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Time of Wisdom and time for Wisdom. The role of time perspective on wisdom in old age

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Abstract

Introduction: Wisdom was defined as a deep knowledge about the most relevant questions of life. Other theoretical perspectives maintain that wisdom is related also to the development of post-formal dialectical thinking and to the ability in managing the uncertainty of the future. Several studies have shown that wisdom is related to high level of psychological well-being in old age.

This study explored the relationships between wisdom and time perspective in the third and fourth age, after controlling for age, gender and level of education as structural variables.

Method: 155 subjects (m. age: 68.69; 67% females and 33% males) filled in the WITHAQ questionnaire (Moraitou & Efklides, 2013) and the S-ZTPI questionnaire (Carelli et al., 2011).

Results: Positive correlations emerged between wisdom as post-formal thinking and future positive, negative correlation with present fatalistic. Wisdom as pragmatics of life is positively correlated with past positive and future positive, while wisdom as awareness of future uncertainty show positive correlations with past negative and past positive, future negative and future positive. Three hierarchical regression model that posited each of them a dimension of wisdom as dependent variable highlights time perspective as significant, positive contributor to them.

Conclusions: The study highlights the relevance of time perspective for wisdom, opening new interesting paths of both research and interventions aimed at a better comprehension of the mechanisms that link the cognitive and affective relation with time in old age with the unfolding of wisdom in its specific dimensions and at translating these results into concrete therapeutic interventions.

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1.Introduction

1.1 Wisdom, a multidimensional construct relevant for a positive aging

Wisdom has been a topic of discussion for many centuries and in many cultures. In fact, the Latin philosophers Seneca (4 BC-65) and Cicero (107-43 BC) were among the first western thinkers to highlight this approach to reality that expresses itself and is exercised in particular as

a form of profound reflection on the most relevant ethical-moral issues of the human existence. In the Old Testament (*Ecclesiaste*, P3, 13-18) wisdom is regarded as a good heredity, and an excellent science that guide our life. In not western cultures several reflections about wisdom has been developed, eg. by Buddhist (e.g. the concept of *prajna*) and Taoist thought.

Only recently, however, has wisdom become the object of attention and study by psychological science, until it has been recognized by Positive Psychology as an authentic "strength" (Peterson & Seligmann, 2004). Positive Psychology, a recent area of research (Seligman & Csikszentmihalyi, 2000) focus its attention on individual and social resources, instead on diseases and maladjustment, and identify a set of strengths that pertain both to individuals and communities. As stated Peterson & Seligman (2004), character strengths are defined as "the psychological ingredients (processes or mechanisms) that define the virtues, that are the core characteristics valued by moral philosophers and religious thinkers" (p. 13). They go on to indicate that the virtue of wisdom can be achieved through such strengths as creativity, curiosity, love of learning, open mindedness, and heaving a "big picture" on life. It is with the start of research on the characteristics of psychological and psychosocial functioning in the old age (Birren & Fischer, 1990; Rowe & Khan, 1997) associated with positive aging that the theme of wisdom has experienced a progressive expansion at the level of theoretical conceptualization and speculation on its nature, characteristics and evolution over time, in addition to its relationships with other dimensions of human functioning, such as perceived well-being (Ryan & Deci, 2001; Ryff & Singer, 2008), having been associated with mature age for centuries.

The research conducted to date in this field has framed wisdom within different perspectives and theorizations, some of which have privileged the emotional-affective dimension, others instead the cognitive dimension, and still the expert and pragmatic competence of life. The perspective elaborated by Baltes (1990) and Baltes & Smith (2008) can be counted as one of the most relevant contributions to the definition of wisdom. Starting from a model of human development that extends over the entire life span, Baltes argues that the old age is characterized by the in-depth elaboration of the life experience thanks to the development of crystallized intelligence, which reaches its peak as functioning in the last decades of life. Through this elaboration, which does not happen in all people, the experiences gained in life on a personal and professional level become "expert knowledge of the pragmatics of life", that is, ability to navigate with experience difficult, complex situations, often characterized by unpredictability and that require ethical-moral judgments. This model, defined as "the Berlin wisdom paradigm" defines wisdom as a process that is composed of five factors: 1) factual and strategic knowledge about the fundamental pragmatics of life; 2) strategic knowledge about the fundamental pragmatics of life; 3) knowledge about the contexts of life and how these change over time; 4)

awareness of relativism of values and goals; 5) knowledge about the fundamental uncertainties of life and ways to management. Taken together they constitute an integrated and complex system of expert knowledge. But, for the wisdom paradigm, simply getting older is not sufficient condition for wisdom. Together with intelligence, other factors during life such as psychosocial characteristics, life history factors, openess to experience, generativity, cognitive style, contact with excellent mentors, and some exposure to structured and critical life events experiences all they concur to the unfolding of wisdom.

Dittmann-Kholi & Baltes (1990) approached wisdom as a form of advanced cognitive functioning and intellectual growth; wisdom in this perspective corresponds to an expert knowledge in the fundamental pragmatics of life that permits insights, judgments and advice about complex and uncertain matters. The fundamental pragmatics of life refers to questions concerning life management, life crucial decisions, life biography. Accumulation and stratification among life of experiences and professional expertise allows the old people to re-elaborate them in depth, acquiring a rich set of factual and procedural knowledge about the world and enabling them to give mature advice.

