

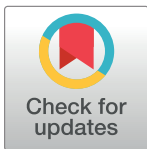
RESEARCH ARTICLE

Personality traits, workers' age, and job satisfaction: The moderated effect of conscientiousness

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Abstract

Job satisfaction has gained increasing interest in the world of work and a vast field of research has been stimulated regarding its antecedents. Among these, personality traits have received consistent and significant attention, with a particular emphasis on conscientiousness. To delve deeper and detail these aspects, in the present research, a moderation model was hypothesized, with the aim of investigating the effect of age on the association between conscientiousness (and its subdimensions scrupulousness and perseverance) and job satisfaction. The age-moderated interactions of the other Big Five personality traits were also explored. The study involved 202 Italian workers (92 men, 110 women) with a mean age of 44.82 years ($SD = 10.56$) who completed the Big Five Questionnaire and the Job Satisfaction Scale. The results showed a positive association between conscientiousness and job satisfaction. This was moderated by age to the extent that it was significant for younger and average-age workers and was less significant for older workers. Similar results were found for the subdomain of perseverance, while the relationship between scrupulousness and job satisfaction was not significant. Furthermore, no age-moderated interaction between the other Big Five personality traits and Job satisfaction were found. Such data supports interactive models that highlight the need to integrate personality traits with other factors in exploring the antecedents of job satisfaction. These findings provide additional elements to an understanding of the factors contributing to workers satisfaction, and could have important applicative implications in a framework for healthy organizations and the well-being movement.

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Introduction

Job satisfaction is a construct that is increasingly growing and attracting consistent interest in the field of work and organizational psychology [1]. It includes cognitive, affective, and behavioral aspects [2] and can be defined as “an evaluative state that expresses contentment with, and positive feelings about, one's job” [3] (p. 347).

Research into job satisfaction has focused, above all, on the consequences resulting from different levels of job satisfaction and on the antecedents of this construct. Job satisfaction is seen as having numerous applications and repercussions both at work and on people's everyday lives [2,3]. Job satisfaction is shown to be associated with numerous organizational outcomes, such as higher commitment [4], greater job involvement [5], improved performance [6], better organizational citizenship [7], and also with lower levels of turnover intentions [8], less absenteeism [9] and fewer counterproductive work behaviors [10,11]. Moreover, job satisfaction can be considered a sub-domain of the larger construct, life-satisfaction, which in turn, is a component of subjective well-being [12–14]. Previous research has reported negative relationships between job satisfaction and distress [15], burnout [16,17], and anxiety [18], as well as positive associations between job satisfaction and marital satisfaction [19,20], happiness [21], and psychophysical health [18,22]. Therefore, evidence supports the importance of focusing on job satisfaction both for its effect on organizational functioning [23] and for ethical reasons: according to the vision for decent work [24–27], work should be sustainable and meaningful within a broader framework of a decent life [28,29]. Job satisfaction is an essential construct in the framework of healthy organizations [30,31]. This perspective underlines the relevance to explore personality and individual differences in relation to workers' well-being. Job satisfaction also emerged as important in the framework of the well-being movement [32,33] that highlights the value of reducing negative outcomes and promoting individual resources to enhance both well-being and productivity. This supports both the relevance of workers' well-being to organizational success and healthy business, and its critical link with strength-based prevention perspectives [34]. Therefore, the well-being of employees and organizational performance are both at the center of focus and are nourished by one another [33,35], where health is seen as optimal functioning [36–38] and a reflection of one's satisfaction with both work and life [39,40].

Given this evidence concerning its applicability and centrality to the working world, a study of the precursors to satisfaction with one's work appears both necessary and useful [3,41,42]. In support of this perspective, the general aim of the present research was to deepen the understanding of the antecedents to job satisfaction.

