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PERSONALITY TRAITS AND COUNTERPRODUCTIVE WORK BEHAVIORS: THE MODERATING ROLE OF DEMOGRAPHIC CHARACTERISTICS

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ABSTRACT. The main objective of the current contribution is to determine how the personality traits (Extraversion, Neuroticism, Conscientiousness, Agreeableness and Openness to experience) influence counterproductive work behaviors (CWB), and whether/to what extent this potential impact is moderated by employees' main demographic characteristics. To reach the pointed aim a survey among 1,380 professionally active people in Poland was conducted. Structural Equation Modeling (SEM) methodology was applied to analyze the obtained empirical data. The proposed theoretical models were intended to determine how particular types of personality affect organizational and interpersonal CWB and how those types of personality affect CWB (Production deviance, Abuse against others, Theft, Sabotage, Withdrawal) with potential moderating effects of demographic features. We confirmed that personality traits have an inverse relationship with counterproductive behavior. The strongest predicators of interpersonal and organizational CWB were: Conscientiousness (the correlation in both cases is negative), Agreeableness (only in the case of CWB-I – negative correlation), Neuroticism (CWB-O – negative correlation) and Extraversion (CWB-I – positive influence; CWB-O - negative influence). With regard to the subjective CWB categories, Agreeableness reduced Abuse against others the most, Openness to experience increased Withdrawal, and Extraversion – Abuse against others, while Neuroticism and Conscientiousness reduced Withdrawal the most. The pointed relationships were significantly moderated by the analyzed demographic variables, with most significant moderating effects recorded in the case of women, the elderly and people with longer work experience, as well as in office / clerical positions (compared to those holding managerial positions).

JEL Classification: M5, M12, M54, C30

Keywords: personality traits, counterproductive work behaviors, demographic moderators, Structural Equation Modeling (SEM)

Introduction

The determinants of counterproductive work behaviors (CWBs) are of interest to both practitioners and theorists, mainly due to the significant costs of such behaviors for the organization, but also for the whole economy (Mount et al., 2006; Anjum & Parvez, 2013; Szostek et al., 2020; 2021; Campbell & Popescu, 2021). As an example, it is estimated that in the case of USA CWBs may account even for 20% of failed businesses (Coffin, 2003). Approximately 25% of companies have fired employees for misuse of the Internet (American Management Association, 2005). However, this negative picture may be still not reflecting the real scale of the problem. For example, it is especially difficult to quantify the negative psychological impact of CWB on the employees (Cohen & Nica, 2021; Mitchell & Lăzăroiu, 2021; Stverkova et al., 2018). Such behaviors can destroy employee' morale, and be responsible for higher rates of absenteeism and lover turnover or productivity (Hoel et al., 2003). It can have negative influence on fundamental competitiveness factors such as internal and external entrepreneurship attitude, initiative potential or abilities to look for innovative solutions (see Dankiewicz et al., 2020; Skalická et al., 2023; Meluzín et al., 2018**;** Civelek et al., 2021; Ključnikov, et al. 2021; Cortes, et al., 2021; Kuswanto et al., 2022; Ledi et al., 2022).

The overall determinants of CWB can be divided into situational (i.e. organizational and non-organizational) and individual; none of them determine these behaviors on their own (Brass et al., 1998). The discussion between personality theorists and social-cognitive viewers about CWB determinants has been vigorous for a long time and there is no indication that it should end soon. There is consensus among researchers that stressors caused by the organization (e.g. injustice on the part of superiors, organizational limitations, work overload) mainly determine CWB directed at the organization (e.g. sabotage, stealing information, violating company's image) (Skarlicki et al., 1999; Everton et al., 2007), while interpersonal stressors (the source are other people, e.g. interpersonal conflicts at work) result in CWB harming coworkers or other stakeholders (Spector et al., 2006).

The organizational determinants of CWB include, for example, a sense of organizational injustice (Berry et al., 2007) and inappropriate treatment by a supervisor (e.g., humiliation) (Cortina & Magley, 2003), resulting in a desire to retaliate (Hung et al., 2009). In this case, CWB is a form of adaptation to the perceived working conditions and a way to regain balance in the sense of justice in the employee-organization relationship (Mount et al., 2006; Cohen-Charash & Mueller, 2007; Cizrelioğulları & Babayiğit, 2022). Other organizational conditions may be: stress (Bowling & Eschleman, 2010), job insecurity (Fine et al., 2010), boredom / insufficient employee stimulation (Bechtoldt et al., 2007), routine, monotonous and low-involvement work (Rodell & Judg, 2009), disappointment with work (Judge et al., 2006), dissatisfaction with work (Mount et al., 2006), low-quality interpersonal relations between employees (Szostek, 2019), insufficient control of subordinates (Kwok et al., 2005), as well as the lack of social norms and structures in the organization that would prevent CWB (Spector et al., 2006).

Non-organizational determinants of these behaviors can be divided into social (e.g. national culture that allows mobbing or harassment at work), economic (e.g. job insecurity or social pauperization that increase the propensity to steal), technological (cyberloafing due to the development of social media), legal (no penalisation of certain CWBs, e.g. mobbing) (Szostek, 2019) and environmental (e.g. air pollution; Fehr et al., 2017).

Among the individual determinants of CWB one should mention the demographic characteristics of employees. It has been empirically confirmed that age and education negatively affect CWB – the higher the age or education, the lower the tendency to such behavior (Douglas & Martinko, 2001; Ng & Feldman, 2009). Moreover, men are more often involved in these behaviors than women (Salami, 2010; Nowak, 2020), This applies, for

example, to aggression, accidents at work caused by breach of regulations (Iverson & Erwin, 1997), but also to behavior with the features of a crime. Other features differentiating the propensity to counterproductive behavior may be self-control and past history of an employee, e.g. aggressive parents raise aggressive children or prior involvement in absenteeism increases the likelihood of similar behavior in the future. In this context, the length of service is also important – the more work experience, the lower the CWB (Douglas & Martinko, 2001; Ones et al., 2003).

Due to the fact that such behaviors are discretionary, it is assumed that they are more likely to be influenced by individuals' personality traits than by ability factors (Mount et al., 2006). For example, in the study by Douglas & Martinko (2001), dispositional factors explained as much as 62% of the variance of aggression at work. Moreover, some authors believe that personality makes the most significant contribution to research on CWBs (e.g. Salgado, 2002; Miller et al., 2003). Hence, Miller & Lynam (2001) suggest that it is necessary to investigate how individual personality traits affect the general CWB and specific cases of such behaviors.

The influence of personality on CWB is usually attributed to traits such as Conscientiousness and Emotional Stability (or Neurotism) in the Five Factor Model (FFM) of personality, because they are the strongest predictors of voluntary behaviors (Barrick et al., 2001). These issues are not unequivocally presented in the literature, because there is a shortage of studies and meta-analyses regarding the direct influence of personality traits on general CWB and specific manifestations of such behaviors (Ones et al., 2003; Mount et al., 2006). Much more often the analysis covers the influence of personality on positive phenomena in the organization, such as turnover, job performance, training success, integrity, safety, etc. (Salgado, 2002; Ferreira & Nascimento, 2016). Thus, despite the validity of personality tests in explaining various job-related criteria is well established, less well established is the theoretical background of such tests' criterion-related validities in predicting CWB and other negative phenomena in organizations (Marcus et al. , 2007).

For example, Mount et al. (2006) found in their research that personality traits differentially predict CWBs and that job satisfaction explain partially these personality-behavior relationships. First of all, Agreeableness had a direct (negative) impact on CWB-I and Conscientiousness had a direct (also negative) impact on CWB-O. Similar results are also provided by the meta-analysis by Barrick et al. (2001), according to which Conscientiousness has the strongest impact on organizational CWB and – with Emotional Stability – on interpersonal CWB. The relationship between the personality traits of employees and their tendency to CWB was also shown in the research or meta-analyzes by: Miller & Lynam (2001), Sackett & DeVore (2001), Salgado (2002), Cullen & Sackett (2003), Miller et al. (2003), Ones et al. (2003), Dalal (2005), Marcus et al. (2007) and Ferreira & Nascimento (2016). Generalizing the results of these studies, the strongest (in this case negative) influence on CWBs was exerted by Conscientiousness and then by Emotional Stability and Agreeableness. These behaviors are also influenced by the last two personality traits within FFM, i.e. Extraversion and Openness to experience – they also predict performance, but only for certain types of jobs (Barrick et al., 2001).

In previous studies on the impact of employee personality traits on counterproductive behaviors, the authors most often distinguished between the impact of personality on individual- and organization-targeted behaviors (CWB-I; CWB-O) (Gruys & Sackett, 2003). Interpersonal CWBs are behaviors directed at others in the organization (e.g. coworkers, customers) that are intended to harm. Organizational CWBs are behaviors targeted on the organization and are harmful to it.

Relatively less studies are devoted to research which personality traits of employees influence the categories of CWB, i.e. separate and exhaustive classes of such behaviors distinguished not by their target object, but by the subjective nature, such as abuse against

others, production deviance, theft, sabotage and withdrawal (Spector et al., 2006) or production deviance, property deviance, political deviance and personal aggression. In practice, it most often boiled down to examining how the personality traits of employees affect selected manifestations of CWB, e.g. poor attendance, disciplinary actions, not following directions, unauthorized absences, and drug and alcohol use on the job; theft, disciplinary problems, organizational rule breaking; substance abuse, property damage; absenteeism, workplace violence workplace aggression (Douglas & Martinko, 2001; Jensen-Campbell & Graziano, 2001; Salgado, 2002; Ones et al., 2003).