As part of a theoretical framework of wisdom as an expression of high cognitive skills, some scholars have referred to the model of cognitive development carried out by the neo-Piagetian school (Commons & Ross, 2008; Efklides, 2008; Labouvie-vief, 2000, 2015). This model maintains that the development of reasoning does not stop at the stage of formal operations, as Piaget (1972) had hypothesized, but continues through a further, defined stage of post-formal dialectical operations, characterized by an integrative logic capable of reaching innovative synthesis or otherwise constructive of opposites. According to Labouvie-vief (2000), the achievement of post-formal dialectical operations leads to a deep awareness of the complexity of society-related issues, leading to a better ability to successfully deal with life's dilemmas (moral, bioethics, socio-political). Kramer (2000), always within the post-Piagetian cognitive perspective, hypothesizes that the achievement of post-formal dialectical thinking leads the person to an increased awareness of the relativity of knowledge and to a better constructive and integrative recomposition of conflicts.

Several authors define wisdom not from a cognitive point of view, but instead as personality dimension. Ardelt (2003) adopts this perspective, referring to personality psychology and personality development perspectives. Indeed Ardelt (2004) defines wisdom as an integration of cognitive (the desire to understand the truth), reflective (taking multiple perspectives on an issue or a problem) and affective (empathy) personality characteristics, instead of psychological processes, as stated by Baltes et al. (1990, 2008). Webster (2007) considers wisdom as the

competence in, intention to, and application of critical life experiences to facilitate the optimal development of self and others.

Kekes (1983) maintains that wisdom requires interpretative, rather than descriptive knowledge, that is related to the ability to discover a significance of life events and a search for a deep meaning of these events. The wise person, in this perspective, when important life events occur, do not ask him/her self how it happen, but instead "what is the meaning of this event"? The post-Piagetian cognitive theoretical perspective was adopted by Efklides & Moraitou (2012), which define wisdom as a specific form of thought characterized by three interconnected dimensions: integrated dialectical thinking; practical wisdom; awareness of life uncertainty. According to the authors, the achievement of post-formal dialectical thinking represents a key element in the possibility of expressing wisdom since it is through this cognitive process that the person manages and approach the relevant issues in a complex way, especially if they are ethical-moral in nature, which require an integrated vision of the factors involved and the ability to bring out a new and original approach to their solution that is able to take into account the different elements that constitute the problem or dilemma. In the post-Piagetian theoretical perspective, the dimension of post-formal dialectical operations follows at the stage of formal operations, that occurs in the late adolescent phase, indicating human development does not stop at the end of adolescence, but continues into adulthood and old age, as argued by life-time perspective theorists such as Baltes (see above).

Regarding the relationships between wisdom and structural variables such as gender, or level of education, research has not come up with clear results. Maraitou & Efklides (2012) highlighted a significant difference in the "uncertainty of the future" dimension, in favour of men, providing as an explanation the greater tendency towards anxiety and negative emotionality of women than men. Ardelt (2009), having included empathy in the construct of wisdom, was able to verify that this is a quality more present in women. However, on a general level, the differences between women and men on wisdom seem little evident, except for the dimension of empathy and compassion (Aldwin, 2009). The cultural-school education level appears to affect wisdom, but in an unexpected direction (Moraitou & Efklides, 2012): a lower level of education corresponds to greater wisdom understood as knowledge of the pragmatics of life and awareness of the uncertainty of the future; on the other hand, no relationship seems to exist with post-formal dialectical thought. However, further studies are needed to better clarify the role of school education on wisdom.

An area of study which is still little explored by research is the relationship between temporal perspective and wisdom. The relationship that humans establishes with time (its cognitive,

represented extension, coherence and density, see Hoornaert, 1973; lived, that is the inner emotional experience of time, near to a phenomenological perspective, see Minkowski,1971) is in fact of fundamental importance for their psycho-social functioning (Stolarski et al., 2015; Zimbardo, 1999); the time perspective in particular represents one of the central dimensions studied in recent decades. Research that delves into the role of time perspective in wisdom could help enrich the knowledge of factors involved in the unfolding of wisdom.

1.2 Time perspective and its role in positive functioning in old age

The relevance of the way in which people live and represent time to themselves in its three dimensions of past, present and future was highlighted in the early twentieth century. Frank (1939) was the first scholar to introduce the concept of time perspective, which he defined as "the totality of a person's views of his or her psychological future and psychological past exiting at a given time". Lewin (1943), introducing the concept of "total temporal perspective" underlined how the morale of a person depended not only on his/her past (as psychoanalysis claimed), but also on the way of representing the future in a precise moment of his/her existence. Therefore, temporality came to be defined as a complex psychological field containing simultaneously the three temporal dimensions, which, according to Lewin, were not in a sequential, but in a correlative relationship and in reciprocal interaction. In other words, according to the scholar, the way in which the past was processed influenced the way of thinking about oneself in the present, one's experiences and influenced the anticipation of the future. At the same time, the experience linked to the present was able to influence in a decisive way the expectations and representations of the future.

