

THE “BIG 5” PERSONALITY TRAITS AND UNION MEMBERSHIP: AN EMPIRICAL ANALYSIS

Claudio Lucifora, Caterina Sturaro*

ABSTRACT

We study how individuals with different personality traits exhibit different personal propensity to unionise. While traditional models of trade union membership state that workers are rational decision makers and highlight benefits and costs of union membership, a growing literature investigates the effect of other factors on individuals' decisions. The “Exit-Voice” framework allows us to discuss whether individuals' decision to unionise depends on values and beliefs. We consider a sample of individuals and workers from Lombardy. We find that higher conscientious and agreeable individuals show higher personal propensity to unionise; conversely, high neurotics and high open individuals have lower propensity. Finally, we show that differences in personal propensity to unionize between individuals with high and low levels of openness and extraversion are largely mediated by individual observable characteristics, while differences in agreeableness, conscientiousness and neuroticism cannot be explained by observable factors.

Keywords: Trade unions, Non cognitive skills, Exit-voice mechanism.

JEL Classification: J51, I3, J52.

ISSN: 0035-676X (print); 1827-7918 (digital)

DOI: 10.26350/000518_000040

1. INTRODUCTION

One of the first contribution of Carlo Dell’Aringa to the economics of trade unions was a booklet titled *Egualitarismo e sindacato* in which he investigated the egalitarian effect of collective bargaining (Dell’Aringa, 1976). In that book Carlo Dell’Aringa put forward the thesis that one of the main objectives of trade unions was to reduce pay differentials to promote workers’ solidarity and increase cohesion around collective goal. The idea that attitudes and values matter in economic decisions has become more widespread among economists and, particularly in recent years there has been growing interest in the relationship between socio-economic outcomes and personality traits (see for example Heckman et al., 2008;

The authors are grateful to G. Martini, G. Vittadini, F. Origo and to participants at the “Labour economics” Workshop held in Università Cattolica in May 2018, for the useful comments received. The data used in the present study have been kindly made available by CISL-Lombardia. Usual disclaimers apply.

* Claudio Lucifora, Caterina Sturaro, Department of Economics and Finance, Università Cattolica. Email Lucifora: claudio.lucifora@unicatt.it. Email Sturaro: caterina.sturaro@unicatt.it.

Heckman and Kautz, 2014; Gerber and Huber, 2010; Nandi and Nicoletti, 2014; OECD, 2017). Many studies show that personality matters in several diverse economic domains such as: educational achievements, labor market outcomes, as well as health and criminal behaviors.

The present work wishes to contribute to the initial intuition of Carlo Dell'Aringa by investigating whether people with different personality traits exhibit a different propensity to unionize.

Traditional models of trade union membership usually assume that individuals are rational decision makers and focus on the benefits and costs of union membership. However, a growing literature focuses attention on the role of non-rational factors in individuals' decision-making (Thaler, 1980). The seminal work of Freeman and Medoff (1979) already hinted to the fact that the sole treatment of trade unions as organizations whose exclusive purpose is to raise wages was likely to be insufficient. Indeed, the decision to join a union, more than traditional consumption decisions, is likely to depend also on values, beliefs and emotional impulses. In this respect, the "exit-voice" framework has put forward the possibility that individuals may join the union to express discontent (collective "voice") rather than quitting their job ("exit"), thus backing other workers' grievances to support common solidaristic values (Hirschmann, 1970).

The paper is organized as follows. First, we use the "Big Five" taxonomy (i.e. the five traits are: openness to experience, conscientiousness, extraversion, agreeableness and neuroticism) to investigate the effect of personality traits on individuals' propensity to unionize. Second, we use information from a individual-level survey with information on personal characteristics, job-related attributes and personality traits, covering workers and retirees living in Lombardy. In the empirical analysis, we characterize the different personality groups (e.g. classifying individuals according to their high and low values for each of the five personality traits) and investigate the mediating role of individual characteristics in the propensity to unionize. In practice, we decompose the overall difference in the likelihood of unionization between those factors that are mediated by individuals' observable characteristics and those associated to the returns to those characteristics (Blinder, 1973; Oaxaca, 1973).

We show that individuals characterized by high values of conscientiousness and agreeableness have a higher propensity to unionize. Conversely, individuals with both high openness and neuroticism are found to be less likely to join the union. Extraversion does not show any statistically significant association with unionization decisions. We also show that the difference in the propensity to unionize between individuals with high and low levels of openness and extraversion are largely mediated by individual observable characteristics, while differences in agreeableness, conscientiousness and neuroticism cannot be explained by observable factors.