However, when analyzing the influence of personality traits on counterproductive work behaviors, differentiating between such disjoint and exhaustive categories is very important for many reasons. First, it can further justify the distinction not only between interpersonal and organizational CWBs, but also between many categories of CWB, and it can help to better understand the personality (Lee et al., 2005a) and counterproductive behaviors at work. Second, it can also suggest practical ways for reducing CWBs. Third, it gives new directions for future research (Mount et al., 2006).

In the research on the influence of personality traits on CWB, some authors seek to find moderators that shape this influence, such as job satisfaction (Mount et al., 2006) and gender (Miller et al., 2003). So far, not many authors have undertaken a comprehensive study of how the relationship between personality and CWB is moderated by such demographic characteristics of employees as sex, age, length of service or type of work (see Szostek et al., 2020, 2021). Meanwhile, a broader model is needed for explaining the influence of personality traits on CWB, which would include more variables. Importantly, based on extended literature review, to our best knowledge, the problem is not empirically analyzed in Central European environment and, what is more, no one has so far studied the influence of personality traits on CWB in Polish conditions (see also Szostek, 2019; Szostek et al., 2020, 2021). In this case, the cultural differences are so significant that the results of this type obtained with empirical studies in different countries, can provide interesting outcome compared to the conclusions dominating in the literature (Ferreira & Nascimento, 2016).

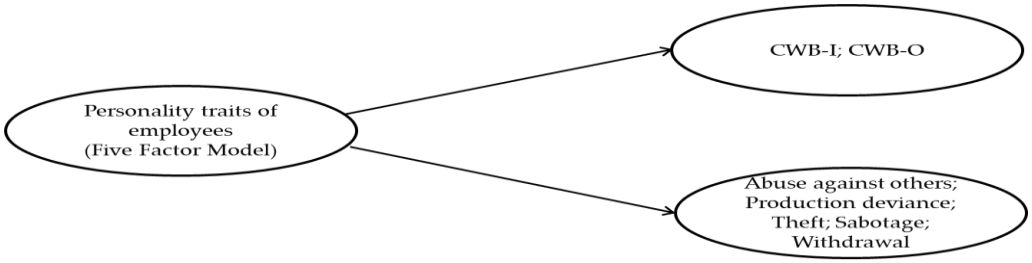
Summing up, taking into account the existing gaps in knowledge and the topic of the influence of personality traits on counterproductive behaviors at work, the authors set the following goals: 1) determining how the personality traits of employees affect the counterproductive behavior at work (including CWB-I and CWB-O and the subjective categories of such behavior: abuse against others, production deviance, theft, sabotage and withdrawal), 2) determining how the impact of employees' personality traits on the counterproductive work behavior is moderated by the demographic characteristics of employees (sex, age, length of service and type of work).

To reach the pointed objectives, a survey was conducted in April and May 2022 on a sample of 1380 professionally active people in Poland. Two research hypotheses were adopted, which are also visualized with the model in Figure 1:

Hypothesis 1: Personality traits of employees have a significant influence on counterproductive work behavior (including CWB-I and CWB-O, and subjective categories of CWB: abuse against others, production deviance, theft, sabotage and withdrawal),

Hypothesis 2: The influence personality traits of employees have on the degree of counterproductive work behavior is moderated by the demographic characteristics of employees, including: (H2a) sex, (H2b) age, (H2c) length of service and (H2d) type of work.

[H1]



[H2]

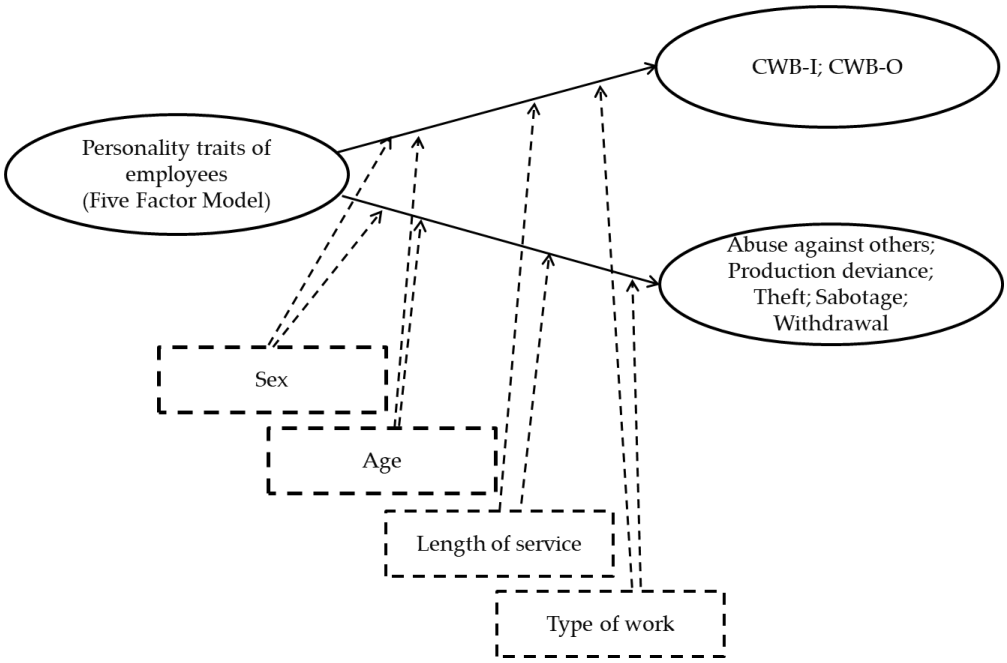


Figure 1. The visualization of hypotheses
Source: *own work.*

We expect this study to make important contribution to the international literature in two main areas. First, this research describes the influence of employees' personality traits on counterproductive work behaviors (including CWB-I and CWB-O, and also subjective categories of CWB). This study also describes how this impact is moderated by demographic characteristic of employees (sex, age, length of service and type of work) in Central European cultural and institutional contexts.

In the following sections, we first describe the theoretical framework for the research. Next, we propose a methodology for statistical verification of the empirical data and we set up the research models. Then, we discuss the direct empirical results and the main contributions of those findings. Lastly, we conclude with practical implications of the current study, the main limitations, and finally future research directions.

1. Literature review

1.1. Personality traits

Personality means „individual's tendency to think, feel, and act in certain consistent ways" (Miller et al., 2003, p. 497; Tekin & Turhan, 2020). The assessment of personality traits in an organization is a wide practice, not only in the recruitment process, but also in employee training and development (Furnham & Miller, 1997; Sarwoko & Nurfarida, 2021; Wach & Głodowska, 2021).

Many authors confirm the possibility of a reliable and objective measurement of human personality traits, as well as the usefulness of these traits in explaining human behavior (Miller et al., 2003; Nasser, 2021). The results of studies suggest that personality is associated with different types of employees' activities (Ferreira & Nascimento, 2016). Consequently, personality traits can also help to understand counterproductive work behavior. Some authors point to heritability of CWB, which can be explained by the heritability of personality. Hence, it is not without reason that personality is examined in the context of criminal behavior, traffic violations or accidents at work, etc. (Iverson & Erwin, 1997; Trimpop & Kirkcaldy, 1997).

Research on the influence of personality traits on CWB has also critics, who usually justify their skepticism (unfortunately often rightly) with the methodological shortcomings of such studies or the lack of reliability of the measuring instruments used in them. Currently, these allegations have become to some extent obsolete, mainly due to the fact that in recent years, validated personality models as well as reliable instruments for measuring personality traits have been proposed (Miller et al., 2003; Szostek, 2022). However, one still should be aware of the problems with possibilities, or rather impossibility of replication of the empirical studies, not only in different countries, but also in the same cultural and institutional context.

Proposed by Costa & McCrae (1990) the Five Factor Model (FFM), known as the Big Five or OCEAN model, is the most investigated and empirically supported model of personality (Saucier &Ostendorf 1999; Ferreira & Nascimento, 2016). Originally, this model was used to identify the most important domains of personality to describe the personality traits of oneself and other persons (Miller et al., 2003). FFM contains five domains, each comprised of six specific personality traits that can be used in the research on the influence of personality on CWB. The mentioned domains of personality are (Douglas & Martinko, 2001; Mount et al., 2006; Ferreira & Nascimento, 2016):

1. Extraversion – how sociable, talkative and engaged in the outside world a person is,
2. Conscientiousness (or Constraint) – conscientious people are dependable (responsible, dutiful, reliable, rules-compliant) and achievement oriented (hardworking, persistent, and goal-directed). Highly conscientious employees are more productive than less conscientious employees because they spend more time on tasks, their job knowledge is higher, they set goals and follow them, they go beyond role requirement and they avoid CWB;
3. Emotional stability/Neuroticism (or Negative affectivity) – lack of emotional stability, seeing negative sides of the phenomenon, pessimism, tension, nervousness, stress, tendency to anxiety. Employees high in neuroticism are more likely to engage in withdrawal behaviors. On the other hand, employees low in negative affectivity are more optimistic, less stressed and more enthusiastic. Interestingly, both dimensions of personality are independent of each other and can occur simultaneously with different intensity;
4. Agreeableness – people high in agreeableness are emphatic to others, prone to co-working and trusting; disagreeable people are self-centered, arrogant, non-

cooperative, vengeful, argumentative and manipulative, emotional, and they have interpersonal relationships that are characterized by conflict,

5. Openness to experience (or intellect/unconventionality) – to what extent a given person is imaginative, sophisticated in the world, interested in different areas and breaks conventions.