Subsequently, in the wake of the perspective opened by Lewin et al. (1999) has deepened the construct of time perspective, defined it as "the outcome of a process whereby the continual flows of personal and social experiences are decomposed or allocated into temporal categories" and as "the often nonconscious process whereby the continual flows of personal and social experiences are assigned to temporal frames, that help to give order, coherence and meanings to those events" (p. 1272). For Zimbardo & Boyd time perspective is constituted by five dimensions: past negative, a negative view of the past, with traumatic or critical events not yet elaborated; past positive, a positive view of the past, with early experiences characterized by warmth and trust; present hedonistic, the preference for present pleasure, activities and persons that can bring satisfaction, with little concern for future consequences; present fatalistic, the perception of the present as out of personal control; future, a constructive representation of the future, with projects and goals, and the ability to plan for their achievement.

Recently Carelli et al. (2011) have argued that a single dimension of the future, as it has been operationalized by Zimbardo & Boyd, is not sufficient to capture all the emotional and cognitive nuances related to this time, in addition to constituting a lack of balance with the two other dimensions, the past and the present, both consisting of two components. For this reason, they have proposed a scale that measures the temporal perspective that welcomes the five dimensions of the scale elaborated by Zimbardo, to which is added a further scale of the future, defined the positive future and the negative future (the latter the vision of the future as threatening, empty or bearer of anxiety). A subsequent study conducted by Carelli & Olsson (2015) highlighted the existence of neural correlates of time perspective dimensions, that is differences in time orientation were associated with selective neural correlates, with distinct areas of neural activation for the three time frames of past, present and future, adding value to the theoretical perspective of the "embodied cognition" (Gallese, 2018; Pennisi, 2016; Shapiro, 2019; Tillas, 2016; Wilson & Golonka, 2013), which asserts that the perception of time (past, present and future) is embodied in the subject (Kranjec & McDonough, 2011; Nather et al., 2011; Wilson, 2002). The profound experience of human temporality understood as a global quality that seeks to overcome the dichotomy between cognitively represented time and emotionally lived time is placed at the center of phenomenological reflection (Fraisse, 1928; Husserl, 1928), where time constitutes a fundamental structure of the lived world. Following the reflection of Minkowski (1971), on the close relationship between the "projection of man in time" and the memory of the past and the expectation of the future, this perspective places the temporal sentiment and human motivational tension towards a purpose at the center of his investigation, emphasizing his outlook towards the future.

Time perspective has shown, in a robust corpus of studies, its centrality in human development in practically every area of functioning and in every stage of life. In young age, the relationship between present-oriented time perspective and involvement in health risks is well established (e.g Henson et al., 2006), while a preferential focus on future time that protects against health risks and favors the adoption of a healthy lifestyle. Time perspective influences the relationship with the social context and civic and political participation in young people (Zambianchi, 2016), the employment status (Parola & Donsì, 2019), while an emerging problem such as overexposure to the Internet (Internet addiction) is often associated with a temporal perspective crushed on the present and a negative past (Chittaro & Vianello, 2013; Przepiorka & Blachnio, 2016). Time perspective influences also the tendency to adopt behaviors aimed at safeguarding the environment (Milfont & Christophe, 2015; Milfont & Gouveia, 2006) and the adoption of specific moral values (Nordhall & Agerstrom, 2013).

The evolution of temporality and the characteristics of the time perspective in the elderly have been deepened and framed within different theoretical perspectives. The theory of Socio-emotional Selection (Carstensen, 1999, 2006) maintains that with the passing of the ages of life both the objectives pursued by individuals and their vision of the future change, with strong reverberations on the level of psychological well-being and life priority. While indeed in the youth the future appears broad and open, encouraging the search for objectives related to the profession and the widening of the life context, in the elderly the future is perceived as more limited, favouring a centering on emotional objectives and close and well-known relationships, which would increase the psychological well-being of the elderly person.

With a different view of temporality in old age, the model developed by Kahana et al. (2014) emphasizes the role of future time, as positive time open to planning, for psychological well-being and, in a general sense, for positive aging. As the authors argue, the possibility of seeing the future still open to planning in the future favors the adoption of healthy lifestyles such as regular and constant physical activity. The role of future time perspective in old age was found in a longitudinal study on psychological factors that predict longevity (Fry & Debats, 2011). People who at the time of the first evaluation had high scores on the future, perceived a sense of connection and continuity between today and the medium to long term future, had a much higher probability of being alive and in good health seven years later.

Time perspective is relevant also in relation to the attitudes and adoption of information technologies: a cross-cultural study (Zambianchi et al., 2019) has highlighted how a high negative past, a fatalistic perception of the present and a negative representation of the future reduce the propensity of the elderly to learn the use of information technology, while the ability to enjoy the present time and positive future planning favour positive attitudes of openness to new digital technologies. Several studies have deepened the role played by time perspective on the psychological and social well-being of older people. Coudìn & Lima (2011) in a study that analysed data coming from the European Social Survey (ESS3-2006), found that a positive and motivating view of the future, although more limited than in young people, is associated with a better well-being and the presence of social goals. Palgi & Shmotkin (2010) in a study on a group of very old Israeli people found that having a balanced temporal trajectory, characterized by a positive past, a satisfactory present and a future still open even if in its limitation favored the physical well-being, a minor depressive experience and a perception of greater health. Gabrian et al. (2017), in a review on the association between time perception and subjective well-being in middle and late adulthood highlight that subjective time concepts are consistent predictors of well-being and health. A positive subjective time perception (here defined as an expanded view of the future, a focus on positive past and future life content) were associated with higher

well-being and better psychological health. Other lines of research involving the temporality in old age evidenced its relevance for recovering from diseases (Di Nuovo et al., 2015; Martino et al., 2019) and for cognitive assessment (Bonnet et al., 2019; Merlo, 2019).

