (Rogers, 1975) and is composed of three factors and 13 items. The first factor is related to the perceived vulnerability to Covid-19 and the use of protections (facial mask, social distancing), with an acceptable reliability (Cronbach Alpha = 0.77) (eg. of item:" Covid-19 scares me and I feel vulnerable to it"). The second factor is related to the beliefs on Covid-19 vaccine. This is composed of four items: the belief that vaccines are effective; the belief that vaccines are dangerous, with reverse coding; the already done vaccination; the intention to vaccine in the future, if necessary, the last added to the original questionnaire due to the update availability of vaccine), with good Alpha reliability (Cronbach Alpha = 0.84) (eg. of item: "The vaccine is effective against Covid-19"). The third factor is related to the perceived efficacy of protection measures (facial mask, sanitizing gel, social distance), with a good Alpha reliability (Cronbach Alpha = 0. 82) (eg. of item: "Sanitizing hand gel is effective against Covid-19"). Two risk behaviours, crowding and the non use of facial masks when necessary resulted with positive intercorrelation ($r = 0.49$; $p < 0.001$) (eg. of item: "Outdoor I do not use facial mask"). Having these two items a positive intercorrelation, a global risk index was calculated adding their scores. The scale is a 5-point Likert (1 = *not at all true*; 5 = *completely true*).

- *Svedish Zimbardo Inventory on Time Perspective* (Zimbardo & Boyd, 1999; S-ZTPI, Carelli et al., 2011). This Questionnaire is composed of six dimensions: Past Negative; Past Positive; Present Hedonistic; Present Fatalistic; Future Positive; Future Negative. For this study four time dimensions have been utilized: Present Fatalistic: the perceived lack of personal control over events (eg. of item: "Fate determines much in my life"; Cronbach Alpha = 0.60); Present Hedonistic: the ability to enjoy the present but also the sensation seeking for risk (eg. of item:"I believe that getting together with one's friends to party is one of life's important pleasure"; Cronbach Alpha = 0.82); Future Positive: the presence of plans and skills to accomplish them (eg of item "When I want to achieve something, I set goals and consider specific means for reaching those goals", Cronbach Alpha = 0. 69); Future Negative: the perception of threats and anxiety related to the future (eg. of item: "The future contains too many boring decisions that I do not want to think about", Cronbach Alpha = 0.79). The scale is a five-point Likers (1 = *very false*; 5 = *very true*). The dimensions of Present and Future were chosen due to the relevance of the present for adopting protective behaviours against spread and contagion of Sars-Cov-2 and future intentions toward them in case of sanitary problems for its circulation.

- *Three items* evaluated the sources of information for the Pandemic: The Social media (eg. Facebook, Twitter, Instagram, Tik Tok); the Traditional mass-media (eg. newspapers, TV, Google news..); specialistic scientific Journals (eg. New England Journal of Medicine, The Lancet). e.g. of item: "I keep myself informed about the Pandemic through mass-media" (eg. TV, Newspapers). The rating scale is a 5-point Likert (1 = *not at all true*; 5 = *completely true*).

- A *single item* tested the level of mistrust on Political institutions and mass-media for the information about the pandemic. ("The Pandemic is a less serious problem than mass-media and political Institutions lead us to believe") The scale is a 5-point Likert (1 = *not at all true*; 5 = *completely true*).

Statistical analyses

First, Means, SD, Skewness and Kurtosis of the variables and factors have been calculated. After, correlation matrices (Pearson r) have been run; subsequently, MANOVAs models and Univariate Anovas were run in order to evaluate the influence of gender and age on the study variables. Finally, a Hierarchical Regression Model tested the contribution offered by study variables on the beliefs about Covid-19 vaccine.

Results

Descriptive statistics of study variables

Tab. 1 - *Descriptive statistics of study variables: Questionnaire on Motivation to Protect against Covid-19, mistrust in Political Institutions and mass-media, Time perspective Inventory, sources of information about the pandemic*

Variable	M	SD	Min	Max	Skewness	Kurtosis
Perceived vulnerability and use of protections	3.27	0.70	1.28	4.85	-0.29	-0.05
Perceived efficacy of protection systems	3.86	0.82	1.66	5.00	-0.32	-0.48
Risk behaviors for contagion	2.85	1.09	1.00	5.00	0.31	-0.69
Beliefs on Covid-19 vaccine	4.11	0.88	1.25	5.00	-1.13	0.74
Mistrust in political Institutions and mass-media	2.64	1.01	1.00	5.00	0.40	-0.14
Present Hedonistic	3.37	0.58	1.85	4.92	0.03	0.05
Present Fatalistic	2.53	0.56	1.28	4.28	0.16	-0.09
Future Positive	3.76	0.49	2.33	4.88	-0.31	0.08
Future Negative	3.29	0.63	1.60	4.80	-0.18	-0.14
Social media as sources of information	2.54	1.12	1.00	5.00	0.16	-0.90
Traditional mass-media as sources of information	3.11	1.06	1.00	5.00	0.12	0.49
Scientific journals as sources of information	1.86	0.97	1.00	5.00	1.13	1.03

- Zero order correlations between PTM factors, Mistrust in political institutions and media and S-ZTPI dimensions

The correlation matrix shows that Future Positive is positively correlated with the perceived vulnerability and use of protections and perceived efficacy of protections; risk behaviours are negatively correlated with Future Positive. Future Negative resulted as positively associated with the perceived vulnerability and use of protections and negatively with risk behaviours and mistrust in political institutions and media. The beliefs on Covid-19 vaccine are negatively correlated with Present Fatalistic. (see Table 3).

Tab 3 - *Correlations between PTM factors, Mistrust in political institutions and media and S-ZTPI*

Variable	Present Hedonistic	Present Fatalistic	Future Positive	Future Negative
Beliefs on Covid-19 vaccine	0.12	-0.16*	0.05	-0.01
Perceived vulnerability and protections use	-0.11	-0.06	0.31***	0.16*
Perceived efficacy of protections	-0.18*	-0.24**	0.31***	0.06
Risk behaviours	0.31***	-0.02	-0.24**	-0.21*
Mistrust in political inst. and media	-0.01	-0.16*	-0.10	-0.18*

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

- Zero order correlations between PTM factors and sources of informations for Pandemic evolution

Only the beliefs on Covid-19 vaccine and the perceived vulnerability to the pandemic appear to be positively correlated both with social media and traditional mass-media, while the perceived efficacy of protections are positively correlated only with traditional media. The risk behaviours for contagion are negatively correlated only with traditional mass-media. Mistrust in political institutions and media appear to be negatively correlated both with social media and traditional mass-media. (see Table 4).

Tab 4 - *Correlations between PTM factors and sources of informations for Pandemic evolution*

Variable	Social media as sources of information	Traditional media as sources of information	Scientific Journals as sources of information
Beliefs on Covid-19 vaccine	0.30***	0.23**	0.07
Perceived vulnerability and use of protections	0.22**	0.32***	0.07
Perceived efficacy of protections	0.00	0.32***	0.08
Risk behaviours	-0.11	-0.25***	-0.11
Mistrust in political institutions and media	-0.21**	-0.39***	-0.00

** $p< 0.01$; *** $p< 0.001$

- Gender difference for PTM factors

A set of Anova Models was run, with gender as grouping variable and PTM Questionnaire's factors. The models resulted as statistically significant for perceived vulnerability and for the risk behaviours involvement (Wilk's Lambda = 0.82; $F (4,122) = 6.44$; $p< 0.001$).

Results highlight that female perceive themselves as more vulnerable to the Covid-19 and use more than males the recommended protections ($F = 1,127$)= 14.21; $p< 0.001$), $\eta = 0.10$: Female = 3.43 (SD = 0.63) Male = 2.91 (SD = 0.75). Females get involved less than males in risk behaviours ($F = 18.45$; $p < 0.001$): Female = 2.60 (SD = 0.96); Male = 3.43 (SD = 1.15), $\eta = 0.11$

- Gender differences for S-ZTPI.

A Manova model was run in order to evaluate the relevance of gender for the Time Perspective dimensions. The overall model resulted as significant (Wilk's lambda = 0.90; $F (4,120) = 3.05$; $p < 0.01$). Subsequent Anovas evidenced that females have higher scores on Future Negative than males ($F = 7.84$; $p < 001$): Female = 3.40 (SD = 0.60); Male = 3.05 (SD = 0.63), $\eta = 0.05$

Differences for gender on Mistrust in political Institutions and mass-media

The Anova Model highlights a significant difference ($F = 5.31$; $p < 0.05$) with lower scores for females than males: Female = 2.51 (SD = 0.98); Male = 2.95 (SD= 1.03). $\eta = 0.03$

Differences for gender on sources of information for the evolution of the pandemic

The Manova model resulted as significant (Wilk's Lambda = 0.94; F =(3, 126) = 2.57; $p < 0.05$).

The subsequent Anova highlights that female use more frequently traditional mass-media than males as sources of information: Female= 3.23 (SD= 1.03) Male = 2.85 (SD = 1.07) ($F = 3.68$, $p < 0.05$). $\eta = 0.03$

Not age difference were found for the study variables.

The Hierarchical Regression Model: the contributors to the positive beliefs on Covid-19 vaccine.

The Hierarchical Regression model having the PTM Questionnaire factor "beliefs on Covid-19 vaccine" as dependent variable was developed in three steps. In the first step the structural variables age and gender entered in the equation. None of them resulted as significant (F = (2, 124) = *0.88*; p = 0.44; $R^2 = 0.01$). Adding, in the second step, the Time Perspective dimensions, age and gender remain as not significant. Present Hedonistic appears as a significant, positive predictor, while Present Fatalistic as a negative predictor. The explained variance slightly improved (F = (6,116) = 1.48, p = *0.18*, $R^2 = 0.02$) but it does not reach the significance. In the third step the PTM factors perceived vulnerability and use of protections, the perceived efficacy of protections and risk behaviours and the item about mistrust in Political institutions and media were added to the equation. Also in the third step the structural variables resulted as not significant. Present Hedonistic reduces its relevance, while Present Fatalistic becomes not significant, highlighting an interaction with PTM factors. Mistrust in political institutions and media, perceived vulnerability and use of protections, perceived efficacy on protections resulted as significant contributors/predictors to the beliefs on Covid-19 vaccine, improving substantially the explained variance of the model (F = (10,110) = 8.23; p < *0.001*; $R^2 = 0.37$). (see table 6).

Tab 6 - *The predictors /contributors to the beliefs on Covid-19 vaccine*

Variable	Beta	p value	*Standard error* of *Beta*
First step			
Age	- 0.03	≥ 0.66	-0.09
Gender	. 103	≥ 0.19	0.09 Multiple R = 0.11; R^2= 0.01; Adj. R^2 = ---- F (2,124) = 0.88; p=0.41
Second step			
Age	-0.01	≥ 0.84	0.09
Gender	0.07	≥ 0.32	0.09
Present Hedonistic	0.190	<0.05	0.09
Present Fatalistic	-0.262	<0.05	0.11
Future Positive	0.01	≥ 0.98	0.09
Future Negative	0.07	≥ 0.50	0.10 Multiple R = 0.26; R^2 = 0.07; adj. R^2 = 0.02 F (6,116) = 1.48; p= 0.18
Third step			
Age	-0.06	≥ 0.30	0.07
Gender	0.01	≥ 0.88	0.08
Present Hedonistic	0 .142	≥ 0.15	0.08
Present Fatalistic	-0.03	≥ 0.56	0.09
Future Positive	-0.07	≥ 0.24	0.08
Future Negative	-106	≥ 0.23	0.08
Mistrust in political institutions and media	-0.405	<0.001	0.08
Perceived vulnerability and use of protections	0.234	<0.05	0.11
Perceived efficacy of protections	0.266	<0.01	0.08
Risk behaviors for contagion	0. 140	≥ 0.15	0.10
			Multiple R = 0.65; R^2= 0.42; Adj. R^2= 0.37; F (10,110) = 8.23; p < 0.001

Discussion

The study has evaluated, in a sample of 130 Italian young people, the relationships between the PTM theory adapted to Covid-19 disease (Rogers, 1975, Zambianchi, 2022) and four dimensions of Time Perspective (Zimbardo & Boyd, 1999; Carelli et al., 2011): Present Hedonistic, Present Fatalistic, Future Positive and Future Negative. The type of information sources for the pandemic and the level of mistrust in political institutions and mass-media, that is close to the construct of conspiracy have also been analysed in their relationships with PTM factors and Time Perspective. Additionally, the influence of age and gender were explored.

Young people possess positive beliefs about Covid-19 vaccination and about the perceived efficacy of the other protective systems such as facial mask, hand gel and social distancing. They perceive themselves as heaving a medium level of vulnerability to the infection and for the utilization of protections. At the same time, there are some of them that declare to adopt risk behaviours such as not using facial masks when necessary (17%) and crowds (12%), when or where it is forbidden. The time perspective appears to be mainly positive future oriented and with the tendency to enjoy the present with friends and seeking positive and intense emotions. Gender emerges as relevant variable for protection and for mistrust in political institutions and mass-media. Our study indeed has found, as previous ones (Lewis & Duch, 2021; Galasso et al., 2020; Tàn et al., 2022), significant gender differences for the perceived vulnerability to Covid-19, with women more concerned than men about their susceptibility to the infection and health adverse outcomes. Different possible explanations have been posed for this result, that is in line with the tendency by women to me more compliant with health behaviours and with the adoption of protections for safeguarding health. The role of women in caring others in family or outside is the most relevant explanation, but this study, and other previous (eg. Zambianchi, 2020; Zambianchi & Volpe 2023) were conducted on young people, mostly students, finding the same results; this stage of life, the youth, cannot be associated to the caring for other people, in particular for old people, so, it may be that other attempt for explaining this outcome have to be done. It may be that personality traits, as the study by Otterbring & Festila (2022) has demonstrated, can give a substantial contribution to the explanation of this result. This study indeed shows significant differences on conscientiousness, a personality trait associated, as a large body of international literature has demonstrated, to less involvement in risk behaviours (Bogg & Roberts, 2004).

These findings have to be taken into account, for example, in planning media campaigns, where, as suggested by Lewis & Duch (2021), communication have to be more tailored on the targets, and in this case, on specific gender, in order to obtain more compliance to the prevention behaviours. Women show also a more pronounced negative future than men. The differences for gender on future is a question difficult to disentangle, as other research found (Mello & Worrell, 2006), since in several cases women and men present similar scores, but, in other cases, women appear to be more positive-future oriented than men (Zambianchi, 2019).

In this area of research, concerning health, the more pronounced future negative of women, if confirmed by other, broader research, have to be taken into account for interventions and health communication about Covid-19 protection.

Age, contrary to the hypotheses, does not influence the level of involvement in risk behaviours for the spread of the virus. Perhaps differences can emerge in the comparison between age groups, such as adolescence and adulthood.

PTM factors, adapted for Covid-19 in a specific questionnaire (Zambianchi, 2022), appear to be significantly intercorrelated, as expected by theory (Rogers, 1975; Rippetoe & Rogers, 1987). As previous research conducted with this questionnaire, the perceived vulnerability to the disease is strictly interwoven to the use of protections in the young, while in the oldest population the perceived vulnerability is interwoven with the perception of severity of this disease (Zanin & Zambianchi, 2022). This data can be related to the information that has been circulating for a long time about the health consequences of the infection for different age cohorts. Young people are indeed presented through mass-media as not impacted from the most severe forms of Covid-19 disease, while old people are defined as the most fragile age group (Belelli et al., 2021). These representations circulate among people and give life to different perceptions about Covid-19, with relevant impact on the tendency and intention to adopt the protections. For young people the perception of severity does not constitute, perhaps, a crucial question for their health status; they do not perceive their health as threatened; only the perception of vulnerability seems to induce them to adopt the protections against contagion, contrary to the oldest. For this reason, the young could be a risk group for the diffusion of Covid-19, since they tend to underestimate its health impact on other age groups or also on peers with health frailty, due to their perception of invulnerability. Effective communication messages are, for this reason, difficult to develop, on the basis of this theoretical model, for encouraging the young to adopt protections. It maybe that the motivation to protect other people could be reinforced through the inclusion of the theme of empathy, or through moral dilemmas (Kholberg, 1989).

The correlations of PTM factors with Time Perspective partially confirms the hypotheses that have been posed. The positive value of a future positive orientation for the efficacy of protective factors, perceived vulnerability and use of protections represents a well-established result, having it being found in other studies on protective and risk behaviours for health (Zimbardo & Boyd, 1999). Those people who possess a positive envisioning of the future tend to reduce the situations that can threaten health, since the deterioration of health can compromise activities and projects. Present Fatalistic, on the contrary, is negatively related to the perceived efficacy of protection systems, while being Present-Hedonistic centred, that means act impulsively and enjoying present without taking into consideration the future consequences encourages risk behaviours for contagion as established by previous research on other risk behaviours and other health compromising actions (eg. Enson et al., 2006; Zimbardo, 2009). The pandemic requests caution and use of protections for the containment of the virus; its spread or new variants circulating could provoke a new intervention by Ministry of Health in order to reduce it through specific laws, reducing the freedom of people, or taking other legal provisions.

The positive beliefs on Covid-19 vaccine appear to be negatively associated with a fatalistic view of the present. Considering that Present Fatalistic denotes the perception to be out of control for events that can happen, that is closely related to a low level of self-efficacy (Bandura, 2000), strengthening the self-efficacy for the control of this pandemic through vaccination can be viewed as another interesting route for improving the compliance to vaccination. It may be done through media communication campaigns or in other contexts such as Universities, workplaces, voluntary associations. This data is quite different from that which emerged in a previous research with old people (Zanin & Zambianchi, 2022), where Present Fatalistic constitutes a positive predictor/contributor to the positive beliefs on vaccine. Bearing in mind that present Fatalistic indicates the perception of being not in control of events, and for this reason, a pronounced external locus of control (Rotter, 1966), and a low level of personal self-efficacy (Bandura, 1997), the attempt to increase personal self-efficacy can leads to positive attitudes toward vaccines. The differences emerged from old age can be explained, perhaps, by the reason that old people perceive that only with vaccination as a collective, mass- action, the Covid-19 pandemic can be reduced.

The sources of information about Covid-19 reveal a complex picture. Young people seem to form their beliefs on Covid-19 vaccine and perceived vulnerability to pandemic based on both social media and traditional media exposure. Differences between vaccines and other protections emerge also in this case, being perceived the efficacy of protections and risk behaviours for contagion only related to traditional media exposure. This data seems to contradict those who consider the young people only a digital generation: it may be that they are of course on social networks, but also "rediscover" the more traditional media, as also the Italian Institutes of Statistics (CENSIS, 2021) reveals. The international literature on the role of social networks on anti-vaccination ideology and conspiracy beliefs is well established (Murphy et al., 2021; Bieber et al. 2021), and this data is central for the future communication campaigns aimed at improving self-protection in this age cohort.

As indeed stated by Riva (2019), social media offer an extraordinary showcase for the diffusion of fake news. During the pandemic, the vaccine- resistant and vaccine- hesitant people utilized social media such as Facebook, for the diffusion of conspiracy representations and for disconfirming the scientific knowledge (Bucciarelli, 2021). Their great diffusion among population, and the less digital literacy owned by a large part of it exposed people to the risk of create a false representation of the Covid-19 disease and of its biomedical characteristics.

The Social Representation Theory indeed poses the translation of the scientific language (*reified universes of knowledge*) into common language (*consensual universes of knowledge*) as one of the most important and difficult question for a correct and authoritative diffusion of qualified information (Moscovici, 2000; Galli, 2012; Smith et al., 2015), with relevant repercussions on attitudes and behaviours of groups and individuals.

The specific factor of the PTM Questionnaire "beliefs on Covid-19 vaccine" could suggest that the vaccine is perceived as a specific type of protection, different from the others protections such as facial mask and sanitizing gel. It can be perceived as an internal protection, which, one inoculated, is completely removed from any personal control. For this reason people with contamination anxiety, distrust or suspiciousness toward the society or social institutions can refuse it believing it a noxious and harmful drug and not a protection against contagion or death (Murphy et al., 2021). The perception of the vaccine as different form of health protection may request careful attention for the construction of persuasive messages aimed at improving the compliance of the population for it, as other research claim (Bokemper et al., 2022), taking into consideration, perhaps, its perceived specificity compared to other protections systems.

As other research highlighted, the conspiracy beliefs, that is to say "the attempts to explain the ultimate causes of significant social and political events and circumstances with claims of secret plots by two or more powerful actors" (Douglas et al., 2019, p. 4) play an important role in protection issue. Our study has inserted only a single item (the mistrust in political Institutions and media) for evaluating this thinking style and not a specific, validated instrument, as other research has done (Hughes & Machan, 2021). But, despite the use of a single item, it reveals an important influence on all the PTM factors. Young people who present a high mistrust toward the political institutions and mass-media are less favourable and available to adopt the protection for safeguarding their health, believing that Covid-19 is less serious than the institutions and media led us to believe. Taking actions for a more rigorous and scientific information from institutions could have a beneficial impact on representations and emotions towards the Covid-19, bearing in mind the difficulty in translating the scientific language into a more clear and authoritative message for "common people", as Social Representation Theory indicates (De Rosa & Mannarini, 2020).

The Hierarchical Regression Model that posed the factor "beliefs on Covid-19 vaccine" as a dependent variable, highlights the importance of the mistrust in political institutions and media, the perceived vulnerability to the pandemic and the use of the other protections and their efficacy are relevant, significant contributors/predictors. The distrust in Institutions emerged as a critical factor for the adoption of this effective behaviour against the spread of Covid-19, as other research has highlighted (eg. Bieper et al., 2021, Zanin & Zambianchi, 2022). The utilization of the other protections and the perception of themselves as vulnerable contributes significantly and positively, on the contrary, to the vaccination of the young people. This data is in line with the prediction of PTM, i.e. that the vulnerability to the disease and the perceived efficacy of the protections contribute to the utilization of the vaccine (Eberhardt & Ling, 2021). These results could give suggestions for the health communication (interpersonal and through social and mass-media systems) to the young people in order to sustain future vaccination campaigns, if they will be necessary. Summarizing, PTM emerges as a relevant theoretical model for contrasting the spread of Covid-19, together with the dimensions of time perspective.

Perspectives for interventions

The elimination of stringent laws about Covid-19 protections from Health Ministry in Italy and other Countries during the 2022 year configures a situation which emphasizes the need to bring the protective norms from hetero-directed to self-directed and therefore based on the awareness of one's own risks and that of others. This passage requests the presence of ethical maturity because the sacrifice to utilize, eg. masks, or keep social distance, or get vaccinated with another booster, or for the first time in case of vaccine- hesitant, is related not only to the preservation of personal health, but also to the preservation of others' health condition.

Young people are interested in the spread of Coronavirus disease, but, in most cases, they are not at risk for life, as biomedical research attests (Bophal et al., 2021). But people older, or with specific frailties also in young age, request more attention and the ethical responsibility to young people to not spread the virus through lack of protective behaviors. PTM, as other research claim (eg. Ezati et al., 2021; Al-Rasheed et al., 2021; Grano et al., 2022; Zanin & Zambianchi, 2022), could be utilized for the construction of persuasive social messages for improving the protective behaviors of individuals (Volpe & Zambianchi, 2022), and also for interventions on groups for the prevention of contagion. Again, the results could be of potential interest for promoting future vaccination campaigns, with specific targeting of population, being vaccine one of the most effective ways of protection (Seeatongo et al., 2022). The relevance of Time Perspective for the Covid-19 prevention, if other future research will confirm it, can be an added value for the prevention messages and also for the prevention projects in various contexts such as work, universities, cultural centers, touristic destinations and other social situations.

Limits of the study

The first limitation of this study is the small sample of young people, that does not allow us to trace back rigorous, extendable information from results to the entire young population. The second limitation is the presence of a vast majority of individuals with high level of school education. Future studies have to broaden the sample including young people with lower level of school education, in order to evaluate potential differences on the study variables. The use of a single item for the evaluation of mistrust in political institutions and media constitutes another precise limit of this study. Also, the questionnaire based on PTM theory doesn't take into consideration the perceived costs of the protective behaviours, so it is not possible to establish its role in the intentions to utilize them.

Finally, the study is a correlational, cross-sectional design. For this reason, also the predictors of positive beliefs on Covid-19 vaccine can be assumed as causally connected to the predictors only through a longitudinal design.

References.

Agnelli, S., & Capua, I. (2022). Pandemic or Panzootic- A Reflection on Terminology for SARS-CoV-2 Infection. *Emerging Infectious Disease*, 28 (*12*), 2552-2556. DOI: 10.3201/eid2812.220819.

AL-Rasheed, M. (2020). Protective Behavior against COVID-19 among the Public in Kuwait: An Examination of the Protection Motivation Theory, Trust in Government, and Sociodemographic Factors. *Social Work in Public Health*, *35* (7), 546-556.DOI: 10.1080/19371918.2020.1806171.

Bandura, A.(1997). *Self-efficacy: the exercise of control.* New York: Freeman.

Bhopal, SS., Bagaria, J., Olabi, B., & Bhopal, R. (2021). Children and young people remain at low risk of COVID-19 mortality. *Lancet Child Adolescent Health*, *5*(5),12-13. DOI: 10.1016/S2352-4642(21)00066-3.