However, FFM has also critics (see Block, 1995). Judge et al. (1997) indicate that this model provides too coarse description of personality traits. Besides, among the 5 dimensions of this model, only two are theoretically best described, i.e. Extraversion and Emotional Stability (Jensen-Campbell & Graziano, 2001). One of the objections raised against FFM is also that this model does not take into account negative categories, hence the Dark Triad model is proposed (Paulhus & Williams, 2002), which includes: narcissism, Machiavellianism and psychopathy.

As an alternative, HEXACO model of personality is sometimes proposed. Some authors believe (e. g. Lee et al., 2005b; Marcus et al., 2007) that this model is more effective than the FFM in explaining the validity of overt integrity tests, whereas the FFM is more applicable than HEXACO model in explaining the validity of personality-based integrity tests (e.g. Ones et al., 2003). HEXACO is an acronym for six categories of personality, however, with five of them resembling the content of the FFM, whereas the new original component is honesty-humility (Marcus et al., 2007). This component represents differences in a reluctance versus a willingness to exploit other people (Lee et al., 2005b). The presence of this sixth component of personality has been confirmed in studies conducted in at least eight languages including Dutch, French, German, Hungarian, Italian, Korean, Polish, and English (Lee et al., 2005a).

Considering the measurement of the influence of personality traits on CWB, there should be mentioned the so-called integrity (honesty) tests. Such tests have existed since the late 1940s (Schmidt et al., 1997) and, as indicated by Ones et al. (2003, p. 22) they „are perhaps the most researched occupational scales in the literature". These tests are used to determine to what extent job applicants or employees are willing to engage in CWB (mainly theft, but also violations of discipline, unjustified absenteeism, etc.) (Fallon et al., 2000; Ones et al., 2003; Marcus et al., 2007).

Two types of integrity tests can be distinguished: overt (clear purpose) and personality-oriented (general purpose) (Schmidt et al., 1997; Fallon et al., 2000; Ones et al., 2003). In the first case, the respondents are aware of the purpose of the study, i.e. to establish whether they engage in various manifestations of CWB (first of all: theft). An example question on such a test may be: „Have you ever taken away property belonging to your current employer without permission?". In turn, personality-oriented tests concern many different manifestations of CWB in practice, and the tendency to such behavior is measured indirectly, i.e. by measuring the personality traits of a given person. These tests are similar in practice to personality inventories, and many researchers equate them with instruments based on the Big Five model.

1.2. Counterproductive work behaviors

In recent years, one can notice a growing interest in the empirical studies on counterproductive work behaviors and their impact on the functioning of the organization (Lee et al., 2005a; Jędrzejczak-Gas & Wyrwa, 2020). The negative consequences can be mitigated via the relevant mangerial support regarding the changes in business surroundings (Mishchuk et al., 2022; Piecuch & Szczygieł, 2021). However, counterproductive behaviour can be often arisen from organisational changes and appropriate behaviour responses of employees (Castillo, 2022). These behaviors are often called as antisocial (Miller et al., 2003; Lee et al., 2005a), unruliness (Hunt, 1996), destructive / hazardous (Murphy, 1993) or unethical. These concepts are close, but definitely not the same. For example, antisocial individual is manipulative,

oppositional and has a tendency to act without thinking (Miller et al., 2003). On the other hand, unethical behavior breaks certain social metanorms (hypernorms, e.g. „you cannot steal, lie, gossip"; Umphress & Bingham, 2011), which do not always have to comply with organizational norms (Everton et al., 2007). The concept of counterproductive work behavior is dominant and best reflects the essence of what is meant by negative behavior at work. For behavior to be considered counterproductive, the following conditions must be met (Spector & Fox, 2010): 1) the behavior has violated the rules in the organization, 2) the behavior was undertaken voluntarily, 3) the behavior harms (or may harm) the organization and / or its stakeholders.

The diversity of CWB definitions and classifications makes it difficult, or even impossible, to compare research results and to assess the state of knowledge about this type of behavior, including its determinants and effects, which was already pointed as the reason for methodological criticism of the studies in the field.

Form the practical business perspective, these behaviors range from minor abuses (e.g., gossiping, leaving work early without permission, or cyberloafing) and more serious organizational violations (e.g., physical/psychical, fraud). There are many classifications of counterproductive work behavior, but most of them are not exhaustive (i.e. they do not cover all possible CWB cases) and disjoint (i.e. there is overlap between different classes / categories of CWB) (see Gruys & Sackett, 2003; Vardi & Weitz, 2004; Szostek et al. 2020, 2021).

One of the more frequently cited classifications of CWB is the one proposed by Spector et al. (2006), who distinguished CWB aimed at other persons and against the organization. They also proposed 5 subjective categories of these behaviors, i.e. .: 1) abuse against others – behavior harmful to other stakeholders of the organization (e.g. violence, slander, cheating); 2) production deviance – performing duties in such a way that it is impossible to complete the work properly (in terms of the quantity and / or quality of results; e.g. violation of safety rules, voluntarily slow working), 3) sabotage – destruction of the organization's property (not only material but also non-material, e.g. image); 4) theft – appropriation of the property belonging to an organization or other people; 5) withdrawal – limiting working time below the minimum necessary for the proper achievement of goals (e.g. being late, leaving the workplace early without permission).

However, from the empirical perspective, it is important that despite the diversity of definitions and classification of CWB and the different meaning of individual manifestations of these behaviors, it is still possible to develop a single broad construct that can be derived from this diversity (Bennett & Robinson, 2000; Szostek, 2022).

2. Methods

2.1. Data and sample characteristics

The study was conducted from April to May 2022 using an online survey among professionally active people in Poland. Due to objective financial costs constraints as the main formal limitation of the study, the selection of the sample was non-random. The questionnaire was addressed to: a) all municipal offices in Poland (about 2.5 thousand), b) 200 enterprises included in the ranking of the 200 largest companies in Poland for 2021 of the Wprost magazine. The characteristic of the respondents in terms of the main demographic characteristics is presented in Table 1.

Table 1. The demographic characteristic of the sample

Sex	F	79.9% (1103 employees)	Type of work	Office / clerical	80.2% (1107 employees)
	M	19.5% (269 employees)		Managerial	19.4% (268 employees)
	Missing	0.6% (8 employees)		Blue collar	0.1% (2 employees)
Age	Mean	40.96 years		Missing	0.2% (3 employees)
	MIN	20 years	Region of Poland (voivodship)	dolnośląskie	0.9% (13 employees)
	MAX	78 years		kujawsko-pomorskie	0.1% (1 employee)
	SD	10.53 years		lubelskie	0.5% (7 employees)
	Missing	45 employees		małopolskie	19.9% (274 employees)
Education	Higher	89.3% (1232 employees)		mazowieckie	11.2% (154 employees)
	Vocational	10.4% (144 employees)		opolskie	0.1% (1 employee)
	No education	0.1% (1 employee)		podkarpackie	5.0% (69 employees)
	Missing	0.2% (3 employees)		podlaskie	9.4% (130 employees)
Length of service	Mean	12.57 years		pomorskie	13.6% (187 employees)
	MIN	1 month		śląskie	11.9% (164 employees)
	MAX	49 years		świętokrzyskie	3.3% (46 employees)
	SD	10.95 years		warmińsko-mazurskie	5.8% (80 employees)
	Missing	43 employees		wielkopolskie	13.5% (186 employees)
Employment sector	Private	20.4% (282 employees)		zachodniopomorskie	4,9% (68 employees)
	Public	79.2% (1093 employees)			
	Missing	0.4% (5 employees)			

Source: *own study.*

2.2. Measurement scales

The Counteproductive Work Behavior Checklist (CWB-C) scale proposed by Spector et al. (2006) was used to measure counterproductive work behaviors (the detailed discussion on the development of the scale is available in Szostek, 2022). The authors proposed a self-report instrument that assesses the intensity (types and frequency) to which individuals engage in counterproductive behavior in the current job. The most extensive version of the scale has 45 items and this was used in the study. The items on the scale can be divided into classes due to

the target of such behaviors (individuals or organization) and their subjective nature (abuse against others, production deviance, theft, sabotage, withdrawal).

So far, in research on the potential influence of personality traits on CWB no one has used this instrument (the only exception are the studies by Bolton et al., 2010). Most often, the scale proposed by Bennett & Robinson (2000) was used, in which the authors distinguished the CWB categories only due to the target object of such behaviors, ignoring the issue of dividing such behaviors according to their subjective nature.

In the case of measuring personality traits, there are in practice a lot of applicative inventories. They can be divided into Criterion-Focused Occupational Personality Scales (COPS) (e.g. integrity tests, violence scales or alcohol scales) and Job-Focused Occupational Personality Scales (JOPS) (e.g. sales potential scales and managerial potential scales) (Ones et al ., 2003). In the case of current research, the universal scale IPIP-NEO-FFI-50 (International Personality Item Pool NEO-Five Factor Inventory-50) proposed by Goldberg (1992) was used. The scale consists of 50 items divided into 5 factors – personality types (the so-called Big Five): Neuroticism, Extraversion, Openness to experience, Agreeableness and Conscientiousness (see Szostek et al., 2020). The Polish version of this scale is proposed by Strus et al. (2014). This scale is based on the aforementioned FFM, which has gained widespread acceptance as a significant model for explaining the structure of personality traits in various situations (e.g. Saucier & Goldberg, 2003). The structure of the model has been confirmed with many measuring instruments, in different communities and different cultures (e.g. Mount, et al., 1994; Saucier & Ostendorf, 1999). For example, meta-analytic research indicated that the criterion validities of the FFM are similar in the United States and Europe, which allowed the integration of American and European databases (Barrick et al., 2001). Hence, the Big Five model is most often used in the available studies on the influence of personality traits on CWB (Salgado, 2002).