Some recent studies have investigated the role of temporality in wisdom in different ages of life, hypothesizing that wisdom may be a feature not only of old age, but also of earlier ages of life. Webster (2006) points out that people with wisdom are capable of analyzing past events, living in the present and making plans for the future. They are also able to learn from past experiences and have an expansive and optimistic future orientation. Another study (Webster et al., 2014) verified the importance of having a balanced time perspective for wisdom and well-being, confirming the hypothesis that a balanced time perspective, with good past experiences, the ability to enjoy and savouring present experiences (especially on an emotional and friendly level) together with a positive vision of the future is associated with greater wisdom and higher well-being. A recent study (Timoszyk-Tomczak & Szcześniak, 2020) examined in a group of young people the relationship between the time perspective in the five-dimensional model proposed by Zimbardo (1999) and wisdom defined by the following factors predicted by the Ardelt model (2004), namely cognitive, reflective and affective. Results indicate that the negative past and the fatalistic present represent critical and unfavourable times for the emergence of wisdom in all three dimensions, while the hedonistic present and the future are positively associated respectively with reflective wisdom and cognitive wisdom.

The knowledge of the relationships between time perspective in its six-dimension construct, and wisdom conceptualized as pragmatic competence, as integrated post-formal dialectical thinking and awareness of the uncertainty of the future has not yet been explored and for this reason it could contribute to increasing knowledge about the relationship between time lived and represented and the manifestation of wisdom in its various components in old age.

1.3 Objectives of the study

The study has posited the following objectives and test the following hypotheses:

- Evaluation of the psychometrics characteristics of WITHAQ questionnaire in a sample of Italian old people;

- Evaluation of the characteristics of time perspective and level of wisdom of the sample;

- Evaluation of the presence of differences for age, gender and level of school education for time perspective and for wisdom. Age was inserted as continuous variable;
- Analysis of the correlations between time perspective and wisdom and of the contribution offered by the time perspective to the dimensions of wisdom. Positive correlations are

hypothesized between the positive past and the positive future with wisdom understood as pragmatic competence and wisdom understood as the use of post-formal dialectical thought; negative correlations between wisdom as a pragmatic competence and a fatalistic present; positive correlations between awareness of the uncertainty of the future and the positive future;

- Evaluation of the contribution offered by time perspective dimensions on the explained variance for the three dimensions of wisdom, after controlling for the structural variables age, gender, level of school education.

2. Methodology

2.1 Procedure

155 old people in the third and in the fourth age took part in the study (m. age = 68.98; SD = 6.68), 32% males and 68% females. For their level of school education, 3% possess the Elementary License; 18% the middle School Diploma, 51% the High School Diploma and 29% the Degree. They were recruited through Institutions such as Universities for the Third age and Senior Social Centres, and also Trade associations. The questionnaires were filled in in several cases at the presence of the author, and in other cases in their home, without the presence of any researcher. The elderly did not encounter any problems for the text comprehension.

2.2 Instruments

The following self-report measures has been employed:

(1) Swedish Zimbardo Time Perspective (Carelli et al., 2011, 2013). This questionnaire contains 64 items and is designated to evaluate six fundamental time dimensions: *Past positive* (a positive evaluation of the past, perceived as bearing of values and experiences, e.g "Familiar childhood sights, sounds, smells often bring back a flood of wonderful memories"), α = .76; *Past negative* (which reflects a negative and traumatic view of the past, with not yet elaborated events, e.g." The past has too many unpleasant memories that I prefer not to think about"), α = .81; *Present hedonistic* (an orientation toward present enjoyment and pleasure, without sacrifices today for rewards tomorrow, e.g. "I believe that getting together with one's friends to party is one of life's important pleasure"), α = .73; *Present fatalistic* (a belief that the future is predestined and uninfluenced by human actions, e.g. "Fate determines much in my life"), α = .59; *Future positive* (efforts to plan for achieving future objectives, e.g. "When I want to achieve something, I set goals and consider specific means for reaching those goals"), α = .73; *Future negative* (a threatening and anxious perception of the future, eg., "The future contains too many boring decisions that I do not want to think about"), α = .70. The score was computed on a 5-point Likert scale (1 = very untrue; 5 = very true).

(2) The WITHAQ questionnaire (Moraitou & Efklides, 2013). The questionnaire has been translated from English language into Italian language by the author of the article and, independently, by an English native-speaker teacher, that provided also the back- translation.

It contains 13 item and is composed by three dimensions: *wisdom as pragmatic competence* (e.g. of item: "Through the experience and the knowledge I have obtained so far, I have built well-formulated views and attitudes as far as important moral matters of modern life are concerned" α =0.72); *wisdom as integrated post-formal dialectical thinking* (e.g: "When I discuss with other people or with myself about life issues, I can usually distinguish different arguments, e.g., which are the strongest in terms of reason or the strongest from a more subjective, experiential point of view"; α = 0.78); wisdom as *awareness of future uncertainty* (e.g: I often think about death. This makes me get cold feet and on the other hand, it teaches me not to pay much attention to transient glory, wealth and the small daily problems"; α = 0.59). The score was computed on a 5-point Likert scale (1 = completely untrue; 5 = completely true).