We check the robustness of our results against a number of potential threats, such as selection into union membership, measurement error, matching of common support in the propensity to unionise, as well as testing for monotonicity in the re-

relationship between wages and personality traits. Results are found to be robust to the above issues.

2. TRADE UNION MEMBERSHIP MODELS

Trade unions play a relevant role in the labour market organizing workers' and bargaining collectively their wages and working conditions. The standard view of trade unions is that they are organization whose purpose is to improve the material welfare of members, mainly raising wages above the competitive wage level (Booth, 1995). Traditional models of trade unions build on the assumption that individuals are rational agents, and base their decision about membership comparing the utility of joining versus not joining the union. These models typically compare the (marginal) benefit of membership – i.e. higher wages, employment guarantees to lower the risk of lay-off and protection against retaliation of management –, with the (marginal) costs of union membership – i.e. union fees. In particular, trade unions, as much as political parties, are described as made up by rational agents who join organizations that are likely to bring them benefits that outweigh the cost of membership and involvement. Still, a fundamental question is why workers join unions to profit from benefits that are in the form of a public good and that they would have gained access even without membership. In such setting rational agents should not have any incentive to support collective action. This is the well-known free rider problem. However, a growing literature has resorted to the role of non-rational factors to explain individuals' decision in joining organizations that provide quasi-public goods (Thaler, 1980). The social custom model formulated by Booth (1985) gives a contribution in this direction, introducing the idea of reputation, from which workers derive utility when they comply with rules and suffer punishment from their peers when they do not comply. While, the model is built on very strong assumptions, such as close-shop unionization, it does convey the idea that beliefs and values are important determinants of the decision to join organizations, and individuals bound by reputational concerns tend to respect rules of punishment and reciprocity which are psychological traits that characterize individuals' behavior.

Freeman and Medoff (1979) proposed two views of trade unions. The first is called "monopoly union" and looks at unions as "detrimental forces in advanced capitalist systems", by which unions are mainly concerned with rent extraction, thus raising their members' wages and introducing distortions in the labor market. The second view, is the so-called "collective voice", by which unions provide workers with a "voice" mechanisms to express their grievances, thus creating an alternative to individuals' exit behavior and reducing the cost of workers quitting their job. Under this hypothesis therefore, the union is an institution able to change the nature of employment relationships both increasing productivity and reducing inefficiencies in many settings. The hypothesis underlying Freeman and Medoff's contribution, by considering this second face of unionism, opens up a new perspec-

tive in trade union theory which encompasses individuals' non-monetary attributes in collective action behavior and the formation of trade unions. Individuals when confronted with diverging options between "desired" and "actual" outcomes have two possibilities, which are likely to be affected by their personality traits. The first, as previously described, is the "exit" mechanism, by which a dissatisfied worker quits her job and looks for a new (better) one. However, by leaving a less desirable for a more desirable job, an individual bears the entire mobility cost of signaling the bad employer. The second option, is represented by a collective mechanism called "voice" and refers to the process of direct communication between two parties, meant at bringing actual and desired situations closer. In the political context, the voice mechanism is given by participation to the democratic process through voting and discussion. In the job market, the "voice" mechanism consists in joining a union which is the vehicle for the voice mechanism. In big firms and large enterprises especially, a trade union collects the voice of numerous workers, providing them with a mean of communicating with management. This tension between the individual choice represented by the "exit" mechanism as opposed to the collective choice represented by the "voice" of unions is likely to be affected by individuals' preferences and psychological traits. We discuss them in the next section.

3. THE "BIG FIVE" MODEL

Personality traits are defined as "relatively enduring patterns of thoughts, feelings and behaviors that reflect the tendency to respond in certain ways under certain circumstances" (Roberts, 2009). It means that traits are peculiar characteristics of one's personality, but they are also susceptible to change particularly at early age. The most famous and commonly used model of personality traits today is the so called "Big Five" model, which defines five higher-order dimensions (factors) each of which collects more narrow traits. This model is not based on a theoretical background, nevertheless it acquired considerable empirical evidence. The present work refers to the Big Five personality traits.