3. Results

3.1. Reliability values

The obtained data was analyzed with application of IBM SPSS Statistics and IBM SPSS Amos v. 16. 1380 correctly completed questionnaires were obtained. Based on the applied confirmatory factor analysis, it was possible to select such variables of personality types and counterproductive behaviors, which most significantly shaped the given construct and had the highest factor loadings, which was important from the point of view of the SEM model estimated in the next stage. Table 2 summarizes the individual factors with a list of observable variables that shape them (P - personality traits; C - CWB).

The values of the Cronbach's Alpha statistics for most of the analyzed factors were oscillating around the value of 0.7 or higher, which means good reliability of the used scale (see Muriithi et al., 2019; Nguyen, et al., 2021). Only for such factors as: theft, production deviance and sabotage the obtained statistic value was below the value of 0.6. Hence, the last two of the factors mentioned, due to too low scale reliability, were omitted when estimating the SEM models. It was decided to keep the theft factor, due to its importance from the point of view of explaining the counterproductive work behaviors. Based on the previous studies, it can be assumed that the best suited scales are usually based on three, and a maximum of 4 factors (abuse against others, theft, withdrawal / abuse against others, theft, withdrawal and sabotage).

Table 2. A list of factors with the measurable variables that describe them and the Alpha-Cronbach statistics

Factors	Measurable variables	Alphe-Cronbach statistics
Neuroticism	P16, P21, P31, P36	0.767
Extraversion	P7, P17, P27, P37	0.765
Openness to experience	P18, P23, P28, P33	0.690
Agreeableness	P29, P39, P44, P49	0.687
Conscientiousness	P20, P30, P40, P50	0.740
CWB-I	C20, C31, C33, C37	0.756
CWB-O	C2, C17, C19, C23	0.724
Abuse against others	C20, C31, C33, C37	0.756
Theft	C10, C24, C25, C32	0.568
Withdrawal	C6, C7, C17, C19	0.607
Production deviance	C5, C13, C18	0.550
Sabotage	C1, C8, C9	0.490

Surce: *own study.*

To verify the research hypotheses, the two SEM models were estimated, where the maximum likelihood method was applied. A significance coefficient of 0.05 was adopted in the research.

3.2. Hypothesis testing

Hypothesis 1 – the first hypothetical model referring to the influence of personality traits on CWB-I and CWB-O is presented in Figure 2. The enabled to describe structural relationships between personality types and categories of counterproductive work behaviors. It also assumes the existence of relationships between the very types of personality, without specifying the direction of influence. Only the correlations between personality types that have a substantive justification (based on the research carried out by other authors) and that were statistically significant were left in the model. The visualization itself does not take into account the components of individual factors (measurable variables). In the model, the set of these variables is identical to the list presented in Table 2.

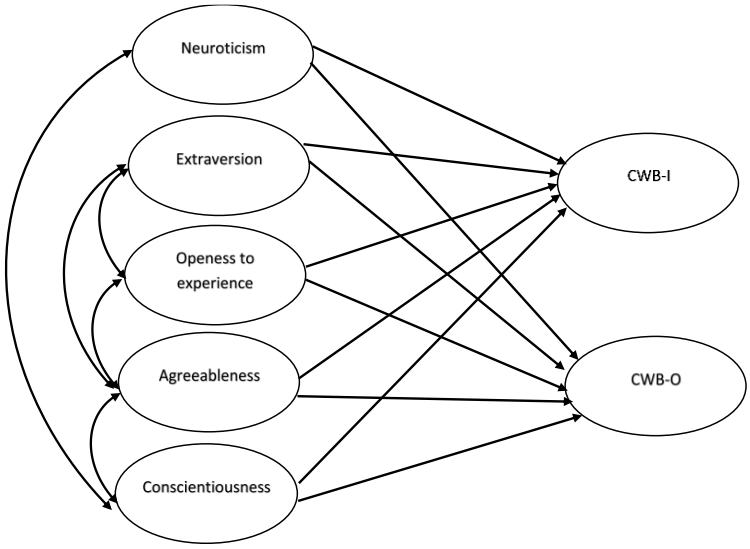


Figure 2. The visualization of SEM 1 model (the impact of personality traits on CWB-I and CWB-O)
Source: *own work.*

Table 3 contains the results of the maximum likelihood estimation of the external SEM 1 model (factor analysis). Then, Table 4 presents the results of this estimation for the internal model (regression analysis), and Table 5 the values included in the correlation and covariance model. Finally, Table 6 presents measures of the degree of fit between the model and the empirical data.

Table 3. The results of the estimation of the external SEM 1 model

Relationship	Parameter	Parameter evaluation	P-value
P16 ← Neuroticism	α_1	0.694	
P21 ← Neuroticism	α_2	0.602	0.000
P31 ← Neuroticism	α_3	0.706	0.000
P36 ← Neuroticism	α_4	0.717	0.000
P7 ← Extraversion	α_5	0.706	
P17 ← Extraversion	α_6	0.729	0.000
P27 ← Extraversion	α_7	0.665	0.000
P37 ← Extraversion	α_8	0.586	0.000
P18 ← Openness to experience	α_9	0.672	
P23 ← Openness to experience	α_{10}	0.657	0.000
P28 ← Openness to experience	α_{11}	0.576	0.000
P33 ← Openness to experience	α_{12}	0.499	0.000
P29 ← Agreeableness	α_{13}	0.608	
P39 ← Agreeableness	α_{14}	0.711	0.000
P44 ← Agreeableness	α_{15}	0.472	0.000
P49 ← Agreeableness	α_{16}	0.611	0.000
P20 ← Conscientiousness	α_{17}	0.631	
P30 ← Conscientiousness	α_{18}	0.667	0.000
P40 ← Conscientiousness	α_{19}	0.601	0.000
P50 ← Conscientiousness	α_{20}	0.636	0.000
C20 ← CWB-I	α_{21}	0.583	
C31 ← CWB-I	α_{22}	0.670	0.000
C33 ← CWB-I	α_{23}	0.692	0.000
C37 ← CWB-I	α_{24}	0.723	0.000
C2 ← CWB-O	α_{25}	0.603	
C17 ← CWB-O	α_{26}	0.662	0.000
C19 ← CWB-O	α_{27}	0.556	0.000
C23 ← CWB-O	α_{28}	0.702	0.000

Source: *own study.*

Table 4. The results of the estimation of the internal SEM 1 model

Relationship	Parameter	Parameter evaluation	Assessment of standardized parameters	P-value
Neuroticism → CWB-I	β_1	0.015	0.032	0.492
Extraversion → CWB-I	β_2	0.061	0.146	0.002
Openness to experience → CWB-I	β_3	0.026	0.063	0.145
Agreeableness → CWB-I	β_4	-0.170	-0.304	0.000
Conscientiousness → CWB-I	β_5	-0.093	-0.186	0.000
Neuroticism → CWB-O	β_6	-0.129	-0.202	0.000
Extraversion → CWB-O	β_7	-0.053	-0.094	0.041
Openness to experience → CWB-O	β_8	0.027	0.049	0.246
Agreeableness → CWB-O	β_9	0.028	0.037	0.528
Conscientiousness → CWB-O	β_{10}	-0.442	-0.653	0.000

Source: *own study.*

Table 5. Correlation and covariance values included in the SEM 1 model

Relationship	Parameter	Covariance	Correlation	P-value
Neuroticism ↔ Conscientiousness	π_1	-0.220	-0.540	0.000
Extraversion ↔ Agreeableness	π_2	0.218	0.530	0.000
Openness to experience ↔ Agreeableness	π_3	0.177	0.427	0.000
Extraversion ↔ Agreeableness	π_4	0.153	0.277	0.000
Agreeableness ↔ Conscientiousness	π_5	0.096	0.277	0.000

Source: *own study.*

Table 6. Measure of the degree of fit of the SEM a model

Model	IFI	PNFI	RMSEA	CMIN/DF
Estimated	0.832	0.666	0.063	6.457
Saturated	1	0.000		
Independent	0	0.000	0.139	27.688

Source: *own study*.

The results for the external model (see Table 4) indicate that all factor loadings are statistically significant. Some parameters do not have a given P-value, which results from the inability to calculate it and is caused by the need to assign a constant variance to a part of the variables in order to ensure the traceability of the model.

It can be noted that Openness to experience has no significant influence on both CWB-I (β_3) and CWB-O (β_8). The influence of Neuroticism on CWB-I (β_1) and Agreeableness on CWB-O (β_9) also turned out to be statistically insignificant. Extraversion significantly promotes the formation of CWB-I (β_2), and at the same time reduces the tendency to CWB-O (β_7). Conscientiousness significantly reduces interpersonal and organizational CWB (β_5, β_{10}). In addition, Agreeableness reduces the tendency to CWB-I (β_4), and Neuroticism reduces the tendency to CWB-O (β_6).

With respect to the correlations between personality traits (see Table 5), it can be noticed that only the relationship between Neuroticism and Conscientiousness is negative.

In relation to the degree of fit the model to empirical data (see Table 6), it should be noted that the IFI value is 0.832, while the RMSEA is 0.063, which allows the conclusion that the model is correctly and satisfactorily fitted to empirical data. Although the CMIN/DF statistics differs from the norm and is above the value of 2, it should be remembered that in the

case of SEM models, each of the model quality measures proposed in the literature have certain limitations, and the choice between them is often subjective (Balcerzak & Pietrzak, 2016; Yayla et al., 2021).