2.3 Statistical analyses

On the WITHAQ questionnaire has been at first conducted an Exploratory Factor Analysis (EFA), which confirmed the three-dimensionality structure of the original questionnaire, after confirmed also by Scree Test (Cattell, 1966) (see Appendix).

The descriptive statistics (mean, standard deviations, skewness and kurtosis) for both instruments were then calculated, while the differences for gender and educational school attainment were explored through the MANOVA analysis. A Pearson correlation matrix evaluated the associations between the dimensions of time perspective and wisdom, while through three Hierarchical Regression Models the contribution offered by time perspective dimensions to each component of wisdom was evaluated, after controlling for age, gender and level of school education.

3.Results

Description of the sample

The old persons show, for wisdom, the highest score on the pragmatics competences sub-component, while the lowest score is referred to the awareness of future uncertainty. For time perspective, the highest scores are reached on past positive and future positive, while the lowest scores are on past negative and present fatalistic (see table 1).

Table 1. Descriptive statistics of the study variables

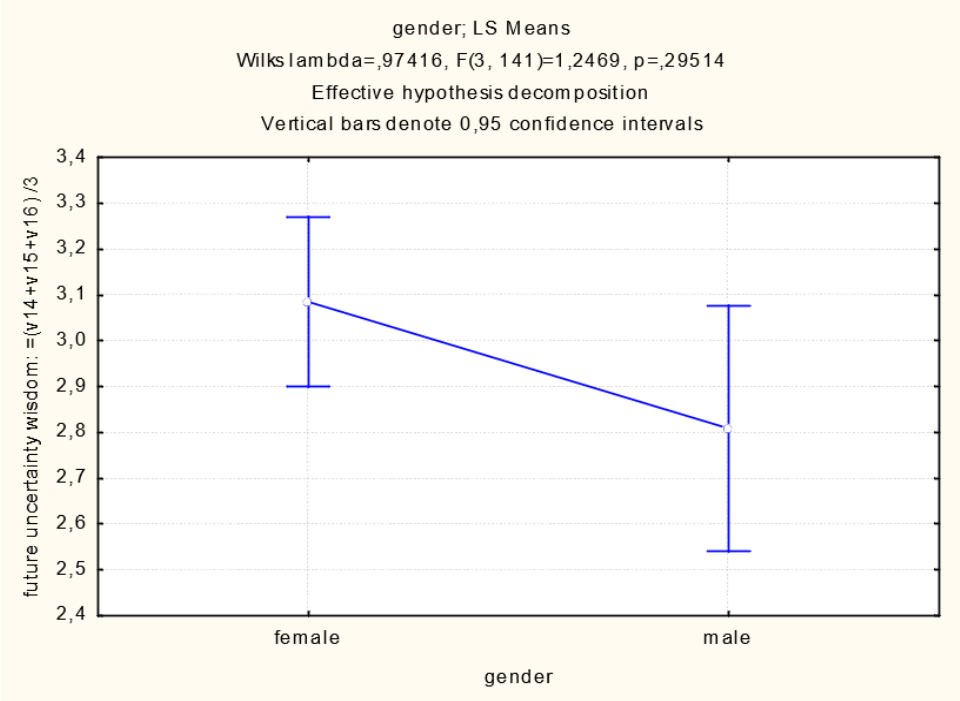
Variables	M	SD	*Skewness*	*Kurtosis*
Wisdom as pragmatic competences	3.83	0.55	0.02	0.21
Wisdom as post-formal thinking	3.66	0.68	-0.29	0.62
Wisdom as awareness of future uncertainty	3.00	0.92	-0.05	0.46
Past negative	2.83	0.74	0.09	0.70
Past positive	3.39	0.72	-0.57	0.25
Present fatalistic	2.57	0.51	-0.05	0.14
Present hedonistic	3.03	0.53	0.24	1.30
Future positive	3.82	0.47	-0.37	-0.13
Future negative	2.93	0.59	-0.19	0.80

Gender differences for wisdom and time perspective

A Manova Model tested the gender effect on wisdom, resulted globally as not significant ($p<0.20$). Subsequent Univariate Anova has shown an effect of gender on wisdom as awareness of future uncertainty, with a value approaching significance ($F = 2.80$; $p<0.08$). Male: M= 30.8 (SD = 0.93); Female M = 2.80 (SD = 0.91), where females possess a lesser score than males (see Graph 1).

For time perspective the Manova Test did not show any statistical significance ($p<0.23$).

Graph 1. Gender differences for wisdom as awareness of future uncertainty.



Correlations among the constructs of the study

The Pearson correlation matrix highlighted that wisdom as pragmatic knowledge and competence is negatively correlated with present fatalistic, while it is positively correlated with future positive and past positive. Wisdom as integrated post-formal thinking appear to be negatively correlated with fatalistic present and positively with future positive. Wisdom as awareness of uncertainty of the future appear to be positively correlated with past positive, past negative, future positive and future negative (see Tab. 2).

Table 2. Correlations between Time Perspective and Wisdom

Variables	Past negative	Past positive	Present hedonistic	Present fatalistic	Future negative	Future positive
Practical wisdom	0.09	0.21*	0.14	-0.20*	-0.09	0.37**
Post-formal thinking	0.07	0.08	0.02	-0.27**	-0.08	0.22*
Uncertaninty of future	0.35***	0.19*	0.01	0.07	0.24**	0.18*

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

The Hierarchical Regression Models. The contribution of time perspective for wisdom dimensions.