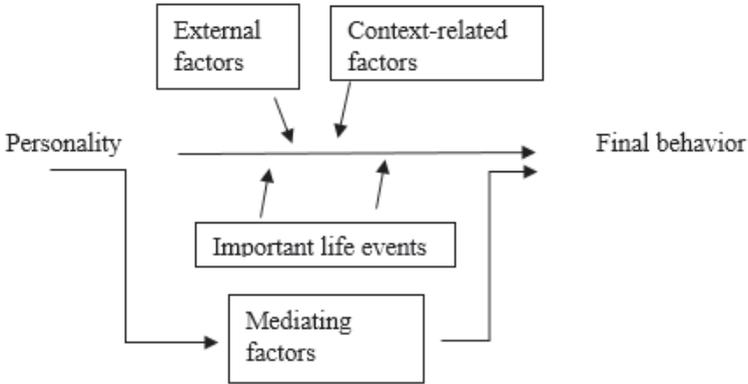
Description of the Big Five dimensions are reported from the seminal paper of John and Srivastava (1999). "**Extraversion** implies an *energetic approach* to the social and material world and includes traits such as sociability, activity assertiveness and positive emotionality. **Agreeableness** contrasts a *prosocial and communal orientation* towards others with antagonism and includes traits such as altruism, tender-mindedness, trust and modesty. **Conscientiousness** describes *socially prescribed impulse control* that facilitates task-and-goal directed behavior, such as thinking before acting, delaying gratification, following norms and rules, and planning, organizing prioritizing tasks. Emotional stability describes even-temperedness and contrasts with negative emotionality, such as **Neuroticism** which is feeling anxious, nervous, sad and tense. **Openness** to experience (*versus* closed-mindedness) describes the breath, depth and originality and complexity of an individual's *mental and experimental life*."

The Big Five traits do not only influence life outcomes directly, but also through their persistent and cumulative effect on other personality attributes, cognitive skills included, and through other intermediate life outcomes, that are referred to as mediating factors throughout the present work. Personality traits develop during early life interacting with the environment and important early-life events. Scholars and policymakers are increasingly acknowledging the importance of personality traits and character skills on a variety of life outcomes.

For example, openness to experience is a crucial prerequisite for developing innate cognitive skills. Individuals with high levels show higher levels of educational attainment and the capacity to create original and artistic pieces of work. Low levels are related to the consume of recreational drugs, fewer out-of-group friends and tendency to vote conservative. Conscientiousness is the trait more strongly related with job performance. It is positively related with wages and school achievement. Low levels of conscientiousness are highly predictive of criminal activity, as much as low levels of agreeableness (Heckman and Kautz, 2014). High levels are related with good health habits, better health status, lower risk of smoking, of substance abuse and poor diet (OECD 2017). Conscientiousness, as extraversion and low neuroticism, is related with greater relationship satisfaction, less conflict and abuse. It is claimed to be the strongest predictor of longevity (Heckman et al., 2008). High extravert individuals are more likely to occupy leadership positions at work and enjoy better work satisfaction in fast-paced work-environments. Low levels of extraversion are related with a constrained social network of few selected relationships and with poorer health. High agreeable individuals are more likely to work in customer care industries and in larger teams (OECD 2017). High levels are related to higher life satisfaction. Low levels predict delinquency, antisocial behavior and have the strongest relationship with criminality, together with low conscientiousness (OECD 2017). Conversely, high levels of neuroticism predict lower school and work achievements, depression and emotional problems in relationships and lower life satisfaction. Highly neurotic people have poorer coping skills. (OECD 2017). On the other hand, low levels are related with fulfilling relationships and improved health.

3.1. *Joining forces: The "Big Five" and unionization*

We intend to contribute to the research on the socio-economic effects of personality traits by examining the relationship between personality traits, proxied by the Big Five model, and union membership decisions. The empirical analysis is organized as follows. First we investigate the correlations of personality traits with the individual's propensity to unionize. A simple logit regression analysis is implemented. Second we analyze the role of mediating factors by stylized personality traits, using an Oaxaca-Blinder decomposition analysis. In particular, the relation between personality traits and behavior may be sketched in the following way:

FIGURE 1 – *Personality traits, mediating factors and behavior*

To begin with, the environment can influence the relation between personality and the concrete expression of it. Considering the worker's decision to unionize, contextual factors such as firm size or industry or activity are likely to be important mediating factors. Similarly, the share of unionized workers in a given industry or organization is an important determinant of the membership choice for peer workers. Experience also interacts with personality and shapes it, hence a worker's past experience with union representatives is likely to play an important role. It is reasonable to expect that positive past experience with unions, will incline workers to join the union or continue membership over time. While, data limitations prevent us to explore in greater details some of the channels discussed above, such as context-related information about workers' past experiences with unions representatives, or past union density at the workplace, other mediating factors will be explored. For example, education and occupational status, according to the literature, are associated to different personality traits and may indirectly influence the personal propensity to unionize. The literature reports positive effects of openness to experience and conscientiousness on education and employment. Negative correlation is instead registered between neuroticism and education. Agreeableness is negatively related with job positions as leaders and managers, but positively related to customer care and sales activities. Finally, extraversion is positively correlated with leadership positions at work. Table 1 reports some of the hypotheses underlying the correlation between the Big Five model and propensity to unionize.