The second hypothetical model, describing the influence of personality types on the subjective CWB categories, is presented in Figure 3. Similarly to the first model, the existence of relations between the personality traits themselves, without specifying the direction of influence as assumed. Theft seems to be the most serious action against the organization of the three analyzed categories of CWB, thus it was additionally assumed that Theft was influenced by Withdrawal and Abuse against others. It is also assumed that Withdrawal leads to Abuse against others.

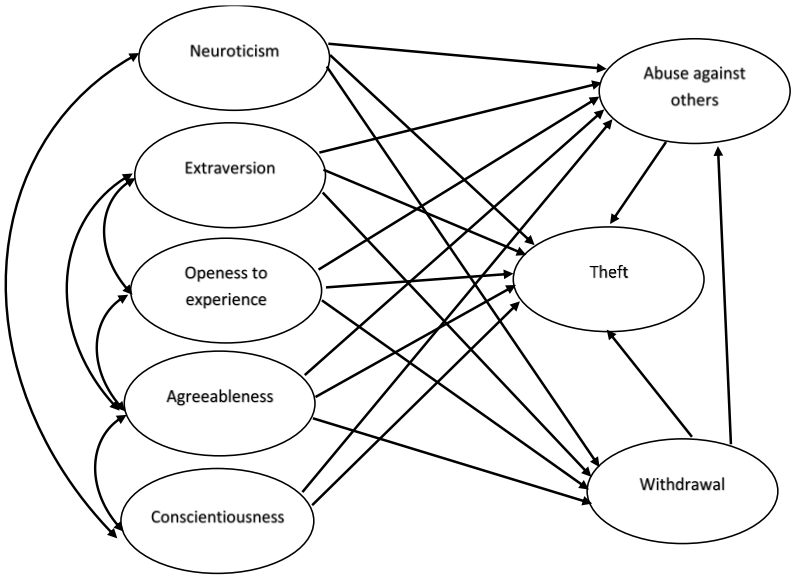


Figure 3. The visualization of the SEM 2 model (the impact of personality traits on subjective CWB categories)
Source: *own work.*

Analogically to model 1, Table 7 presents the results of the maximum likelihood estimation of the external SEM 2 model (factor analysis), and Table 8 – the results of this estimation for the internal model (regression analysis). Table 9 presents the values included in the correlation and covariance model, Table 10 – measures of the degree of model fit to the empirical data, and Table 11 – standardized total effects of the impact of individual categories.

Table 7. The results of the estimation of the external SEM 2 model

Relationship	Parameter	Parameter evaluation	P-value
P16 ← Neuroticism	α_1	0.693	
P21 ← Neuroticism	α_2	0.604	0.000
P31 ← Neuroticism	α_3	0.707	0.000
P36 ← Neuroticism	α_4	0.715	0.000
P7 ← Extraversion	α_5	0.703	
P17 ← Extraversion	α_6	0.730	0.000
P27 ← Extraversion	α_7	0.666	0.000
P37 ← Extraversion	α_8	0.586	0.000
P18 ← Openness to experience	α_9	0.669	

P23 ← Openness to experience	α_{10}	0.660	0.000
P28 ← Openness to experience	α_{11}	0.572	0.000
P33 ← Openness to experience	α_{12}	0.502	0.000
P29 ← Agreeableness	α_{13}	0.608	
P39 ← Agreeableness	α_{14}	0.713	0.000
P44 ← Agreeableness	α_{15}	0.474	0.000
P49 ← Agreeableness	α_{16}	0.606	0.000
P20 ← Conscientiousness	α_{17}	0.641	
P30 ← Conscientiousness	α_{18}	0.661	0.000
P40 ← Conscientiousness	α_{19}	0.617	0.000
P50 ← Conscientiousness	α_{20}	0.630	0.000
C20 ← Abuse against others	α_{21}	0.593	
C31 ← Abuse against others	α_{22}	0.657	0.000
C33 ← Abuse against others	α_{23}	0.696	0.000
C37 ← Abuse against others	α_{24}	0.724	0.000
C6 ← Withdrawal	α_{25}	0.458	
C7 ← Withdrawal	α_{26}	0.453	0.000
C17 ← Withdrawal	α_{27}	0.633	0.000
C19 ← Withdrawal	α_{28}	0.662	0.000
C10 ← Theft	α_{29}	0.478	
C24 ← Theft	α_{30}	0.650	0.000
C25 ← Theft	α_{31}	0.698	0.000
C32 ← Theft	α_{32}	0.676	0.000

Source: *own study.*

Table 8. The results of the estimation of the internal SEM 2 model

Relationship	Parameter	Parameter evaluation	Assessment of standardized parameters	P-value
Neuroticism → Withdrawal	β_1	-0.106	-0.170	0.001
Extraversion → Withdrawal	β_2	-0.068	-0.124	0.013
Openness to experience → Withdrawal	β_3	0.042	0.077	0.094
Agreeableness → Withdrawal	β_4	0.005	0.007	0.920
Conscientiousness → Withdrawal	β_5	-0.331	-0.512	0.000
Neuroticism → Abuse against others	β_6	0.081	0.185	0.000
Extraversion → Abuse against others	β_7	0.089	0.231	0.000
Openness to experience → Abuse against others	β_8	0.014	0.037	0.394
Agreeableness → Abuse against others	β_9	-0.186	-0.362	0.000
Conscientiousness → Abuse against others	β_{10}	0.072	0.159	0.013
Neuroticism → Theft	β_{11}	0.003	0.021	0.697
Extraversion → Theft	β_{12}	0.010	0.081	0.101
Openness to experience → Theft	β_{13}	-0.012	-0.096	0.025
Agreeableness → Theft	β_{14}	-0.028	-0.169	0.009
Conscientiousness → Theft	β_{15}	0.031	0.210	0.001
Withdrawal → Abuse against others	β_{16}	0.307	0.439	0.000
Abuse against others → Theft	β_{17}	0.080	0.246	0.000
Withdrawal → Theft	β_{18}	0.092	0.406	0.000

Source: *own study.*

Table 9. Correlation and covariance values included in the SEM 2 model

Relationship	Parameter	Covariance	Correlation	P-value
Neuroticism ↔ Conscientiousness	π_1	-0.221	-0.536	0.000
Extraversion ↔ Openness to experience	π_2	0.152	0.278	0.000
Openness to experience ↔ Agreeableness	π_3	0.177	0.427	0.000
Extraversion ↔ Agreeableness	π_4	0.217	0.530	0.000
Agreeableness ↔ Conscientiousness	π_5	0.101	0.287	0.000

Source: *own study*.

Table 10. Measures of the degree of fit of the SEM 2 model

Model	IFI	PNFI	RMSEA	CMIN/DF
Estimated	0.838	0.675	0.056	5.370
Saturated	1	0.000		
Independent	0	0.000	0.127	27.688

Source: *own study.*

Table 11. Standardized total effects of the impact of personality traits on the subjective CWB categories for the SEM 2 model

	Withdrawal	Abuse against others	Theft
Agreeableness	0.007	-0.359	-0.254
Openness to experience	0.077	0.070	-0.047
Extraversion	-0.124	0.177	0.075
Neuroticism	-0.170	0.110	-0.021
Conscientiousness	-0.512	-0.066	-0.014
Withdrawal		0.439	0.514
Abuse against others			0.246

Source: *own study.*

The results for the external model show that all factor loadings are statistically significant (see Table 7). The results given in Table 8 indicate that Openness to experience significantly (negatively) influences only Theft (β_{13}). Neuroticism, Extraversion and Conscientiousness reduced Withdrawal (β_1, β_2, β_5) and increased Abuse against others (β_6, β_7, β_{10}). Only Agreeableness (β_9) had a significant impact on the reduction of Abuse against others. Agreeableness also reduced Theft (β_{14}). What is interesting, Conscientiousness intensified Theft (β_{15}). The remaining relationships turned out to be statistically insignificant (β_3, β_4, β_8, β_{11}, β_{12}). As expected, more Withdrawal led to more Abuse against others and Theft (β_{16} and β_{18}), while Abuse against others reduced Theft (β_{17}).

As in the case of the SEM 1 model, it can be noticed that only the relationship between Neuroticism and Conscientiousness is negative (Table 9).

When analyzing the standardized total effects (Table 11), it can be noticed that Agreeableness influenced the Abuse against others the most, reducing this CWB category (-0.359). Openness to experience was most strongly (positively) correlated to Withdrawal (0.77), and Extraversion – to Abuse against others (0.177). Neuroticism and Conscientiousness reduced Withdrawal (-0.170 and -0.512).

With respect to the degree of fit of the model to empirical data (Table 11), it can be seen that the value of the IFI index is 0.838, while the RMSEA is 0.056, which allows the conclusion that the model is correctly and satisfactorily fitted to empirical data. Although the CMIN/DF statistics are different from the norm and are above the value of 2, as already mentioned, in the

case of SEM models, each of the quality measures has certain limitations, and the choice between them is purely subjective.

Hypotheses 2 – to verify the hypothesis, both models were estimated by subgroups, taking into account the respondents' sex, age, length of service and type of work. The model with a breakdown by the education of the respondents was abandoned as nearly 90% of the respondents graduated from higher education. The results of the SEM 1 internal model estimation for the two sex groups are summarized in Table 12.