The first model has placed wisdom as a pragmatic competence as a dependent variable. The age, gender and school education variables were included in the first step, resulting not significant. In the second step, after the insertion of the temporal dimensions, past positive, present hedonistic and future positive have highlighted a significant contribution on this component of wisdom. The final model explains 18% of the variance (Multiple R = 0.50; R^2 = 0.25; adj. R^2= 0.18; F (9, 91)= 3.53; p<0.001) (see Tab.3).

Table 3. The Hierarchical Regression Model for wisdom as pragmatic competence

	β	*B*	Standard error of B	Change in R^2
First step				
Age	0.08	0.007		
Gender	0.004	0.005		
Level of education	-0.01	-0.007		Multiple R = 0.09; R^2 = 0.008; p= 0.75
Second step				
Age	0,032	0.002		
Gender	-0,083	-0.09		
Level of education	-0.136	-0.91		
Past negative	0,053	0.04		
Past positive	0,180+	0.134		
Present hedonistic	0,174+	0.170		
Present fatalistic	-0,271**	0.288		Multiple R = 0.50; R^2 = 0.25; adj. R^2= 0.18; F (9, 91)= 3.53; p<0.001
Future positive	0,303***	0.334		
Future negative	-0.053	0.098		

+= p<0.07; ** = p<0.01; *** = p<0.001

The second Hierarchical Regression Model has placed wisdom as post-formal dialectical thinking as dependent variable. At the first step all the structural variables age, gender and level of education resulted as not significant. In the second step, when time perspective dimensions have been inserted, the structural variables remained not significant, while present fatalistic and future positive emerged as significant predictors contributing significantly to the explained variance (9%) of the model (Multiple R= 0.41; R^2= 0.17; adj. R^2 = 0.09; F (9,90) = 2.13; p<0.05) (see Tab.4).

Table 4. The Hierarchical Regression Model for wisdom as integrated dialectical post-formal thinking

	β	*B*	Standard error of B	Change in R^2
First step				
Age	-0.03	-0.003		
Gender	0.08	0.12		
Level of education	-0.03	-0.02		Multiple R = 0.09; R^2= 0.09; p= 0.74
Second step				
Age	-0.067	-0.007		
Gender	0.050	0.07		
Level of education	-0.068	-0.06		
Past negative	0.187+	0.195		
Past positive	0.042	0.04		
Present hedonistic	0.072	0.09		
Present fatalistic	-0.360***	-0.503		
Future positive	0.184+	0.275		Multiple R= 0.41; R^2= 0.17; adj. R^2 = 0.09; F (9,90) == 2.13; p<0.05
Future negative	-0.145	-0.171		

+ = p<0.08; *** = p<0.001

The third Hierarchical Regression model has placed wisdom as future uncertainty management as dependent variable. In the first step, gender was the only structural variable that highlighted a statistical significance. In the second step, when time perspective dimensions have been inserted, gender maintained its significance, while past negative and past positive emerged as significant contributors to this component of wisdom. The variance explained by the model is 15% Multiple R = 0.45, R^2= 0.20; Adj. R^2= 0.12; F(9,91) = 2.57; p<0.01) (see table 5).

Table 5. The Hierarchical Regression Model for wisdom as awareness of future uncertainty

	β	*B*	Standard error of B	Change in R^2
First step				
Age	0.07	0.01		
Gender	-0.161*	-0.31		
Level of education	0.001	0.002		Multiple R = 0.17; R^2 = 0.02; Adj. R^2 = 0.009; F (3,146) = 1.45; p<0.22
Second step				
Age	0.04	0.005		
Gender	-0.157	-0.31		
Level of education	0.08	0.10		
Past negative	0.363***	0.474		
Past positive	0.166+	0.217		
Present hedonistic	0.110	0.192		
Present fatalistic	-0.66	-0.122		
Future positive	0.151	0.296		Multiple R = 0.45, R^2= 0.20
Future negative	0.01	0.02		Adj. R^2= 0.12; F(9,91) = 2.57; p<0.01

+= p<0.08; * = p<0.05; *** p< 0.001

4. Discussion

The study has analysed the relationships between time perspective and wisdom as it was conceptualized by Moraitou & Efklides (2012), that comprises three dimensions, namely the pragmatic knowledge and competence, the integrated dialectical post-formal thinking, the awareness of future uncertainty.

Wisdom appears to express itself above all as competence in navigating the pragmatics of life and as the use of post-formal dialectical integrated thinking, while the awareness and the consequent ability to manage the uncertainty of the future and the anxiety that derives from this awareness appears to be less. The temporal perspective indicates the presence of good past experiences, an ability to savor life in the present and to keep planning open to the future, which seems to contradict the model proposed by Carstensen (2006) on the evolution of the relationship with future time in life.

The old person also appears to perceive a good self-efficacy in the management of events that may occur in the present, as shown by the low score reported on the size of the fatalistic present, even if this perception of internal locus of control (Rotter, 1966) seems to decrease with the increase in age, probably due to the decrease in available resources (Hobfoll, 2011). As for the relationship between the cultural level and the components of wisdom, the Multivariate analysis of the WITHAQ questionnaire did not show any influence, as already emerged from Moraitou & Efklides (2011), suggesting that the determination of wisdom is linked to other factors, still to be explored.