Bieber, F., Prelec, T., Jovic, D., & Nechev, Z. (2021). The Suspicious Virus: Conspiracies and COVID-19 in the Balkans. *The Balkans in Europe Policy Advisory Group* (BiEPAG). Available at: https://biepag.eu.

Bogg, T., & Roberts, B.W. (2004). Conscientiousness and Health-Related Behaviors: A Meta-Analysis of the Leading Behavioral Contributors to Mortality. *Psychological Bulletin,* 130(6), 887-919. DOI: 10.1037/0033-2909.130.6.887.

Bucciarelli, M. (2021). Meccanismi psicologici alla base del disprezzo del sapere scientifico, *Giornale Italiano di Psicologia* 2, 335-350, DOI: 10.1421/102686.

Carelli, G., Wiberg, B., & Wiberg, M. (2011). Development and construct validation of the Swedish Zimbardo Time Perspective Inventory. *European Journal of Psychological Assessment, 4*, 220-227. DOI: 710.1027/1015-5759/a000076.

CENSIS (23 aprile 2021). Rapporto Ital Communications – *Disinformazione e Fake News durante la Pandemia: il Ruolo delle Agenzie di Comunicazione.*

De Rosa, A.S., & Mannarini, T. (2020). The "*Invisible Other*": Social representations of COVID-19 pandemic in media and institutional discourse. *Papers on Social Representations*, *29*(2), 5.1-5.35.

Douglas, K. M., Uscinski, J. E., Sutton, R. M., Cichocka, A., Nefes, T., Ang, C. S., et al. (2019). Understanding conspiracy theories. *Political Psychology. 40,* 3-35. DOI: 10.1111/pops.12568.

Eberdart, J., & Ling, J. (2021). Predicting COVID-19 vaccination intention using protection motivation theory and conspiracy beliefs. *Vaccine*, 39, 6269-6275. DOI: 10.1016/j.vaccine.

Ezati RAD., Mohseni, S., Takhti, H.K., Azad, M.H., Shahabi, N., Aghamolaei, T., & Norozian, F. (2021). Application of the protection motivation theory for predicting COVID-19 preventive behaviors in Hormozgan, Iran: a cross-sectional study. *BMC Public Health*, 21-466. DOI: 10.1186/s12889-021-10500w.

Frank, K. (1939). Time Perspective. *Journal of Social Phylosophy*, *4*, 293-312.

Galasso, V., Pons, V., Profeta, P., Becher, M., Brouard, S., & Foucault, M. (2020).Gender differences in COVID-19 attitudes and behavior: Panel evidence from eight countries. *Proceedings of the National Academy* of *Science*, 3, *117*(44), 27285-27291. DOI: 10.1073/pnas.2012520117.

Galli, I. (2012). *Le Rappresentazioni Sociali*. Bologna: il Mulino.

Gallmaister, D. (2021). What are the Determinants of the Protection Motivation Theory Predicting the Willingness to get Vaccinated Against Covid-19? available at: http://essay.utwente.nl/86729/1/Gallmeister_BA_Psychology.pdf.

Goldberg, J.F. (2021). How should psychiatry respond to COVID-19 anti-vax attitudes? *Journal of Clinical Psychiatry*, *82* (5)21ed14213. DOI: 10.4088/JCP.21ed14231.

Grano, C., Solorzano, C., & Di Pucchio, A. (2022) Predictors of protective behaviours during the Italian Covid-19 pandemic: an application of protection motivation theory. *Psychology & Health*, published online. DOI: 10.1080/08870446.2022.2062355.

Gremigni, P. (2013). *Comportamenti di salute: teorie e modelli di riferimento.* In P. Gremigni & P.E. Ricci Bitti (eds): Psicologia della Salute. Modelli Teorici e Contesti Applicativi. Carocci ed. Rome.

Harbek, EL., Ian, G., & Hine, T.J. (2018). Young driver perceived risk and risky driving: A theoretical approach to the "fatal five". *Transportation Research Part* F *Traffic Psychology and Behaviour*. 58, 392-404. DOI: 10.1016/j.trf.2018.06.018.

Henson, JM., Carey, MP. Carey, KB., & Maisto, SA.(2006). Associations among health behaviors and time perspective in young adults: model testing with boot-strapping replication. *Journal of Behavioral Medicin*e, *2*, 27-137.

HishimaruIshimaru, T., Okawara, M., Ando, H., Hino, A., Nagata, T., Tateishi, S., Tsuji, M., Matsuda, S., & Fujino, Y. (2021). An CORoNaWork Project. Gender differences in the determinants of willingness to get the COVID-19 vaccine among the working-age population in Japan. *Human Vaccines & Immunotherapeutics*, 2(11), 3975-3981. DOI: 10.1080/21645515.2021.1947 098.

Hughes, S., & Machan, L. (2021). It's a conspirancy: Covid-19 conspiracies link to psychopathy, Machiavellianism and collective narcissism. *Personality and Individual Differences*, disponibile online. DOI: 10.1016/j.paid.2020.110559.

Jiang, X., Elam,G., Yuen, C., Voeten, H., de Zwart, O., Veldhuijzen, I., & Brugg, G. (2009). The perceived threat of SARS and its impact on precautionary actions and adverse consequences: A qualitative study among

Chinese communities in the United Kingdom and the Netherlands. *International Journal of Behavioural Medicine,* 16:58-67. DOI: 10.1007/s12529-008-9005-5.
Laghi, F., Liga, F., Baumgartner, E., & Baiocco, R. (2012). Identity and conformism among Italian adolescents who binge eat and drink. *Health, Risk and Society*, *14*(4), 361-376.
Lewis, A., & Duch, R. (2020). Gender differences in perceived risk of COVID-19. *Social Science Quarterly,* 101, 5, 2124-2133. DOI: 10.1111/ssqu.13079.
Liang, M., & Liang, G. (2020). Efficacy of face mask in preventing respiratory virus transmission: A systematic review and meta-analysis. *Travel Medicine and Infections Disease*, *36*. DOI: 10.1016/j.tmaid.2020.101751
Kholberg, L. (1981). The *Phylosophy of Moral Development*. Moral Stages and Justice. San Francisco: Harper & Row.
Mello, Z., & Worrell, F. (2006).The Relationship of Time Perspective to Age, Gender, and Academic Achievement Among Academically Talented Adolescents. *Journal for the Education of the Gifted*. 29, 3.
Milne, S., Sheeran, P. & Orbell, S. (2006). Prediction and Intervention in Health Related Behavior: A Meta-Analytic Review on Protection Motivation Theory. *Journal of Applied Social Psychology, 30(1*), 106-144. DOI: 10.1111/j.1559-1816.2000.tb02308.
Moore, R., Purvis, R.S., Hallgren, E. *et al. (*2022*)*. Motivations to Vaccinate Among Hesitant Adopters of the COVID-19 Vaccine. *Journal of Community Health,* 47, 237-245. DOI: 10.1007/s10900-021-01037-5.
Moscovici, M. (2000). *Social Representations: Exploration in Social Psychology*. Cambridge, UK: Polity.
Murphy, J., Vallieres, F., Bentall, RP., Shevlin, M., McBride, O., Hartman, TK., McKay, R., Bennett, K., Mason, L., Gibson-Miller, J., Levita, L., Martinez, AP., Stocks, TVA., Karatzias, T., & Hyland, P. (2021). Psychological characteristics associated with COVID-19 vaccine hesitancy and resistance in Ireland and the United Kingdom. *Nature Communications*, *12*(1) 1-15. DOI: 10.1038/s41467-020-20226-9.
Plotnikoff, RC., Lippke, S., Trinh, L., Courneya, KS., Birkett, N., & Sigal, RJ. (2010). Protection motivation theory and the prediction of physical activity among adults with type 1 or type 2 diabetes in a large population sample. *British Journal of Health Psychology*, *15*(3), 643-61.DOI: 10.1348/1359107 09X478826.
Przepiorka, A., & Blachnio, A. (2016). Time perspective in Internet and Facebook addiction. *Computers in Human Behavior*, *60*, 13-18.
Rippetoe, P. A., & Rogers, R. W. (1987). Effects of components of Protection Motivation Theory on adaptive and maladaptive coping with a health threat. *Journal of Personality and Social Psychology, 52*, 596-604. DOI: 10.1037//0022-3514.52.3.596.
Riva, G. (2019). *Nativi digitali. Crescere e apprendere nel mondo dei nuovi media*. Bologna: il Mulino.

Rogers, R. W. (1975). A protection motivation theory of fear appeals and attitude change. *Journal of Psychology, 91*(1), 93-114. DOI: 10.1080/00223980.1975.9915803.

Rogers, R. W., & Prentice-Dunn, S. (1997). *Protection motivation theory*. In D. S. Gochman (Ed.), Handbook of health behavior research I: Personal and social determinants (pp. 113-132). New York, NY: Plenum Press.

Rotter, J.B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs General and Applied*, *80*(1), 1-28. DOI: 10.1037/h0092976.

Sharifirad, G., Yarmohammadi, P., Sharifabad, MA., & Rahaei Z. (2014). Determination of preventive behaviors for pandemic influenza A/H1N1 based on protection motivation theory among female high school students in Isfahan, Iran. *Journal of Education Health Promotion*, 2014, *21*, 3-7. DOI: 10.4103/2277-9531.127556.

Smith, N., O'Connor, C., & Joffe, H.(2015). Social Representations of Threatening Phenomena: The Self-Other Thema and Identity Protection. *Papers on Social Representations*, 24 (2), 1.1-1.23.

Ssentongo, P., Ssentongo, A.E., Voleti, N., Grof, D., Sun, A., Djibril M.B., Nunez, J., Parent, L.J., Chinchilli, VM., & Paules, C.I. (2022). SARS-CoV-2 vaccine effectiveness against infection, symptomatic and severe COVID-19: a systematic review and meta-analysis. *BMC Infectious Diseases, 22,* 439 DOI: 10.1186/s12879-022-07418-y.

Tan, J., Yoshida, Y., Ma, KK., Jarvis, M.F., & Lee, C-C. (2022). Gender differences in health protective behaviours and its implications for COVID-19 pandemic in Taiwan: a population-based study. *BMC Public Health, 22*, 1900. DOI: 10.1186/s12889-022-14288-1.

Tognotti, E. (2020). *Vaccinare i bambini tra obbligo e persuasione. Tre secoli di controversie*. Milano: FrancoAngeli.

Toshkov, D. (2023). Explaining the gender gap in COVID-19 vaccination attitudes. *European Journal of Public Health,* 1, *33*(3), 490-495. DOI: 10.1093/eurpub/ckad052.

Yan, Y., Jacques-Tiura, AJ., Chen, X., Xie, N., Chen, J., Yang, N., Gong. .J, & Macdonell, KK. (2014). Application of the protection motivation theory in predicting cigarette smoking among adolescents in China. *Addiction Behavior, 39*(1). 181-8. DOI: 10.1016/j.addbeh.2013.09.027.

Volpe, L., & Zambianchi, M. (2022). *Design Dentro* e *Oltre la Pandemia. Il valore della Comunicazione Sociale*. Homless Book ed. Faenza.

Zambianchi, M. (2019). Time Perspective and Eudaimonic Well-being in Italian Emerging Adults, *Counseling*, *12*(3). DOI: 10.14605/CS1231902.

Zambianchi, M. (2020). *Così il Coronavirus ha rubato il tempo alle persone*. Il Sole 24 Ore. Available at https://www.previdir.it/cosi-il-coronavirus-ha-rubato-il-tempo-delle-persone/.

Zambianchi, M. (2022). The Young and the Pandemic. A pilot study testing a Questionnaire on Psychological Motivation to Protect against Covid-19. *Counseling*, *Giornale Italiano di Ricerca e Applicazioni*, *15*(1), 86-106. DOI: 10.14605/CS1512206.

Zambianchi, M., Ricci Bitti, P. E., & Gremigni, P. (2010). Prospettiva temporale, pianificazione dell'agenda personale e adozione di comportamenti a rischio in adolescenza. *Psicologia Clinica dello Sviluppo*, *2*, 395-412. DOI: 10.13140/2.1.1690.1767.

Zambianchi, M., & Volpe, L. (2023). La Comunicazione Sociale sulla Pandemia di Covid-19. *Counseling, 16(*2), 1-27. DOI: 10.14605/CS1622304.

Zancu, S.A., Mairean, C., & Diaconu-Gherasim, L. (2022).The longitudinal relation between time perspective and preventive behaviors during the COVID-19 pandemic: The mediating role of risk perception. *Current Psychology*, DOI: 10.1007/s12144-022-03069-z.

Zanin, L., & Zambianchi, M.(2022).Anziani, prospettiva temporale e pandemia Covid-19. *Counseling, Giornale Italiano di Ricerca e Applicazioni,* 15(2), 37-62 - DOI: 10.14605/CS1522203.

Zimbardo, P.G., & Boyd, JN. (1999). Putting Time in Perspective: a valid, reliable individual- differences metric. *Journal of Personality and Social Psychology, 6*, 1271-1288.

Zimbardo, PG. & Boyd, J.(2009). *The Time Paradox*. Simon & Schuster ed.

Zimbardo, PG., Keough, K. & & Boyd, J. (1997).Present time perspective as a predictor of risky driving. *Personality and Individual Differences*, 23(6), 1007-1023. DOI: 10.1016/S0191-8869(97)00113-X.

La Multidimensional Financial Literacy Scale: proposta di un nuovo strumento per la misurazione della financial literacy

The Multidimensional Financial Literacy Scale: Proposal of a new tool for measuring financial literacy

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Riassunto

L'alfabetizzazione finanziaria (*financial literacy*) è l'insieme delle conoscenze e competenze relative alla gestione delle proprie risorse finanziarie. Possedere tali nozioni e abilità consente di prendere decisioni finanziarie che impattano positivamente sul proprio benessere personale. Ad oggi gli strumenti per misurare il livello di alfabetizzazione finanziaria dell'individuo sono molteplici a causa dell'esistenza di diverse concettualizzazioni del costrutto stesso. A partire dalla definizione dell'*Organization for Economic Co-operation and Development* (OECD), che considera l'alfabetizzazione finanziaria come l'insieme di consapevolezza, conoscenze, competenze, atteggiamenti e comportamenti in tale ambito, il presente contributo intende descrivere la progettazione di un nuovo strumento di misura della *financial literacy*. La Multidimensional Financial Literacy Scale (MFLS) vuole proporsi come nuovo strumento di misurazione dell'alfabetizzazione finanziaria intesa come costrutto multidimensionale. Gli item della nuova scala costituiscono l'operazionalizzazione dei costrutti teorici inclusi nella definizione dell'*Organization for Economic Co-operation and Development* (OECD). La scala presenta una struttura modulare,

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in cui gli item sono ordinati per gradiente di difficoltà, da livello base a livello avanzato. Il presente contributo, oltre alla presentazione di un nuovo strumento di misurazione della *financial literacy*, offre altresì una riflessione teorica sulle motivazioni scientifiche che hanno portato alla creazione della nuova scala che, tuttavia, necessita di studi futuri che ne testino le proprietà psicometriche.

Parole chiave: alfabetizzazione finanziaria, validazione di scala, multidimensionalità, conoscenze finanziarie, atteggiamenti finanziari, comportamenti finanziari

Abstract

Financial literacy is the set of knowledge and skills related to managing personal financial resources. Financial knowledge and financial competences enable people to make financial decisions that have a positive impact on personal wellbeing. To date, there are multiple tools for measuring an individual's level of financial literacy due to the existence of various conceptualizations of the construct itself.

Starting from the definition of the *Organization for Economic Co-operation and Development* (OECD), which considers financial literacy as the set of awareness, knowledge, skills, attitudes and behaviors, this contribution intends to describe the development of a new financial literacy measurement tool. The *Multidimensional Financial Literacy Scale* (MFLS) is a new tool for measuring financial literacy thought as a multidimensional construct. The items are the operationalization of the theoretical constructs included in the definition of the OECD. The scale has a modular structure, in which the items are ordered by gradient of difficulty, from basic to advanced level. This contribution, in addition to presenting a new financial literacy measurement tool, also offers a theoretical reflection on the scientific reasons that led to the development of the new scale. However, future studies are necessary to test *Multidimensional Financial Literacy Scale*'s psychometric properties.

Keywords: financial literacy, scale validation, multidimensionality, financial knowledge, financial attitudes, financial behaviors

Introduzione

L'alfabetizzazione finanziaria (*financial literacy*) è l'insieme delle conoscenze e delle competenze dell'individuo relative alla gestione efficace delle proprie risorse finanziarie (Hilgert et al., 2003). Tale costrutto possiede un ruolo chiave nell'influenzare i comportamenti e le decisioni degli individui in ambito finanziario (Hung et al., 2009; Ingale & Paluri, 2022).

Come è ormai ben documentato in letteratura, una buona alfabetizzazione finanziaria risulta essere correlata con una gestione funzionale delle proprie risorse economiche (Hilgert et al., 2003; Huhmann & McQuitty, 2009). Coloro che ottengono punteggi più elevati di *financial literacy* hanno infatti maggiori probabilità di mettere in atto delle "buone pratiche" finanziarie, ad esempio pagare in tempo le bollette o avere un fondo di emergenza (Hilgert et al., 2003). Possedere una buona alfabetizzazione finanziaria, inoltre, porta le persone ad avere maggiori probabilità di investire nei mercati finanziari (Robba et al., 2024a) e di preoccuparsi del proprio piano pensionistico (Van Rooij et al., 2012).

Alcune ricerche, piuttosto recenti, forniscono supporto empirico nell'identificazione della *financial literacy* quale predittore fondamentale della modalità con cui le persone prendono le proprie decisioni finanziarie e dell'esito di tali decisioni (Ingale & Paluri, 2022). Le persone finanziariamente alfabetizzate sono maggiormente in grado di prendere buone decisioni finanziarie, incrementando il livello di sicurezza economica e di benessere (Lusardi, 2019).

L'alfabetizzazione finanziaria è inoltre fortemente associata al benessere finanziario, o *financial well-being* (Huston, 2009). Quest'ultimo fa parte del costrutto più ampio di benessere personale ed è funzione di caratteristiche personali, comportamenti finanziari e strategie in risposta a *stressor event* finanziari (Zemtsov & Osipova, 2016).

Dato il legame diretto tra il livello di alfabetizzazione finanziaria dell'individuo e il benessere finanziario dell'individuo stesso, risulta essere di grande importanza che le persone siano adeguatamente equipaggiate di conoscenze e di competenze in ambito finanziario, anche per rispondere in maniera efficace a *stressor event* finanziari (Ingale & Paluri, 2022). Sebbene sia ormai evidente il ruolo chiave dell'alfabetizzazione finanziaria nell'influenzare i livelli di benessere delle persone, l'analfabetismo finanziario è ancora oggi molto diffuso nel mondo (Lusardi, 2019). In Italia, l'indicatore complessivo di alfabetizzazione finanziaria – che considera conoscenze, comportamenti e atteggiamenti – è pari a 10,6 su una scala che va da 0 a 20 (Lamboglia et al., 2023). Tale livello di *financial literacy* varia a seconda del genere, dell'età e del titolo di studio (*ibidem*). La percentuale di italiani che rispondono correttamente ad almeno cinque domande su sette relative alle conoscenze finanziarie è del 39% (OECD, 2023). In particolare, come indicato nel rapporto EduFin 2023, la percentuale di risposte corrette a tutte e tre le domande su inflazione, tassi di interesse e diversificazione del rischio complessivamente è del 44,5%. Singolarmente, il 69,8% degli italiani risponde correttamente alla domanda sull'inflazione, il 71,6% alla domanda sui tassi di interesse e il 63,8% a quella sulla diversificazione del rischio (Comitato EduFin, 2023).

Per quanto riguarda i *financial behavior*, soltanto il 35% degli italiani mette in atto comportamenti finanziari auspicabili, quali tenere traccia delle proprie entrate e uscite, risparmiare e pianificare a lungo termine, ed effettuare decisioni d'acquisto ponderate (OECD, 2023). Dal momento che comportamenti finanziari efficaci sono strettamente connessi a adeguate conoscenze e competenze finanziarie (Zemtsov & Osipova, 2016), è ormai largamente condivisa la necessità di promuovere e potenziare i livelli di *financial literacy* delle persone.

Nonostante la presa di coscienza della necessità di colmare tali lacune in termini di alfabetizzazione finanziaria, poche energie sono state dedicate ad indagare il costrutto stesso di *financial literacy* (Bongini et al., 2015) e gli strumenti per misurarlo. Uno dei maggiori ostacoli connessi all'indagine e alla promozione dell'alfabetizzazione finanziaria è la mancanza, in letteratura, di una definizione univoca del costrutto e della conseguente difficoltà nella sua misurazione (Potrich et al., 2018).

Nell'ultimo decennio i ricercatori hanno considerato, nella concettualizzazione dell'alfabetizzazione finanziaria, anche variabili soggettive come l'atteggiamento e il comportamento, andando oltre le definizioni incentrate unicamente sulle conoscenze oggettive. Tale tendenza è il sintomo di un chiaro cambiamento nel modo di concepire la *financial literacy*: è un costrutto multi-sfaccettato e multidisciplinare (Ingale & Paluri, 2022). A tale andamento teorico, però, non si è affiancato un conseguente aggiustamento degli strumenti di misurazione della *financial literacy* che, infatti, si limitano per lo più a indagare conoscenze specifiche (Lusardi & Mitchell, 2011).

Inoltre, in letteratura emerge la mancanza di strumenti validati nel contesto italiano volti a misurare le conoscenze finanziarie – come le "*Big Three*" (Lusardi & Mitchell, 2007) – e i *financial behavior* – si pensi, per esempio, alla Consumer Spending Self-Control (CSSC; Haws et al., 2011) o alla Brief Money Management Scale (Ksendzova et al., 2017). Considerando le differenze esistenti nei sistemi economico-finanziari internazionali, non solo risulta necessaria la validazione degli strumenti già esistenti in letteratura, ma c'è anche bisogno dello sviluppo di uno strumento di misurazione dell'alfabetizzazione finanziaria adatto a studi cross-culturali (Nicolini et al., 2013), e, in particolar modo adattabile al contesto culturale italiano.

Con l'obiettivo di colmare la discrepanza esistente tra la definizione multi-componenziale di alfabetizzazione finanziaria e la relativa operazionalizzazione, il presente studio intende presentare una nuova scala di misurazione del costrutto di *financial literacy* nella popolazione adulta e nel contesto italiano: la *Multidimensional Financial Literacy Scale* (MFLS). Verranno considerate anche variabili soggettive come la *financial literacy* percepita, l'atteggiamento e il comportamento.

Prima di procedere con la presentazione della scala, ci si propone di riportare alcune delle definizioni più diffuse di *financial literacy* da cui sono scaturite alcune riflessioni relative alla necessità di proporre un nuovo strumento di misurazione.

Definire la *financial literacy*

La maggior parte dei ricercatori sposa una definizione di alfabetizzazione finanziaria incentrata sulle conoscenze tecniche. In questa direzione, la *financial literacy* è stata definita come "la conoscenza degli investitori ordinari circa i principi, gli strumenti, le organizzazioni e le regolamentazioni del mercato" (FINRA, 2003), oppure "la capacità di elaborare informazioni di tipo economico e prendere decisioni ponderate sulla pianificazione finanziaria, sull'accumulo di ricchezza, sul debito e sulla pensione" (Lusardi & Mitchell, 2014), o ancora "la conoscenza di concetti finanziari di base, come il funzionamento di un interesse composto, la differenza tra valore nominale e reale, e le nozioni alla base della diversificazione del rischio" (Lusardi, 2008a; 2008b).

Una delle concettualizzazioni più diffuse in letteratura è quella fornita dall'*Organization for Economic Co-operation and Development* (OECD), che concepisce l'alfabetizzazione finanziaria come la combinazione di consapevolezza, conoscenze, abilità, atteggiamenti e comportamenti utili per prendere decisioni finanziarie e, in ultima analisi, favorevoli al raggiungimento del benessere finanziario individuale (OECD, 2013). Da tale varietà di definizioni si evince come la *financial literacy* sia un costrutto complesso e multi-sfaccettato. L'OECD propone di concepire l'alfabetizzazione finanziaria come il risultato di tre componenti: le conoscenze finanziarie (*financial knowledge*), gli atteggiamenti finanziari (*financial attitude*) e i comportamenti finanziari (*financial behavior*).

Con *financial knowledge* si intendono le conoscenze e il grado di preparazione dell'individuo in materia finanziaria. Alcune nozioni che solitamente vengono indagate sono: l'inflazione (ossia il valore del denaro legato alla dimensione temporale), il concetto di interesse (sia semplice che composto), la diversificazione del rischio e il rapporto rischio-rendimento (OECD, 2020). La *financial knowledge* è una componente importante della *financial literacy* in quanto permette alle persone di effettuare delle comparazioni tra prodotti e servizi al fine di compiere scelte consapevoli e informate (OECD, 2020).

L'atteggiamento finanziario (*financial attitude*) è l'espressione del grado di piacevolezza e della disposizione, positiva o negativa, delle persone verso l'ambito finanziario (anche su tematiche specifiche come, per esempio, l'atteggiamento nei confronti del debito).