Table 12. The results of the estimation of the internal model SEM 1 in subgroups defined by the sex of the respondents

Relationship		**Women**		**Men**	
	Parameter	**Assessment of standardized parameters**	**P-value**	**Assessment of standardized parameters**	**P-value**
Neuroticism → CWB-I	β_1	-0.004	0,946	0,169	0,112
Extraversion → CWB-I	β_2	0.125	0,018	0,197	0,052
Openness to experience → CWB-I	β_3	0.043	0,379	0,110	0,208
Agreeableness → CWB-I	β_4	-0.222	0,001	-0,503	0,000
Conscientiousness → CWB-I	β_5	-0.248	0,000	0,040	0,731
Neuroticism → CWB-O	β_6	-0.320	0,000	0,162	0,111
Extraversion → CWB-O	β_7	-0.170	0,002	0,139	0,131
Openness to experience → CWB-O	β_8	0.037	0,448	0,073	0,363
Agreeableness → CWB-O	β_9	0.113	0,104	-0,155	0,159
Conscientiousness → CWB-O	β_{10}	-0.716	0,000	-0,440	0,000
Measures of the degree of model fit		IFI = 0,826 RMSEA = 0,063		The saturated model cannot be estimated	

Source: *own study.*

In the analyzed subgroups, there are significant discrepancies in the case of 3 parameters. Among men, the influence of Conscientiousness on CWB-I (β_5) and Neuroticism and Extraversion on CWB-O turned out to be statistically insignificant (β_6 and β_7). In the case of women, the influence of these personality traits was statistically significant and negative. However, the obtained results should be treated with great caution, because in the case of the subgroup defined for men, it was not possible to estimate the saturated model, and thus verify the model in terms of its quality. This may be due to the fact that only less than 20% of the analyzed sample was male. This group included only 289 observations.

The median age of the respondents was 40 years. To maintain the greatest possible comparability of models in subgroups defined by age, group 1 includes people under 40 years, and group 2 – respondents aged 40 and more. The results are given in Table 13.

Table 13. The results of the estimation of the internal model SEM 1 in subgroups defined by the age

Relationship	Parameter	Under 40 years		At least 40 years	
		Assessment of standardized parameters	P-value	Assessment of standardized parameters	P-value
Neuroticism → CWB-I	β_1	-0.026	0.671	0.118	0.085
Extraversion → CWB-I	β_2	0.132	0.053	0.169	0.009
Openness to experience → CWB-I	β_3	-0.040	0.487	0.147	0.024
Agreeableness → CWB-I	β_4	-0.327	0.000	-0.297	0.000
Conscientiousness → CWB-I	β_5	-0.161	0.032	-0.173	0.021
Neuroticism → CWB-O	β_6	-0.143	0.022	-0.231	0.002
Extraversion → CWB-O	β_7	-0.089	0.172	-0.087	0.174
Openness to experience → CWB-O	β_8	-0.006	0.916	0.146	0.024
Agreeableness → CWB-O	β_9	0.002	0.983	0.026	0.748
Conscientiousness → CWB-O	β_{10}	-0.587	0.000	-0.691	0.000
Measures of the degree of model fit		IFI = 0.840 RMSEA = 0.065		IFI = 0.823 RMSEA = 0.063	

Source: *own study.*

In this case, the impact of Neuroticism on CWB-I was insignificant in both age groups (β_1) – similarly as the impact of Extraversion (β_7) and Agreeableness (β_9) on CWB-O. In turn, Openness to experience turned out to have a significant (and positive) impact on both CWB-O and CWB-I only in the group of people at least 40 years old (β_3 and β_8). Additionally, the influence of Extraversion on CWB-I was borderline significant in the subgroup of people up to 40 years of age (β_2). The other parameters were significant and did not differ in the direction of the impact in both analyzed subgroups.

In the next step, the respondents were divided according to the length of service. As before, the division into subgroups was based on the median, which was 10 years (see Table 14).

Table 14. The results of the estimation of the internal model SEM 1 in subgroups defined by the length of service

Relationship	Parameter	Under 10 years		At least 10 years	
		Assessment of standardized parameters	P-value	Assessment of standardized parameters	P-value
Neuroticism → CWB-I	β_1	-0.029	0.653	0.069	0.294
Extraversion → CWB-I	β_2	0.184	0.007	0.111	0.070
Openness to experience → CWB-I	β_3	-0.098	0.120	0.179	0.003
Agreeableness → CWB-I	β_4	-0.358	0.000	-0.263	0.000
Conscientiousness → CWB-I	β_5	-0.185	0.018	-0.207	0.005
Neuroticism → CWB-O	β_6	-0.199	0.003	-0.202	0.005
Extraversion → CWB-O	β_7	-0.037	0.559	-0.141	0.025
Openness to experience → CWB-O	β_8	-0.033	0.585	0.124	0.035
Agreeableness → CWB-O	β_9	0.041	0.641	0.029	0.711
Conscientiousness → CWB-O	β_{10}	-0.674	0.000	-0.642	0.000
Measures of the degree of model fit		IFI = 0.847 RMSEA = 0.063		IFI = 0.807 RMSEA = 0.066	

Source: *own study.*

Only in the case of respondents with at least 10 years work experience was the impact of Openness to experience on both types of CWB statistically significant and positive (β_3 and β_8). The negative influence of Extraversion on CWB-O (β_7) also turned out to be significant. In turn, the influence of Extraversion on CWB-I was significant (and positive) only in the subgroup of people with less than 10 years of experience (β_2). The other parameters did not differ in the significance and direction of the influence of the personality types on CWBO and CWB-I (the exception is the difference in the direction of the influence of the β_1 parameter, although it turned out to be statistically insignificant in both subgroups).

The last step in the case of the SEM 1 model was the division of respondents according to the type of work (see Table 15).

Table 15. The results of the estimation of the internal model SEM 1 in subgroups defined by the type of work

Relationship		**Office / clerical**		**Managerial**	
	Parameter	**Assessment of standardized parameters**	**P-value**	**Assessment of standardized parameters**	**P-value**
Neuroticism → CWB-I	β_1	0.023	0.663	0.077	0.419
Extraversion → CWB-I	β_2	0.108	0.035	0.313	0.010
Openness to experience → CWB-I	β_3	0.050	0.298	0.077	0.379
Agreeableness → CWB-I	β_4	-0.293	0.000	-0.417	0.004
Conscientiousness → CWB-I	β_5	-0.188	0.002	-0.245	0.022
Neuroticism → CWB-O	β_6	-0.191	0.000	-0.304	0.007
Extraversion → CWB-O	β_7	-0.115	0.023	-0.001	0.991
Openness to experience → CWB-O	β_8	0.041	0.386	0.116	0.184
Agreeableness → CWB-O	β_9	0.043	0.520	-0.039	0.763
Conscientiousness → CWB-O	β_{10}	-0.625	0.000	-0.801	0.000
Measures of the degree of model fit		IFI = 0.835 RMSEA = 0.063		IFI = 0.795 RMSEA = 0.069	

Source: *own study*.

Almost all parameters turned out to have the same direction of impact and significance in both subgroups divided by type of work. The exception was the influence of Extraversion on CWB-O, which turned out to be statically significant (and negative) only among office / clerical workers (β_7).

Also in the case of the model of the influence of personality types on the subjective CWB categories (SEM 2), the model with subgroups based on the demographic characteristics of the respondents was estimated. The results of the SEM 2 internal model estimation for two groups distinguished on the basis of the respondents' sex are summarized in Table 16.

Table 16. The results of the estimation of the internal model SEM 2 in subgroups defined by the sex of respondents

Relationship	Parameter	Women		Men	
		Assessment of standardized parameters	P-value	Assessment of standardized parameters	P-value
Neuroticism → Withdrawal	β_1	-0.283	0.000	0.194	0.092
Extraversion → Withdrawal	β_2	-0.179	0.002	-0.012	0.904
Openness to experience → Withdrawal	β_3	0.072	0.171	0.081	0.375
Agreeableness → Withdrawal	β_4	0.051	0.488	-0.043	0.733
Conscientiousness → Withdrawal	β_5	-0.590	0.000	-0.214	0.097
Neuroticism → Abuse against others	β_6	0.212	0.000	0.092	0.374
Extraversion → Abuse against others	β_7	0.252	0.000	0.161	0.091
Openness to experience → Abuse against others	β_8	0.026	0.600	0.056	0.501
Agreeableness → Abuse against others	β_9	-0.317	0.000	-0.465	0.000
Conscientiousness → Abuse against others	β_{10}	0.129	0.099	0.228	0.060
Neuroticism → Theft	β_{11}	0.060	0.350	-0.079	0.388
Extraversion → Theft	β_{12}	0.076	0.214	0.147	0.087
Openness to experience → Theft	β_{13}	-0.071	0.164	-0.134	0.070
Agreeableness → Theft	β_{14}	-0.140	0.065	-0.206	0.078
Conscientiousness → Theft	β_{15}	0.173	0.035	0.130	0.232
Withdrawal → Abuse against others	β_{16}	0.416	0.000	0.502	0.000
Abuse against others → Theft	β_{17}	0.111	0.033	0.388	0.000
Withdrawal → Theft	β_{18}	0.333	0.000	0.347	0.000
Measures of the degree of model fit		IFI = 0.824 RMSEA = 0.057		IFI = 0.809 RMSEA = 0.071	

Source: *own study.*

There are numerous discrepancies in the analyzed subgroups, not only in the significance of the estimated parameters, but also in the direction of their impact. It turned out that Neuroticism reduces Withdrawal among women and increases among men (β_1) (although in the second case it is statistically insignificant). The influence of Extraversion on Withdrawal (negative) and Abuse against others (positive) turned out to be statistically significant only among women (β_2, β_7). Similarly, only in this subgroup was the influence of Conscientiousness on Withdrawal and Theft statistically significant (β_5 and β_{15}). Moreover, only in the case of women was the influence of Neuroticism on Abuse against others (positive) statistically significant (β_6). Besides, many of the considered relationships turned out to be insignificant in the subgroup of men. This does not mean that women were less likely to engage in certain counterproductive work behaviors, but only that these behaviors are less dependent on personality than in the case of men.