Gender does not seem to affect wisdom either, with the exception of the awareness of the uncertainty of the future, where there appears a, albeit modest, difference in favour of males compared to females, confirming the results of Moraitou & Efklides (2012). The uncertainty of the future, as identified by Moraitou & Efklides in their validation study of the WITHAQ questionnaire, is associated with the presence of negative emotions and experiences, the latter more experienced by women than men, as several studies have shown (Alaszewski & Coxon, 2009).

The relationship between past time and the awareness of future uncertainty appears interesting and seems to confirm the hypothesis expressed by Baltes & Kunzmann (2003) and Mickler & Staudiger (2008) on the relevance of critical experiences in life for achieving wisdom. In fact, both dimensions of the past appear positively associated with this expression of wisdom; the processing of traumas and negative experiences that occurred in the past can lead to a process and path of profound psychological maturation (Kallio, 2015) that leads to the awareness of human mortality and the unpredictability of the future without giving up self-development, openness to dialogue and knowledge. The ontological precariousness experienced, accepted and inscribed in the individual biography is the result, in this model and in these results, of both early positive experiences that led to internal models of relationship and attachment characterized by security and trust (Bowlby, 1988; Saribay & Andersen, 2009), and painful experiences, where, however, pain was experienced and "crossed" as an opportunity for growth and maturation. Starting from Labouvie - vief 's theoretical perspective (1994), the process of intrapsychic integration, typical of adult intelligence, allows for the integration of emotions, cognition and volition, opening the way to actions aimed at overcoming obstacles, conflicts or critical issues. The "wise action", as defined by Yang (2008), could, in the case of traumatic events or deep suffering related to the past, modify not only the intrapsychic world but, where possible, also the interpersonal social reality.

Wisdom as an expression of post-formal dialectical thinking highlights a close and significant positive connection with future positive, and negative with present fatalistic. This cognitive resource appears to be linked to the management of complexity (social, cultural) through the ability of innovative integration of the dilemmatic horns of important issues, often represented as antinomian and therefore not-integrable and non-negotiable on the basis of classical formal operational thinking, of Aristotelian derivation (Aristotle, *Organon*).

Post-formal dialectical thinking, as the post-Piagetian school has argued, is instead that thought process, typical of adulthood and the elderly, through which it is possible to grasp the common elements that underlie issues of a social, bioethical and value nature.

Having a high ability to manage complexity, its often antinomic aspects and difficult to frame them in a "classic" formal logic characterized by mutually excluding opposites, probably increases the perception of self-efficacy in managing the relationship with the social contexts of life, especially in complex societies from a cultural, value, ethical, religious point of view such as contemporary post-modern society (Baumann, 2014; Beck, 2000). A less fatalism therefore characterizes the old person able to exercise this important cognitive resource, as argued by Efkildes & Moraitou (2011). The ability to envision design, planning by objectives also appears to be linked to the high capacity for abstraction, while early experiences, positive or negative, do not seem to affect this purely intellectual-cognitive competence, as can be deduced from its lack of relationships with wisdom as pragmatic competence.

Unlike post-formal dialectical thinking, wisdom as an expert navigation of the pragmatics of life has a significant and positive relationship with having experienced, at an early age, positive relationships characterized by authenticity and positive affectivity, which with the passing of time they have become real "inner experiential bases" capable of instilling security and competence on the affective-relational and social level. Expert knowledge of life, of concrete strategies to respond to difficult situations, becomes not only a basis and relational and contextual competence, but also a competence to plan the future, felt as open and constructive, despite its reduction in size due to increasing age (Carstensen, 2006).

Despite increasing attention, wisdom has received little clinical attention (Knight & Laidlaw, 2009), today only one psychotherapy technique has, among its aims, the increasing of wisdom, but, considering the emerging relationships between wisdom and positive functioning, a stronger attention on it may be relevant for psychotherapists and counselors.

Our results indeed, although coming from a little sample size, could give some suggestions for clinical and counseling interventions on elderly population for reaching wisdom, contributing in this way to the enhancement of psychological well-being.

Helping the old person to elaborate the critical situations of the past trying to deepen the sense and the meaning that they have had for him/her and for personal development can favor the emergence of wisdom as the ability to deal with the uncertainty of the future and the awareness of their own finitude without having to succumb to experiences of discomfort of a depressive matrix. Wisdom can favor well-being and positive evolution, constituting a real "strength" (Peterson & Seligmann, 2004).

Lampasona et al. (2013) have focused on the issue of implicit memory (Siegel, 1999), an emotional and affective memory which develops in early years of life and determines the affective tuning of individual experiences, including time. These early experiences that are sedimented in the implicit memory can be modified through psychotherapeutic intervention.

Valuing the past, especially when it is the bearer of positive experiences from which the person has drawn resources and skills to relate to social contexts and create good relationships, can represent a useful approach and in line with the cornerstones of positive psychology that favours strengthening skills and strengths, as well as with the recent intervention approaches on temporality (Boniwell & Zimbardo, 2004; Boniwell et al., 2014; Boniwell, 2015; Kazakina, 2015; Zambianchi, 2015).