The scientific literature concerning the variables associated with job satisfaction highlights several approaches, which can be grouped into dispositional, environmental, and integrative [2]. With regards to individual factors, personality traits emerge as important predictors of job satisfaction [43,44], with particular reference to the Big Five model of Costa and McCrae [45], which has proved particularly effective in the study of the dispositional sources of job satisfaction [44]. This structure does not imply that personality differences can be reduced to just five traits (extraversion, agreeableness, conscientiousness, emotional stability, and openness), but with these, it is possible to obtain a sufficiently complete and exhaustive representation, in which each dimension summarizes and contains other, more specific, characteristics [45,46]. Among the five traits, the conscientiousness one (consisting in the dimensions of scrupulousness and perseverance) [45,47] has been showed as particularly relevant in the organizational context by several studies, highlighting its associations with important work outcomes, such as attitudes [48,49], job satisfaction [50], performance [51,52], relationships with leaders [53], response to workplace stressors [54], and organizational citizenship behaviors [55]. More specifically, the relationship with job satisfaction was also pointed by previous meta-analyses, which showed that conscientiousness showed significant positive associations [13], sometimes the highest among different traits of the big five [44,56,57]. Conscientious people tend to be well-organized, self-disciplined, hardworking, growth and success-oriented, persevering, and motivated in the pursuit of established goals [58,59]. Taken together, these factors favor greater

efficiency and increase the probability of obtaining satisfactory rewards in the work context, both formally (e.g., promotion) and informally (e.g., esteem and reputation) [44].

However, although the scientific literature has highlighted the association between personality traits and job satisfaction [44], these dispositions may not play an exclusive role in determining motivation and job satisfaction during working life [60]. For example, the Baltes' model of Selective Optimization with Compensation (SOC) [61] argues that old age is associated with a decline in motivation concerning job growth and an increase in factors relating to regulation-loss and the maintenance of status. Therefore, the energy invested in the initial objectives of success and the expenditure of effort toward achievement that is typical of the younger worker tends to be replaced by a reallocation of resources toward preserving one's own situation and avoiding losses in older age [62,63].

Based on this theoretical framework, the purpose of this study is to gain insights regarding the relationships between workers' ages, conscientiousness, and job satisfaction. Therefore, a moderation model was hypothesized, in which the interaction between conscientiousness and job satisfaction was moderated by age (see Fig 1A), with the expectation that the association with this personality trait is stronger for younger workers. Furthermore, the age-moderated relationship between the subdomains of conscientiousness (scrupulousness and perseverance) and job satisfaction was explored.

Method

Participants and procedure

The study involved a sample of 202 Italian workers (45.5% men, 54.5% women), with a mean age of 44.82 years ($SD = 10.56$, age range 25–64 years). They were recruited from various private Tuscan organizations, and their participation in this study was voluntary. All respondents completed a paper and pencil self-report questionnaire administered by the researchers, without receiving any form of compensation, and they were free to leave the study at any time. Furthermore, participants were informed about the general aim of the research and were asked to complete a written informed consent form before starting. This protocol had been approved by the Ethical Committee of the Integrated Psychodynamic Psychotherapy Institute (IPPI).

Measures

Big Five Questionnaire (BFQ). The Big Five Questionnaire (BFQ) [47] is a self-report measure for the assessment of personality in line with the Costa and McCrae Big Five Theory [45]. Caprara et al. [64] reported good psychometric properties and satisfactory internal consistency in the original study. It consists of 132 items answered on a five-point Likert scale (from “*Absolutely false*” to “*Absolutely True*”). These are grouped into five dimensions with an additional scale indicating truthfulness: (1) Extraversion (24 items; $\alpha = .81$) includes the Dynamism and Dominance subdimensions and indicates a confident and enthusiastic tendency toward the various circumstances of life; (2) Agreeableness (24 items; $\alpha = .73$) includes the Cooperativeness and Politeness subscales and indicates a tendency to be empathetic and cooperative (or suspicious and hostile); (3) Conscientiousness (24 items; $\alpha = .81$) includes the Scrupulousness and Perseverance subdimensions and indicates a tendency to be organized, precise, self-disciplined, dependable, and persevering, with a preference for planned rather than spontaneous activities; (4) Emotional Stability (24 items; $\alpha = .90$) includes the Control of the emotions and Control of the impulses subscales and indicates the degree of emotional stability and impulse control; (5) Openness (24 items; $\alpha = .75$) comprises the Openness to culture and Openness to experience subscales and indicates a tendency to be open toward new ideas, other's values, and one's own feelings; (6) Lie (12 items; $\alpha = .74$), an truthfulness indicator