The results of the SEM 2 model estimation for two subgroups divided by respondent's age are presented in Table 17 (as already mentioned, the subgroups were divided based on the median value of age, i.e. 40 years).

Table 17. The results of the estimation of the internal model SEM 2 in subgroups defined by the age

Relationship		Under 40 years		At least 40 years	
	Parameter	Assessment of standardized parameters	P-value	Assessment of standardized parameters	P-value
Neuroticism → Withdrawal	β_1	-0.099	0.146	-0.246	0.002
Extraversion → Withdrawal	β_2	-0.149	0.044	-0.101	0.133
Openness to experience → Withdrawal	β_3	0.026	0.682	0.134	0.047
Agreeableness → Withdrawal	β_4	0.003	0.979	-0.013	0.875
Conscientiousness → Withdrawal	β_5	-0.435	0.000	-0.586	0.000
Neuroticism → Abuse against others	β_6	0.080	0.197	0.298	0.000
Extraversion → Abuse against others	β_7	0.229	0.001	0.240	0.000
Openness to experience → Abuse against others	β_8	-0.043	0.453	0.090	0.162
Agreeableness → Abuse against others	β_9	-0.376	0.000	-0.334	0.000
Conscientiousness → Abuse against others	β_{10}	0.162	0.057	0.162	0.091
Neuroticism → Theft	β_{11}	0.088	0.156	-0.076	0.333
Extraversion → Theft	β_{12}	0.117	0.102	0.007	0.914
Openness to experience → Theft	β_{13}	0.006	0.909	-0.242	0.000
Agreeableness → Theft	β_{14}	-0.174	0.070	-0.099	0.234
Conscientiousness → Theft	β_{15}	0.153	0.074	0.238	0.013
Withdrawal → Abuse against others	β_{16}	0.512	0.000	0.365	0.000
Abuse against others → Theft	β_{17}	0.245	0.000	0.274	0.000
Withdrawal → Theft	β_{18}	0.272	0.000	0.496	0.000
Measures of the degree of model fit		IFI = 0.841 RMSEA = 0.059		IFI = 0.827 RMSEA = 0.057	

Source: *own study.*

In this case, the influence of Neuroticism on both Withdrawal and Abuse against others was significant only in the subgroup of people at least 40 years old (β_1 and β_6), while having neurotic personality traits reduced the tendency to Withdrawal and increased to Abuse against others. Also, only in this age subgroup did it turn out that Openness to experience significantly increases the tendency to Withdrawal (β_3) and decreases the tendency to Theft (β_{13}). Conscientiousness in the subgroup of employees over 40 years of age was associated with an increased propensity to Theft (β_{15}). In turn, Extraversion reduced Withdrawal (β_3) only in the age subgroup up to 40. The other parameters, in terms of significance, did not differ in both

analyzed subgroups, and – according to significant parameters – they also did not differ in the direction of the impact.

When dividing employees by length of service, similar as in the SEM 1 model, the median value (10 years) was used – see Table 18.

Table 18. The results of the estimation of the internal model SEM 2 in subgroups defined by the length of service

Relationship		Under10 years		At least 10 years	
	Parameter	Assessment of standardized parameters	P-value	Assessment of standardized parameters	P-value
Neuroticism → Withdrawal	β_1	-0.210	0.003	-0.128	0.087
Extraversion → Withdrawal	β_2	-0.091	0.193	-0.136	0.042
Openness to experience → Withdrawal	β_3	-0.009	0.894	0.140	0.027
Agreeableness → Withdrawal	β_4	0.026	0.785	-0.024	0.774
Conscientiousness → Withdrawal	β_5	-0.552	0.000	-0.483	0.000
Neuroticism → Abuse against others	β_6	0.119	0.080	0.220	0.002
Extraversion → Abuse against others	β_7	0.240	0.000	0.209	0.000
Openness to experience → Abuse against others	β_8	-0.073	0.246	0.111	0.059
Agreeableness → Abuse against others	β_9	-0.427	0.000	-0.298	0.000
Conscientiousness → Abuse against others	β_{10}	0.152	0.107	0.127	0.133
Neuroticism → Theft	β_{11}	0.040	0.602	0.008	0.900
Extraversion → Theft	β_{12}	0.203	0.012	0.059	0.317
Openness to experience → Theft	β_{13}	-0.070	0.305	-0.142	0.009
Agreeableness → Theft	β_{14}	-0.176	0.113	-0.172	0.019
Conscientiousness → Theft	β_{15}	0.139	0.187	0.268	0.000
Withdrawal → Abuse against others	β_{16}	0.417	0.000	0.426	0.000
Abuse against others → Theft	β_{17}	0.068	0.378	0.331	0.000
Withdrawal → Theft	β_{18}	0.457	0.000	0.390	0.000
Measures of the degree of model fit		IFI = 0.849 RMSEA = 0.056		IFI = 0.820 RMSEA = 0.061	

Source: *own study.*

In the case of people with longer work experience, there are more (compared to the second subgroup) statistically significant parameters determining the impact of personality types on the CWB subjective categories. This is the case of: negative influence of Extraversion (β_2) and positive influence of Openness to experience (β_3) on Withdrawal, positive influence of Neuroticism on Abuse against others (β_6), negative influence of Openness to experience (β_{13}) and Agreeableness (β_{14}) on Theft, as well as the positive influence of Conscientiousness (β_{15}) on Theft. On the other hand, only in the subgroup of people with shorter work experience, the influence of Neuroticism on Withdrawal (β_1) and Extraversion on Theft (β_{12}) turned out to be

significant. The other parameters did not differ in significance in both analyzed subgroups and, in the case of significant parameters, they did not differ in the direction of the impact.

In the last step, the respondents were divided according to the type of work (see Table 19).

Table 19. The results of the estimation of the internal model SEM 2 in subgroups defined by the type of work

Relationship		Office / clerical		Managerial	
	Parameter	Assessment of standardized parameters	P-value	Assessment of standardized parameters	P-value
Neuroticism → Withdrawal	β_1	-0.167	0.004	-0.117	0.282
Extraversion → Withdrawal	β_2	-0.148	0.007	-0.067	0.574
Openness to experience → Withdrawal	β_3	0.063	0.219	0.143	0.125
Agreeableness → Withdrawal	β_4	-0.005	0.940	0.093	0.504
Conscientiousness → Withdrawal	β_5	-0.483	0.000	-0.605	0.000
Neuroticism → Abuse against others	β_6	0.172	0.002	0.240	0.024
Extraversion → Abuse against others	β_7	0.204	0.000	0.370	0.003
Openness to experience → Abuse against others	β_8	0.034	0.483	-0.002	0.979
Agreeableness → Abuse against others	β_9	-0.352	0.000	-0.478	0.001
Conscientiousness → Abuse against others	β_{10}	0.138	0.052	0.215	0.155
Neuroticism → Theft	β_{11}	0.024	0.672	0.028	0.788
Extraversion → Theft	β_{12}	0.090	0.098	0.136	0.282
Openness to experience → Theft	β_{13}	-0.102	0.035	-0.068	0.413
Agreeableness → Theft	β_{14}	-0.147	0.043	-0.334	0.031
Conscientiousness → Theft	β_{15}	0.188	0.009	0.373	0.015
Withdrawal → Abuse against others	β_{16}	0.425	0.000	0.524	0.000
Abuse against others → Theft	β_{17}	0.248	0.000	0.191	0.109
Withdrawal → Theft	β_{18}	0.408	0.000	0.470	0.004
Measures of the degree of model fit		IFI = 0.839 RMSEA = 0.056		IFI = 0.809 RMSEA = 0.064	

Source: *own study*.

In this case, only in the subgroup of office / clerical employees statistically significant was the negative influence of Neuroticism and Extraversion on Withdrawal (β_1, β_2), positive influence of Conscientiousness on Abuse against others (β_{10}) and negative influence of Openness to experience on Theft (β_{13}). It seems interesting that in the subgroup of employees in managerial positions, the impact of Abuse against others on Theft (β_{17}) turned out to be insignificant. In the case of the rest of the relationships, there were no differences in significance between the two subgroups (for significant factors, there were also no differences in the direction of the impact).

Concluding the considerations, it should be noted that all the analyzed models divided into subgroups distinguished on the basis of sex and age of the respondent, as well as length of service and type of work, should be assessed as correct and satisfactorily adjusted to empirical data. Each time the value of the IFI was above 0.8 (only in the case of the SEM 1 model for a managerial position it was 0.795), while the RMSEA coefficient was in the range of 0.05-0.08.

4. Discussion

With respect to the results of the SEM 1 model, it should be noted that Conscientiousness turned out to be the strongest predicator of interpersonal and organizational CWB, and the relationship in both cases is negative. This result is conducive to already recorded empirical studies, where people strong in Conscientiousness tended to avoid CWB (see Ones & Viswesvaran, 2001). In addition, the tendency to counterproductive work behaviors is also significantly influenced by: Agreeableness (only in the case of CWB-I – negative correlation), Neuroticism (only for CWB-O – negative correlation) and Extraversion (positive correlation in the case of CWB-I and negative correlation in case of CWB-O). Agreeable people are empathetic and avoid conflicts, therefore it is not surprising that this type of personality has a negative influence on the CWB-I. Extravert people are more likely to interact with colleagues, and therefore may have more opportunities to engage in CWB-I and less to engage in counterproductive work behaviors against the organization. The negative relationship between Neuroticism and CWB-O seems to be a kind of paradox.