Infine, con *financial behavior* ci si riferisce ai comportamenti di gestione delle proprie risorse finanziarie (risparmio, investimenti, etc.), incluse anche le strategie di coping volte a evitare o risolvere shock finanziari (Sorgente & Lanz, 2017). I comportamenti finanziari, che per l'OECD sono la componente di maggior impatto nel definire una persona "finanziariamente alfabetizzata", sono un ulteriore elemento in grado di plasmare la situazione finanziaria e il benessere finanziario degli individui. Infatti, alcune azioni come, ad esempio, la mancanza di strategie di risparmio o di pianificazione a lungo termine, o l'incapacità di scegliere strumenti finanziari adatti alle proprie necessità, hanno un impatto negativo sul benessere finanziario (*financial well-being)* e sono indicatori di una scarsa *financial literacy* (OECD, 2020).

I tre pilastri dell'alfabetizzazione finanziaria sono collegati tra loro, si influenzano reciprocamente e hanno un grande impatto nel determinare il livello complessivo di *financial literacy*. Ad esempio, gli atteggiamenti finanziari dei consumatori influenzano i loro comportamenti e le loro decisioni finanziarie: persone che hanno una disposizione negativa nei confronti del risparmio saranno meno inclini a mettere in atto tale comportamento (Atkinson & Messy, 2012). Anche le conoscenze e i comportamenti finanziari sono correlati positivamente, ma la causalità è da chiarire: questo potrebbe significare che maggiori livelli di *financial knowledge* comportino una maggiore partecipazione ai mercati finanziari e la messa in atto di comportamenti finanziari virtuosi, ma è anche ipotizzabile che coloro che gestiscono accuratamente le proprie finanze (come ad esempio investire nei mercati) tendano più spesso a interessarsi e formarsi in materia (Atkinson & Messy, 2012). Alcuni dati rilevano come fare utilizzo di strumenti finanziari formali (es. carte di pagamento e conti bancari) sia correlato a maggiori punteggi di *financial literacy*, indipendentemente dal reddito (Klapper et al., 2015).

Il fatto che, in letteratura, non ci sia una definizione univoca di *financial literacy* ha generato alcune riflessioni critiche da parte dei ricercatori (Huston, 2010). Uno dei problemi che comporta la mancanza di un'unica definizione di alfabetizzazione finanziaria è la presenza di diversi strumenti di misurazione, il che implica, tra gli altri svantaggi, l'impossibilità di effettuare dei confronti tra popolazioni differenti, come, ad esempio, comparazioni tra paesi (Lusardi & Mitchell, 2011).

La presenza di diverse concettualizzazioni di alfabetizzazione finanziaria comporta, inoltre, che ci siano altrettanti tipi di metodologie per misurare tale costrutto: ci si concentra, talvolta, su una certa varietà di argomenti finanziari (come i debiti, le assicurazioni, gli investimenti, i risparmi pensionistici ecc.), talvolta, invece, su un tema specifico. Anche il numero di item utilizzati per misurare la *financial literacy*, varia molto da ricerca a ricerca (Bongini et al., 2015).

Nel panorama degli studi che si sono occupati di indagare il costrutto di alfabetizzazione finanziaria, soltanto alcuni hanno deciso di considerare sia variabili oggettive, come la *financial knowledge* indagata tramite domande a scelta multipla con una sola risposta corretta, sia variabili soggettive, come le conoscenze percepite indagate tramite misure self-report (Bongini et al., 2015).

Alcune evidenze mettono in luce l'importanza di tenere in considerazione anche una dimensione soggettiva di alfabetizzazione finanziaria: infatti, nonostante possedere conoscenze finanziarie oggettive abbia un grande impatto sui comportamenti finanziari, talvolta questo non è sufficiente a produrre un effettivo cambiamento comportamentale (Robb & Woodyard, 2011). La relazione tra conoscenze e comportamenti è ben più complicata di quanto non si pensi: alcune ricerche mostrano come all'aumentare dei livelli di *financial knowledge* non corrisponda sistematicamente la messa in atto di comportamenti finanziari efficaci (Braunstein & Welch, 2002; Dwiastanti, 2015).

Ad esempio, dalla letteratura emerge che le decisioni di investimento non sono determinate solo dalle conoscenze finanziare oggettive, ma anche dalla *financial literacy* percepita che, in alcuni casi, gioca un ruolo persino più rilevante della stessa alfabetizzazione finanziaria (Bannier & Neubert, 2016; Robba et al., 2023b). Altri studi mostrano che la *financial literacy* percepita predice l'intenzione e la messa in atto di comportamenti di risparmio e di investimento, nonché la decisione di aderire a un piano pensionistico complementare, indipendentemente dal livello di conoscenza effettiva (e.g., Parker et al., 2008). La *financial knowledge* è un requisito necessario ma non sufficiente alla messa in atto di comportamenti finanziari responsabili (Tang & Baker, 2016): ci sono altre variabili che incidono sull'effettiva realizzazione del comportamento.

Le persone non hanno sempre una corretta percezione ed una piena consapevolezza del livello delle proprie conoscenze finanziarie (Yeh & Ling, 2022; Robba et al., *in press*). È interessante sottolineare come, talvolta, nonostante i livelli di alfabetizzazione finanziaria siano bassi, le persone tendano a sovrastimare le proprie conoscenze e competenze finanziarie (Bongini et al., 2015). Tale fenomeno prende il nome di *knowledge gap* (Lusardi & Mitchell, 2007). Le implicazioni del *knowledge gap* non vanno sottovalutate: infatti, le persone potrebbero trovarsi a gestire strumenti e prodotti finanziari senza avere conoscenze e competenze adeguate.

Un altro fattore soggettivo che ha un impatto sui *financial behavior* è l'atteggiamento finanziario. L'atteggiamento finanziario positivo influenza l'intenzione ad agire, ad esempio la decisione di investire nei mercati finanziari (Hapsari, 2021). Un altro studio evidenzia che gli atteggiamenti verso le carte di credito e il controllo percepito predicono l'intenzione di utilizzare la carta di credito. Tale correlazione positiva non è emersa tra le conoscenze finanziarie e l'utilizzo della carta di credito (Kennedy, 2013).

In conclusione, bisogna altresì considerare come la *financial literacy* sia il risultato di un'interrelazione complessa tra conoscenze effettive, conoscenze e competenze percepite e altri elementi come, ad esempio, gli atteggiamenti, l'accesso alle fonti e l'utilizzo dei social network che insieme originano il comportamento finanziario effettivo (Hung et al., 2009).

Quando si parla di *financial literacy* è bene ricordare che non ci si riferisce ad un mero possesso di conoscenze e nozioni teoriche, ma anche alla capacità di tradurre tali conoscenze in competenze pratiche (Huston, 2010). Possedere un'alfabetizzazione finanziaria significa, ad esempio, anche saper come reperire nuove informazioni finanziarie, riuscire a gestire efficacemente le proprie finanze o effettuare semplici calcoli per valutare prodotti finanziari (*ibidem*). Secondo Moore (2003) le persone finanziariamente alfabetizzate dovrebbero anche essere in grado di utilizzare le conoscenze apprese nell'esperienza pratica attraverso l'integrazione attiva delle nozioni teoriche. Le competenze di cui si parla sono strettamente legate alla vita quotidiana degli individui e riguardano la capacità di utilizzare e gestire il denaro in maniera adeguata, nonché la capacità di prendere decisioni consapevoli in ambito economico-finanziario (ANZ Bank, 2008). Ad esempio, scarse competenze finanziarie comportano maggiori probabilità di richiedere un prestito con alti tassi di interesse (Lusardi & Tufano, 2015).

La rilevanza delle competenze emerge, inoltre, in alcune ricerche che rivelano la presenza del processo di apprendimento *learning-by-doing*, ossia attraverso l'esperienza diretta. Questo significa che le persone che mettono in atto comportamenti finanziari (come la gestione delle proprie finanze o l'investimento dei propri guadagni) hanno maggiori opportunità e probabilità di apprendere nuove nozioni in materia finanziaria (Filipiak & Walle, 2015).

Le capacità di calcolo di base (*numeracy)*, definibili come la capacità di processare informazioni numeriche ed effettuare calcoli (Almenberg & Widmark, 2011), rappresentano un prerequisito necessario a prendere decisioni finanziarie che, spesso, richiedono di effettuare alcune operazioni matematiche o semplici calcoli, ad esempio per valutare i rendimenti di un investimento o il tasso di interesse di un mutuo.

Alcuni studi riportano che la *numeracy* e l'alfabetizzazione finanziaria sono entrambe fortemente correlate alla partecipazione ai mercati finanziari (Christelis et al., 2010; Sivaramakrishnan et al., 2017). Le capacità matematiche influenzano, ad esempio, la propensione a pianificare il proprio pensionamento, mettendo in atto comportamenti di risparmio (Lusardi & Mitchell, 2007; Van Rooij et al., 2011; Thomas & Spataro, 2018), e la decisione di partecipare a piani di previdenza complementare (Fornero & Monticone, 2011). Infine, le persone che riferiscono di avere un mutuo tendono ad ottenere punteggi più elevati ai test che mettono alla prova le abilità matematiche rispetto a coloro che non ce l'hanno (Almenberg & Widmark, 2011).

Nonostante la *numeracy* rivesta un ruolo di rilievo nelle decisioni finanziarie, le persone mostrano in genere scarse capacità di calcolo (Lusardi, 2012).

Visto il forte legame tra la *financial literacy* e le abilità di calcolo, alcuni ricercatori hanno ipotizzato che incrementare i livelli di alfabetizzazione finanziaria favorisca l'apprendimento e il potenziamento, in maniera indiretta, della *numeracy* (Skagerlund et al., 2018).

Obiettivi

Il presente manoscritto mira a dare una panoramica delle definizioni, nonché delle operazionalizzazioni, del costrutto di alfabetizzazione finanziaria proposte e presenti in letteratura mostrando l'esistenza di diverse lacune, sia rispetto alla concettualizzazione di *financial literacy* ancorata alle sole conoscenze finanziarie, sia rispetto alla misurazione del costrutto ad opera di strumenti non validati nel contesto italiano. Viste tali premesse si procede alla presentazione della MFLS come proposta di nuovo strumento di misurazione dedicato alla rilevazione delle diverse dimensioni – *financial knowledge*, *financial literacy* percepita, *financial attitude*, *financial behavior* – sottostanti il costrutto di alfabetizzazione finanziaria.

Inoltre, nel presente contributo, verrà descritto il protocollo di valutazione delle proprietà psicometriche della scala stessa.

La popolazione target di riferimento per cui verrà testata la validità di costrutto della scala sono gli adulti – persone dalla maggiore età in poi – considerando una maggiore disponibilità e autonomia nella gestione delle finanze personali. Il campione verrà selezionato in modo da essere rappresentativo della popolazione italiana in termini di genere, età, titolo di studio e area geografica (nord, centro, sud Italia o isole).

Si ipotizza che la MFLS possa essere un valido strumento di misurazione dell'alfabetizzazione finanziaria grazie al forte ancoraggio alla letteratura esistente in materia in fase di costruzione degli item.

Metodo

Costruzione della scala

L'obiettivo nella costruzione della MFLS consiste nel mantenere da un lato i tre pilastri della *financial literacy*, ossia conoscenza, atteggiamenti e comportamenti, e di innovare, dall'altro lato, dando spazio a variabili soggettive come la percezione soggettiva delle conoscenze e competenze personali.

La maggior parte delle scale presenti in letteratura per misurare la *financial literacy* si concentra, per lo più, sulle conoscenze oggettive suddivisibili in quattro macrocategorie (Huston, 2010): nozioni di base sul denaro (inclusi il potere d'acquisto, il valore del denaro nel tempo e concetti di contabilità personale), prestiti (ossia la conoscenza e l'utilizzo di carte di credito, prestiti al consumo o mutui), investimenti (ovvero i concetti di azioni, obbligazioni, fondi comuni d'investimento e conti deposito) e, infine, strumenti di tutela delle proprie risorse (come prodotti assicurativi o altri principi di *risk management*). Soltanto un quarto di queste scale include la misurazione di tutte le aree sopra citate (*ibidem*).

Una delle ragioni che ha condotto allo sviluppo della *Multidimensional Financial Literacy Scale* è stato appunto il desiderio di rendere disponibile una scala di misurazione della *financial literacy* che coprisse tutte le tematiche afferenti alla finanza personale.

In aggiunta, si è deciso di rilevare il comportamento finanziario delle persone, ricordando come *financial knowledge* e *financial behavior* siano due costrutti collegati fra loro e indispensabili nel determinare il livello complessivo di alfabetizzazione finanziaria.

Dopo un'accurata revisione della letteratura, si è deciso di utilizzare, per la costruzione della nuova scala, la concettualizzazione di *financial literacy* fornita dall'OECD (2013), che concepisce il costrutto come una combinazione di consapevolezza, conoscenze, abilità, atteggiamenti e comportamenti utili per prendere corrette decisioni finanziarie. La definizione in questione risulta essere quella più completa: riesce infatti a tenere insieme le diverse sottodimensioni di un costrutto multi-sfaccettato com'è l'alfabetizzazione finanziaria.

A partire da tale definizione e dagli strumenti di misurazione presenti in letteratura si è proceduto allo sviluppo della MFLS che include le seguenti dimensioni: *financial knowledge*, *financial literacy* percepita, *financial attitude*, *financial behavior*.

L'operazionalizzazione dei costrutti prevede che nella presente scala le conoscenze finanziarie vengano misurate attraverso una serie di undici item a risposta multipla (di cui alcuni creati ad hoc e altri ripresi dalla letteratura, come esplicitato in seguito) organizzati secondo un livello di complessità via via crescente. Tale organizzazione mira a rendere la MFLS uno strumento modulare, ovvero adattabile a diverse popolazioni target e obiettivi di ricerca cogliendo gradi di complessità e, in conseguenza, di conoscenze finanziarie diversi. La *financial literacy* percepita viene misurata attraverso il grado di fiducia espresso verso un unico item a risposta chiusa, creato ad hoc sulla base della letteratura esistente, che riguarda le conoscenze e le competenze percepite. Il *financial attitude*, ossia la misura dell'atteggiamento positivo delle persone nei confronti del mondo finanziario, viene misurato con il grado di accordo espresso verso tre item - a risposta chiusa creati ad hoc – sull'interesse e il coinvolgimento verso le notizie di attualità in materia. Infine, ci si è concentrati sui comportamenti finanziari caratterizzanti la vita quotidiana delle persone, sviluppando sedici item ad hoc a risposta chiusa per indagare comportamenti quali il risparmio, la pianificazione e il monitoraggio delle spese, e le abitudini di consumo consapevoli. Queste sono le tre aree comportamentali maggiormente sondate in letteratura e che spesso correlano positivamente con alti livelli di *financial literacy* (si veda Tab. 1).

Tab. 1 – *Gli item della Muldimensional Financial Literacy Scale*

Financial knowledge (livello base)	*Di seguito troverà una serie di domande attinenti all'ambito economico-finanziario. Le chiediamo di scegliere l'alternativa che secondo Lei è corretta, considerando che per ciascuna domanda è prevista una sola risposta esatta.*
	1.Inflazione elevata significa che il costo della vita cresce rapidamente. *Vero – Falso - Non so - Preferisco non rispondere*
	2.Che cos'è una carta di credito? *È una carta con cui si può spendere o prelevare solo entro il saldo disponibile del conto corrente - È una carta che consente di effettuare delle spese che non vengono addebitate immediatamente - È una carta di pagamento sulla quale può essere caricato un ammontare di denaro - Non so - Preferisco non rispondere*
	3.Nei mutui, il tasso di interesse rappresenta la percentuale sul prestito che ottiene l'ente che ha erogato il denaro. *Vero – Falso - Non so - Preferisco non rispondere*
	4.Immagini di depositare 100 € in un conto deposito che rende un interesse del 2% annuo. Sul suo conto non ci sono né tasse né costi di alcun genere. Se per cinque anni non preleva mai, quanto pensa si accumulerà sul conto? *Più di 102 € - Esattamente 102 € - Meno di 102 € - Non so – Preferisco non rispondere*
	5.Immagini ora che il tasso d'interesse di un conto deposito sia dell'1% annuo e che il tasso di inflazione per l'anno in corso sia del 2%. Dopo un anno, quanto pensa che sarà in grado di comprare con il denaro accumulato sul conto? *Più di oggi - Esattamente come oggi - Meno di oggi - Non so – Preferisco non rispondere*
	6.Un mutuo di 15 anni richiede tipicamente rate mensili maggiori rispetto ad un mutuo della durata di 30 anni, ma gli interessi totali alla fine del prestito saranno minori. Questa affermazione è: *Vera – Falsa - Non so – Preferisco non rispondere*
Financial knowledge (livello avanzato)	
	7.Quando un investitore diversifica il proprio capitale su diversi asset, il rischio di perdere soldi: *Aumenta – Diminuisce - Rimane lo stesso - Non so - Preferisco non rispondere*
	8.Un investimento con un alto tasso di interesse avrà un rischio maggiore. Questa affermazione è: *Vera – Falsa - Non so - Preferisco non rispondere*

	9.Considerando un ampio periodo di tempo (per esempio: 10 o 20 anni), quale asset normalmente fornisce un rendimento maggiore? *Conti deposito – Obbligazioni – Azioni - Non so - Preferisco non rispondere*
	10.Un fondo comune di investimento è un insieme di titoli. *Vero – Falso - Non so - Preferisco non rispondere*
	11.Di solito, quale asset mostra le fluttuazioni più elevate nel tempo? *Conti deposito - Obbligazioni – Azioni - Non so - Preferisco non rispondere*
Financial literacy percepita	
	1.Nel complesso, quanto si sente sicuro/a delle Sue conoscenze e competenze in ambito finanziario? *Risponda su una scala da 1 a 7 (dove 1 significa "per niente sicuro" e 7 significa "molto sicuro").*
Financial attitude	*Le chiediamo ora di esprimere il Suo grado di accordo riguardo le seguenti affermazioni su una scala da 1 a 7 (dove 1 significa "per niente d'accordo" e 7 significa "molto d'accordo").*
	1.Di solito, mi tengo informato/a sulle news/notizie di attualità del mondo finanziario.
	2.Di solito, mi tengo aggiornato/a sui temi del mondo finanziario attraverso fonti istituzionali (es. telegiornale, sito web istituzionale, riviste di settore, ecc…).
	3.Di solito, mi tengo aggiornato/a sui temi del mondo economico-finanziario attraverso fonti informali (es. social, blog/community online, ecc…).
Financial behavior	*Le chiediamo ora di esprimere il Suo grado di accordo riguardo le seguenti affermazioni su una scala da 1 a 7 (dove 1 significa "per niente d'accordo" e 7 significa "molto d'accordo").*
Comportamenti di risparmio	1.Cerco di risparmiare regolarmente per avere un fondo di emergenza da usare in casi di necessità.
	2.Di solito, mi impegno a stabilire una cifra fissa da risparmiare.
	3.Ogni mese sono solito/a risparmiare dei soldi per il futuro.
	4.È mia abitudine, appena ho un'entrata, metterne via una parte e risparmiarla.
	5.Cerco di risparmiare una certa somma ogni mese.
Pianificazione e monitoraggio delle spese	6.Riesco a pianificare in modo efficace come spendere il denaro.

	7.È mia abitudine fare un budget almeno una volta al mese, cioè fare un'attenta previsione delle mie spese in anticipo.
	8.Solitamente stabilisco un budget per pianificare in anticipo le mie spese.
	9.Tengo regolarmente sotto controllo (almeno una volta al mese) la mia situazione finanziaria.
	10.Regolarmente (almeno una volta al mese), controllo le mie uscite/entrate.
	11.Di solito prendo nota delle mie spese personali.
Consumi consapevoli	12.Prima di acquistare qualcosa rifletto con attenzione se mi serva davvero.
	13.Quando faccio acquisti, di solito paragono i prezzi dei prodotti.
	14.Prima di effettuare un acquisto valuto se me lo posso permettere.
	15.Le mie scelte d'acquisto sono sempre ponderate.
	16.Prima di acquistare un prodotto valuto accuratamente le alternative a disposizione e i relativi prezzi.

In termini operativi, la *financial literacy* viene spesso misurata in letteratura con tre item a risposta multipla ("*Big Three*") ideati da Lusardi e Mitchell (2007) e utilizzati in numerosi studi nel panorama internazionale (Bongini et al., 2015). In particolare, tali domande vertono sui tassi di interesse, sulla nozione di inflazione e su quella di diversificazione del rischio (*ibidem*). Per rispondere correttamente alle prime due domande, inoltre, sono necessarie basiche capacità di *numeracy*.

Anche nella MFLS si è ritenuto opportuno inserire i tre item ideati da Lusardi e Mitchell (2008), poiché queste tre domande costituiscono lo strumento maggiormente utilizzato al momento per misurare la *financial literacy* (Lusardi & Mitchell, 2023). Inoltre, negli anni, le "*Big Three"*, progettate sulla base di semplicità, rilevanza, brevità e capacità di discriminazione, si sono dimostrate un buon metodo per misurare le conoscenze finanziarie oggettive (*ibidem*). Tuttavia, volendo assumere una prospettiva ampia e multidisciplinare, si è deciso di estendere il numero degli item per sondare anche alcune conoscenze oggettive relative a comportamenti quotidiani, andando oltre ai concetti finanziari considerati dalle "*Big Three*". Sono stati inseriti alcuni item a risposta multipla e altri con modalità di risposta "vero", "falso", "non so", "preferisco non rispondere", riguardanti, ad esempio, i mutui (e.g., "Nei mutui, il tasso di interesse rappresenta la percentuale sul prestito che ottiene l'ente che ha erogato il denaro") o le carte di credito (e.g., "Che cos'è una carta di credito?"), ovvero nozioni relative a conoscenze e comportamenti quotidiani.

Infine, per rendere la MFLS adattabile a diverse popolazioni target e contesti di ricerca, si è deciso di suddividere gli undici item che sondano le conoscenze finanziarie in due sezioni, una di livello base e una di livello avanzato, cercando di posizionare le domande secondo un ordine di complessità crescente. Infatti, dai primi item contenenti alcune definizioni (e.g., "Inflazione elevata significa che il costo della vita cresce rapidamente"), si passa a domande che richiedono sia la conoscenza che la capacità di calcolo (e.g., "Immagini ora che il tasso d'interesse di un conto deposito sia dell'1% annuo e che il tasso di inflazione per l'anno in corso sia del 2%. Dopo un anno, quanto pensa che sarà in grado di comprare con il denaro accumulato sul conto?"), per poi passare a nozioni tecniche del mondo degli investimenti finanziari (e.g., "Considerando un ampio periodo di tempo (per esempio: 10 o 20 anni), quale asset normalmente fornisce un rendimento maggiore?").

Le "*Big Three*" sono considerate un valido strumento di misurazione della *financial literacy*, tuttavia, non tengono conto delle competenze finanziarie che, secondo la definizione dell'OECD, sarebbero parte integrante del costrutto. La MFLS mira a colmare questo gap misurando i *financial behavior,* ovvero tutti quei comportamenti che sarebbe preferibile mettere in atto per garantirsi un buon livello di sicurezza finanziaria e, in ultima analisi, di *financial well-being*.

In particolare, ci si è dedicati alla rilevazione dei comportamenti di risparmio, di consumo e di pianificazione e monitoraggio delle spese, sviluppando item ad hoc per ognuna delle tre dimensioni. I comportamenti finanziari riguardano, in generale, la corretta gestione del proprio denaro (Xiao, 2008).

I comportamenti di risparmio sono considerati una componente importante della *financial literacy* in quanto consentono di assicurarsi una certa sicurezza finanziaria riducendo le probabilità di indebitarsi (Atkinson & Messy, 2012). Per misurare le abitudini di risparmio, ai rispondenti viene chiesto di esprimere, su una scala Likert a sette passi (dove 1 significa "per niente d'accordo" e 7 significa "molto d'accordo"), il proprio grado di accordo (e.g., "Cerco di risparmiare regolarmente per avere un fondo di emergenza da usare in casi di necessità"). Come evidenziato da Batterton e Hale (2017) una scala Likert più ampia, come quella da uno a sette passi, offre una maggiore flessibilità nella raccolta dei dati rispetto a scale più limitate, consentendo ai partecipanti di esprimere una gamma più ampia di opinioni e sfumature. Inoltre, gli autori evidenziano che l'uso di una scala da uno a sette passi può migliorare la sensibilità statistica delle analisi, consentendo la rilevazione di differenze significative con maggiore precisione.

Pianificare le proprie spese future fa parte dei comportamenti finanziari virtuosi che impattano positivamente sul benessere finanziario (Atkinson & Messy, 2012), così come il monitoraggio delle proprie entrate e uscite finanziarie. Un item utilizzato, ad esempio, nella MFLS per la misurazione di tale sottodimensione è "Solitamente stabilisco un budget per pianificare in anticipo le mie spese".

Anche i comportamenti di consumo responsabile, ovvero considerre l'impatto di una spesa sulla propria situazione finanziaria oppure porre attenzione al rapporto qualità prezzo, è uno dei *financial behavior* auspicabili: alcuni dati mostrano come, in questo modo, diminuiscano le probabilità di indebitarsi (OECD, 2020). Nella *Multidimensional Financial Literacy Scale* sono presenti alcuni item, ad esempio "Prima di acquistare un prodotto valuto accuratamente le alternative a disposizione e i relativi prezzi", volti a misurare se le persone mettono in atto comportamenti di consumo finanziariamente responsabili.