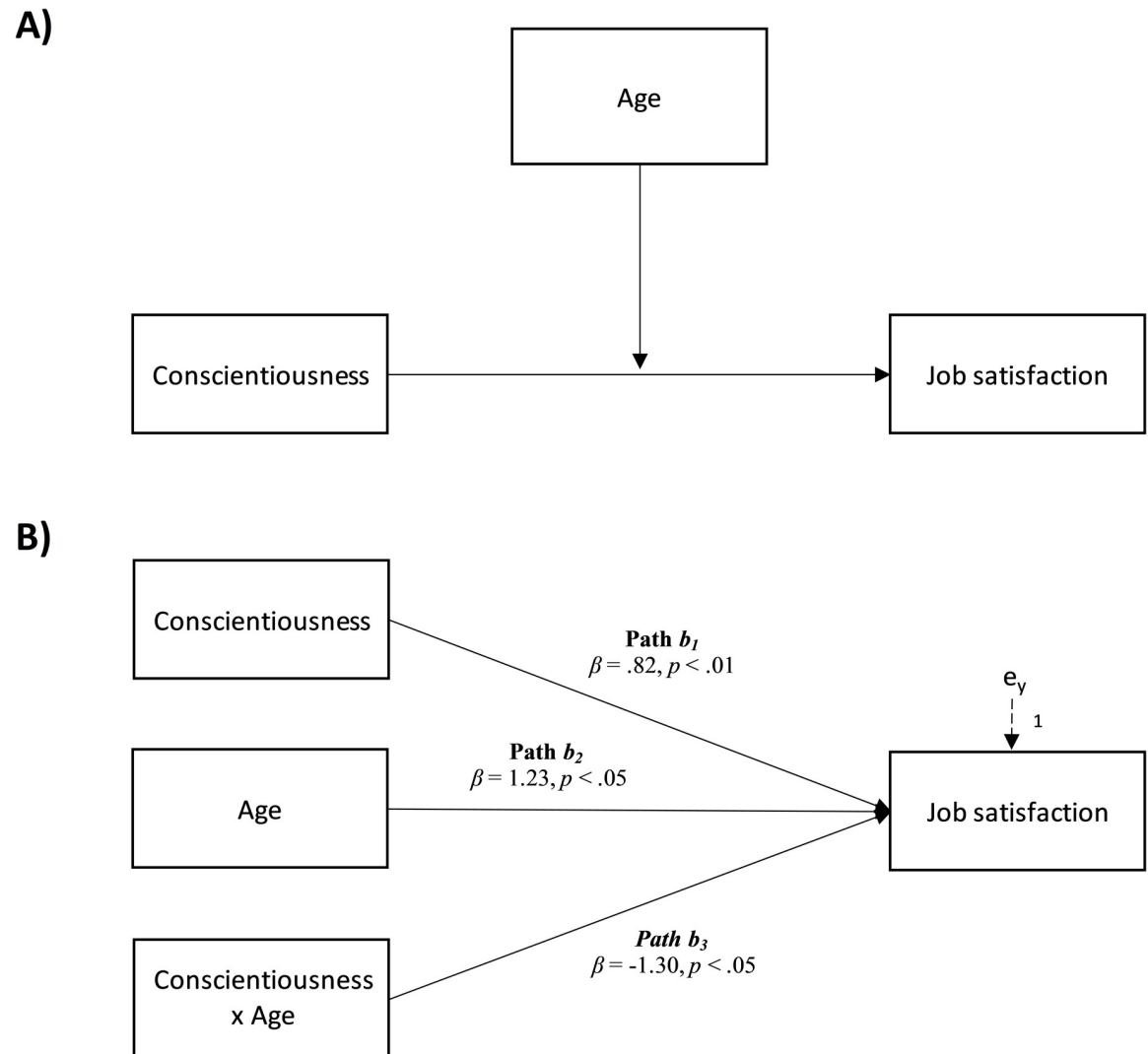


Fig 1. Conceptual (A) and statistical (B) models. The moderation of age on the relationship between Conscientiousness and Job satisfaction.

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which concerns the subject's tendency to provide a distorted profile, whether positively or negatively.