TABLE 1 – *The "Big Five" model and propensity to unionize*

	<i>American Psychology Association Dictionary Description⁽¹⁾</i>	<i>Propensity to unionize</i>
Openness	“The tendency to be open to new aesthetic, cultural or intellectual experiences”	Union members are more likely to be open to be able to interact with their peers (Positive correlation)
Conscientiousness	“The tendency to be organized, responsible, and hardworking”	Union members are more risk averse; they may join to avoid the risk of layoff (Positive correlation)
Extraversion	“An orientation of one’s interests and energies towards the outer world of people and things rather than the inner world of subjective experience; characterized by positive affect and sociability”	Extravert individuals are likely to exert effort towards collective and socially desirable outcomes so as the ones pursued by unions (Positive correlation)
Agreeableness	“The tendency to act in a cooperative, unselfish manner”	Important role of reputation in individuals’ decision-making process. Psychology states agreeable individuals are “prosocial and communal in orientation ⁽²⁾ ”. (Ambiguous correlation) Alternative scenarios: 1. Agreeable individuals in a highly unionized industry are more likely to join because they conform with values and believes 2. Agreeable individuals in poorly unionized environment are less likely to join
Neuroticism	“Predictability and consistency in emotional reactions, with absence of rapid mood changes”. Neuroticism is “a chronic level of emotional instability and proneness to psychological distress”	Individuals who are more anxious and worry prone may join trade unions, as an insurance (a “safety net”) against lay off Risk or seek to redress through social interventions ⁽²⁾ . Alternatively, greater emotionality may lead neurotics to shy away from others and from collective goals. (Ambiguous correlation)

Notes: ⁽¹⁾ The second column of this table is taken from Heckman and Kautz (2008). Examples of socio-economic outcomes in the third column are taken from Kankaras (2017).

⁽²⁾ John and Srivastava (1999: 121); Gerber et al. (2010).

4.1. *Sample selection and variables*

The survey was administered by Euromedia Research in cooperation with the University of Bergamo in 2017. More than 4,000 individuals living and working in Lombardy were interviewed. The sample provides detailed information on education, employment, trade unions, political orientation and the Big Five 15-items inventory. In the whole sample, 1,200 are retired individuals while 2,800 actively participate to the labour market.

4.2. *Personality traits*

The Big Five personality traits (openness to experience, conscientiousness, extraversion, agreeableness and neuroticism) are measured using the 15-item personality inventory available in the questionnaires administered to respondents. There is empirical evidence supporting the reliability of this concise inventory based on the 15-item responses. Each personality trait is measured as the average score of the three measured items. The standard approach to assess measurement error problems is used, by computing the standardized Cronbach's alpha reliability index. Results for alpha reliability are found equal to 0.68, 0.5, 0.67, 0.49 and 0.42 for openness, conscientiousness, extraversion, agreeableness and neuroticism, respectively. These metrics are very similar to the one found by Nandi and Nicoletti (2014) who used BHPS data. In general, reliability is considered sufficient for values of the index close or above 0.5 which suggests that the predictive power of the agreeableness and neuroticism traits might be weak.

Table 2 reports the mean, standard deviation, first, second and third quantiles for each of the five personality traits (see Nandi and Nicoletti, 2014). We report different quantiles of each personality trait to distinguish between people with low and high, extremely low and extremely high levels of the trait¹. Each trait takes values from 1 to 10. The largest standard deviation is observed for Openness followed by Neuroticism. For Conscientiousness, Extraversion and Agreeableness variability is lower. For Openness, Conscientiousness and Agreeableness more than 50% of respondents report a value higher than 7. Personality traits variables have been standardized².

¹ Compare with Gerber et al. (2010).

² Each variable is computed as the average score of the three answers related to each trait, e.g. Openness = (answer1+answer2+answer3)/3, and so on. Those observations for which the answers related to a trait were not complete were considered missing, and therefore dropped.

TABLE 2 – *Descriptive statistics for each of the five personality traits*

	<i>Obs</i>	<i>Mean</i>	<i>s.d.</i>	<i>25th percentile</i>	<i>Median</i>	<i>75th percentile</i>
Openness	3834	7.41	1.53	6.33	7.67	8.33
Conscientiousness	3762	7.40	1.40	6.33	7.33	8.33
Extraversion	3844	5.96	1.42	5.33	6	6.83
Agreeableness	3846	7.25	1.43	6.33	7.33	8.33
Neuroticism	3861	5.67	1.51	4.67	5.67	6.67

	<i>Obs</i>	<i>Mean</i>	<i>s.d.</i>	<i>25th percentile</i>	<i>Median</i>	<i>75th percentile</i>
Openness	3834	7.41	1.53	6.33	7.67	8.33
Conscientiousness	3762	7.40	1.40	6.33	7.33	8.33
Extraversion	3844	5.96	1.42	5.33	6	6.83
Agreeableness	3846	7.25	1.43	6.33	7.33	8.33
Neuroticism	3861	5.67	1.51	4.67	5.67	6.67

Notes: Each variable is computed as the average score for that trait.