Un'altra variabile che si desidera misurare con la MFLS è la *financial literacy* percepita, da intendere come la percezione soggettiva delle proprie competenze e conoscenze finanziarie. Come si diceva sopra, la *financial literacy* percepita ha un impatto notevole sulle decisioni e sui comportamenti finanziari che non sempre possono trovare una spiegazione solo nei livelli di conoscenze finanziarie oggettive. Ci si propone di indagare tale dimensione utilizzando un item, a risposta chiusa, che sonda la percezione dell'individuo rispetto alle proprie conoscenze e competenze riprendendo la formulazione tipicamente sfruttata in letteratura ("Nel complesso, quanto si sente sicuro/a delle sue conoscenze e delle sue competenze in ambito finanziario?"). Ai rispondenti è richiesto di esprimere il proprio grado di fiducia su una scala Likert a sette passi (dove 1 significa "per niente sicuro" e 7 significa "molto sicuro").

Il costrutto di *financial attitude* è stato operazionalizzato come l'interesse per il mondo finanziario e la ricerca attiva di informazioni finanziarie attraverso diversi tipi di fonti, istituzionali e non, partendo dall'assunto che queste siano dei buoni indici di un atteggiamento positivo verso la materia finanziaria. Nella *Multidimensional Financial Literacy Scale* si è deciso di indagare l'atteggiamento e l'interesse vero le tematiche finanziarie attraverso tre item (e.g., "Di solito, mi tengo informato/a sulle news/notizie di attualità del mondo finanziario"), costruiti ad hoc, verso i quali i rispondenti sono chiamati ad esprimere il proprio grado di accordo su una scala Likert a sette passi (dove 1 significa “per niente d’accordo” e 7 significa “molto d’accordo”).

Valutazione della scala e analisi delle proprietà psicometriche

In merito alla valutazione della validità e attendibilità dello strumento, si prevede di adottare la *contemporary view of validity* (Zumbo, 2005; 2006) come framework teorico. La *contemporary view of validity* si distingue per tre differenze principali rispetto al concetto tradizionale di validità. Innanzitutto, secondo la concezione contemporanea di validità, non si assume più che la validità sia una proprietà del test di per sé, bensì che debba essere contestualizzata. In altre parole, non basta dimostrare una sola volta che lo strumento misura ciò che si propone di misurare per avere la certezza circa la bontà delle proprietà psicometriche dello strumento. Infatti, la validità di un test può cambiare da un contesto ad un altro, richiedendo di valutare di volta in volta la validità di uno strumento a seconda del contesto o della popolazione di riferimento.

Questo cambiamento di paradigma, ovvero il passaggio verso una concezione contestuale di validità, si lega ad una seconda peculiarità della visione contemporanea di validità. Secondo la visione classica di validità, testare le proprietà psicometriche dello strumento è un compito che spetta solamente a chi ha sviluppato lo strumento stesso. Secondo questa nuova prospettiva teorica, questo compito ricade anche sugli utilizzatori stessi, che di volta in volta sono chiamati a testare la validità dello strumento usato su un campione specifico o in un determinato contesto. Infine, la visione contemporanea di validità propone una visione unificata di validità. Per valutare la bontà di uno strumento, è necessario ottenere evidenze circa la validità di costrutto, ovvero che un test misuri effettivamente ciò che si propone di misurare. Siccome non è possibile misurare direttamente la validità di costrutto, il processo di validazione di uno strumento richiede di accumulare diversi tipi di evidenze di validità, per poter effettivamente valutare la bontà dello strumento (Sorgente & Zumbo, in press; Zumbo, 2006).

A questo proposito, per la validazione della MFLS, si prevede di utilizzare la procedura sistematica proposta da Hubley e Zumbo (2011), in linea con questa visione contemporanea di validità. Nello specifico, a partire da ipotesi formulate sulla base della letteratura scientifica di riferimento, prevediamo di ottenere le seguenti evidenze di validità:

Content evidence: per valutare che gli item rispecchino il costrutto di riferimento, si prevede di chiedere una valutazione ad un gruppo di esperti sul tema.

Score structure evidence: questa evidenza di validità consiste nell'ipotizzare la struttura fattoriale dello strumento, a partire dalla teoria sottostante alla costruzione dello strumento stesso. Per raccogliere questo tipo di evidenza, prevediamo di eseguire su due campioni diversi dapprima un'Analisi Fattoriale Esplorativa (EFA), per valutare se la struttura della scala rispecchia le nostre ipotesi. Successivamente, tramite Analisi Fattoriale Confermativa (CFA) eseguita su un secondo campione, andremo a confermare la struttura fattoriale emersa precedentemente.

Reliability evidence: per dimostrare l'attendibilità di ciascuna dimensione della scala verrà calcolata la consistenza interna tramite l'indice omega (ω; McDonald, 1999).

Generalizability evidence: uno strumento psicometrico può essere considerato generalizzabile nel momento in cui misura lo stesso costrutti in gruppi diversi. A questo proposito, andremo a testare l'invarianza di misura per genere e educazione, secondo gli step previsti dal *free baseline approach* (Stark et al., 2006).

Known groups evidence: questa evidenza di validità fa riferimento alla capacità di uno strumento di rilevare differenze tra gruppi evidenziate dalla letteratura di riferimento. Considerato il forte gender gap rilevato in relazione a conoscenze e competenze finanziarie, ci aspettiamo che anche la MFLS sia in grado di misurare differenze significative nei punteggi di maschi e femmine.

Convergent and discriminant evidence: ci aspettiamo che la MFLS correli significativamente con strumenti che misurano costrutti simili (*convergent evidence*) e che abbia invece una debole (o nulla) correlazione con strumenti che misurano un costrutto diverso (*discriminant evidence*). Nello specifico, andremo a testare l'esistenza di una relazione forte e positiva (*convergent evidence*) tra le sottodimensioni legate al *financial behavior* e la propensione a monitorare e regolare i propri comportamenti d'acquisto, misurata, ad esempio, tramite la scala CSSC di Haws et al. (2011). Dall'altro lato, ci aspettiamo invece una correlazione negativa o nulla (*discriminant evidence*) con misure legate alla mancanza di autocontrollo, pianificazione e preoccupazione per le conseguenze future dei propri comportamenti. Potenziali scale utilizzabili sono la *Barratt Impulsiveness Scale* (BIS; Patton et al., 1995) o la *Consideration of Future Consequences* (CFC-14; Nigro et al., 2016).

Criterion-Related Evidence: ci aspettiamo che i punteggi della dimensione comportamentale della scala dipendano dai punteggi di *financial literacy* oggettiva.

Una volta ottenute queste evidenze di validità e confermate le ipotesi formulate a partire dalla letteratura di riferimento, potremo quindi testare se lo strumento misura effettivamente il costrutto che si propone di misurare (i.e., validità di costrutto).

Il primo passo consisterà nel far valutare la formulazione degli item, in termini di comprensibilità e di rappresentatività rispetto al costrutto di riferimento, a degli esperti nel tema. Successivamente, verrà condotta una preliminare EFA e analisi degli item (e.g., *extracted communality* e *item-total correlation*). In merito all'ampiezza campionaria, prevediamo di utilizzare dati raccolti su un campione di 200 partecipanti circa, seguendo la *rule-of-thumb* di 10 casi per ogni item della scala. Per raccogliere tutti gli altri tipi di evidenze di validità faremo invece affidamento ai Modelli di Equazione Strutturale (SEM), che permettono la misurazione di variabili latenti, invece che di variabili osservate, escludendo l'errore di misura dai punteggi osservati (Zumbo, 2005). Nello specifico, per ottenere *Score structure evidence,* e *Generalizability evidence* verranno stimati dei modelli di misura tramite CFA e, testando l'invarianza di misura, controlleremo che tutti i parametri della CFA (i.e., *factor loading*, intercette e residui) siano invarianti tra i gruppi. Questo ci permetterà di fare dei confronti tra medie e testare quindi la *Known groups evidence.* Infine, tre modelli di struttura verranno stimati per testare le evidenze di validità convergente, discriminante e di criterio, utilizzando variabili latenti per rimuovere l'errore di misura.

La dimensione campionaria verrà stimata utilizzando la N:q rule (Jackson, 2003), ossia valutando il rapporto tra numero di casi (N) e numero di parametri del modello (q). Considerato un rapporto di 20 casi per parametro da stimare, prevediamo un'ampiezza campionaria di circa 800 partecipanti.

In totale, verrà coinvolto un campione di circa 1000 partecipanti, rappresentativo della popolazione italiana per genere, età, istruzione e provenienza geografica. Le risposte verranno ottenute tramite metodologia CAWI, attraverso la piattaforma Qualtrics. I partecipanti saranno invece reclutati tramite la piattaforma Prolific.

Risultati attesi

Ci si aspetta che lo strumento possa soddisfare i requisiti di validità e attendibilità secondo la visione contemporanea di validità di cui sopra.

In particolare, si attendono risultati in linea con le ipotesi circa il graduale aumento di difficoltà degli item che riguardano le conoscenze finanziarie e la capacità degli stessi di discriminare bene tra bassi e alti livelli di *financial knowledge.*

Per quanto riguarda la struttura fattoriale della dimensione comportamentale della scala ci si aspettano tre fattori, uno per ogni comportamento finanziario – budgeting, comportamento di risparmio e consumi consapevoli. Relativamente agli *outcome*, si prevede che la MFLS restituisca un andamento in linea con la letteratura secondo la quale le conoscenze finanziarie sono carenti soprattutto nelle donne, nelle persone giovani, in quelle con titolo di studio più basso e in coloro che risiedono nel sud d'Italia (Bottazzi & Oggero, 2023).

Discussione

L'alfabetizzazione finanziaria racchiude un insieme di conoscenze e competenze necessarie a prendere, in maniera consapevole, decisioni che hanno potenzialmente un grande impatto sulla qualità di vita delle persone. La *financial literacy* è strettamente legata al *financial well-being,* che costituisce a sua volta una componente del benessere personale generale.

Uno dei problemi, quando si parla di alfabetizzazione finanziaria, è la mancanza in letteratura di una definizione univoca del costrutto e di una conseguente difficoltà nell'operazionalizzazione del costrutto stesso.

Al momento, la maggior parte degli strumenti di misurazione dell'alfabetizzazione finanziaria si focalizzano sulla quantificazione delle conoscenze oggettive. Tuttavia, la recente definizione dell'OECD mette in luce che la *financial literacy* è un costrutto complesso e multidimensionale. In linea con questa definizione, pertanto, risulta importante indagare, accanto alla dimensione delle conoscenze finanziarie oggettive, anche altre variabili, tra cui le conoscenze e le competenze percepite, gli atteggiamenti e i comportamenti finanziari, ovvero le conoscenze elaborate e tradotte in competenze. Questo è stato il punto di partenza per sviluppare uno strumento di *financial literacy* che restituisse la multidimensionalità del costrutto.

La *Multidimensional Financial Literacy Scale* misura quattro macro-dimensioni (*financial knowledge*, *financial literacy* percepita, *financial attitude* e *financial behavior*) servendosi sia di item creati ad hoc che di domande provenienti dalla bibliografia esistente in merito.

Il presente manoscritto si limita a riportare i contributi teorici da cui origina la MFLS e descrive il percorso di progettazione della scala stessa. Sono necessari studi futuri per verificare la bontà delle proprietà psicometriche della MFLS.

Qualora i risultati attesi rispetto alle proprietà psicometriche della scala venissero confermati, la MFLS potrebbe essere utilizzata come valido strumento per misurare conoscenze, atteggiamenti, abitudini e comportamenti finanziari delle persone, in particolare dei cittadini italiani, al fine di costruire programmi di educazione finanziaria ad hoc, volti al miglioramento di conoscenze e competenze in materia. Il bisogno di possedere un'adeguata alfabetizzazione finanziaria nasce dallo stretto legame che questa possiede con la qualità delle decisioni, soprattutto finanziarie, che l'individuo prende, ma anche con il benessere personale e la qualità di vita che si possono raggiungere come risultato di scelte finanziarie.

La MFLS potrebbe trovare impiego nella ricerca, non solo nei settori economico e finanziario, ma anche in quello psico-educativo in virtù dell'impatto che l'alfabetizzazione finanziaria potenzialmente ha sul benessere personale e collettivo (OECD, 2009).

Riferimenti bibliografici

Almenberg, J., & Widmark, O. (2011). Numeracy, Financial Literacy and Participation in Asset Markets. *Social Science Research Network*. DOI: 10.2139/ssrn.1756674.

ANZ Bank (2008). *ANZ survey of adult financial literacy in Australia*. The Social Research Centre. 'https://www.anz.com/Documents/AU/Aboutanz/AN_5654_Adult_Fin_Lit_Report_08_Web_Report_full.pdf.

Atkinson, A., & Messy, F. (2012). Measuring financial literacy. *OECD Working Papers on Finance, Insurance Private Pensions*. DOI: 10.1787/5k9csfs90fr4-en.

Bannier, C. E., & Neubert, M. (2016). Gender differences in financial risk taking: The role of financial literacy and risk tolerance. *Economics Letters*, *145*, 130-135. DOI: 10.1016/j.econlet.2016.05.033.

Batterton, K. A., & Hale, K. N. (2017). The Likert Scale What It Is and How To Use It. *Phalanx*, *50*(2), 32-39. http://www.jstor.org/stable/26296382.

Bongini, P., Colombo, L., & Iwanicz-Drozdowska, M. (2015). Financial literacy: where do we stand?. *Journal of Financial Management, Markets and Institutions*, *3*(1), 3-12. DOI: 10.12831/80527.

Bottazzi, L., & Oggero, N. (2023). Financial Literacy and Financial Resilience: Evidence from Italy. *Journal of Financial Literacy and Wellbeing*, *1*(2), 199-224. DOI: 10.1017/flw.2023.1.

Braunstein, S. F., & Welch, C. M. (2002). Financial Literacy: An Overview of Practice, Research, and Policy. *Federal Reserve Bulletin*, *88*(11). DOI: 10.17016/bulletin.2002.88-11.

Christelis, D., Jappelli, T., & Padula, M. (2010). Cognitive abilities and portfolio choice. *European Economic Review*, *54*(1), 18-38. DOI: 10.1016/j.euroecorev.2009.04.001.

Comitato EduFin (2023). *RAPPORTO EDUFIN 2023. Educazione finanziaria: iniziamo dalla scuola*. Ministero dell'economia e delle finanze. https://www.quellocheconta.gov.it/export/sites/sitopef/modules/news/159/Rapporto-Comitato-Edufin-2023.pdf .

Dwiastanti, A. (2015). Financial Literacy as the Foundation for Individual Financial Behavior. *Journal of Education and Practice*, *6*(33), 99-105. http://files.eric.ed.gov/fulltext/EJ1083664.pdf.

Filipiak, U., & Walle, Y. M. (2015). *The financial literacy gender gap: A question of nature or nurture?* '(Discussion Paper No. 176). Georg-August-University of Göttingen.

FINRA (2003). *NASD investor literacy research: Executive summary* (Annual report). https://www.finra.org/sites/default/files/Corporate/p010697.pdf.

Fornero, E., & Monticone, C. (2011). Financial literacy and pension plan participation in Italy. *Journal of Pension Economics & Finance*, *10*(4), 547-564. DOI: 10.1017/s1474747211000473.

Hapsari, S. A. (2021, September). The theory of planned behavior and financial literacy to analyze intention in mutual fund product investment. In *5th Global Conference on Business, Management and Entrepreneurship (GCBME 2020)* (pp. 136-141). Atlantis Press. DOI: 10.2991/aebmr.k.210831.028.

Haws, K. L., Bearden, W. O., & Nenkov, G. Y. (2011). Consumer spending self-control effectiveness and outcome elaboration prompts. *Journal of the Academy of Marketing Science*, *40*(5), 695-710. DOI: 10.1007/s11747-011-0249.

Hilgert, M. A., Hogarth, J. M., & Beverly, S. G. (2003). Household financial management: The connection between knowledge and behavior. *Fed. Res. Bull.*, *89*, 309.

Hubley, A. M., & Zumbo, B. D. (2011). Validity and the consequences of test interpretation and use. *Social Indicators Research*, *103*(2), 219-230. DOI: 10.1007/s11205-011-9843-4.

Huhmann, B. A., & McQuitty, S. (2009). A model of consumer financial numeracy. *International Journal of Bank Marketing*, *27*(4), 270-293. DOI: 10.1108/02652320910968359.

Hung, A., Parker, A. M., & Yoong, J. (2009). *Defining and measuring financial literacy*. DOI: 10.2139/ssrn.1498674.

Huston, S. (2009, 9 October). *The Concept and Measurement of Financial Literacy: Preliminary Results from a New Survey on Financial Literacy Assessment*. [Conference Presentation]. Academy of Financial Services Annual Conference, Academy of Financial Services, California.

Huston, S. J. (2010). Measuring Financial Literacy. *Journal of Consumer Affairs*, *44*(2), 296-316. DOI: 10.1111/j.1745-6606.2010.01170.x.

Ingale, K. K., & Paluri, R. A. (2022). Financial literacy and financial behaviour: A bibliometric analysis. *Review of Behavioral Finance*, *14*(1), 130-154. DOI: 10.1108/rbf-06-2020-0141.

Jackson, D. L. (2003). Revisiting Sample Size and Number of Parameter Estimates: Some Support for the N:q Hypothesis. *Structural Equation Modeling*, *10*(1), 128-141. DOI: 10.1207/s15328007sem1001_6.

Kennedy, B., P. (2013). *The Theory of Planned Behavior and Financial Literacy: A Predictive Model for Credit Card Debt?* [Theses, Dissertation]. Marshall University. '

Ksendzova, M., Donnelly, G. E., & Howell, R. T. (2017). A brief money management scale and its associations with personality, financial health, and hypothetical debt repayment. *Journal of Financial Counseling and Planning*, *28*(1), 62-75. DOI: 10.1891/1052-3073.28.1.62.

Klapper, L., Lusardi, A., & Van Oudheusden, P. (2015). *Financial literacy around the world.* World Bank. https://gflec.org/wp-content/uploads/2015/11/Finlit_paper_16_F2_singles.pdf.

Lamboglia, S., Marinucci, M., Stacchini, M., Vassallo, P. (2023). *Indagini sull'alfabetizzazione finanziaria e le competenze di finanza digitale in Italia: adulti.* '(Report). Banca d'Italia. https://www.bancaditalia.it/pubblicazioni/indagini-alfabetizzazione/2023-indagini alfabetizzazione/statistiche_AFA_20072023.pdf.

Lusardi, A. (2008a). *Household Saving Behavior: The Role of Financial Literacy, Information, and Financial Education Programs*. DOI: 10.3386/w13824.

Lusardi, A. (2008b). *Financial Literacy: An Essential Tool for Informed Consumer Choice?*. DOI: 10.3386/w14084.

Lusardi, A. (2012). Numeracy, Financial Literacy, and Financial Decision-Making. *Numeracy*, *5*(1). DOI: 10.5038/1936-4660.5.1.2.

Lusardi, A. (2019). Financial literacy and the need for financial education: evidence and implications. *Swiss Journal of Economics and Statistics*, *155*(1), 1-8. DOI: 10.1186/s41937-019-0027-5.

Lusardi, A., & Mitchell, O. S. (2007). Financial Literacy and Retirement Preparedness: Evidence and Implications for Financial Education Programs. *Social Science Research Network*. DOI: 10.213.9/ssrn.95776.

Lusardi, A., & Mitchell, O. S. (2008). Planning and Financial Literacy: How Do Women Fare?. *The American Economic Review*, *98*(2), 413-417. DOI: 10.1257/aer.98.2.413.

Lusardi, A., & Mitchell, O. S. (2011). Financial literacy around the world: an overview. *Journal of Pension Economics & Finance*, *10*(4), 497-508. DOI: 10.1017/s1474747211000448.

Lusardi, A., & Mitchell, O. S. (2014). The Economic Importance of Financial Literacy: Theory and Evidence. *Journal of Economic Literature*, *52*(1), 5-44. DOI: 10.1257/jel.52.1.5.

Lusardi, A., & Mitchell, O. (2023). *The Importance of Financial Literacy: Opening a New Field*. DOI: 10.3386/w31145.

Lusardi, A., & Tufano, P. (2015). Debt literacy, financial experiences, and overindebtedness. *Journal of Pension Economics & Finance*, *14*(4), 332-368. DOI: 10.1017/s1474747215000232.

McDonald, R. P. (1999). *Test theory: A unified treatment*. Lawrence Erlbaum Associates Publishers.

Moore, D. (2003). *Survey of financial literacy in Washington State: knowledge, behavior, attitudes, and experiences, social and economic sciences research center*, (SERC Technical Report 03-39). Washington State University. DOI: 10.13140/2.1.4729.4722.

Nicolini, G., Cude, B. J., & Chatterjee, S. (2013). Financial literacy: A comparative study across four countries. *International Journal of Consumer Studies*, *37*(6), 689-705. DOI: 10.1111/ijcs.12050.

Nigro, G., Cosenza, M., Ciccarelli, M., & Joireman, J. (2016). An Italian translation and validation of the Consideration of Future Consequences-14 Scale. *Personality and Individual Differences*, *101*, 333-340. DOI: 10.1016/j.paid.2016.06.014.

OECD (2009). OECD/INFE (2009) Financial Education and the Crisis: Policy Paper and Guidance. https://www.oecd.org/finance/financial-education/50264221.pdf.

OECD (2013). Financial literacy and inclusion: Results of OECD/INFE survey across countries and by gender. OECD Publishing. https://www.oecd.org/daf/fin/financialeducation/TrustFund2013_OECD_INFE_Fin_Lit_and_Incl_SurveyResults_by_Country_and_Gender.pdf.

OECD (2020). OECD/INFE 2020 International Survey of Adult Financial Literacy. www.oecd.org/financial/education/launchoftheoecdinfeglobalfinancialliteracysurveyreport.htm.

OECD (2023). *OECD/INFE 2023 International Survey of Adult Financial Literacy.* https://www.oecd.org/publications/oecd-infe-2023-international-survey-of-adult-financial-literacy-56003a32-en.htm

Parker, A.M., Yoong, J., Bruine de Bruin, W., Willis, R. (2008, September). *(Over)confidence and economic behavior*. Conference on Understanding Economic Decision-Making. Jackson, Wyoming.

Patton, J. H., Stanford, M. S., & Barratt, E. S. (1995). Factor structure of the Barratt impulsiveness scale. *Journal of clinical psychology, 51*(6), 768-774.

Potrich, A. C. G., Vieira, K. M., & Kirch, G. (2018). How well do women do when it comes to financial literacy? Proposition of an indicator and analysis of gender differences. *Journal of Behavioral and Experimental Finance*, *17*, 28-41. DOI: 10.1016/j.jbef.2017.12.005.

Robb, C. A., & Woodyard, A. (2011). Financial Knowledge and Best Practice Behavior. *Journal of Financial Counseling and Planning*, *22*(1), 60-70. http://files.eric.ed.gov/fulltext/EJ941903.pdf.

Robba, M., Colautti, L., Iannello, P. (in press). Emerging adults' financial decisions: A neurocognitive perspective. In A. B. LeBaron-Black, H. H. Kelley, A. Sorgente (Eds.). *Flourishing and Floundering Financially in Emerging Adulthood: A Handbook*. Oxford University Press.

Robba, M., Sorgente, A., & Iannello, P. (2024b). Disentangling the "crypto fever": An exploratory study of the psychological characteristics of cryptocurrency owners. *Current Research in Behavioral Sciences*, 100151. DOI: 10.1016/j.crbeha.2024.100151.

Robba, M., Sorgente, A., Miccoli, M. R., & Iannello, P. (2024a). Is financial literacy enough to explain investment decisions? Understanding the role of psychological characteristics. *PsyArXiv*. DOI: 10.31234/osf.io/yd8u3.

Sivaramakrishnan, S., Srivastava, M., & Rastogi, A. (2017). Attitudinal factors, financial literacy, and stock market participation. *International Journal of Bank Marketing*, *35*(5), 818-841. DOI: 10.1108/ijbm-01-2016-0012.

Skagerlund, K., Lind, T., Stromback, C., Tinghog, G., & Vastfjall, D. (2018). Financial literacy and the role of numeracy-How individuals' attitude and affinity with numbers influence financial literacy. *Journal of Behavioral and Experimental Economics*, *74*, 18- 25. DOI: 10.1016/j.socec.2018.03.004.

Sorgente, A., & Lanz, M. (2017). Emerging Adults' Financial Well-being: A Scoping Review. *Adolescent Research Review*, *2*(4), 255-292. DOI: 10.1007/s40894-016-0052-x.

Sorgente, A., & Zumbo, B. D. (in press). The alphas and omegas of validity and reliability: Contemporary advances in evaluating and selecting instruments for quantitative research with emerging adults. In A. Sorgente, R. Vosylis, S. Claxton, & J. Schwab (Eds.), *Flourishing as a Scholar: Research Methods for the Study of Emerging Adulthood*. Oxford University Press.

Stark, S., Chernyshenko, O. S., & Drasgow, F. (2006). Detecting differential item functioning with confirmatory factor analysis and item response theory: Toward a unified strategy. *Journal of Applied Psychology*, *91*(6), 1292-1306. DOI: 10.1037/0021-9010.91.6.1292.