Job Satisfaction Scale (JSS). The Job Satisfaction Scale (JSS) [65] is a self-report questionnaire used to assess a worker's satisfaction with their own job. It consists of five items answered on a seven-point Likert scale (from "strongly disagree" to "strongly agree"). The Italian version of Di Fabio [66] was used in this study, which showed good internal consistency ($\alpha = .89$).

Data analysis

The SPSS software (v. 25.0 for Windows) was used to analyze the collected data. Descriptive statistics were examined for the sample and the measures. Pearson's r correlations and Partial correlation controlling for age and gender were calculated to explore the association between variables. Furthermore, the hypothesized moderation model and the explorative ones involving the subdimensions of conscientiousness (scrupulousness and perseverance) were

investigated by using the macro-program PROCESS v. 3.4 [67] and applying Model 1. The moderated effects were tested by performing the bootstrapping technique with 95% confidence intervals (CI) with 5000 samples and then by using the Wayne et al. [68] procedure. Concerning the first, a bootstrapped confidence interval (from “LLCI = Lower Limit” to “ULCI = Upper Limit”) not including zero indicates the significance of the effect. For the second, following Wayne et al. [68], the conditional effect was tested by analyzing the index of the moderated relationship (and confidence intervals) for “low,” “average,” and “high” levels of the moderator (-1DS, Mean, +1DS), considering a p level of $< .05$ to define statistical significance. Post-hoc power analyses were conducted to assess the achieved power for the moderation analyses given a sample size of 202 and an alpha of .05, by using G*Power 3 software [69] for Linear multiple regression (Fixed model, R^2 deviation from zero): a power of at least 0.80 is considered as the recommended value for the social sciences [70,71]. Similarly, alternative models were also tested, to explore relationship between different Big Five personality dimensions and job satisfaction, with the moderation of age.

Results

The correlation analyses and descriptive statistics are shown in [Table 1](#).

Pearson's analysis showed significant and positive correlations for Job satisfaction with Extraversion ($r = .243, p < .01$) and its subdimension Dominance ($r = .250, p < .01$), Agreeableness ($r = .194, p < .01$) and its subdimension Politeness ($r = .218, p < .01$), Conscientiousness ($r = .151, p < .05$) and its subdimension Perseverance ($r = .278, p < .01$), and Emotional stability ($r = .191, p < .01$) and its subdimensions Control of the emotions ($r = .150, p < .05$) and Control of the impulses ($r = .193, p < .01$). Job satisfaction did not correlate with Age ($r = .069$). Similar results were found with the partial correlation analysis, controlling for Gender and Age: Job satisfaction was significantly and positively associated with Extraversion ($r = .247, p < .01$) and its subdimension Dominance ($r = .252, p < .01$), Agreeableness ($r = .209, p < .01$) and its subdimensions Cooperativeness ($r = .142, p < .05$) and Politeness ($r = .223, p < .01$), Conscientiousness ($r = .159, p < .05$) and its subdimension Perseverance ($r = .283, p < .01$), and Emotional stability ($r = .185, p < .01$) and its subdimensions Control of the emotions ($r = .142, p < .05$) and Control of the impulses ($r = .188, p < .01$).

Concerning the hypothesized moderation model, the results confirmed a significant and positive relationship between Conscientiousness and Job satisfaction (path b_1 in [Fig 1B](#); $\beta = .82, p < .01, LLCI = .093$ – $ULCI = .658$), which was moderated by age (path b_3 in [Fig 1B](#); $\beta = -1.30, p < .05, LLCI = -.013$ – $ULCI = -.001$): $\Delta R^2 = .023, F(1, 198) = 4.724, p < .05$ (see [Table 2](#), part A). The interaction was probed following Wayne et al. [68] by testing the conditional effects of Conscientiousness at three age ranges (i.e., -1DS, Mean, +1DS). The interaction between Conscientiousness and Job satisfaction was significant, positive, and slightly stronger at low age ranges (estimate = $.142(.05), p < .01, LLCI = .053$ – $ULCI = .232$) than at average age ranges (estimate = $.070(.03), p < .05, LLCI = .007$ – $ULCI = .133$), while it became insignificant at high age ranges (estimate = $-.002(.05), p = .971, LLCI = -.094$ – $ULCI = .090$). Therefore, younger workers showed a more positive association between Conscientiousness and Job satisfaction, which weakened for average-age subjects and became insignificant for older workers (see [Fig 2](#)).