4.3. *Union membership*

Union membership is measured with respect to individual's affiliation to a trade union. In the sample respondents belong to different trade unions: CISL, CIGL, UIL, CONFASAL and a residual group which collects all other minor trade unions. CISL members represent the largest share (2000 members), while other unions together reach 350 affiliates. Nearly, half of the sample is composed by retired individuals.

4.4. *Other control variables*

The survey contains other information on personal characteristics, values and opinions and job-related attributes. Demographic

5. EMPIRICAL STRATEGY

Union membership (M_i) is a dichotomous variable taking value 1 if the individual is member of a trade union. We specify and estimate the following membership equation,

$$P(M_i) = \varphi(\alpha + \beta PT_i^k + x_i' \gamma) \quad (1)$$

where PT_i^k are the k personality traits (k =Openness, conscientiousness, extraversion, agreeableness, neuroticism), vector x_i contains individual characteristics. After dropping missing observations, the sample consists of 3,965 individuals. First, we estimate equation (1) on the full sample, and second we drop retired individuals restricting the analysis to workers only. We also investigate the role of mediating factors in union membership decisions by implementing a Blinder-Oaxaca decomposition (Blinder, 1973; Oaxaca, 1973). In practice, we estimate equation (1) separately for two stylized group of individuals characterized by different levels of the Big Five personality traits and investigate how their different propensity to unionize is mediated by personal characteristics and opinions. Thus, by considering one of the k -th traits at time, individuals are classified into two different stylized groups, according to their Big Five score (i.e. whether above or below the sample median value of that trait: for example high versus low openness, etc.). For each trait, the difference in personal propensity to unionize between the two groups is decomposed into two additive components: a component explained by differences in respondents' observable attributes (composition effect), and a component capturing the difference in the returns to those characteristics which represents the residual unexplained part of the propensity to unionize.

6. RESULTS

6.1. Pooled sample

We first assess the overall effect of personality traits (openness, conscientiousness, extraversion, agreeableness and neuroticism) on union membership estimating equation (1) by logit on the pooled sample of workers and retirees. Table 3 shows the main set of results, with the coefficients expressed as odds ratio. We estimate three different specifications: in column (1) we only consider personality traits, in column (2) we also control for demographic characteristics and, in column (3) we add personal opinions.

Results indicate a positive correlation between conscientiousness and agreeableness and the propensity to unionize. A negative correlation between openness and union membership decision is detected instead. The odds ratios are all statistically significant at the 1% level. Conversely, we find that extraversion is never statistically significant, while the negative correlation between neuroticism and unionization decisions becomes non-significant when personal opinions are added to the regression. These results suggest that personal traits matter.

We can now compare these results with the hypotheses previously formulated. With respect to conscientiousness, the expected positive correlation is supported by the empirical evidence. Our hypothesis is that individuals with such trait are more likely join a union in order to seek insurance against the risk of lay-off. In other

TABLE 3 – *Propensity to unionize and the "Big Five" personality traits (pooled sample)*

	(1)	(2)	(3)
	<i>Odds-ratios</i>	<i>Odds-ratios</i>	<i>Odds-ratios</i>
Openness	0.661***	0.666***	0.674***
Conscientiousness	1.211***	1.223***	1.194***
Extraversion	1.074	1.076	1.090
Agreeableness	1.444***	1.433***	1.392***
Neuroticism	0.878**	0.884**	0.942
Demographic characteristics	No	Yes	Yes
Personal opinions	No	No	Yes
Observations	3,213	3,207	3,207
Pseudo R2	0.03	0.04	0.15

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

words, these results point out that the more individuals are organized and dutiful in completing their tasks, the more are likely to be union member. Results for openness to experience instead go against our expectations, as the correlation is negative suggesting that open and extravert individuals are less likely to become union members. One explanation for the openness results may be that individuals endowed with such trait have a higher capacity to adapt, approach challenges and face new situations positively, being able to react and re-organize, according to the changed environment. These workers are probably more independent, compared to those with low levels of openness, and therefore less likely to rely on unions to address their work-related issues. Recalling expectations about the correlation between agreeableness and unionization, individuals with high agreeableness are expected to be characterized by prosocial and collective orientation, thus more inclined to respond positively to communal action, as a mean to join forces and cooperate to improve working conditions. The positive and statistically significant coefficient obtained from the logit regression, confirms the relationship between this trait and the propensity to unionize. While individuals who exhibit positive emotionality and sociability (extraversion) should engage with political and social participation, the coefficient on extraversion is never statistically significant. Similarly, Gerber and Huber (2010) acknowledged the inconsistency of the extraversion trait in their review of the empirical literature on personality and political orientation.