Tang, N., & Baker, A. (2016). Self-esteem, financial knowledge and financial behavior. *Journal of Economic Psychology*, *54*, 164-176. DOI: 10.1016/j.joep.2016.04.005.

Thomas, A., & Spataro, L. (2018). Financial Literacy, Human Capital and Stock Market Participation in Europe. *Journal of Family and Economic Issues*, *39*(4), 532-550. DOI: 10.1007/s10834-018-9576-5.

Van Rooij, M., Lusardi, A., & Alessie, R. (2011). Financial literacy and stock market participation. *Journal of Financial Economics*, *101*(2), 449-472. DOI: 10.1016/j.jfineco.2011.03.006.

Van Rooij, M., Lusardi, A., & Alessie, R. (2012). Financial Literacy, Retirement Planning and Household Wealth. *The Economic Journal*, *122*(560), 449-478. DOI: 10.1111/j.1468-0297.2012.02501.x.

Xiao, J., J. (2008). Applying Behavior Theories to Financial Behavior.

In Xiao, J., J. (Ed.), *Handbook of Consumer Finance Research* (pp. 69-81). Springer. DOI: 10.1007/978-0-387-75734-6_5.

Yeh, T., & Ling, Y. (2022). Confidence in financial literacy, stock market participation, and retirement planning. *Journal of Family and Economic Issues*, *43*(1), 169-186. DOI: 10.1007/s10834-021-09769-1.

Zemtsov, A. A., & Osipova, T. A. (2016). Financial Wellbeing as a Type of Human Wellbeing: Theoretical Review. In *The European Proceedings of Social and Behavioural Sciences*. DOI: 10.15405/epsbs.2016.02.49.

Zumbo, B. D. (2005). Structural Equation Modeling and Test Validation. In B. Everitt & D. C. Howell (Eds.), *Encyclopedia of Statistics in Behavioral Science* (pp. 1951-1958). John Wiley & Sons Ltd. DOI: 10.1002/0470013192.bsa654.

Zumbo, B. D. (2006). 3 validity: Foundational issues and statistical methodology. In C. R. Rao & S. Sinharay (Eds.), *Handbook of Statistics* (pp. 45-79). Elsevier.

Reframing developmental dyslexia and bilingualism:
An overview to enhance strengths and advantages

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Abstract

This paper explores the evolving perceptions of bilingualism and developmental dyslexia, shifting from viewing them as deficits to acknowledging their inherent strengths. This overview contributes to the evolving narrative surrounding dyslexia and bilingualism, urging a revaluation of these conditions from deficit-centered perspectives to recognize the diverse cognitive abilities and adaptive advantages they offer. It delves into the positive aspects associated with developmental dyslexia, highlighting cognitive strengths like visuospatial skills, narrative reasoning, and dynamic reasoning. Additionally, it examines the multifaceted nature of bilingualism, outlining distinctions between types of bilingualism and emphasizing cognitive benefits such as enhanced cognitive flexibility, attentional skills, and executive functions among bilingual individuals. The complexities of language acquisition, socio-economic factors, and societal support are discussed in understanding the interplay between language acquisition and cognitive development in bilingual contexts. Furthermore, the paper navigates the intricate connection between dyslexia and bilingualism, emphasizing factors like language exposure, linguistic characteristics, and individual cognitive processes that influence their

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interaction. Dyslexia significantly impacts language acquisition and proficiency in both native and second languages, requiring tailored assessments and interventions for dyslexic bilingual individuals.

Keywords: developmental dyslexia; bilingualism; l2; advantages; learning challenges

Introduction

This paper aims to provide an overview from a different perspective on two topics, bilingualism and dyslexia, which have been considered by the literature as disadvantages in the classical studies but have been reconsidered in a new, more positive light by recent literature. Indeed, both psychological and linguistic literature has implemented a shift in recent years from viewing both bilingualism and developmental dyslexia as risk factors for the acquisition of developmental skills to viewing them as different ways of acquiring developmental skills or even as a plus (Bialystok, 2021; Taylor and Vestergaard, 2022). After all, the interest in dyslexia is not new (for a review, Kirby, 2020); However, the focus of interest in more recent years has shifted towards a deeper understanding of the challenge of dyslexia especially in light of the advantages of this neurodevelopmental condition (Eide and Eide, 2012). Similarly, despite the potential challenges, more recent literature has emphasized the advantages of bilingualism, which often outweigh the disadvantages (Bialystok, 2021).

In the following sections, we examine the strengths of developmental dyslexia and the advantages of bilingualism and point out the co-occurrence of developmental dyslexia bilingualism. In this contribution, therefore, an overview of the studies on developmental dyslexia and bilingualism that have been contributing to this changing trend in recent years will be presented, and then the issue of when bilingualism and dyslexia meet will be addressed.

When Learning is Harder? Strengths of Developmental Dyslexia

As already pointed out, in psychological and linguistic literature there has recently been an inversion of trends concerning the research on Developmental Dyslexia. Very briefly, Developmental Dyslexia (henceforth DD) is a neurobiological disorder (Valdois, 2010) defined as a disorder in those children who fail to achieve the age-appropriate language skills in reading, writing and spelling despite an intact set of intellectual abilities and a conventional classroom experience (American Psychiatric Association, 2013). The difficulty in achieving a proficient level of reading and writing is due to slow and inaccurate word recognition and spelling, difficulties that persist despite receiving appropriate education and having adequate sensory and cognitive abilities (Peterson, 2012). DD affects 10% of the population and is universal and cross-cultural (Wagner et al., 2020), and has a clear genetic basis (Erbeli, Rice and Paracchini, 2021). Multiple empirical studies indicate that this specific learning condition is often linked to challenges in social-emotional and behavioral realms, leading to significant emotional distress (Francis, Caruana, Hudson, and McArthur, 2018), even though the diagnosis appears to offer protection against situations of distress, especially in school settings (Lombardi, Traficante, Bettoni, Offredi, Vernice, and Sarti, 2021). The deficit-centered view of the past provides an incomplete picture of DD. As early as the 1980s, there were suggestions that people with DD had superior talents in certain visuospatial skills, supporting the idea that many individuals with dyslexia demonstrate high levels of creativity (for a review see Gutierrez-Ortega et al., 2023); in fact, they often think outside the box and not only they have a unique perspective on problem solving, but they also show signs of divergent thinking, such as originality and fluidity (Cancer and Antonietti, 2019). Geschwind (1982) was the first researcher to observe that when a disorder affects a relatively large part of a population, it is worth asking ourselves whether there might be some advantage to it. However, there are still few contributions from research on understanding the abilities associated with DD. Recent literature, however, continues to ask questions about the benefits of this condition, not focusing on the neurodiversity of the dyslexic brain, but rather wondering what might be the its purpose (Eide and Eide, 2019) and arguing that the form of cognition represented by DD plays an essential role in enabling humans to adapt (for a review, Taylor and Vestergaard, 2022).

In particular, the MIND strengths framework theorized by Eide and Eide (2012) "places abilities rather than disabilities at the center of […] what it means to be an individual with dyslexia" (page 6). The two authors did not view Dyslexia as a disability thus introducing a revolutionary way of thinking about DD. In fact, their book aimed at a requalification of the whole concept of DD as a deficit in need of compensations and corrections. On the contrary, they viewed DD as an ability rather than a deficit. For this reason, they theorized the "MIND" model which showed some specific traits and skills that only people with DD seem to posess. The first competence is the M-strengths or Material Reasoning: the ability to perceive the spaces in a tridimensional dimension and modify them to create an entirely new space. Those are commonly referred to as visuospatial abilities. This specific talent of imagining our surroundings not as they are but as they could be, seeing a bridge where others see two separate roads, a drawing room where others see a construction site full of dust, is proper of some of the best architects and designers of our century. The second competences is the I-strengths or Interconnected Reasoning: the ability to create a connection between different concepts, ideas, and events which are not related to each other. This talent of detecting the relationship between ideas also allows one to approach a concept from various angles and to swiftly shift perspective to generate a wider and more integrated network of thought. The third competency is the N-strengths or Narrative Reasoning: the ability to construct a mental scene joining together fragments of one's personal experiences to understand the present, remember and recall the past, and hypothesize future scenarios. This talent relies heavily on episodic memory or personal memory. As a result, it should come as no surprise that this skill is proper of many great writers who can "think in stories". Lastly, the D-strengths or Dynamic Reasoning is described as the ability to effectively predict future events and also to recall past events with a level of accuracy. Essentially, it suggests that individuals with this competency are skilled at both foreseeing future occurrences and understanding accurately past situations. It implies a capacity for strategic thinking, understanding patterns, and making informed decisions based both on past experiences and on future possibilities. As well as Narrative Reasoning, those skills also rely heavily on episodic memory but with a key difference. On one hand, when episodic memory is used to create a new written imaginary world, to paint a picture, or to make a compelling speech, we are in the field of the N-strengths. On the other hand, when episodic memory is used to make predictions on future uncertain events or states, we are in the area of the D-strengths. They aim at understanding the world around us as it is, as it once was and most importanly, as it is probably going to be.

In brief, this shift in paradigm towards recognizing and valuing the intrinsic strengths associated with DD redefines the narrative of this condition, emphasizing the diverse cognitive abilities present in this population and hinting at the adaptive advantages conferred by this particular form of cognition.

Bilingualism is Never a Bad Idea….

In the first half of the 20th century, bilingual studies were driven by the question of whether bilingualism hurt the child (Romaine, 1989), supporting the idea that bilingualism is a mental burden on bilingual children that makes them insecure and confused (McLaughin, 1981); over the years there has been considerable debate about the advantages and disadvantages of this condition (Bruin, Dick and Carreiras, 2021; Dunabeita et al., 2014). However, an important and consistent recent body of studies show a new found awareness of the stronger cognitive flexibility, wider attention skill set, executive function, and theory of mind of bilingual children (Bialystok, 2021; Bialystok, Craik and Freedman, 2007; Djumabaeva and Kengboyeva, 2021; Filippi, Karaminis and Thomas, 2014; Grote, Scott and Gilger, 2021; Yu, Kovelman and Wellman, 2021). Understanding and fluently speaking another language is certainly not enough to be considered bilingual. It is not the purpose of this paper to delve into details concerning the different bilingualism typologies, it is enough to point out briefly the different levels of knowledge during the acquisition of a second language, without presuming to be exhaustive. Classically, the first distinction is between formal and informal language: formal L2 learning occurs in the classroom, whereas informal L2 learning occurs through repeated non-academic interactions with the target language (Cummins, 1979). Another significant difference concerns the period of L2 acquisition. Already Lenneberg (1969) hypothesized the existence of a critical period for language acquisition from the age of two until puberty, during which its acquisition should take place much more easily and naturally than later in life,, when it would be almost impossible to reach the L2 level of a native speaker. This hypothesis has been revised over the years, first by placing the idea of less profitable language acquisition beyond the age of sixteen and then by replacing the concept of the critical period with that of the sensitive period in 1989 (Johnson and Newport, 1989). In the last two decades, literature underlined that there are two types of bilingualism, sequential or consecutive bilingualism and simultaneous bilingualism (Bonifacci et al., 2016; De Lamo White and Jin, 2011; Paradis, Genesee and Crago, 2011). The first occurs when a child becomes bilingual by first learning one language, and then acquiring another language later in development. In this case, L1 and L2 are developed at different stages of the child's life. Simultaneous bilingualism happens when a child is exposed to more than one language prior to the age of three. In this scenario, L1 and L2 develop almost simultaneously and equally through constant exposure and the opportunities to use each language during everyday life. It is also important to underline the difference between additive bilingualism and subtractive bilingualism (Baker, 2011). In sum, additive bilingualism is particularly advantaged by a social context that supports and encourages the use of both languages, whereas subtractive bilingualism is particularly emphasized in the case of minority languages where these languages are sacrificed in favor of the dominant language of the social context (Baker, 2011; Bonifacci, Cappello and Bellocchi, 2012).

The last few years have seen a renewed interest in the topic of bilingualism with a rich set of studies worth mentioning, that underline the advantage of bilingualism, in particular focusing on its cognitive, social and of course, professional benefits.

Recently, Poulin-Dubois and colleagues (2021) studying the effect of bilingualism on infants' cognitive flexibility, wondered whether bilinguals could perform better than monolinguals in tasks concerning executive functions, in particular cognitive flexibility, working memory and inhibitory control. An advantage for bilinguals in executive function-related tasks has already been proven throughout adult life. This specific ability is thought to be due to the superior attention-switching skills needed to constantly switch between two languages (Bialystok, 2021). Furthermore, enhanced cognitive flexibility and better inhibitory control system have also been found in young children and even infants (Comishen, Bialystok, and Adler, 2019). So this evidence, challenges the established idea of a bilingual advantage which would enable the child to suppress or inhibit one of the two languages that is not useful in a specific conversational moment. For this reason, the researchers suggested that the mechanism responsible for the bilinguals' superior scores could be attention rather than inhibition. In fact, the capacity to select the appropriate stimuli and at the same time to ignore the distracting factors is the core feature of attention. Thus, it is evident that a certain degree of cognitive effort is fundamental both in the resolution of the within-language competition of monolinguals, and in the cross-linguistic competition of bilinguals. But another important difference could be found between monolinguals and bilinguals in the process of within-language competition. InIn fact, the within language competion could harbour wider consequences for monolinguals in terms of their efficency and their speed; bilinguals manage to resolve the competition faster and better thanks to their previous linguistic experience (Blumenfeld and Marian, 2011).

Furthermore, there is another aspect of bilingualism that affects the quantity and the quality of linguistic expression: the bilingual patterns of language use, and the social-pragmatic use. The bilingual patterns of language identify the various ways in which a bilingual can choose to use theirs competence. The role of the interactional context appears fundamental in order to understand the working of the control mechanisms in everyday-life situations. The first context is the single-language context where one language is used in one conversational situation, and the other language in a different one, while the second context is the dual-language context where both languages are used to sustain a conversation with two different people, and lastly the third is the dense-code switching context where the languages are constantly intertwined even in the process of a single utterance, allowing a massive language switching and swiftly adapting the words to the required language (Green and Abutalebi, 2013).

As of today, the multifaceted nature of bilingualism has been universally recognized generating several questions on this complex phenomenon that still still unanswered. Recently, Kalamala and colleagues (2022) analyzed the relationship between three different aspects used to measure the level of bilingualism: the onset of bilingualism, the daily use of language, and language proficiency. The onset of bilingualism is the age of the L2 acquisition or the age of the first active communication in the L2, which is the first time that the possibility of bilingualism makes its appearance in the child's life. The daily use of language is the amount of time in which the child uses the L2 during everyday activities (Luk, De Sa, and Bialystock, 2011). However, quantifying language proficiency, or the level of competence displayed in a certain language has proven difficult. A consistent number of authors have argued that while the onset of bilingualism and the daily use of language could be easily measured through self-reports, language proficiency is a multilayered construct strongly influenced by the personal characteristics of the speakers and by language acquisition history (Hansen et al., 2019; Tomoschuk, Ferreira, and Gollan, 2019). Therefore, a specific method to evaluate proficiency should be implemented in addition to the known self-assessment methods. These assessments were employed to detect receptive and expressive language skills below the expected age level, focusing on vocabulary and grammar proficiency. For receptive vocabulary, the Italian version of the Peabody Picture Vocabulary Test-Revised (PPVT-R, Stella et al., 2000) and expressive language, Test di Valutazione del Linguaggio (TVL, Cianchetti and Fancello, 2003); for receptive morphosyntax, the Test di Comprensione Grammaticale per Bambini (TCGB, Chilosi, Cipriani, Pfanner, and Piazzalunga, 2023). The BVL 4-12 (Marini, Marotta, Bulgheroni, and Fabbro, 2015) assesses phonological, lexical, semantic, pragmatic, and discursive skills in production, comprehension, and oral repetition tasks in children aged 4 to 12 years. Recently, a scoping review by Weisleder, Friend, Sin Mei Tsui, and Marchma (2023) revealed a growing interest in bilingual/multilingual vocabulary research over the past two decades, albeit with limited linguistic diversity representation, highlighting the need for standardized reporting practices and the development of dedicated assessment tools tailored for bilingual/multilingual contexts. Furthermore, as Green and Abutalebi (2013) suggest, the language control processes adjust themselves in response to the recurring demands imposed by the interactional context. His adaptation involves altering certain parameters related to theirs neural capacity or efficiency, as well as their coordination with other control processes, either individually or in sequence.

Starting from these studies, a question arises: are language comprehension and production subjected to these control processes, or are those same control processes adaptable to the request of the everchanging linguistic contexts? The answer to this matter will require further investigation, in particular if we aim to understand the multifaceted interlacement between various languages and the different manifestations of Dyslexia.

Language knowledge itself seems to be critical in the resolution of both within-language and cross-linguistic competition.As a result individual differences could determine a variation in the lexical competition, as shown by Botezau and collegues (2021) who underlined the enhanced inhibition response of bilinguals individuals when compared to monolinguals, despite comparable behavioral task performance. This underlines that monolinguals may exert greater effort to achieve similar levels of performance as bilinguals and suggests that individual differences in language proficiency and cognitive resources may influence nonlinguistic conflict resolution. To gain a comprehensive understanding of the complex mechanisms involved in encountering various languages or assessing the particular challenges faced by a dyslexic child, it is imperative, thus, to examine the condition of bilingualism.

In conclusion, the exploration of bilingualism has undergone a significant shift from once focusing only on the potential burden it could represent for children , to the recognition of the multitude of cognitive, social and professional advantages it offers. Recent studies have illuminated the advantages of bilingualism, emphasizing enhanced cognitive flexibility, attentional skills, executive functions, and theory of mind among bilingual individuals. The distinctions between sequential and simultaneous bilingualism, as well as additive and subtractive bilingualism, underscore the complex interplay between language acquisition, socioeconomic factors, and societal support for language use. Furthermore, investigations into the mechanisms underlying bilingual advantages, particularly in terms of cognitive flexibility and inhibitory control, suggest that attentional skills may play a pivotal role rather than mere inhibition.

The Challenge When Bilingualism and Dyslexia Meet

The interaction between dyslexia and bilingualism may differ depending on factors such as the individual's languages, the age at which they learned each language, and the severity of dyslexia. For some people, bilingualism may pose an additional challenging task, while for others, it may offer some cognitive advantages. There is evidence that the acquisition of a second language, especially regarding English, a language with opaque orthography (see for example Tainturier et al., 2011), has become necessary in an adaptive sense to navigate social contexts throughout our lives and even working into adulthood. Thus, from the earliest stages of development we are exposed both formally and informally to a language other than our L1. A common and unavoidable language essential both in formal and informal contexts is, of course, English. However, for people with DD, learning a foreign language can be a challenging experience, without even addressing the issue of different languages and multilingualism.

But is a deficit truly always present and unchangeable? Or could something be done to improve these abilities? Literature tried to answer this important topic starting from the last decades of the twentieth century. The idea that linguistic abilities in one's mother tongue and a second language should be similar originates from the "Linguistic Coding Deficit Hypothesis" (LCDH) proposed by Ganschow and colleagues (1998). They analyzed the performance of a group of Harvard students in Foreign Language Courses and discovered significant difficulties in acquiring the second language. These difficulties were attributed to specific impairments in their first language, making the study of a second language more challenging. This supports the notion that a strong skill set in one's native language is fundamental for acquiring a second language (Spolsky, 1989). These approaches were fixed on the discovery of single learning conditions with a motivational input that could solely explain the process of acquisition of a second language. However, this line of research ended abruptly during the twenty-first century. It has been particularly opposed by Norton who rejected all motivational-oriented theories. The author coined the term investment to describe the historical and social connection that each person creates with the target language in learning settings, such as the classroom, which are significant learning vessels (Norton, 2013). On the contrary, Brown in 2015 proposed an individualistic approach to the acquisition of L2 (Brown and Lee, 2015). He believed that to be effective, linguistic learning should be directly connected to the interests and goals of the student. Despite proposing different interpretations of the process of learning a second language, all these theories have one fundamental element in common: the idea that children with DD all share some core deficits in phonological awareness, working memory, and stimuli processing speed. One of the variables depends, in fact, on some linguistic factors such as phonological awareness, especially for the L1 (Vender and Melloni, 2021). English and Italian, for example, differ widely one from the other in the extent of how transparent they are. Italian is defined as a transparent orthography, that is to say, a language in which each grapheme mostly corresponds to a sound, except for a few irregular words. Therefore, Italian can be considered a more regular language compared to English which is characterized by many homophones such as “hear” and “here” or “by” and “bye”. Unlike Italian, English does not have a consistent orthography in which every phoneme has a corresponding grapheme, thus making it an opaque orthography. Furthermore, compared to Italian, English is rich in irregular words and usually has a bi-univocal correspondence between each letter and each sound, the vowel sound can be long or short and some letters are pronounced differently according to the context or are not pronounced at all despite being written.

Recent literature, focusing on language orthography, suggest that significant attention has been recently given to various studies on language spelling, writing systems or orthographic conventions (for a review, see Lecerf, Casalis and Commissaire, 2023). It is particularly worth mentioning the approach that analyzes dyslexia in a global way, both via cross-linguistic and cross-cultural perspectives, and highlights that dyslexic students just learn differently and can reach an excellent knowledge of different languages (Maunsell, 2020). The author investigated the multi-cultural aspects of dyslexia, finding several different symptoms and manifestations. Those difficulties seem to be due to the degree of consistency or opaqueness of each language’s orthography. On one hand, the difficulties in language with opaque orthography are evident in a slow reading with a low reading accuracy, and most importantly in an almost absent phonemic awareness. On the one hand, the difficulties in languages with opaque orthography are evident in slow reading with low reading accuracy, and most importantly in an almost absent phonemic awareness. On the other hand, the difficulties in transparent orthographies are encompassed in a poor organization of a writing task, slow reading, and a deficient short-term memory. So, while the challenges may vary between an opaque orthography and a transparent one, there is a concept considered unchangeable in literature: all difficulties in the mother tongue will be reflected in the L2. This passage of deficits seems to occur because every time that a dyslexic student has to learn something, he can rely on some compensatory strategies, but the acquisition of an entirely new language would mean starting the process all over again without the known compensation skills.

Bogdanowicz & Bogdanowicz (2016) suggest that learners with DD can experience difficulties in foreign language acquisition in any of five language subsystems (i.e., phonology, morphology, lexical, syntax and stylistic). Regarding phonology, the difficulties concern the discrimination and production of phonemes; similar problems may also apply to different types of accents, rhythmic and intonation patterns as well as understanding the meaning they bear. With regards to morphology, dyslexic children may not understand the role of certain meaningful language units like affixes and have problems with creating new words based on the knowledge of specific word formation rules. Furthermore, people with DD often experience difficulties in the lexical subsystem due to the problems with remembering and reproducing vocabulary on demand and both the syntax (rarely manage well with grammar) and stylistic (may have problems with written expression) dimensions. In this vein, the main difficulties faced by DD second language learners are the same as for monolingual children with DD. The main problem for these children is the difficulty in learning to decode written words in an accurate and fluent manner so that they can grasp the meaning and understand the written text (Paradis, Genesee and Crago, 2011).

If children's word-reading skills are impaired, their comprehension of written text will also be impaired because they cannot read individual words accurately and fluently enough to create meaningful text. In addition, second language learners with dyslexia face the challenges that all second language learners encounter: limited vocabulary and grammatical competence and lack of familiarity with the cultural or social context of the text. In this sense, their challenges are different from those of monolingual children. Literature about the relationship between DD and L2 seems unanimous in showing that when there is a specific learning disorder, as dyslexia, the reading and comprehension abilities in the second language will be significantly affected (Bellocchi, Tobia and Bonifacci, 2017; Košak-Babuder et al., 2019).

Elin Thordardottir focused her lifework on the relationship between DD and bilingualism (Thordardottir and Juliusdottir, 2013). In fact, being born in Iceland and having done research in Canada all her life, the theme of learning in a bilingual context came naturally. In particular, she tried to answer two questions: i) how DD affects bilingualism? and ii) Do bilingual children experience similar challenges in both languages? Thortardottir (2005; 2006) believes that bilingual children are a heterogeneous population and for this reason, establishing a firm description of the typical bilingual behavior could be very difficult. However, she hypothesizes, following the general view, that the amount of exposure to a language could be a determining factor in bilingual development. Furthermore, she affirms that the children who are exposed to both languages for the same amount of time will likely perform at the same level in the two languages; while those who are exposed to only one language for a larger amount of time, will end up with a stronger and a weaker language especially in the areas of grammar, syntactic and spelling. Thortardottir and Brandeker (2013), along with many other researchers, recommended for a comprehensive assessment of both languages to enhance deficient skills. This approach aims to foster genuine bilingualism and potentially mitigate the risk of dyslexia development in both the first (L1) and second (L2) languages in the future. In the same way, given the extent of the challenges that bilingual children with Dyslexia have to face a committee of Italian researchers and experts has recently drawn up some guidelines for the identification of the main markers of DD in bilingualism (ISS, 2022). The recognition of the heterogeneity within this target population suggests assessing the various abilities and difficulties across four categories: i) monolinguals versus bilinguals with typical linguistic development; ii) monolinguals with typical linguistic development versus monolinguals with DD; iii) monolinguals with dyslexia versus bilinguals with dyslexia; iv) bilinguals with typical linguistic development versus bilinguals with dyslexia. Simplification of the relationship between L2 and DD for both monolinguals and bilinguals could be achieved through this approach. Lastly, the guidelines suggest focusing on the linguistic history of each child to understand if he/she is a sequential or simultaneous bilingual, while for the monolinguals to verify the amount, and the quality of exposure to the L2 during the first grades of primary school. However, due to the disorder underlying DD being part of the learner's genetic profile and its effects affecting the child's ability to learn to read in any language, dyslexia in bilinguals are evident in both languages (Paradis et al., 2011). Obviously, since many bilinguals are more proficient in one language than the other, the extent of their disorder will be more evident in the weaker language.