Concerning the explorative moderation models, the association between Scrupulousness and Job satisfaction was not significant ($\beta = -.01, p = .936, LLCI = -.100$ – $ULCI = .092$) and there was not a significant moderation effect (see [Table 2](#), part B). On the other hand, a significant and positive relationship between Perseverance and Job satisfaction was found ($\beta = 1.06, p < .001, LLCI = .394$ – $ULCI = 1.344$), which was moderated by age ($\beta = -1.50, p < .01, LLCI = -.026$ – $ULCI = -.004$): $\Delta R^2 = .033, F(1, 198) = 7.407, p < .01$ (see [Table 2](#), part C). Therefore, the conditional effects of

Table 1. Pearson's correlation matrix (below the diagonal), Partial correlation controlling for Gender and Age (above the diagonal), and descriptive statistics.

	JS_Tot	BFQE	BFQE_1	BFQE_2	BFQA	BFQA_1	BFQA_2	BFQC	BFQC_1	BFQC_2	BFQS	BFQS_1	BFQS_2	BFQO	BFQO_1	BFQO_2	M	SD
JS_Tot	-																22.40	5.16
BFQE	.243**	-															77.29	1.30
BFQE_1	.053	.780**	-														41.29	5.51
BFQE_2	.250**	.857**	.407**	-													35.50	6.17
BFQA	.194**	.205**	.308**	-.031	-												79.70	9.71
BFQA_1	.121	.242**	.320**	.025	.872**	-											41.77	5.40
BFQA_2	.218**	.122	.223**	-.077	.884**	.542**	-										37.93	5.65
BFQC	.151	.263**	.055	.257**	.104	.136	.049	-									83.86	11.21
BFQC_1	-.006	.013	-.148*	.106	-.052	-.023	-.067	.849**	-								40.28	7.49
BFQC_2	.278**	.455**	.274**	.334**	.248**	.270**	.168**	.775**	.324**	-							43.58	6.27
BFQS	.191**	.191**	.159**	.150**	.212**	.116	.254**	-.051	-.152**	.091	-						71.49	13.87
BFQS_1	.150**	.287**	.244**	.244**	.105	.052	.131	-.082	-.222**	.118	.905**	-					37.09	8.20
BFQS_2	.193**	.041	.028	.012	.284**	.161*	.334**	-.004	-.039	.040	.880**	.593**	-				34.40	7.34
BFQO	-.006	.455**	.445**	.289**	.430**	.474**	.285**	.299**	.133	.377**	.097	.134	.033	-			83.35	1.63
BFQO_1	.022	.396**	.348**	.295**	.354**	.408**	.218**	.339**	.194**	.376**	.157*	.177*	.098	.897**	-		41.38	6.52
BFQO_2	-.037	.405**	.442**	.205**	.405**	.426**	.289**	.173	.026	.278**	.001	.048	-.051	.856**	.539**	-	41.97	5.58
Age	.069	-.056	-.014	-.045	-.082	-.166*	.017	-.065	-.073	-.029	.086	.099	.052	.042	.152*	-.098	44.82	1.56

Note

*. Correlation is significant at the .05 level (2-tailed).

** . Correlation is significant at the .01 level (2-tailed). JS_Tot = Job Satisfaction Scale total score; BFQE = Extraversion (Big-Five Questionnaire); BFQE_1 = Dynamism (Big-Five Questionnaire); BFQE_2 = Dominance (Big-Five Questionnaire); BFQA = Agreeableness (Big-Five Questionnaire); BFQA_1 = Cooperativeness (Big-Five Questionnaire); BFQA_2 = Politeness (Big-Five Questionnaire); BFQC = Conscientiousness (Big-Five Questionnaire); BFQC_1 = Scrupulousness (Big-Five Questionnaire); BFQC_2 = Perseverance (Big-Five Questionnaire); BFQS = Emotional Stability (Big-Five Questionnaire); BFQS_1 = Control of the emotions (Big-Five Questionnaire); BFQS_2 = Control of the impulses (Big-Five Questionnaire); BFQO = Openness (Big-Five Questionnaire); BFQO_1 = Openness to culture (Big-Five Questionnaire); BFQO_2 = Openness to experience (Big-Five Questionnaire).