Finally, neuroticism was predicted to have an ambiguous correlation with union membership, depending on whether neurotic individuals like to be involved in social goals or shy away from them. The empirical evidence points, towards a nega-

tive association between low emotional stability and union membership. Neurotic individuals, who do not handle stress well and are generally more anxious and worry prone, seem to shy away from collective participation in union organizations.

TABLE 4 – *Propensity to unionize and the “Big Five” personality traits (workers sample)*

	(1)	(2)	(3)
	<i>Odds-ratios</i>	<i>Odds-ratios</i>	<i>Odds-ratios</i>
Openness	0.687***	0.707***	0.767***
Conscientiousness	0.990	1.023	0.995
Extroversion	1.109	1.143*	1.100
Agreeableness	1.428***	1.348***	1.317***
Neuroticism	1.013	1.091	1.150
Demographic characteristics	No	Yes	Yes
Personal opinions	No	Yes	Yes
Job-related attributes	No	No	Yes
Observations	1,705	1,703	1,703
Pseudo R2	0.02	0.17	0.26

Note: *** p<0.01, ** p<0.05, * p<0.1.

6.2. *Workers sample*

In this section, we replicate the analysis on the sample of workers. After dropping students, housewives and individuals who are not currently working, we are left with 2,337 workers, who represent the sample of interest. Missing observations on job-related characteristics further restrict our sample to approximately 1,700 individuals. Table 4 presents the results on the workers’ sample, replicating the same specification as in Table 3, with the only addition of job-related controls – industry affiliation and firm size – in column (3).

Some differences emerge with respect to previous results. Openness and agreeableness are still statistically significant at the 1% level, while conscientiousness is not. In line with previous results, workers who are characterized by higher agreeableness exhibit a greater propensity to unionize, while workers who are more open seem to be less inclined to join the union. The goodness of fit of the model increases when we control for job-related characteristics suggesting that environmental attributes also influence individual propensity to unionize.

6.3. *The role of mediating factors*

In this section we analyze how mediating factors affect membership decision and present the results of the decomposition. As previously described we characterize different stylized individuals with high and low levels (above and below the median) of the “Big Five” personality traits. Table A.1. in the Appendix reports the differences in the propensity to unionize. We observe a statistically significant difference in the propensity to unionize for all traits. High conscientious, high extravert and high agreeable individuals show higher propensity to unionize; whereas people with high openness and high extraversion are less inclined to unionize. As a first step, we estimate a membership equation, such as (1), for each of the “Big Five” personality trait and separately for individuals with high and low levels of each trait. In practice, we estimate different returns to demographic and other attributes (our mediating factors) across the two stylized group of individuals. Next, we decompose these differences in the propensity to unionize, into an explained “composition” effect and an unexplained component capturing the “behavioral” effect (or returns) in the mediating factors. These are computed using the Oaxaca-Blinder decomposition method. Results are reported in Table 5. We find that difference in the propensity to unionize for conscientiousness is almost completely mediated by compositional factors. For other traits such as openness, extraversion and neuroticism mediating factors account for approximately two-third of differences in unionization propensity, while it is less than one-third for agreeableness

TABLE 5 – *Mediating factors in membership propensity (by personality traits)*

Personality	<i>Gross difference in the propensity to unionize</i>	<i>Explained component (a.v.)</i>	<i>Unexplained component (a.v.)</i>	<i>Explained (in %)</i>	<i>Unexplained (in %)</i>
Openness	-0.0506	-0.0314	-0.192	62%	38%
Conscientiousness	0.0553	0.0530	0.0022	96%	4%
Extraversion	0.0430	0.0265	0.0165	61%	38%
Agreeableness	0.1321	0.0415	0.0906	30%	70%
Neuroticism	-0.0469	-0.0277	-0.0191	59%	41%

Since previous studies have shown that conscientiousness is highly correlated with education³, it is not surprising that compositional effect explains the largest part of the difference in the average propensity to unionize for the conscientiousness trait. Similarly, openness, extraversion and neuroticism are highly correlated with the demographic characteristics included in the estimated model, as well as with

³ A score has been created for every observation for which there is a response to a least one item.

opinion (i.e. being optimist about the future) and political orientation (Forza Italia, Lega Nord and Cinque Stelle)⁴.