Another particularly noteworthy approach is the analysis of the mechanisms of language and lexical retrieval for monolingual and bilingual children. Botezatu and colleagues (2021) wondered whether there could be a difference in fluency production between monolinguals and L2 speakers. In general, for every speaker, it is mandatory to put in place an efficient lexical retrieval in order to obtain a fluent and coherent speech. However, the process of lexical retrieval strictly depends on the vocabulary size and the lexical selection. The vocabulary size plays a significant role because the development of every sentence is limited to the range of available lexical candidates. As a result, the lexical selection allows the person to select the most suitable option from several lexical candidates; so, the wider the vocabulary, the more lexical options that student will be able to choose from. It is a competitive process, based on inhibitory control (Levelt et al., 1999). In fact, a better inhibitory control generates a faster resolution of the lexical competition, in turn producing a more fluent language production. It is at this point of the process that the author believes a difference could arise between monolinguals and bilinguals.

In summary, recent literature explores the intricate relationship between dyslexia and bilingualism, emphasizing that this interaction is influenced by various factors like language exposure, language characteristics (e.g., transparency vs opacity), and individual cognitive processes. Dyslexia can significantly impact written language acquisition and proficiency in both the mother tongue and second languages. Bilingual development is influenced by exposure duration, and dyslexia manifests in similar ways across the language dimensions, necessitating tailored assessments and interventions for dyslexic bilingual individuals.

Conclusion

The mainstream literature on bilingualism and dyslexia has often highlighted the weaknesses of these two conditions even if they occur in isolation. However, recent psychological and linguistic literature has shifted from considering bilingualism and developmental dyslexia as risk factors for the acquisition of developmental skills to considering them as different ways of acquiring developmental skills or even as an advantage. This work aims to bring to light this literature, which offers a stimulus to rethink in a different way those considered to be two issues for the acquisition of language skills, in particular a new point of view on the relationship between Developmental Dyslexia and bilingualism.

In conclusion, this overview of the intersection between developmental dyslexia and bilingualism highlights the evolving paradigms surrounding these apparently dissimilar conditions. Over time, the literature has shifted from viewing dyslexia solely as a deficit to recognizing and valuing the built-in strengths associated with this neurodevelopmental condition. The MIND strengths framework, proposed by Eide and Eide (2012), emphasizes the unique cognitive strengths present in individuals with dyslexia, redefining the narrative and suggesting the adaptive advantages conveyed by this developmental condition. Similarly, the understanding of bilingualism has undergone a profound transformation, moving from historical debates about its potential burden on children to the recognition of the multiple cognitive, social, and professional benefits it offers. Recent studies highlight improvements in cognitive flexibility, attention skills, and executive functions among bilingual individuals, emphasizing the complex interaction between language acquisition, socioeconomic factors, and social support for language use. However, when these two conditions converge, as in the case of bilingual individuals with dyslexia, the interaction presents a unique set of challenges and opportunities. The impact of dyslexia on written language acquisition and competence in both primary and secondary languages is substantial. The occurrence of dyslexia across language dimensions requires tailored assessments and interventions, recognizing individual cognitive processes, language characteristics, and duration of exposure. In-depth evaluations of both languages, considering aspects of grammar, syntax, morphology, phonology, and stylistics, become indispensable to address the diverse needs of dyslexic bilinguals. The interplays entailed in this intersection emphasize the importance of ongoing research, including inter-linguistic perspectives, sociocultural factors, and individualized approaches to learning. The efforts to reveal the complexities between dyslexia and bilingualism not only enhance our understanding of these conditions but also lead the way to more effective strategies in educational settings. Embracing the inherent strengths of dyslexia and drawing on the advantages of bilingualism by addressing the challenges posed by their overlap can lead to more inclusive and tailored interventions, fostering holistic development in individuals navigating these intertwined cognitive domains.

References

American Psychiatric Association, D. S. M. T. F., & American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders: DSM-5* (Vol. 5, No. 5). Washington, DC: American psychiatric association.

Baker, C. (2011). *Foundations of bilingual education and bilingualism*. Multilingual Matters.

Bellocchi, S., Tobia, V., & Bonifacci, P. (2017). Predictors of reading and comprehension abilities in bilingual and monolingual children: a longitudinal study on a transparent language. *Reading and Writing*, 30(6), 1311-1334. DOI: 10.1007/S11145-017-9725-5.

Bialystok, E. (2017). The bilingual adaptation: How minds accommodate experience. *Psychological Bulletin*, 143(3), 233. DOI: 10.1037/bul0000099.

Bialystok, E. (2021). Bilingualism: Pathway to cognitive reserve. *Trends in Cognitive Sciences*, 25(5), 355-364. DOI: 10.1016/j.tics.2021.02.003.

Bialystok, E., Craik, F. I. M., & Freedman, M. (2007). Bilingualism as a protection against the onset of symptoms of dementia. *Neuropsychologia*, 45(2), 459-464. DOI: 10.1016/j.neuropsychologia.2006.10.009.

Bialystok, E., Craik, F. I. M., & Luk, G. (2012). Bilingualism: consequences for mind and brain. *Trends in Cognitive Sciences*, 16(4), 240-250. DOI: 10.1016/j.tics.2012.03.001.

Blumenfeld, H. K., & Marian, V. (2011). Bilingualism influences inhibitory control in auditory comprehension. *Cognition*, 118(2), 245-257. DOI: 10.1016/j.cognition.2010.10.012.

Bogdanowicz, K. M., & Bogdanowicz, M. (2016). "The Good Start Method for English" or how to support development, prevent and treat risk of dyslexia in children learning English as a second language. *Polish Psychological Bulletin*, 3. DOI: 10.1515/ppb-2016-0032.

Bonifacci, P., Cappello, G., & Bellocchi, S. (2012). Linguaggio e cognizione: implicazioni dal bilinguismo. *Rivista Italiana di Filosofia del Linguaggio*, 5, 7-21.

Bonifacci, P., et al. (2016). Specific learning disorders: A look inside children's and parents' psychological well-being and relationships. *Journal of Learning Disabilitie*s, 49(5), 532-545. DOI: 10.1177/0022219414566681.

Botezatu, M. R., et al. (2021). Discourse fluency modulates spoken word recognition in monolingual and L2 speakers. *Bilingualism*: *Language and Cognition*, 1-14. DOI: 10.1017/S1366728921001024.

Brown, H. D., & Lee, H. (2015). *Teaching principles*. P. Ed Australia.

Cancer, A., & Antonietti, A. (2019). Creativity and dyslexia: Theoretical insights and empirical evidence supporting a possible link. In S. Kreitler (Ed.), *New frontiers in creativity* (pp. 125-148). Nova Science Publisher. http://hdl.handle.net/10807/149270.

Chilosi, A. M., Piazzalunga, S., Pfanner, L., & Cipriani, P. (2023). TCGB-2: *Test di comprensione grammaticale per bambini*-Seconda Edizione. Edizioni Hogrefe, Firenze.

Cianchetti, C. , & Sannio Fancello, G. (2003). *Test TVL - Valutazione del linguaggio*. Edizioni Erickson-Trento.

Comishen, K. J., Bialystok, E., & Adler, S. A. (2019). The impact of bilingual environments on selective attention in infancy. *Developmental Science*, 22(4), e12797. DOI: 10.1111/desc.12797.

Cummins, J. (1979). Cognitive/Academic Language Proficiency, Linguistic Interdependence, the Optimum Age Question and Some Other Matters. *Working Papers on Bilingualism,* 19. DOI: 10.3102/003465430490022 22.

De Bruin, A., Dick, A. S., & Carreiras, M. (2021). Clear theories are needed to interpret differences: Perspectives on the bilingual advantage debate. *Neurobiology of Language*, 2(4), 433-451. DOI: 10.1162/nol_a_00038.

De Lamo White, C., & Jin, L. (2011). Evaluation of speech and language assessment approaches with bilingual children. *International Journal of Language & Communication Disorders,* 46(6), 613-627. DOI: 10.1111/j.1460-6984.2011.00049.x.

Djumabaeva, J. S., & Kengboyeva, M. Y. (2021). Bilingualism and its importance in human life. *Linguistics and Culture Review*, 5(1), 53-63. DOI: 10.37028/lingcure.v5n1.451.

Dunabeitia, J. A., et al. (2014). The inhibitory advantage in bilingual children revisited: myth or reality?. *Experimental Psychology*, 61(3), 234. DOI: 10.1027/1618-3169/a000243.

Eide B., Eide F. (2019). "Bug or feature: understanding the dyslexic advantage," in Proceedings of the Dyslexi och Kreativitet, June 3rd, 2019, Stockholm.

Eide, B. L., & Eide, F. F. (2012). *The dyslexic advantage: Unlocking the hidden potential of the dyslexic brain*. Penguin.

Erbeli, F., Rice, M., & Paracchini, S. (2021). Insights into dyslexia genetics research from the last two decades. *Brain Sciences*, 12(1), 27. DOI: 10.3390/brainsci12010027.

Filippi, R., Karaminis, T., & Thomas, M. S. C. (2014). Language switching in bilingual production: Empirical data and computational modelling. Bilingualism: L*anguage and Cognition,* 17(2), 294-315. DOI: 10.1017/S1366728913000485.

Francis, D. A., Caruana, N., Hudson, J. L., & McArthur, G. M. (2019). The association between poor reading and internalising problems: A systematic review and meta-analysis. *Clinical Psychology Review,* 67, 45-60. DOI: 10.1016/j.cpr.2018.09.002.

Geschwind, N. (1982). Why Orton was right. *Annals of Dyslexia*, 13-30.

Green, D. W., & Abutalebi, J. (2013). Language control in bilinguals: The adaptive control hypothesis. *Journal of Cognitive Psychology*, 25(5), 515-530. DOI: 10.1080/20445911.2013.796377.

Grote, K. S., Scott, R. M., & Gilger, J. (2021). Bilingual advantages in executive functioning: Evidence from a low-income sample. *First Language*, 41(6), 677-700. DOI: 10.1177/014272372110242.

Gutiérrez-Ortega, M., Torres-Quesada, M., Crespo, P., López-Fernández, V., Fariña, N., & Barbón, A. (2023). Are dyslexic people more creative? Myth or reality: A meta-analysis. *Psicología Educativa,* 29(1), 55-64. DOI: 10.5093/psed2023a1.

Hansen, P., et al. (2019). Picture-based vocabulary assessment versus parental questionnaires: A cross-linguistic study of bilingual assessment methods. *International Journal of Bilingualism,* 23(2), 437-456. DOI: 10.1177/13670069177330.

Hoff-Ginsberg, E. (1991). Mother-child conversation in different social classes and communicative settings. *Child Development*, 62(4), 782-796.

Hoff, E. (2006). How social contexts support and shape language development. *Developmental Review*, 26(1), 55-88.

Istituto Superiore di Sanità. (2022). *Linee Guida per la gestione dei disturbi specifici dell'apprendimento*. Sistema Nazionale Linee Guida dell'Istituto Superiore di Sanità.

Johnson, J. S., & Newport, E. L. (1989). Critical period effects in second language learning: The influence of maturational state on the acquisition of English as a second language. *Cognitive Psychology*, 21(1), 60-99.

Kalamala, P., Senderecka, M., & Wodniecka, Z. (2022). On the multidimensionality of bilingualism and the unique role of language use. *Bilingualism: Language and Cognition,* 25(3), 471-483. DOI: 10.1017/S1366728921001073.

Kirby, P. (2020) Dyslexia debated, then and now: a historical perspective on the dyslexia debate, *Oxford Review of Education*, *46*(4), 472-486, DOI: 10.1080/03054985.2020.1747418.

Košak-babuder, M., et al. (2019). The effect of read-aloud assistance on the text comprehension of dyslexic and non-dyslexic English language learners. *Language Testing*, 36(1), 51-75. DOI: 10.1177/026553221875694.

Lecerf, M. A., Casalis, S., & Commissaire, E. (2023). New insights into bilingual visual word recognition: State of the art on the role of orthographic markedness, its theoretical implications, and future research directions. *Psychonomic Bulletin & Review*, 1-25.

Lenneberg, E. H. (1969). On Explaining Language: The development of language in children can best be understood in the context of developmental biology. *Science*, 164(3880), 635-643.

Levelt, W.JM; Roelofs, A. and Meyer, A.S. (1999). A theory of lexical access in speech production. *Behavioral and brain sciences, 22*(1), 1-38. DOI: 10.1017/S0140525X99001776.

Lombardi, E., Traficante, D., Bettoni, R., Offredi, I., Vernice, M., & Sarti, D. (2021). Comparison on well-being, engagement and perceived school climate in secondary school students with learning difficulties and specific learning disorders: An exploratory study. *Behavioral Sciences*, 11(7), 103. DOI: 10.3390/ bs11070103.

Luk, G., De Sa, E., & Bialystok, E. (2011). Is there a relation between onset age of bilingualism and enhancement of cognitive control?. *Bilingualism*: *Language and Cognition,* 14(4), 588-595. DOI: 10.1017/S13667289110000 10.

Marini, A., Marotta, L., Bulgheroni, S., & Fabbro, F. (2015). *Batteria per la Valutazione del linguaggio in Bambini dai 4 ai 12 anni (BVL_4-12)*. Firenze: Giunti O.S.

Maunsell, M. (2020). Dyslexia in a global context: a cross-linguistic, cross-cultural perspective. L*atin American Journal of Content & Language Integrated Learning*, 13(1). DOI: 10.5294/laclil.2020.13.1.6.

Mclaughlin, B. (1981). Differences and similarities between first- and second-language learning. *Annals of the New York Academy of Sciences*, 379.

Norton, B. (2013). *Identity and language learning. In Identity and Language Learning*. Multilingual Matters.

Paradis, J., Genesee, F., & Crago, M. B. (2011). *Dual language development and disorders. A handbook on bilingualism and second language learning* (2nd ed.).

Peterson, R. L., & Pennington, B. F. (2012). Developmental dyslexia. *The Lancet,* 379(9830), 1997-2007. DOI: 10.1016/S0140-6736(12)60198-6.

Poulin-Dubois, D., et al. (2021). Effect of bilingualism on infants' cognitive flexibility. *Bilingualism: Language and Cognition,* 1-14. DOI: 10.1017/S1366728921000912.

Romaine, S. (1989). *The role of children in linguistic chang*e. In LE Breivik & EH Jahr (Eds.), (pp. 199-226).

Stella G., Pizzoli C. E., Tressoldi P. E. (2000). Peabody. *Test di Vocabolario Recettivo*. Torino: Omega Edizioni.

Spolsky, B. (1989). *Bilingualism. In Linguistics: The Cambridge Survey* (pp. 100-118).

Tainturier, M. J., Roberts, J., & Charles Leek, E. (2011). Do reading processes differ in transparent versus opaque orthographies? A study of acquired dyslexia in Welsh/English bilinguals. *Cognitive Neuropsychology*, 28(8), 546-563. DOI: 10.1080/02643294.2012.698986

Taylor, H., & Vestergaard, M. D. (2022). Developmental dyslexia: disorder or specialization in exploration?. *Frontiers in Psychology,* 3374. DOI: 10.3389/fpsyg.2022.889245.

Thordardottir, E. T. (2005). Early lexical and syntactic development in Quebec French and English: implications for cross-linguistic and bilingual assessment. *International Journal of Language & Communication Disorders*, 40(3), 243-278. DOI: 10.1080/13682820410001729655.

Thordardottir, E. T., & Juliusdottir, A. G. (2013). Icelandic as a second language: A longitudinal study of language knowledge and processing by school-age children. International *Journal of Bilingual Education and Bilingualism*, 16(4), 411-435. DOI: 10.1080/13670050.2012.693062.

Thordardottir, E., & Brandeker, M. (2013). The effect of bilingual exposure versus language impairment on nonword repetition and sentence imitation scores. *Journal of Communication Disorders,* 46(1), 1-16. Doi: 10.1016/j.jcomdis.2012.08.002.

Thordardottir, E., Rothenberg, A., Rivard M. E., & Naves, R. (2006). Bilingual assessment: Can overall proficiency be estimated from separate measurement of two languages?. *Journal of Multilingual Communication Disorders*, 4(1), 1-21. DOI: 10.1080/14769670500215647.

Tomoschuk, B., Ferreira, V. S., & Gollan, T. H. (2019). When a seven is not a seven: Self-ratings of bilingual language proficiency differ between and within language populations. *Bilingualism: Language and Cognition*, 22(3), 516-536. DOI: 10.1017/S1366728918000421.

Valdois, S. (2010). Dyslexia (developmental). In G. F. Koob, M. Le Moal, & R. F. Thompson (Eds), *Encyclopaedia of Behavioural Neuroscience* (pp. 454–460). Elsevier.

Vender, M., & Melloni, C. (2021). Phonological awareness across child populations: How bilingualism and dyslexia interact. *Languages*, 6(1), 39. DOI: 10.3390/languages6010039.

Wagner, R. K., et al. (2020). The prevalence of dyslexia: A new approach to its estimation. *Journal of Learning Disabilities,* 53(5), 354-365. DOI: 10.1177/0022219420920377.

Weisleder, A., Friend, M., Tsui, A., & Marchman, V. A. (2023). Using parent report to measure vocabulary in young bilingual children: A scoping review. *Language Learning*. DOI: 10.1111/lang.12617.

Yu, C.-L., Kovelman, I., & Wellman, H. M. (2021). How Bilingualism Informs Theory of Mind Development. *Child Development Perspectives*, 15(3), 154-159. DOI: 10.1111/cdep.12412.

Quality of school inclusion and digital technologies: A pilot study

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Abstract

The quality of school inclusion of children with disabilities is a complex construct that emerges from the interaction between individual needs and different systems and processes; therefore, it needs to be investigated through a multi-method approach, using tools capable of grasping its complexity.

The general goal of the study is to describe and test the modified version of two instruments: ICP and SELFIE. The ICP (the Inclusive Classroom Profile; Soukakou, 2016) is an observational tool aimed at measuring and quantifying school inclusion quality through the observation of the teachers' daily practices and the analysis of the school's policy. For the present research, the ICP was adapted to the Italian school context. Moreover, other minor changes were applied to adapt the tool to the primary and secondary levels of education. The SELFIE (Self-reflection on Effective Learning by Fostering Innovation through Educational Technology; European Commission, 2018) analyses the use of digital technologies in the school context. Originally developed as a self-evaluation questionnaire, for the present study it has been transformed into a guided interview, allowing the research team to collect more comprehensive quantitative data.

The tools were tested in a pilot study involving a kindergarten and a 3rd-grade class in the municipality of Genoa.

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Results outline the strengths and weaknesses of the modified versions of the instruments and further changes are proposed. Furthermore, the SELFIE interviews content analysis highlights valuable insights regarding kindergarten and primary school teachers' use of digital technologies.

Keywords: School, educational survey tools, school inclusion, new technologies

Introduction

This paper presents the first results of a pilot study, part of broader research on the quality of school inclusion, aimed at verifying the suitability of two instruments in the Italian context: an observational tool designed in the British context to analyse various aspects of classrooms' inclusiveness (the Inclusive Classroom Profile: ICP by Soukakou, 2016) and a self-assessment tool (SELFIE: Self-reflection on Effective Learning by Fostering Innovation through Educational Technology), born from the initiative of the European Commission with the intention of allowing the entire school community to understand how digital technologies are used for the purposes of teaching and learning.

In Italy, the school inclusion of children with disabilities has been a matter of fact for more than five decades. However, it is widely accepted that the quality of school inclusion varies in relation to cultural, environmental, psychosocial, and personal factors (Maciver et al., 2019; Nilholm, 2021; Zanobini et al., 2024). Many aspects, including school organization and policies (Vlachou, 2004), physical environment, attitudes of teachers and peers, degree of cooperation inside and outside the school, teaching strategies, etc., can contribute to the full realization of an inclusive education model. The physical environment can be evaluated in terms of accessibility and suitability for physical activities, but it can also constitute a barrier for the learning and participation of children with disabilities, especially those with physical or sensory disabilities (Ackah-Jnr & Danso, 2017). Furthermore, the success of inclusive education is usually conditioned by teachers' attitudes and their ability to adapt teaching strategies to foster each student's participation and learning: a recent meta-analysis showed that teachers' attitudes towards inclusion have improved over the years thanks to the emergence of increasingly inclusive policies and that cultural variables can significantly influence such attitudes (Steen & Wilson, 2020). Studies on the importance of cooperation for inclusion have mainly considered collaboration between regular and special education teachers, but cooperation with professionals outside the school and parents has also been outlined as a key factor for the implementation of inclusion (Kaldi et al., 2018). Furthermore, the application of technological devices can facilitate the inclusion of children with disabilities, specific learning disorders (SLDs), or other conditions determining the presence of special educational needs (SENs) in terms of participation, learning, and wellbeing (Cheung and Slavin, 2013; Fage et al., 2018; Panesi et al., 2020; Parsons et al., 2020).

To date, studies analysing the quality of school inclusion usually use self-report research tools selectively focused on single aspects. For example, a large body of literature focuses on the attitudes and perceptions of different actors, particularly teachers (Heyder et al., 2020; Kiel et al., 2020), peers (Laws & Kelly, 2005; Woodgate et al., 2019; Zanobini & Viterbori, 2022), and parents (deBoer et al., 2010; de Boer & Munde, 2015; Zanobini et al., 2018). More qualitatively oriented research uses case studies, interviews, or focus groups to analyse teachers' opinions (Glazzard, 2011) or the effects of a given condition on the achievement of educational objectives or on the well-being and satisfaction of end users.

In contrast, our project analyses different dimensions of school inclusion quality. Moreover, it considers both data acquired through self-report tools (*Quality Scale of Inclusive School Development-short form* - QU!S-S, Schurig et al., 2020; *Professional Self-Efficacy*, PSE, Nota, Santilli, and Soresi 2015; *Multidimensional Attitudes toward Inclusive Education Scale*, MATIES, Mahat, 2008), administered online to kindergarten, primary and lower secondary school teachers and data acquired through direct observations (selected parts of the ICP) and teachers' interviews (selected parts of SELFIE).

Previous results of a study aimed at testing the psychometric properties of the Italian version of the Qu!S-S, confirmed the validity of this multidimensional self-report tool for the evaluation of school inclusion quality and its association with measures of teachers attitudes and self-efficacy collected online (see Zanobini et al., 2024).

In this article we focused on the description of the last two data collection methods (observation and interview) and on the first results of a pilot study, which represents a very first step towards the adaptation of the ICP to the Italian context and a first verification of the suitability of an interview version of SELFIE.

The ICP (Soukakou, 2016) is an observational tool aimed at studying various aspects related to the inclusion of preschool children with disabilities, developmental disorders, or special educational needs. The original version has been created and validated in the British context (Soukakou, 2012) and used in other countries, i.e. Greece, to analyse the quality of inclusion at the preschool level (Fyssa and Vlachou, 2015). We have chosen, translated and reviewed some parts of the tool with the aim of adapting them to the Italian context and to the primary and lower secondary school levels (see the Methods section for further details). As highlighted by Soukakou and Sylva (2010), measuring concepts such as "classroom quality" represents a challenge, both because it is difficult to establish which domains are included in the construct and because of the methodological issues related to creating an objective measure of them. The choice of an observational measure structured through situation-specific rating scales allows us to evaluate to what extent situations, conditions or behaviours of interest occur.

The SELFIE was created in the European context, translated into 32 languages, and validated by evaluating its reliability and construct validity with a large sample of school leaders and teachers from 33 different countries, including Italy (Costa et al., 2021). Selected parts of the tool were used in the Italian context to analyse the role of educational technologies in supporting the school community and promoting the wellbeing and inclusion of students (Panesi et al., 2020). We selected only some parts of the SELFIE, in accordance with the research aims and the new administration procedure, through interviews rather than self-report assessments (see the Methods section for further details); in particular, we chose the areas most directly linked to the possible use of technologies to promote school inclusion.

This contribution aims to provide some preliminary information on the possible use of the modified versions of ICP and Selfie in the description of the practical ways to implement school inclusion and of the actual use of technologies in schools. In particular, we intended:

- Verify the suitability of the ICP for the Italian context and for primary and lower secondary schools, taking into account the differences between school levels in the planning of activities and in teachers' strategies with children of different age groups.
- Verify the adequacy of using structured interview in administering the Selfie and the quality of the additional information thus obtained; moreover, evaluate the suitability of its application to nursery school teachers.
- Discuss some preliminary results obtained from the interviews collected in the pilot study to highlight possible areas of interest related to the teachers perception of technology usage in schools.