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Table 2. Coefficients of the moderation models.

A) Model 1: the age-moderated association between Conscientiousness and Job Satisfaction					
Antecedent	Consequent				
	Y (Job satisfaction)				
		Coeff.	SE	<i>p</i>	95% Confidence Intervals
X (Conscientiousness)	b_1	.376	.143	.009	[.093; .656]
W (Age)	b_2	.601	.261	.022	[.087; 1.116]
Conscientiousness * Age	b_3	-.007	.003	.031	[-.013; -.001]
Constant	i_Y	-10.494	11.983	.382	[-34,124; 13,136]
$R^2 = 0.052$ $F(3, 198) = 3.608$, $p = .014$					
B) Model 2: the age-moderated association between Scrupulousness and Job Satisfaction					
Antecedent	Consequent				
	Y (Job satisfaction)				
		Coeff.	SE	<i>p</i>	95% Confidence Intervals
X (Scrupulousness)	b_1	.121	.213	.571	[-.299; .541]
W (Age)	b_2	.142	.189	.451	[-.229; .513]
Scrupulousness * Age	b_3	-.003	.005	.559	[-.012; .006]
Constant	i_Y	16.065	8.662	.065	[-1,016; 3.147]
$R^2 = 0.007$ $F(3, 198) = .434$, $p = .729$					
C) Model 3: the age-moderated association between of Perseverance and Job Satisfaction					
Antecedent	Consequent				
	Y (Job satisfaction)				
		Coeff.	SE	<i>p</i>	95% Confidence Intervals
X (Perseverance)	b_1	.869	.241	< .001	[.394; 1.344]
W (Age)	b_2	.669	.234	.005	[.207; 1.131]
Perseverance * Age	b_3	-.015	.005	.007	[-.026; -.004]
Constant	i_Y	-16.652	10.435	.112	[-37.230; 3.926]
$R^2 = 0.116$ $F(3, 198) = 8.676$, $p < .001$					

Furthermore, the significance of the moderation effect was confirmed by the bootstrapping procedure (Boot LLCI = -.013; Boot ULCI = .001). The post-hoc power analysis revealed sufficient power, with a value of 0.80.

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Perseverance at three age ranges (i.e., -1DS, Mean, +1DS) was tested following Wayne et al. [68]. The interaction between Perseverance and Job satisfaction was significant, positive, and slightly stronger at low age ranges (estimate = .363(.07), $p < .01$, LLCI = .218–ULCI = .508) than at average age ranges (estimate = .207(.06), $p < .001$, LLCI = .097–ULCI = .317), while it became insignificant at high age ranges (estimate = .051(.09), $p = .550$, LLCI = -.118–ULCI = .221). Therefore, younger workers showed a more positive association between Perseverance and Job satisfaction, which weakened for average-age subjects and became insignificant for older workers. The bootstrapping procedure confirmed the significance of the age-moderated effect between Perseverance on Job satisfaction (Boot LLCI = -.026; Boot ULCI = .004) and a post-hoc power analysis revealed a high power, with a value of 0.99.

Finally, the moderation effect of age in the relationships between different personality dimensions and job satisfaction was tested. The results showed that no significant alternative moderation models were found (see Table 3).

Discussion

The concept of healthy organizations highlights the strong link between health and productivity [35]. Performance and well-being are seen as two interdependent and necessary aspects for