7. SENSITIVITY ANALYSIS

In this section we perform a number of sensitivity analyses to address the robustness and limitation of our work. We first check monotonicity in the relationship between the propensity to unionize and personality traits. Second, we discuss the endogeneity (reverse causality) of personality traits and the threat to our estimates. Third, we analyze measurement error issues for the personality trait indicators and finally we check the common support.

7.1. Monotonicity

To check the robustness of our mediation analysis and the decomposition method we use, we analyzed the monotonicity of the relationship between the propensity to unionize and personality traits. We consider different values along the propensity to unionize distribution for each personality trait. Table 6 shows the propensity to unionize differences comparing individuals at different points of the personality score distribution (i.e. scores above the 3rd quartile, median and below the 1st quartile). We cannot reject the hypothesis of monotonicity in the relationship between the propensity to unionize and personality scores for all the different traits. With respect to openness, conscientiousness and agreeableness, the difference in the propensity to unionize between individuals with high and median scores shows the same sign as the difference between median and low scores for each of the “Big Five” traits. In the other cases the differences are not statistically significant.

TABLE 6 – *Difference in the propensity to unionize along the personality trait distribution (quartiles vs. median for each trait)*

	<i>High vs median</i>	<i>Median vs low</i>
Openness	-0.0852***	-0.0634***
Conscientiousness	0.0642***	0.5051***
Extraversion	-0.0001	0.0278
Agreeableness	0.1187***	0.1194***
Neuroticism	-0.0681***	-0.0292

Note: *** indicate statistical significance at the 1%.

⁴ See Barrick and Mount (1991), Raad and Schouwenburg (1996) in Nandi and Nicoletti (2014).

7.2. *Endogeneity*

One potential problem is related to the endogeneity of personality traits. In general traits are assumed to be rather stable after a certain age, as they crystallize to form one’s individual personality. However, it cannot be excluded that shocks occurring later in life do not influence individuals’ personality, as well as their propensity to unionize. In particular, in the psychological literature “genetic factors are [*considered as*] largely responsible for stability in personality in adulthood, whereas environmental factors are mostly responsible for changes” (Borghans et al., 2008). Borghans and Heckman (in Borghans et al., 2008) report that the prevailing view in psychology about the effects of environment on personality traits is pessimistic about their long-lasting effects. “Environmental factors do not exert cumulative long-lasting influences [...] even when substantial, environmental factors do not normally lead, in adulthood, to a long-term redirection to the individuals course of personality development [...]. Environmental factors are most likely to influence behavioral stability when they are consistently and persistently experiences” (McGue, Bacon and Lykken, 1993). We rely on these evidences reported in the psychological literature to claim that the enduring effects of environment and interventions are to be regarded as negligible later in life, typically after the age of 30. Given that the large majority of respondents in the present sample is older than 30 years, we argue that their personality traits are pre-determined and quite stable.

7.3. *Measurement error issue*

A further problem is represented by measurement error since personality traits are typically self-reported and difficult to measure. Since in our analysis personality traits scores are used to split the sample into different groups (i.e. above and below the median score), measurement error can affect our decomposition if scores close to the median threshold are noisy. We tested the sensitiveness of our results applying a donut algorithm which excludes individuals whose personality scores are immediately above or below the median (i.e. between 95% and 105% of the median score). Results of the decomposition do not change when these individuals are dropped.

7.4. *Common support*

One problem with the Oaxaca-Blinder decomposition is due to the possibility that the two groups to be compared have a different support. In other words, this implies that counterfactual statistics are computed using out of the sample prediction. To avoid this problem, the analysis has been replicated enforcing a common support for the predicted probability of being a union member, for each of the five

factors studied. Only few cases had no common support and the decomposition analysis results were not affected.

8. CONCLUSIONS

The present work investigated the relationship between the “Big Five” personality traits model and union membership using information on 4,000 individuals from the Lombardy region. We first estimated the overall effect of personality traits on the propensity to unionize, then we implemented an Oaxaca-Blinder decomposition method to study the role of mediating factors. Our results show that personality traits matter for individual’s union membership decision. Openness to experience, conscientiousness and agreeableness are the traits that are found to be correlated with individuals’ union status. High conscientious and high agreeable people show a higher propensity to unionize, whereas individuals with high openness scores are less likely to unionize. Moreover, we find that the high propensity to unionize associated with conscientiousness is largely explained by differences in individuals observed characteristics, whereas with openness only 30% of the difference is due to observable characteristics. Whilst, several limitations in the data and in the empirical analysis do not allow us to comment on the external validity of the present study, the main set of results provide new evidence on the importance of psychological traits in the decision to join a trade union which the previous literature had overlooked.