Methods

Ethics Committee approval

The research project was submitted to the Comitato Etico di Ateneo - CERA (University Ethics Committee) of the University of Genoa; the Committee examined the objectives, method of the research, and the documentation for the participants: informed consent and privacy policy forms. The ethics committee approved the project and the documentation on 16-3-2023 (N: 2023/16).

Participants

The pilot study involved a kindergarten class and a third-grade class of a comprehensive school (including preschool, primary and lower secondary school) in the main town of Genoa. During the observation in the kindergarten class, a total of 13 children were present, while in the third-grade class, there were 16 children. The kindergarten class included a girl with a motor disability, and the third-grade class included a boy with an autism spectrum disorder. Furtheremore, the study involved 6 teachers and the school principal. Teachers' age ranged between 25 and 58.

Data collection procedure

The first contact with participants took place in an online meeting during which researchers explained the aims and procedure of the study to the teachers of the classes that volunteered to be part of the pilot sample. All the participants (teachers of the involved classes and the school leader) and children's parents signed the informed consent and privacy policy forms approved by the CERA. Appointments for conducting observations and semistructured interviews were scheduled with the teachers.

The observations within the classes participating in the project were carried out by two independent, non-participant researchers, filling the grid provided by the ICP. They lasted approximately two hours, and two teachers were present in each class during the observation: the class teacher and the support teacher. Teachers were asked to carry on with the usual class routine, and the observation could include every moment of usual school life (e.g., frontal lessons, group activities, break time, lunch in the canteen). With the prior consent of the school leader and parents, the school personnel provided the researchers the anonymized version of children's individual educational plans and other school documentation, as required by the ICP. Other school documents containing important information for the ICP procedure were downloaded from the school website by the researchers: the PTOF (Triennial Plan of the Training

Offer), the PAI (Individualized Care Plan) and the Institute Regulations, in order to verify whether the school provides a written document concerning inclusion policy and written procedures for school-family communications. Moreover, data collected with the observations were integrated by additional information gathered through specific questions to teachers in the form of an interview, as specified by the original instrument. Teachers were asked for additional information regarding students' learning monitoring, teacher-family communication practises, and information regarding the Individualised Educational Plans (PEI).

Guided interviews pertaining to both the ICP and SELFIE were then conducted with the four teachers involved in the observations, while the school principal and two additional teachers of the same classes participated only in the SELFIE-guided interview. Each complete interview (ICP and SELFIE) lasted approximately one hour, while the SELFIE-guided interview lasted approximately 40 minutes. Participants' answers were recorded and transcribed with speech-to-text software and then checked manually. Moreover, participants were asked to provide a rating on a 5-point Likert scale for each item on the SELFIE.

Instruments

Inclusive Classroom Profile

The inclusive classroom profile aims at assessing the quality of inclusion by analysing the everyday class routine of pupils with an identified disability (Soukakou, 2016). Originally consisting of 12 items, for the purposes of our study, we chose to focus on 6 items: Adaptation of spaces, material and equipment; Membership; Support for communication; Adaptation of group activities; Family-professional partnerships; and Monitoring children's learning (see Appendix 1 for the description of the selected items). We decided not to observe: those aspects typically inherent to kindergarten only, (i.e., *Adult guidance of children's free-choice activities and play* and *Transitions Between Activities*); aspects directly investigating the relationship between teachers and children (i.e. *Relationships Between Adults and Children* and *Adult involvement in peer interactions*) because they are more susceptible to subjective judgment by the observer and at risk of creating resistance in teachers; aspects that are not so central to the topic of inclusion (i.e. *Conflict resolution* and *Feedback*). Each item is rated on a 7-point Likert scale, where a rating of 1 reflects the presence of practices that significantly undermine inclusive education, and a rating of 7 represents highly inclusive and supportive practices. The score for each item is determined by the presence of a set of indicators provided by the tool's grid; furthermore, for each indicator, the ICP provides examples of the target practices, behaviours, or interactions that the observers should focus on. These indicators must be assessed through three different procedures: a 2-hour classroom observation, a brief teacher interview, and a review of school documentation. The researchers after obtaining the information in the described ways score each indicator. The total ICP score is represented by the mean of the scores of all items.

Regarding the part of ICP interview, the aim of the questions is to assess the application of practices, activities and procedures aimed at fostering the inclusion of children in school life (Table 1). The scores of single indicators and items assessed through the interview are quantitative data that are embedded into the ICP global scores; therefore, no qualitative analysis of the content is required by the ICP scoring procedure or needed for testing purposes.

Tab. 1 – *Examples of ICP interview questions organized by each item*

Item	Examples of the interview indicators
Membership	1. Do children in the classroom have equal opportunities to assume the role as helper of the day? 2. How do you make decisions about children's work and photos that are displayed in class?
Family-professional partnerships	1. "Do you have any written policies/procedures for communicating with families?" 2. "How do you encourage family participation in parent-teacher meetings?"
Monitoring children's learning	1. "How do you monitor children's progress on various learning and developmental goals?" 2 "How often do you monitor children's progress on various goals?"

In the original tool, the analysis of the documentation requires reviewing the children's Individualized Education Program and other school documents that outline the school's guidelines and educational policies such as PTOF (Triennial plan of Education Offer). The documentation review takes into account the personalization, accessibility and inclusiveness of the school documents. For example, the indicators under the item "Monitoring children's learning" take into consideration the frequency of updating the documents, the intelligibility of their contents and the involvement of the family and professionals in the drafting process. The PTOF is key document to gather information about family-teachers communication guidelines and the general pedagogical framework of the school.

The results of the present study concern, in particular, the adjustments and modifications applied to the ICP to fit the Italian context and the primary and middle school contexts. A detailed description of the changes applied to the tool is reported in the following section. The purpose of the present pilot research is not to analyse the quantitative data, such as the ICP's total scores.

ICP Adaptations

We modified the ICP following two different aims: adapting the scale to the Italian context and to the primary and middle school levels of education.

Regarding the adaptation to the Italian context, one important set of changes concerns the terminology that refers to school documentation. The Individualized Education Program (IEP) is a document used in the education system of the United Kingdom (DfES, Department for Education and Skills, 2001) and other English-speaking countries, such as the USA (IDEA, Individuals with Disabilities Education Act, 2006), for eligible students with disabilities, specific learning disorders or other special needs. In the Italian educational system, two different documents can be considered the equivalents of the IEP, which are the "Piano Educativo Individualizzato - PEI" (Individualized Educational Plan) and the "Piano Didattico Personalizzato - PDP" (Customized Learning Plan). The PEI addresses the special educational needs of students with disabilities such as intellectual disability, autism, and sensory or motor disabilities. The PEI, like the IEP, defines educational goals, strategies and the assessment of children's progress; it also outlines possible major adaptations to lessons, activities and contents (Ianes & Cramerotti, 2009; Inter-ministerial Decree no.182 of December 29th, 2020; Ianes, et al., 2021). The PDP is a document that addresses students with specific learning disabilities and other special educational needs, such as emotional or behavioural disorders or difficulties, sociocultural disadvantages and linguistic differences (Fogarolo, 2014). Both the PEI and PDP must be developed by professionals and families. In our version of the ICP, we used the PEI and PDP as an equivalent of the IEP; in particular, these changes concerned the Monitoring children's learning item.

Another important document in Italian school legislation is the "Piano Triennale dell'Offerta Formativa" (Educational Three-year Plan). The PTOF is mandatory, and every Italian school is expected to develop and publish it on the school website. This document is developed by the school leader and the teachers' team, outlining the school's goals and strategies aimed at achieving learning and pedagogical outcomes. For example, the PTOF describes specific projects implemented by the school to improve students' performance in one or more specific subjects, collaboration projects with local associations or organizations, and indications regarding updates and meetings with families (Law 107, 2015; Ianes & Cramerotti, 2016). Furthermore, the PTOF contains the Piano Annuale dell'Inclusione (PAI, Inclusion Annual Plan). This document aims to define objectives and actions to improve the quality of inclusion within the school (Directive of December 27th, 2012; Ministerial Circular no. 8 of March 6th, 2013; Ianes & Cramerotti, 2016). Some important information regarding the item Family-professional partnerships can be found in the PTOF and PAI.

The ICP was originally developed for kindergarten programs (Soukakou, 2016); for the present research, we adapted this instrument to the primary and middle school levels of education.

In this regard, no changes to the item and indicator's structure or scoring system were necessary. The practices targeted by the kindergarten and primary/middle school observation grid are the same; nevertheless, modifications were applied to the examples of behaviours or interactions provided by the grid. For example, the content of indicator 7.1 of the Adaptation of spaces, material and equipment item is the following: "Adults intentionally organize the physical space and materials throughout the day to accommodate individual needs and encourage peer interaction". The kindergarten grid provides the following example of the target practice: "Adult clear toys from floor space to support easy access to a particular child". In the primary/middle school version, the previous example was changed as follows: "Adults move materials, objects, or pieces of furniture to support easy access to a particular child". The rationale behind this change is that toys are not common in the classrooms, especially in middle school, so the same example applied to the middle school environment may be misleading. Therefore, toys have been substituted with other things or objects, more common in a middle or primary context, that a teacher may need to clear to ease the access to classroom spaces.

A comprehensive list of the changes applied to the examples reported by the indicators is available in Appendix 3.

SELFIE

The SELFIE (Self-reflection on Effective Learning by Fostering Innovation through Educational Technology) is a self-assessment tool created in the context of the Digital Education Action Plan of the European Commission (2018) to measure the implementation of digital and innovative practices in the school system. SELFIE is a tool freely available online that schools can use to assess the level of application of digital technologies in teaching and learning practices. Different versions of SELFIE were developed for school leaders, teachers and students and for different school levels: primary, middle, high school and vocational schools; also, SELFIE is used in research on the application of digital technology in school systems at the European level (Bocconi et al., 2020; Panesi et al., 2020; Costa et al., 2021; Castaño Muñoz et al., 2022). The questionnaire requires participants to rate the items on a 5-point Likert scale, from 1 = strongly disagree to 5 = definitely agree.

For the purpose of the current research, we selected the following areas of interest: Collaboration & Networking; Infrastructure and Equipment; Continuing Professional Development; Teaching and Learning Part 1; and Assessment practices (see Appendix 2 for the description of the selected items).

There is a teachers' and school leaders' version of the SELFIE questionnaire. The items' content is the same in all areas of the two versions, except Area 3 – Continuing Professional Development; in this area, the teachers' version contains additional items regarding teachers' training activities. For a detailed description of the differences between the two versions and of the SELFIE questionnaire in general, refer to the SELFIE website (https://ec.europa.eu/education/schools-go-digital_en).

For the purpose of the present investigation, the SELFIE questionnaire was modified and transformed into a guided interview to collect qualitative data about teachers' motivations and environmental conditions regarding the implementation of educational technologies; nevertheless, teachers and principals were asked to provide quantitative judgements using a 5-point Likert scale see the Methods section for further details. For the purpose of this paper, we report only the qualitative results. The detailed description and the rationale of the modifications are reported in the following section.

SELFIE Adaptations

For the purpose of the current research, modifications to the SELFIE questionnaire were applied. Primarily, we used the SELFIE questionnaire items to create a guided interview for teachers and school leaders of kindergarten, primary and middle schools. In general, through the interview method, it is possible to:

- collect a greater amount of qualitative information than the questionnaire method, allowing a more in-depth knowledge of the perception of teachers and principals of the use of digital technologies in their schools;
- avoid misinterpretations and misunderstandings of the questions' contents.

Since every item has been modified, it is not possible to report an exhaustive list of all the changes. Nevertheless, it is possible to group all modifications into 4 categories:

- changes applied to transform the questionnaire statements into questions;
- changes applied to the item content to better define the question's target topic and the criteria by which respondents were asked to answer;
- additional information was included in the interviewer form in case the interviewee misinterpreted or did not fully understand the question;
- optional probing questions were added to the interviewer form if the spontaneous response of the interviewee did not provide the target information.

The changes are summarized in Appendix 4, which shows an example item of the teachers' version for each modification category. The same types of modifications were applied to the school leaders' version of the interview.

As previously mentioned, a specific version of the SELFIE questionnaire for kindergarten is not available; therefore, one aim of the pilot study is to test the SELFIE-guided interview at this educational level.

Results

Outcomes from the ICP observations and interviews

The general procedure required by the ICP took place without any critical issues. Regarding the observation phase, no significant problems emerged: after a short presentation by the observers, the children became familiar with their presence, and no important or overt changes in the classroom routine were observed or reported by the teachers. Regarding the interview phase, we chose to individually interview all the teachers present during the observation, two teachers from the 3rd grade class and two from the kindergarten class.

Specific issues emerged in the adaptation of the ICP to the legislation of the Italian school context and in the adaptation to the primary school level of education.

Issues in the area of Italian legislation emerged in the item Monitoring Children's Learning, indicator 1.1; this indicator requires the use of research-based screening tools to assess possible children's learning and developmental risks. Only one primary school teacher reported that the screening process is outsourced to external centres specialized in learning disorders, which carried out the screening using standardized tools. A teacher reported that the school does not carry out any type of screening, and the other interviewees reported that they carry out an evaluation of children based on observational grids designed by the teacher's team. For the Italian school system, the legislation states that schools are expected to implement measures to identify children's learning difficulties; however, it does not explicitly require the screening process to be performed with standardized or research-based tools (170 Law, 2010). Indicator 1.1 is critical in the ICP scoring process because if its requirements are not met, observers must assign to the Monitor Children's Learning item the lowest score; in this way, it is possible that this item may generate systematically low scores if applied to the Italian school context. One possible solution is to modify the content of the indicator in such a way that the lowest score is applied if the school does not carry out any type of observation aimed at targeting possible developmental risks.

Another issue regards the adaptation to the primary and middle school level of education. The item Support for Communication reports some strategies and practices to foster children's linguistic competence: repetition of important words during conversations, modelling of elements of expressive language or social interaction (e.g., "how to ask for help"), descriptive commenting on what the child is doing (e.g., "You are painting with so many colours!"), expanding the child's verbal communication (e.g., The child says "doggie", and the adult expands "Yes, that is a big brown doggie"), and asking open-ended questions. In the context of an early childhood classroom, the previously mentioned strategies can be applied to the entire group of children. In the case of primary and lower secondary school, such adjustments are necessary only in the case of a child with severe language and/or communication impairment. If there were no children with such difficulties in the classroom, these adaptations and strategies would not be necessary, and their absence would not represent an obstacle to inclusion. An alternative approach would be to allow observers to assess this item as ’not applicable’ if the observed children do not require any assistance at all in the area of language and communication. Children’s need for support can be assessed through observation and information provided by the PEI (in the Italian context, the PEI is required to report clinical information such as diagnosis and information about children’s functioning in the school context).

A minor issue emerged in indicator 3.3 of the Membership item: “Many books, materials, and pictures displayed in class describe and reflect individual differences in a positive way”. The researchers did not observe the requested material in any of the classes involved. In the ICP interview part, however, teachers reported that this type of material is available but simply not displayed; they usually use it in activities or games aimed at promoting inclusion and belonging. It is possible that displaying this kind of material in the classrooms might be an uncommon practice among teachers; nevertheless, the pilot sample is too narrow to outline any conclusion about this topic.

Another issue regards the ICP interview part; as mentioned above, interviews were carried out with both teachers who were in class during the observation. In indicators 1.1 and 5.3 of the Monitor Children Learning item and 7.1 of the Membership item, teachers’ responses were contradictory; this highlights the importance of confirming the interviewee’s statements by examining documentation or another source of information when the interviewee is uncertain or his or her answers are unclear.

Outcome from the SELFIE interviews

Since the items of the interview were open questions, participants were allowed to produce complex and extended answers; therefore, a categorization of participants’ answer content was necessary. Because the sample is limited, a paper-and-pencil method was used to analyse the content of the interviews. The most relevant and frequent topics for each interview area were selected, and the corresponding labels summarizing the answers produced by the participants were applied. The chosen labels divided by area are reported and described in Appendix 5.

Network collaborations and interactions

The interview contents outline that the collaboration regarding the support of **the use of new technologies** is mainly internal to the school, while not all teachers consider the discussion on new technologies between institutes and external bodies to be a widespread and consolidated procedure.

Participants reported examples of formal and informal **internal** opportunities during which they were able to share successful experiences of new technology application to teaching practice; E (English version): "For *example, we [primary school teachers] and the secondary school both take part in the Coding Unplugged project, which involves other schools of our institute too... However, there's a lot of collaboration between us [teachers]";* I (Italian version): "*Noi [insegnanti della scuola primaria] abbiamo per esempio in comune con la scuola secondaria il Coding Unplugged poi anche con le altre scuole dello stesso istituto comprensivo... Comunque' c'è tanto ricircolo tra di noi di collaborazione*".

Participants answer that the **monitoring** process of the progress in teaching and learning practices with digital and educational technologies is carried out in an informal way and no official tools are employed; E: "*Covid has imposed a change in this [in the use of new technologies]; now there is a continuous exchange of skills and a more widespread use of technologies but there is no formalized monitoring process*"; I: "*Il covid ha imposto un cambiamento in questo [nell'utilizzo delle nuove tecnologie], ora c'è un continuo scambio di competenze e un utilizzo più diffuso delle tecnologie ma non è previsto un momento di monitoraggio formalizzato*".

Infrastructure and equipment

This area is the one that emerges as least problematic for respondents. All participants reported that thanks to **PNRR funds**, schools are well equipped with both devices within the classroom and internet connection that allows them to use the new technologies successfully; E: "*Of course, IWBs are everywhere now; we have interactive screens without a projector; they are in almost all classes, and now with the PNRR this equipment is available in all classes";* I*: "Certo, le LIM ormai sono un po' ovunque, abbiamo gli schermi interattivi senza videoproiettore, sono in quasi tutte le classi e ora con il PNRR completiamo la dotazione in tutte le classi".*

Participants showed satisfaction with the **types** of new technologies available in the school, which is also evident from the previous answer. E: *"We have at least one laptop per class. We have fibre optic* *connections in all schools, for now it is fibre to the cabinet, FTTC, but we already have inside our schools fibre to the home, let's say, FTTH";* I: "*Abbiamo almeno un portatile per classe. Abbiamo la fibra in tutti i plessi, per adesso è una fibra cabinet, FTTC, ma abbiamo già dentro nelle scuole la fibra che arriva in casa diciamo, FTTH*".

The devices are functional, updated and meet the learning and teaching needs for all students (**beneficiaries**); E: "*Yes, we have a laptop in each classroom at least [...] thanks to the funding of specific projects of the Ministry of Education aimed at providing schools resources to acquire digital devices for pupils with disabilities";* I: *"Abbiamo almeno un portatile per classe [...] con i finanziamenti del progetto specifico a livello di ministero per la dotazione dispositivi digitali per gli alunni con disabilità".*

They are all largely satisfied with the technologies that are used with children with special educational needs. All the teachers said that every year, the requests are met, and the technologies available in the school are functional and efficient.

The school also provides devices that students can take home if requested.

Regarding the **technical assistance** service, all respondents noted a lack of a professional figure within the institute who can support teaching by fixing any device malfunctions. However, there is a technician who is not an internal resource of the institute. Everyone noted a slowness of the intervention that pushes teachers to solve the problem with their own resources; E: *"Because there's a collaborator who sometimes is available, however, I know that if a computer breaks down very often it's quicker to take it to a repair shop yourself";* I: *"Perché [c'è] un collaboratore che ogni tanto viene però, solitamente se ci si rompe il computer della classe, molto spesso chiedi assistenza, [ma] fai prima a portarlo tu da qualche parte".*

When asked about **data protection**, many teachers were uncertain whether the school was equipped with some form of data protection tool; E: *"...I don't know if there's this systematic safety thing [data protection] for the whole system...."; I: "...non so se c'è questa cosa [la protezione dei dati] sistematica su tutto...".* The interview content utlined that the school web network is protected by traditional tools, i.e., passwords, firewalls, profanity filter and e-mail filtering.

Regarding the measures introduced by the school to ensure efficient actions derived from blended learning, teachers feel supported not only by colleagues but also by external professionals, such as psychologists. Furthermore, teachers reported that the school has introduced efficient measures to identify students' needs arising from blended learning.

Regarding the **use of personal electronic devices,** there are only a few selected classes where all students can bring their own devices and use them for educational purposes. In other classes, the use of personal devices in class is permitted only if required by the PDP or PEI as a compensatory measure. Furthermore, teachers reported that school spaces are suitable for teaching with digital devices.

Continuous professional development

Regarding continuing professional development, all teachers reported many **possibilities** available for training. The possibilities arise not only from local proposals (municipal projects) or ministerial proposals but also from feedback to the school principal, who uses online forms to collect the training needs of teachers (**how courses are chosen**) E: "*Training courses are often offered. It is the digital animator who requests feedback during meetings or through those famous Google forms...";* I: *" propongono spesso e volentieri dei corsi di formazione. È l'animatore digitale poi tramite interventi durante le riunioni o tramite quei famosi moduli Google [che] chiede dei feedback…*".

The proposals are very broad and include courses for the use of new digital technologies that involve tutoring, workshops, and online courses. Other schools, organizations or institutions propose school training events and projects that, in turn, are directed by the head teacher to the teaching staff. In addition, within the institute there are many opportunities to have a debate with colleagues and to learn the use of new technologies; E: *"Yes, […], for example, today there's the institute teachers meeting... which is divided into groups; everyone can access the areas of interest, i.e., the Coding group, the Psychomotricity group, and the Library group";* I: *"Sì, ad esempio oggi fanno l'interclasse che si suddivide in gruppi, ognuno può accedere alle aree di interesse, cioè il gruppo Coding, il gruppo Psicomotricità, il gruppo Biblioteca".*

Pedagogy: Tools and resources

All participants said they usually look for digital educational resources for teaching (**reasons for search)**; E: *"Often. Yes [I look at digital resources], to design and schedule lessons"* I: *"Spesso. Sì [guardo le risorse digitali], per la progettazione per la programmazione anche delle lezioni.".*

The material is often designed to explain a topic in a way that is understandable to all the children in the class and to adapt the lesson to the students' needs; E: *"I usually look for so much material I don't even* *use it, but I look for different ways to explain the topic";* I: *"Solitamente cerco più materiale che poi magari neanche utilizzo, ma per vedere come l'argomento può essere presentato sotto tante forme".*

The search for digital materials takes place daily, but they are rarely **created from scratch**: E: "*Not much, but I'd like more..."*; I: "Non molto, ma mi piacerebbe di più…". In particular, all teachers said that they look for digital material on a daily basis. At the same time, however, all teachers report that they rarely create original material and that, more often, they try to adapt the one they find on the internet. Digital tools are widely **used within the educational institution** to foster collaboration. In this regard, all teachers reported an overuse of digital technologies for **communications** between colleagues and with external users, i.e., parents; E: "[We always use new technologies for school communications] *that is, through the electronic register, through emails, through the... I mean, let's say it is very effortful...[because we are always available]"*; I: *"[Usiamo sempre le nuove tecnologie per le comunicazioni scolastiche], cioè attraverso il registro elettronico, attraverso le mail, attraverso le… Cioè, risulta molto faticoso [perchè siamo sempre reperibili]",*

Moreover, teachers in the classroom try to use open-source digital resources.

Evaluation practices

In regard to the assessment of skills using digital technologies, teachers attribute to the word "evaluation" mainly the meaning of "grade": for this reason, the answers refer to the fact that in kindergarten and primary school, grades are usually not visible on the electronic register.

Games and quizzes are **used** to provide immediate feedback to students on the correctness of their answer; E: "*Yes, even quizzes. Children also use them during breaktime as a game, sometimes we use them during the Italian lesson, so they practice more"*; I: *"Sì, anche quiz. Lo fanno anche in ricreazione per gioco, a volte li mettiamo durante italiano, così si esercitano di più".*

Teachers think that new **technologies** can encourage students to **improve** their learning and their creativity, but this can only happen in higher levels of education. E: "*(kindergarten teacher) We don't use them much, because I'm speaking personally... I believe that there are other means to encourage students' creativity, using other tools I mean. Nevertheless, you might use technology as well, but only after the creativity comes out, right? In other words, of course, we take technologies into consideration, but we don't start from this. We work* *with young children",* I: *"[Si fa] poco, cioè perché parlo personalmente... Cioè ritengo che ci siano altri mezzi per incoraggiare la creatività degli studenti. Poi si arriva magari a utilizzare la tecnologia, ma dopo che la creatività è venuta fuori, no? Come dire, non è che non si prenda in considerazione. Eh, però non si parte da questo, no? [lavoriamo] con i bimbi piccoli".*

While in primary school, digital technology is used to stimulate creativity in art teaching lessons; E: "We do it [stimulate creativity with new digital technologies] during art lessons: you can show a picture, a painting and children can copy it"; I: "questo qua lo facciamo [stimolare la creatività con le nuove tecnologie digitali] quando c'è non so arte si può far vedere un quadro, un dipinto e lo possono copiare".

The support of the use of digital technologies for children's learning assessment comes mainly from the teachers' training, and for this reason, it is at the discretion of the teacher whether to be supported or not in this area; E: "*The support is definitely there, then it is at your discretion...";* I: *"Il supporto c'è sicuramente… poi è a discrezione, a scelta [dell'insegnante]".*

In general, the representation of all teachers is that digital technologies can improve the learning experience of pupils.