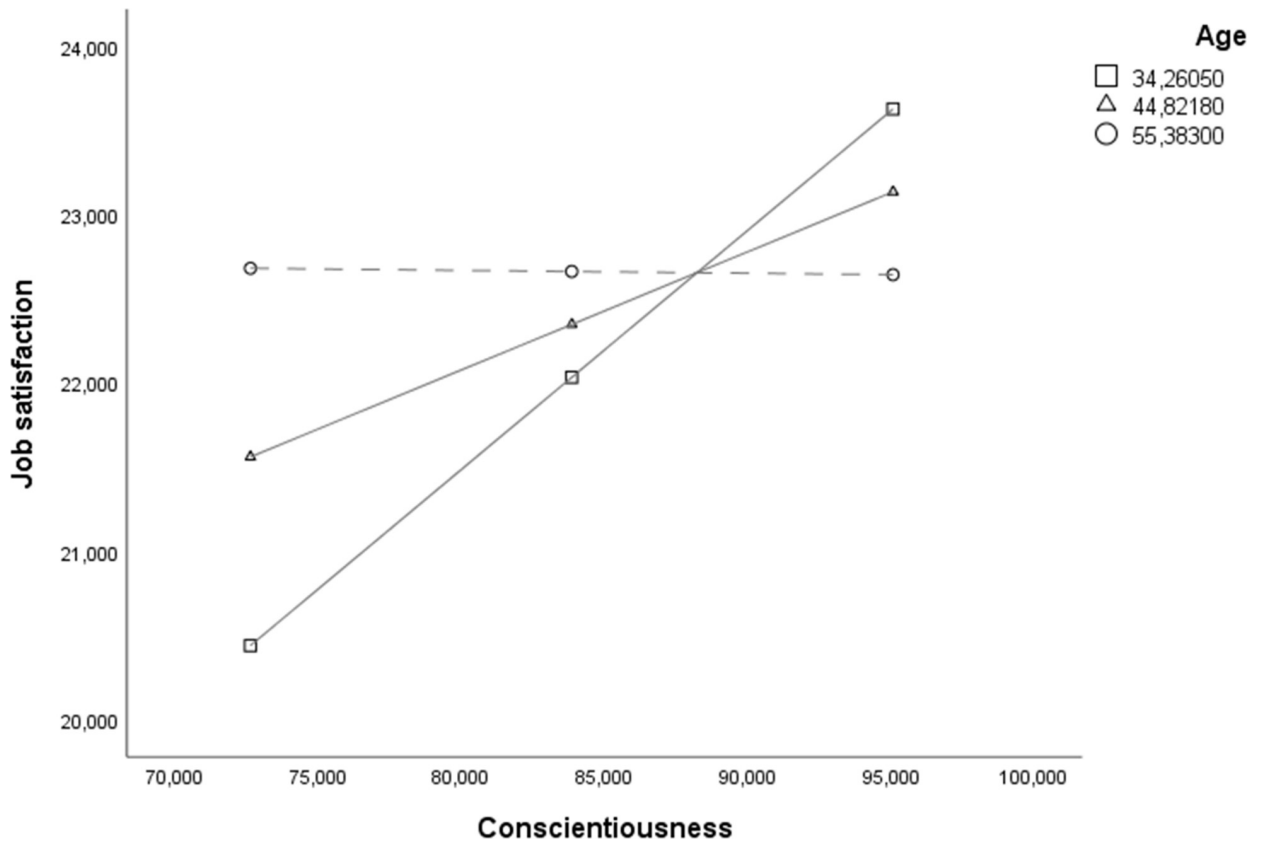


Fig 2. Moderation chart. Graphical representation of the moderation effect.

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a sustainable and successful business [30,72,73]. Within this framework, job satisfaction assumes a key role, where it is strictly related to personal and organizational results and to the life satisfaction of the workers [74]. Therefore, this study set itself the goal of deepening

Table 3. Alternative models summaries and indices.

Antecedent	Model Summary	Test of highest order unconditional interaction:	Bootstrapping 95% CI for the Moderation Effect
Extraversion	$R^2 = .069$ $F(3, 198) = 4.861, p < .01$	$\Delta R^2 = .003$ $F(1, 198) = .594, p = .442$	[-.0037; .0082]
Agreeableness	$R^2 = .047$ $F(3, 198) = 3.272, p < .05$	$\Delta R^2 = .001$ $F(1, 198) = .457, p = .500$	[-.0096; .0051]
Conscientiousness	$R^2 = .052$ $F(3, 198) = 3.608, p < .05$	$\Delta R^2 = .023$ $F(1, 198) = 4.724, p < .05$	[-.0132; -.0010]
Emotional Stability	$R^2 = .039$ $F(3, 198) = 2.700, p < .05$	$\Delta R^2 = .000$ $F(1, 198) = .000, p = .987$	[-.0054; .0062]
Openness	$R^2 = .007$ $F(3, 198) = .460, p = .711$	$\Delta R^2 = .002$ $F(1, 198) = .406, p = .525$	[-.0088; .0044]

Note: Extraversion = the association between Extraversion and Job satisfaction, moderated by age; Agreeableness = the association between Agreeableness and Job satisfaction, moderated by age; Conscientiousness = the association between Conscientiousness and Job satisfaction, moderated by age; Emotional Stability = the association between Emotional Stability and Job satisfaction, moderated by age; Openness = the association between Openness and Job satisfaction, moderated by age.