A psychotherapeutic path of cognitive and emotional elaboration and processing of critical events that occurred in the past (Bucci, 1997; Pennebaker, 2004) can favor post-traumatic psychological growth and resilience in the elderly person, opening the way to the manifestation of wisdom in its facets of pragmatic resource for managing daily life and social contexts, and of constructive confrontation with negative experiences and anxiety linked both to previous experiences and to the deep awareness of human mortality.

The post- formal dialectical thinking seems to represent a significant resource to allow the elderly person to have a positive relationship with social reality and to be able to identify methods of problem-solving that are not only constructive, but also innovative with regard to complex problems and issues. It could be a fundamental resource in many life contexts, from the family, to the community to which he/she belongs, to work, due to the ability to identify effective elements or information to manage difficult situations or even to reconcile conflicts in an integrative way, for the benefit of all people involved. For this reason, the definition of interventions aimed at its strengthening its use could help the development of an ethical-moral maturity perhaps close to the model proposed by Kohlberg (1984), in which the post-conventional moral stage was associated with the ability to use of dialectical thinking, capable of an integrated and unconventional vision of ethical dilemmas.

4.1 Limits of the study

There are several important limitations of this study which must be taken into account. The first limit is represented by the small size of the sample, which does not allow to draw conclusions that can be extended to the old population, as well as making the validation of the WITHAQ tool in Italian impractical. A second important limit is given by the imbalance of the sample with regard to school education, which does not allow to evaluate more precisely the influence of this variable on wisdom in its three components, but only to give some indications. Further studies are needed to better understand the presence of gender differences for wisdom dimensions.

The third limit is represented by its cross-sectional nature, while longitudinal studies would be indispensable to evaluate the causal influence of time perspective on wisdom.

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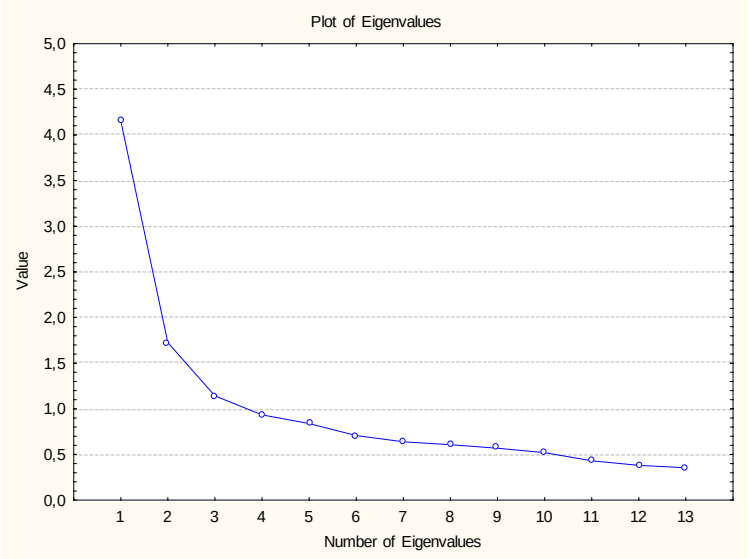
Appendix A

Scree Test for WITHAQ Questionnaire



Appendix B

Factor loadings WITHAQ Questionnaire. Varimax rotation. Extraction: Principal Components

Item	Factor 1	Factor 2	Factor 3
PW 1. Through the experience and the knowledge I have obtained so far, I have built well-formulated views and attitudes as far as important moral matterns of modern life are concerned	0.66		
PW 2. owning to my various experiences in life, I feel competent enough to handle different situations or - when asked – advise people who face similar situations	0.65		
PW 3. The way I act in everyday life is not only defined by what my sense, experience or heart says, but mainly by what my principles dictate to me.	0.81		
PW4. When people ask for my advice regarding a dilemma, I usually try my advice to serve, first of all, the values that rule life.	0.51		
DT1. when I want to fully understand an important event that has happened to me, I usually try to look at it from different angles. That is, look at it not only from my point of view but also from the perspective of those who were involved in this event or of a third party who views event from a distance.		0.66	
DT2. When I have to reach an important decision, I take into account as many aspects as possible. That is, I take into consideration what my sense, my hearth, my experience, my principles, ecc. say.		0.48	
DT3. When I come up across a difficult situation, I usually try to consider various factors which may have affected the formation of this situation (eg., from luck to intentional action, from my affect to external circumstances)		0.49	
DT4.I am usually open and interested in different viewpoints, because this way I can form a more complete and clear opinion about an issue.		0.61	
DT5. When I hear different or opposing views on a matter or a person, I usually search for common ground that may underlie these views.		0.81	
DT6. When I discuss with other people or with myself about life issue, I can usually distinguish different arguments, e.g., which are the strongest in terms of reason or the strongest from a more subjective, experiential point of view.		0.72	
AU1.When I plan tomorrow's schedule, I usually think about the possibility that something happens and as a result my plans would be reversed.			0.80
AU2. The saying "it changes in an hour what happens not in 7 years" is almost always true when I plan my future.			0.76
AU3. I often think about death. This make me get cold feet and on the other hand, it teaches me not to pay much attention to transient glory, wealth and the small daily problems.			0.57

PW = pragmatic wisdom; DT = dialectical thinking; AU = awareness of uncertainty

	Eigenvalue	% Total	Cumulative	Cumulative
1	4,15	31,93	4,15	31,93
2	1,73	13,27	5,88	45,21
3	1,14	8,79	7,02	53,99