Finally, regarding the enhancement of children's digital skills acquired independently and applied in the school context, there is a difference in the representations of teachers of different levels of education. Kindergarten teachers report that this cannot be done because the children are too young, while the primary school teachers report that often the pupils teach them how to operate a certain device or how to connect it; E: "*They are all very competent and often teach us";* I: *"Tutti, molto tanto competenti e insegnano a noi".*

The answers to the item that asks whether children are allowed to bring their own devices to school outlines some doubts; E: "*Oh no, we can't do this [we can't let them use their technologies]... We know that unfortunately they are young, unfortunately they use them badly";* I: *"Eh questo no, questo non possiamo farlo [non possiamo fargli usare le loro tecnologie… Sappiamo che purtroppo son piccoli, purtroppo le usano male".*

Discussion and conclusion

The aim of the article was to provide some preliminary information on the possible use of the modified versions of ICP and Selfie in Italian schools.

For what concerns the selected parts of ICP and their modifications, the study considered their suitability in describing the concrete ways to implement school inclusion not only in preschool but also in a primary classroom. For SELFIE, a self-evaluation tool for schools created and validated at European level, we proposed an administration method via guided interview in order to collect qualitative data on the actual use of technologies in schools.

Regarding the ICP, the narrowness of the pilot sample does not allow quantitative conclusions about the scores of the single indicators or items; however, it is possible to outline which elements and contents of the instrument were assessed as effective and suitable for use in the Italian context and primary schools. Minor issues with the item content have been identified and reported in the previous paragraph, and changes are proposed as possible solutions.

Having addressed these concerns, the methods of data collection required by the tool (i.e., observation, interview, and analysis of documents) look promising; the observation indicators can give useful information about behaviours, strategies or elements of the environment to be assessed.

The interview questions required the teacher to report precise information about the school routines and procedures, reducing eventual subjective interpretation. The document review indicators clearly outline which information the documents have to provide and the features of the documents to be assessed. As a result, no differences emerged from the two observers' ratings.

The items used in the research take into account several key elements of the implementation of inclusion: the strategies carried out by teachers in the classroom to improve inclusion (Support for Communication, Membership), the structuring of physical environments (Adaptation of Space, Materials and Equipment) and the school's systematic procedures and national school legislation (Family-Professional Partnership, Monitoring Children's Learning).

Overall, the chosen areas of interest allow researchers to provide a picture of some very important, easily observable aspects of inclusive practices implemented in kindergarten and primary schools that may represent a measure of the actual realization of inclusive practices in school routines.

This feature may be considered crucial from a research perspective. The preliminary results of a systematic review of the literature regarding inclusion in schools carried out by Papotti et al. (2023) reveal that much of the literature on inclusion focuses on the analysis of individual variables measured, especially among teachers, such as attitudes and beliefs towards inclusion. From the data collected thus far, it seems that there is little research investigating how these individual variables impact the actual implementation of inclusion in classes and school routines. In future research, ICP scores could be employed as an outcome variable to determine which individual variables impact the effective implementation of inclusion in classroom and school procedures.

The SELFIE tool was first transformed into a semistructured interview.

The tool has proven very useful in capturing teachers' representations of the use of new technologies in various areas of school life. In all areas of SELFIE, which were chosen for the purpose of research, the interview proved to be able to grasp the teachers' representations, and the respondents were able to expand their responses by describing in detail their use of new technologies in teaching practice.

In the first area entitled *Network collaboration and interaction,* respondents reported that new technologies have proved useful for fostering collaboration between colleagues, both for communication and for the transmission of skills. All in all, digital technologies are perceived as a crucial tool for implementing teacher teamwork, which can be considered a cornerstone of school practice (Szymkowiak et al., 2021).

In the area of *Infrastructure and equipmen*t, the interview was useful to grasp the perceptions of teachers. Specifically, all respondents noticed a breakthrough when they had access to PNRR funds. Thanks to these resources, the school was equipped with many new learning technologies, and all students have access to them. The only area considered more critical is technical assistance, judged by all respondents to be very occasional and inefficient. Not receiving technical support could lead teachers to abandon the use of technologies and embrace traditional methods, especially in the case of teachers who perceive themselves as incompetent in the use of new technologies. Regarding the protection of personal data, teachers were not always aware of the data protection tools used in the school digital network even though they were active. Unawareness of the means of data protection could lead to underestimating them and not fully understanding their importance.

In the context of *Continuous professional development*, interviews outlined that teachers are satisfied with the school training offer regarding digital technologies: they reported positive opinions on both the quality and variety of the training proposals. This aspect is also confirmed by the school principal's interview, who reported that he collected every year teachers' training needs, this year, through ad hoc Google questionnaire where teachers can indicate their training needs.

Through the interviews, it was also possible to understand the teachers' representations of *Pedagogy tools and resources*. On the one hand, teachers stated that they usually looked for digital resources for teaching practice; on the other hand, these resources are not intended to be used by students independently. In this regard, the teachers' belief that clearly emerges from the interview content is that digital tools are considered only a support for learning and that the teaching process cannot be carried out through the exclusive use of digital technologies. Furthermore, although this belief is shared by all the teachers interviewed, the contents of the interviews of the kindergarten teachers highlighted an even more cautious attitude towards the use of digital technologies compared to that of the primary school teachers.

With regard to the overuse of communication technology, perhaps this issue should be taken into account by principals by offering explicit family-teachers communication rules in school regulation documents, in order not to overload teachers even in moments of private life. Moreover, teachers who feel invaded by new technologies could develop a negative attitude towards them. Finally, regarding *Evaluation practices with digital technology*, thanks to the interviews, it was possible to understand how the use of digital tools to assess children's skills is represented as a moment of playful exercise, and consequently, the feedback stemming from it is not considered part of the assessment process.

As mentioned above, SELFIE was applied to kindergarten teachers for the first time; in this regard, no issue arose. SELFIE proved to be an effective tool for gathering opinions, beliefs, and representations of teachers at this level of education, and no item content adaptation was necessary.

In general, starting from these preliminary qualitative analyses, we think that the SELFIE tool, translated into an interview, can be a useful tool to collect this type of data and better understand school complexity.

Given the exploratory nature of this pilot study, further steps are necessary to validate the tools, modified through the selection of items, the adjustments made to adapt them to different school levels and the different methods of administration of the SELFIE. As regards the ICP, the instrument must be validated, as well as through a construct validity analysis of the selected parts, also with a reliability analysis, through the comparison of the quantitative scores with the outcome of a self-report tool, in our project the Italian version of the Qu!S-S. Moreover, it should be interesting to compare the ICP results with the teachers attitudes toward inclusion and their self-efficacy, in order to understand how behaviour intentions and self-perception can be predictive of observable ways of realizing inclusion.

For what concerns SELFIE, it has been already validated and used as self-evaluation instrument in European and Italian research. The qualitative analysis of our study will be used as a basis for better understanding how teachers already use technology in their classes, also for inclusive purposes, and what their expectations are towards the PNRR RAISE project, within which our research fits. Furthermore, a comparison with measures of teachers' self-efficacy in using technology could provide further information on the suitability of selected parts of the instrument.

However, caution is required interpreting data from this pilot study, because of the very limited sample size. An expansion of the sample and the results of a standardization process will clarify whether the modified tools can be useful for evaluating the concrete results of inclusive processes.

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References

Ackah-Jnr, F.R. & Danso, J.B. (2019). Examining the physical environment of Ghanaian inclusive schools: how accessible, suitable and appropriate is such environment for inclusive education?. *International Journal of Inclusive Education*, *23*(2) DOI: 10.1080/13603116.2018.1427808.

Bocconi, S., Panesi, S., & Kampylis, P. (2020). Fostering the digital competence of schools: piloting SELFIE in the Italian education context. *IEEE Revista Iberoamericana de Tecnologias del Aprendizaj*e, 15(4), 417-425. DOI: 10.1109/RITA.2020.3033228.

Castaño Muñoz, J., Pokropek, A., & Weikert García, L. (2022). For to all those who have, will more be given? Evidence from the adoption of the SELFIE tool for the digital capacity of schools in Spain. *British Journal of Educational Technology*, *53*(6), 1937-1955. DOI: 10.1111/bjet.13222.

Cheung A.K.C. & Slavin R.E. (2013), Effects of Educational Technology Applications on Reading Outcomes for Struggling Readers: A Best-Evidence Synthesis, *Reading Research Quarterly*, 48(3), 277-299, DOI: 10.1002/rrq.50.

Costa, P., Castano-Munoz, J., & Kampylis, P. (2021). Capturing schools' digital capacity: Psychometric analyses of the SELFIE self-reflection tool. *Computers & Education*, 162, 104080. DOI: 10.1016/j.compedu.2020.104080.

De Boer, A., & Munde, V. S. (2015). Parental attitudes toward the inclusion of children with profound intellectual and multiple disabilities in general primary education in the Netherlands. *The Journal of Special Education*, 49(3), 179-187. DOI: 10.1177/0022466914554297.

De Boer, A., Pijl, S. J., & Minnaert, A. (2010). Attitudes of parents towards inclusive education: A review of the literature. *European Journal of Special Needs Education*, *25*(2), 165-181.DOI: 10.1080/08856251003658694.

DfES (2001). *Special Educational Needs Code of Practice*. London: HMSO. https://www.gov.uk/government/publications/special-educational-needs-sen-code-of-practice.

European Commission. (2018). *Digital education action plan*. https://education.ec.europa.eu/focus-topics/digital-education/action-plan.

Fage C, Consel CY, Balland E, Etchegoyhen K, Amestoy A, Bouvard M., & Sauzéon H. (2018) Tablet Apps to Support First School Inclusion of Children With Autism Spectrum Disorders (ASD) in Mainstream Classrooms: A Pilot Study. *Frontiers in Psychology*, 9, 2020. DOI: 10.3389/fpsyg.2018.02020.

Fogarolo, F. (2014). *Costruire il Piano Didattico Personalizzato: Indicazioni e strumenti per una stesura rapida ed efficace*. Edizioni Centro Studi Erickson.

Fyssa, A., & Vlachou, A: (2015). Assessment of Quality for Inclusive Programs in Greek Preschool Classrooms. Journal of Early Intervention, 1-18. DOI: 10.1177/1053815115606908.

Glazzard, J. (2011). Perceptions of the barriers to effective inclusion in one primary school: Voices of teachers and teaching assistants. *Support for Learning*, 26(2), 56-63. DOI: 10.1111/ j.1467-9604.2011.01478.x.

Heyder, A., Südkamp, A., & Steinmayr, R. (2020). How are teachers' attitudes toward inclusion related to the social-emotional school experiences of students with and without special educational needs?. *Learning and Individual Differences*, 77, 1-11. DOI: 10.1016/j.lindif. 2019.101776.

Ianes, D., & Cramerotti, S. (2009). *Il piano educativo individualizzato. Progetto di vita* (Vol. 1). Erickson.

Ianes, D., & Cramerotti, S. (2016). *Dirigere scuole inclusive: Strumenti e risorse per il Dirigente scolastico*. Erickson.

Ianes, D., Cramerotti, S., & Fogarolo, F. (2021). *Il nuovo PEI in prospettiva bio-psico-sociale ed ecologica.* Erickson.

IDEA (2006) U.S. Department of Education. http://www.ideadata.org/PartBReport.asp.

Kaldi, S., Tzika V., & Xafakos E. (2018). 'Professional Cooperation in Primary School Classes: General Education Teacher and Specialization Teacher Views'. In *Proceedings of the Sixth International Conference on Technological Ecosystems for Enhancing Multiculturality*, 617-23. Salamanca Spain: ACM. DOI: 10.1145/3284179.3284287.

Kiel, E., Braun, A., Muckenthaler, M., Heimlich, U., & Weiss, S. (2020). Self-efficacy of teachers in inclusive classes. How do teachers with different self-efficacy beliefs differ in implementing inclusion?. *European Journal of Special Needs Education*, 35(3), 333-349. DOI: 10.1080/08856257.2019.1683685.

Laws, G., & Kelly, E. (2005). The attitudes and friendship intentions of children in United Kingdom mainstream schools towards peers with physical or intellectual disabilities. International *Journal of Disability, Development and Education*, 52(2), 79-99. DOI: 10.1080/10349120500086298

Maciver, D., Rutherford, M., Arakelyan, S., Kramer, J. M., Richmond, J., Todorova, L., Forsyth, K. (2019). Participation of children with disabilities in school: A realist systematic review of psychosocial and environmental factors. *PloS one*, 14(1), e0210511. DOI: 10.1371/journal.pone.0210511.

Mahat, M. (2008). The Development of a Psychometrically-Sound Instrument to Measure Teachers' Multidimensional Attitudes toward Inclusive Education. *International Journal of Special Education,* 23 (1), 82-92.

Nilholm, C. (2020). Research about inclusive education in 2020 - How can we improve our theories in order to change practice?. *European Journal of Special Needs Education*, 1-13. DOI: 10.1080/08856257.2020.1754547.

Nota, L., Santilli, S., & Soresi, S. (2015). Dare "Valore" All'inclusione: Procedure e Strumenti Di Analisi e Verifica [Giving "Value" to Inclusion: Procedures and Tools of Analysis and Assessment]. In: L. Nota, M. C. Ginevra, and S. Soresi (Eds.). *Tutti Diversamente a Scuola. L'inclusione Scolastica Nel XXI Secolo [Everybody at School, Differently. School Inclusion in the 21st Century]*, 185-222. Padua, Italy: CLEUP.

Panesi, S., Bocconi, S., & Ferlino, L. (2020), Promoting Students' Well-Being and Inclusion in Schools Through Digital Technologies: Perceptions of Students, Teachers, and School Leaders in Italy Expressed Through SELFIE Piloting Activities, *Frontiers in Psychology*, 11, 1563. DOI: 10.3389/fpsyg.2020.01563.

Papotti, N., Zanobini, M., Muscella, L., (2023), The quality of school inclusion from the QU!S-S Model, poster at the International Workshop - Child Well-Being in Formal and Informal Care and Education Contexts: New Perspectives On Intervention, Milan, October 27th.

Parsons S., Yuill N., Good J. & Brosnan M. (2020) 'Whose agenda? Who knows best? Whose voice?' Co-creating a technology research roadmap with autism stakeholders, *Disability & Society*, *35*(2), 201-234, DOI: 10.1080/09687599.2019.1624152.

Schurig, M., Weiß, S., Kiel, E:, Heimlich, U., & Gebhardt M. (2020). Assessment of the Quality of Inclusive Schools A Short Form of the Quality Scale of Inclusive School Development (QU!S-S) - Reliability, Factorial Structure and Measurement Invariance. *International Journal of Inclusive Education,* December, 1-16. DOI: 10.1080/13603116.2020.1862405.

Soukakou, E. (2012). Measuring Quality in Inclusive Preschool Classrooms: Development and Validation of the Inclusive Classroom Profile (ICP). *Early Childhood Research Quarterly, 27*(3), 478-88. DOI: 10.1016/j.ecresq.2011.12.003.

Soukakou, E. P. (2016), *The Inclusive Classroom Profile (ICPTM) Manual*, Research Edition. Baltimore, MD: Brookes.

Soukakou, E.P. & Sylva, K. (2010). Developing Instruments for Assessing 'Difficult to Measure' Dimensions of Quality in Early Childhood Practice. In: G. Walford, E. Tucker, & M. Viswanathan (Eds). *The SAGE Handbook of Measurement.* SAGE Publications Ltd, London. DOI: 10.4135/9781446268230.n5.

Szymkowiak, A., Melović, B., Dabić, M., Jeganathan, K., & Kundi, G. S. (2021). Information technology and Gen Z: The role of teachers, the internet, and technology in the education of young people. *Technology in Society*, *65*, 101565. DOI: 10.1016/j.techsoc.2021.101565.

Van Steen, T., & Wilson, C. (2020). Individual and cultural factors in teachers' attitudes towards inclusion: A meta-analysis. *Teaching and teacher Education*, 95, 103127. DOI: 10.1016/j.tate.2020.103127.

Vlachou, A., (2004) Education and inclusive policy-making: implications for research and practice. *International Journal of Inclusive Education*, *8*(1), 3-21, DOI: 10.1080/1360311032000139449.

Woodgate, R., Gonzalez, M., Demczuk, L., Snow, W., Barriage, S., & Kirk, S. (2019). How do peers promote social inclusion of children with disabilities? A mixed-methods systematic review. Disability and Rehabilitation, 42(18), 2553-2579. DOI: 10.1080/09638288. 2018.1561955.

Zanobini, M., & Viterbori, P. (2022). Students' well-being and attitudes towards inclusion. *European Journal of Special Needs Education*, 37(4), 679-689.

Zanobini, M., Chiorri, C., & Viterbori, P. (2024). Psychometric properties of the Italian adaptation of the short form of the Quality Scale of Inclusive School Development (QU!-SS). *International Journal of Inclusive Education*, 1-17.

Zanobini, M., Viterbori, P., Garello, V., & Camba, R. (2018). Parental satisfaction with disabled children's school inclusion in Italy. *European Journal of Special Needs Education*, 33(5), 597-614.

Appendix

Appendix 1 - List and brief description of the ICP items used in the present research

Item	Description
Adaptation of spaces, material and equipment	It assesses the adaptation carried out by the adults to classrooms' spaces, environment and furniture to improve the accessibility and participation of all pupils. The indicators included in this item take into account the accessibility of classroom areas and materials and the support strategies provided by the teachers to promote the independent use of classroom materials and equipment.
Membership	It assesses the extent to which children are involved in the classroom daily life and routines. The indicators of these items are, for example, the presence of overt bullying behaviours ignored by teachers or the organisation of activities specifically aimed at promoting the understanding of individual differences.
Support for communication	It is aimed at analysing teachers' strategies intended to create opportunities for communication between the target children and their classmates. The indicators of this item consider, for example, the use of communication strategies (e.g. modelling and prompting) aimed at improving language skills and fostering communication with classmates.
Adaptation of group activities	It takes into consideration the strategies carried out by the adults to include and support target children during group activities, for example, by positioning a child with visual impairment in front of the group and supporting his engagement in the activity.
Family-professional partnerships	It assesses the quality of the communication between children's families and the school personnel. The indicators of this item take into account, for example, the written policies and procedures of the school, the opportunity for the families to provide feedback about the school services, and the organization of activities aimed at building and strengthening an inclusive community.
Monitoring children's learning	This item is based, for the most part, on the review of the school documents that define pedagogical objectives, activity planning and the assessment of children's learning outcomes.

Appendix 2 - *List and brief description of SELFIE questionnaire areas used in the present research*

AREA	SELFIE brief description of items' content European Commission, 2018
Collaboration & Networking	This area relates to measures that schools may consider supporting a culture of collaboration and communication for sharing experiences and learn effectively within and beyond the organisational boundaries. **(EU Commission, 2018, pag. 5)**.
Infrastructure and Equipment	This area is about having adequate, reliable and secure infrastructure (such as equipment, software, information resources, internet connection, technical support or physical space). This can enable and facilitate innovative teaching, learning and assessment practices. **(EU Commission, 2018, pag. 6).**
Continuing Professional Development	This area looks at whether the school facilitates and invests in the continuing professional development (CPD) of its staff at all levels. CPD can support the development and integration of new modes of teaching and learning that harness digital technologies to achieve better learning outcomes. **(EU Commission, 2018, pag. 8)**
Teaching and Learning Part 1	Using digital technologies for more effective learning and updating and innovating teaching and learning practices. **(EU Commission, 2018, pag. 10)**
Assessment practices	This area relates to measures that schools may consider to gradually shift the balance from traditional assessment towards a more comprehensive repertoire of practices. This repertoire could include technology-enabled assessment practices that are student-centred, personalised and authentic. **(EU Commission, 2018, pag. 12).**

Appendix 3 - *List of the adjustments applied to the kindergarten version of the ICP needed to adapt*

Item indicator	Indicator content	Examples - Original version	Examples - Primary and middle school version
Adaptation of spaces, material and equipment Indicator 7.1	Adults intentionally organize the physical space and materials throughout the day to accommodate individual needs and encourage peer interaction	Adult clear toys from floor space to support easy access to a particular child"	"Adults move materials, objects, or pieces of furniture to support easy access to a particular child".
Membership Indicator 3.1	When adults provide opportunities for children to assume social roles and responsibilities	Helping at a snack time, cleaning up toys after playtime, setting up table for activity	Helping the teacher, tiding up the classroom, setting up table for activity
Membership Indicator 3.4	When children's photographs or work is displayed in the classroom (e.g.), examples completed by children with and without disabilities are present	e.g. children's work pictures displayed on the wall, children's or family photograph albums	e.g. posters, art works, poems
Support for communication Indicator 1.1	Adults ignore children's attempts to communicate or make no time and effort to understand them	e.g. Adult ignores child's persistent pointing to a specific toy, child is left crying for a long period of time	e.g. Adult ignores child's persistent pointing to a specific object, child is left crying or in overt distress for a long period of time
Support for communication Indicator 3.3	Criteria for Rating indicators Score YES if at least one of the following oral strategies is used at least occasionally with the majority of children to encourage them, facilitate, or model language:	Repetition: e.g. adults say to child: "do you hear the doggie? Hear the doggie? Doggie!" Expanding: e.g. child say "doggie" and adult expands, "Yes, that is a big brown doggie" e.g. child points to a cookie saying "cookie" and adult extends with, "this is a cookie	Repetition: e.g. adult say to child: "Can you hear the drum? Listen to the drum! Expanding: e.g. child says "sheet" and adult expands, "Yes, that is a squared sheet" e.g. child points to a notebook saying "notebook" and adult extends with: "this is a notebook"
Adaptation of group activities	Criteria for Rating indicators - introduction	Examples include circle time, storybook reading, group cooking, music and art activities	Examples include group activities, reading, art, musical class activities
Adaptation of group activities	Children are excluded from all planned group activities	e.g. children always pulled out during group	e.g. children always pulled out during

Indicator 1.1		story time, circle time, snack time, and outdoor play	group reading activities, break time, group activies and outdoor activities
Adaptation of group activities 3.2	Adults make effort to encourage child participation, although children might not be consistently or actively engaged for the whole time	e.g. adult models song movements for child	e.g. The adult re-explains the instructions of a group activity individually to a student
Adaptation of group activities 3.3	Children interact in compliance with the overall demands of the group activity	e.g. child attends quietly to a story time	e.g. child attends quietly to a group activity

Appendix 4 - *This table summarizes the modification carried out to the Selfie Questionnaire. The column "Type of modification" shows the 4 categories of modification that have been applied to the original version of the Selfie. The "Questionnaire item example" column displays an example of the content of an item of the original questionnaire version; in the "Interview - item example" column the modified item content of the interview version is reported. The "Interview-additional information" and "Interview probing questions" column shows respectively the additional information or question that have been reported on the interviewer form. The Item column reports the code of single items to which a type of modification has been applied.*

Modification Category	Questionnaire item example	Interview item example	Interview additional information/ probing questions	Item
1. From statement to question	In our school, physical spaces support teaching and learning with digital technologies	In your school, do physical spaces support teaching and learning with digital technologies?		All
2. Criteria definition	I create digital resources to support my teaching	How often do you create digital resources to support your teaching practice?		C3, C13 C15 C16 E1 E2 E3 E4 E5, G1 G3 G5 G6 G7 G8 G9 G10
3. Optional additional information	In our school, the digital infrastructure supports teaching and learning with digital technologies	Does the digital infrastructure of your school support teaching and learning with digital technologies?	Digital infrastructure refers to the set of digital technologies available in the school for teaching and learning. Ex: internet connection, IWBs or digital equipment for the classroom, digital resources, software...	C1, C7 C14 E5 G1 G3 G5 G6 G8 G9 G10
4. Optional question	In our school, we review our progress in teaching and learning with digital technologies	In your school, do you monitor your progress in teaching and learning practices with digital and educational technologies?	How does the monitoring take place? How often?	B1 B2, B3 B4 C2 C5 C7 C8 C10 C11 C12 C15 C16 D1 D2 D3 G1 G3 G5 G6 G7 G8 G9 G10

Appendix 5 - *the areas identified in separate paragraphs are described in each of which the labels of the themes categorized in each area are shown in bold*

Network collaborations and interactions

- Internal/external

The school uses digital technologies for internal purposes or to facilitate partnerships with other organizations

- Activities

Areas of collaboration between schools and organizations aimed at supporting the use of digital technologies

- Monitoring

How progress in teaching and learning practices is monitored with digital and educational technologies

Infrastructure and equipment

- PNRR

The way schools managed to find funding to buy digital teaching equipment

- Types

The types of digital equipment for teaching that are present within the institute

- Beneficiaries

Those who use digital technologies for teaching

- Technical assistance

Whether a technician is present within the school and how the digital devices are repaired within the school

- Data protection

Which data protection systems are applied within the school

- Use of your electronic devices

How students use their own devices at school

Continuous professional development

- Possibilities

Digital technology training opportunities for teachers

- How training is chosen

How teachers decide which training courses to attend.

Pedagogy: Tools and resources

- Reasons for search

The reasons why teachers look for online digital resources for teaching

- Creation from scratch

The reasons why teachers create their own digital materials from scratch

- Use within the class

How teachers use new technologies in their daily work

Evaluation practices with digital technology

- Technology in the assessment process

How teachers use the new technologies for the student evaluation process

- Technology that improves

How new technologies are used in teaching practice to improve the learning experience

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