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understanding the relationship between dispositions and job satisfaction by exploring the effects of age and conscientiousness.

Consistent to previous research, results showed a significant relationship between conscientiousness and job satisfaction [50,56]. Analyzing more specifically the dimensions of this personality trait, while for the scrupulousness subdimension no significant association was found, that of perseverance showed a significant interaction with job satisfaction. Indeed, scientific literature suggested that workers having high levels of conscientiousness seem more success-oriented, with behaviors aimed at achieving positive results with higher work efficiency: this will favor higher intrinsic and extrinsic rewards, in turn, providing sources of job satisfaction [50,75]. More specifically, perseverance is negatively associated with counterproductive behavior at work and positively with job performance [76], which in turn is related to being more likely to be satisfied with one's job [77]. However, our results also highlighted greater complexities in these relationships by showing the moderation by age: specifically, although significant association of conscientiousness or perseverance with job satisfaction were found, they were limited to the younger and average-age workers. This is in line with previous studies [60] and could be read as expressing the strong influence of a success-orientation on younger subjects who are still experiencing both personality and professional identity pathways to maturation [78]. On the other hand, in the course of a lifespan, decreased levels of conscientiousness may occur [79]. This may lead to changes in motivation, which could now be directed towards other factors from which the subject derives satisfaction [80]. Lastly, no age-moderated effects were found in the relationship between the other personality traits and job satisfaction, although the data confirmed the results obtained in previous studies highlighting significant and positive correlations between job satisfaction and traits of extraversion [43,81], agreeableness [56,82], and emotional stability [83,84]. Such findings support the role of dispositions and their relevance in exploring the antecedents of job satisfaction, but in parallel, the moderation of age for conscientiousness corroborate the view of the interactive models, that highlighted the need for integration with other factors, such as situational ones, which could gain greater relevance at certain in certain life phases of some workers [85].

This research has some limitations that would be useful to consider. The first concerns the fact that the research is cross-sectional. To effectively evaluate the trajectories of traits and their association with job satisfaction, it would be valuable to carry out longitudinal studies in the future. Moreover, no data about tenure, position or education have been collected, and no occupational differences were investigated. Future research could deepen the integrative approach by exploring these factors in relation to different kinds of work, occupation, and organization (e.g., public or private) and also job position. Additionally, self-report measures were used to gather the data, with the possibility that biases were present. Multimethod-multimodal approaches (e.g., integrating the use of structured or semi-structured interviews) could help to overcome this issue in future studies. Finally, Although the bootstrap technique and post-hoc power analysis supported the statistical stability of the models, it will be necessary further research to replicate and extend results, also integrating information of other sources (e.g., qualitative information and replication studies in other workers samples and different job environments).

Conclusions

This research provides additional elements to support a better understanding of factors associated with job satisfaction. Specifically, associations between conscientiousness traits and job satisfaction were highlighted, and also the need to integrate the study of dispositional factors with the characteristics of work and situational elements in order to provide a more complete

picture of the phenomenon [73,85]. This may have important implications both from a theoretical and applicative point of view. Indeed, such findings increases evidences in line with an integrated approach and stimulates the deepening of both personality and organizational factors in subsequent research. Furthermore, these results could have important applicative implications for the framework of healthy organizations [30,31] and the well-being movement [32,33]. More effective interventions could be planned by suggesting the need for differentiation according to workers' traits and ages.

Author Contributions

Conceptualization: Eleonora Topino, Annamaria Di Fabio, Alessio Gori.

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Writing – review & editing: Eleonora Topino, Annamaria Di Fabio, Letizia Palazzeschi, Alessio Gori.

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