APPENDIX

TABLE A.1 – *Difference in the propensity to unionize between high/low personality trait individuals (above/below the median)*

<i>Personality</i>	<i>Gross difference in the propensity to unionize</i>
Openness	-0.0506***
Conscientiousness	0.0553***
Extraversion	0.0430**
Agreeableness	0.1321***
Neuroticism	-0.0469**

Note: ** and *** indicate statistical significance at the 5% and 1%.

TABLE A.2 – *Detailed decomposition of differences in personal propensity to unionize*

<i>Detailed dedecomposition</i>	<i>Openness</i>	<i>Conscientiousness</i>	<i>Extraversion</i>	<i>Agreeableness</i>	<i>Neuroticism</i>
Personal info	0.0011	0.0087	-0.0144	-0.0028	-0.0031
Personal opinions	0.0081	-0.0239	-0.0010	-0.0280	0.0175
Occupation	0.0220	-0.0315	-0.0092	-0.0106	0.0099
<i>Generalized B-O effect</i>	<i>0.0312</i>	<i>-0.0467</i>	<i>-0.0246</i>	<i>-0.0415</i>	<i>0.0243</i>
<i>Unexplained part</i>	<i>0.0194</i>	<i>-0.0086</i>	<i>-0.0184</i>	<i>-0.0906</i>	<i>0.0226</i>
<i>Total difference</i>	<i>0.0506</i>	<i>-0.0553</i>	<i>-0.0430</i>	<i>-0.1321</i>	<i>0.0469</i>

REFERENCES

- Barrick M.R., Mount M.K. (1991). The Big Five personality dimensions and job performance: a meta-analysis. *Personnel Psychology*, **44**, 1-26
- Blinder A.S. (1973). Wage discrimination: Reduced form and structural estimates. *The Journal of Human Resources*, **8**(4), 436-455
- Booth A.L. (1985). The free rider problem and a social custom model of trade union membership. *The Quarterly Journal of Economics*, **100**(1), 253-261
- Booth A.L. (1995). *The economics of the trade union*. Cambridge University Press, Cambridge
- Borghans L., Duckworth A.L., Heckman J.J., Ter Weel B. (2008). The economics and psychology of personality traits. *The Journal of Human Resources*, **43** (4), 972-1059
- De Raad B., Schouwenburg H.C. (1996). Personality in learning and education: A review. *European Journal of personality*, **10**(5), 303-336
- Dell'Aringa C. (1976). *Egalitarismo e sindacato: l'evoluzione dei differenziali retributivi nell'industria italiana*, Vita e Pensiero, Milano
- Freeman R.B., Medoff J.L. (1979). *The two faces of unionism*. The Public Interest, **57**
- Gerber A.S., Huber G.A., Doherty D., Dowling C.M., Ha S.E. (2010). Personality and Political attitudes: relationship across issue domains and political contexts. *American Political Science review*, **104**, 1
- John O.P., Srivastava S. (1999). *The Big Five trait taxonomy: History, measurement, and theoretical perspectives*. In O.P. John, L.A. Pervin (Eds). *Handbook of Personality: Theory and Research*. Guilford Press, New York
- Heckman J.J., Kautz T. (2014). *The myth of achievement tests*. The University of Chicago Press, pp. 347-348
- Heckman J.J., Malofeeva L., Pinto R., Savelyev P. (2008). *The Effect of the Perry Pre-school Program on Cognitive and Noncognitive Skills: Beyond Treatment Effects*. Unpublished manuscript, Department of Economics, University of Chicago
- Hirschman A.O. (1970). *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States*. Harvard University Press, Cambridge, MA
- Kankaras M. (2017). *Personality matters: Relevance and assessment of personality characteristics*. OECD Education Working Papers, N. 157, OECD Publishing, Paris
- 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 (No. w20749). *National Bureau of Economic Research*

Nandi A., Nicoletti C. (2014). Explaining personality pay gaps in the UK. *Applied Economics*, **46**(26), 3131-3150

Oaxaca R. (1973). Male-Female wage differentials in urban labor markets. *International Economic Review*, **14**(3), 693-709

Roberts B.W. (2009). Back to the future: Personality and assessment and personality development. *Journal of research in personality*, **43**(2), 137-145

Thaler R. (1980). Toward a positive theory of consumer choice. *Journal of Economic Behavior & Organization*, **1**(1), 39-60