The results of other studies (e.g. Bolton et al., 2010) and several meta-analyzes (e.g., Berry et al., 2007) confirm that Conscientiousness, Agreeableness and Neuroticism are among the features of the Big Five most strongly associated with CWB. The outcomes presented here are in part consistent with Salgado's (2002) study, where meta-analytical correlations of Emotional stability, Agreeableness, and Conscientiousness with CWB ranged from 0.06 to 0.26. The results showed that Conscientiousness and Agreeableness are valid predictors of CWB (validity coefficients: -0.16 and -0.13). Besides, Emotional stability, Openness to experience and Extraversion can be considered as weak predictors of CWB (validity coefficients: -0.04, 0.10 and 0.01).

The consistency of the presented study results can also be noticed in relation to research by Lee et al. (2005a) on the correlation between HEXACO model and antisocial behaviors. The authors stated that Honesty-humility and Extraversion predicted most both behaviors against organization and other individuals. Besides, Agreeableness was correlated with antisocial behaviors against other people and Conscientiousness – with organizational behaviors that are antisocial.

In turn, the study by Mount et al. (2006) conducted on the example of 141 employees, showed that CWB-O was strong correlated with Conscientiousness ($r = -0.55$), while CWB-I – with Agreeableness ($r = -0.48$). That was also confirmed in the presented study. One can also notice similarity to the results of the study by Berry et al. (2007). The authors reported in their meta-analysis correlation up to $\rho = -0.46$ between Agreeableness and CWB-I, and $\rho = -0.42$ between Conscientiousness and CWB-O. The correlation between Neuroticism and CWB was $\rho = -0.27$. Extraversion and Openness to experience had weak correlations with CWB (from $\rho = -0.09$ to $\rho = 0.02$).

Our results also did not differ much from the study by Ferreira & Nascimento (2016), where the correlations with CWB were between $\rho = 0.07$ (Extraversion) and $\rho = -0.41$ (Agreeableness) – only Extraversion showed no significant association. The correlations with CWB-O ranged from $\rho = 0.04$ (Extraversion) and $\rho = 0.38$ (Conscientiousness) and with CWB-I - from $\rho = 0.04$ to $\rho = -0.35$. The Agreeableness, Conscientiousness and Neuroticism showed the most significant coefficients.

On the other hand, the obtained results are partially inconsistent with the longitudinal study by Miller et al. (2003) conducted on the sample of 481 students. The author showed that Neuroticism had the strongest correlation with antisocial behavior (most similar to CWB-I) for the facet of angry hostility (r = 0.29). Additionally, 80% correlations between the Agreeableness specific traits and antisocial behavior were significant. For Conscientiousness, it was 60% and for Neuroticism 47%.

With regard to the subjective CWB categories, Agreeableness had the greatest impact on Abuse against others (ρ = -0.359), Openness to experience influenced most strongly Withdrawal (ρ = 0.77), and Extraversion – Abuse against others (ρ = 0.177). Neuroticism most strongly reduced Withdrawal (-0.170) and that contradicts the findings of Judge et al. (1997). According to them, neurotic people are more likely to engage in Withdrawal. Besides, in the study of Judge et al. (1997), Openness to experience influenced most strongly Conscientiousness (-0.512). These correlations seem to be logical and understandable. Unfortunately, the obtained results cannot be compared with others, similar, because the influence of personality traits on the subjective CWB categories has not been the subject of a comprehensive study so far.

The analyzed demographic variables, i.e. sex and age of the respondents, as well as the length of service and type of work, moderated statistically significantly the relationship between personality traits and CWB, both in the case of the SEM 1 model (the influence of personality types on CWB-O and CWB-I), as well as in the case of the SEM 2 model (the influence of personality types on the CWB subjective categories).

In the group of women, it was possible to notice a greater significance in the influence of personality traits on counterproductive work behaviors in both analyzed models. For the SEM 1 model, this applies to every personality type except Openness to experience, which also turned out to be insignificant in the subgroup of men. Among women, Neuroticism, Extraversion, and Conscientiousness reduced organizational CWB, while Agreeableness and Conscientiousness reduced interpersonal CWB (only Extraversion increased involvement in CWB-I). Among men, only Agreeableness significantly reduced CWB-I, and Conscientiousness reduced CWB-O.

With regard to the SEM 2 model for the female subgroup, one could find a significant negative effect of Neuroticism, Extraversion and Conscientiousness on Withdrawal and Agreeableness on Abuse against others, while the effect of Neuroticism and Extraversion on Abuse against others and Conscientiousness on Theft was positive. In the subgroup of men, a significant (negative) effect was noted only for Agreeableness and Abuse against others. These results contradict the findings of Miller et al. (2003), who found that there were no significant sex differences for any of the analyzed correlations between personality traits and CWB.

Also in relation to the age subgroups, differences in the influence of personality traits on CWB could be noticed. This impact was more significant among the elderly employees. In the case of the SEM 1 model, Openness to experience had a significant (positive) effect on CWB-O and CWB-I only in the subgroup of people at least 40 years old. Moreover, the influence of Extraversion on CWB-I was borderline significant in the subgroup of people up to 40 years of age. For the SEM 2 model, Neuroticism shaped significantly negatively, and Openness to experience – significantly positively, Withdrawal only in the case of people 40+. This was also the case with regard to the positive effect of Neuroticism on Abuse against others, as well as the positive effect of Openness to experience and Conscientiousness on Theft. On the other hand, only in the group of people under 40 did Extraversion significantly negatively influence Withdrawal.

Also, the length of service moderated the relationship between the employee's personality traits and the tendency to counterproductive work behavior. However, it should be noted that this relationship was more significant in the case of people with longer work

experience. In the SEM 1 model, only in the case of people with at least 10 years of work experience, the impact of Openness to experience on the organizational and interpersonal CWB was positive and statistically significant. The same was true of the negative effect of Extraversion on CWB-O. On the other hand, Extraversion significantly and positively modeled CWB-I only in the subgroup of people with less than 10 years of work experience. Even greater differences between the two subgroups are noticeable in the SEM 2 model. Only in the case of people with longer work experience did Extraversion and Openness to experience significantly negatively influence Withdrawal. Also only in this subgroup did Neuroticism significantly positively influence Abuse against others, while Openness to experience, Agreeableness and Conscientiousness influenced Theft (in the first two cases – negatively, and in the case of Conscientiousness – positively). On the other hand, only among people with 10 or less years of work experience did Extraversion have a significant negative effect on Withdrawal.

The last of the analyzed moderating variables was type of work. In this case, it can be noticed a greater significance of the influence of personality traits on CWB in the subgroup of respondents in office / clerical positions, but rather in relation to the subjective categories of CWB (SEM 2 model). Only in this subgroup did Neuroticism and Extraversion have a significant negative effect on Withdrawal, Conscientiousness had significantly positive impact on Abuse against others, while Openness to experience influenced significantly and negatively Theft. For the SEM 1 model, the only difference is the significant negative impact of Extraversion on CWB-O among people in non-managerial positions.

Conclusion

The main objective of the current research was to analyze how the personality traits (Extraversion, Neuroticism, Conscientiousness, Agreeableness and Openness to experience) influence counterproductive work behaviors (CWB), and whether/to what extent this potential impact is moderated by employees' main demographic characteristics. The problem was analyzed within Central European socio-economic context, where the Poland can be considered as an interesting case study for other countries of the region. To reach the pointed aim a survey was conducted with relatively big sample of 1,380 professionally active people, where the empirical data was analyzed with application of the Structural Equation Modeling (SEM) methodology. The scale of the research and the complexity of the modelling approach probably makes the current study one of the biggest empirical contributions of that kind for the Central European region.

Beside strictly academic value of the obtained results, the current outcome provides important practical implications: a) for employee selection – the results show that selecting employees high on Conscientiousness and Agreeableness is likely to reduce the occurrence of CWB. Employees high in Neuroticism and Openness to experience engage in more CWBs (it relates both to organizational and interpersonal CWBs); b) for organizational training programs – such trainings programs should include a component that conveys to managers the pervasiveness and expense associated with CWBs; c) for detection of CWBs by the manager and the organization – CWB-O are less observable and more difficult to detect than CPB-I. Therefore, organizations may benefit from the development of electronic monitoring systems specifically designed to detect organizational CWB.

The current study is not free of some objective limitations, which at the same time it can provide paths for future studies. The first and unquestionable limitation is non-random selection of employee sample. Although the sample was relatively large in number and demographically diverse, in the future it is worth to conduct similar research with random selection of employee sample. It would also seem important to differentiate more the sample by sex and job sector. Second, in the measurement of CWB, it would be better to use both self-reports and supervisor

reports. CWBs can be measured by self-ratings and/or ratings made by others (e.g. boss, colleagues); these measurement methods should complement each other. However, employees are reluctant to self-report CWB because of the potential for reprimands.

Using only self-ratings for both predictor (i.e. personality traits) and criterion (CWB) variables, may artificially inflate this relationship because of common method bias. So it would be better to use other's people ratings of CWB to minimize the problem. However, employees in the presence of their supervisor try not to show counterproductive behaviors, such as theft or fighting with coworkers. Hence, the supervisors' observation possibilities in relation to certain aspects of CWB (mainly overt and organization-oriented behaviors) are significantly limited. Moreover, the supervisor's observations may be influenced by one of the basic attribution errors – the hallo effect, when subordinates are assigned positive or negative personality traits (including a tendency to CWB or not) based on their first impression. Nevertheless, in future studies, it is worthwhile to measure CWB in two ways, including the use of self-reports and supervisor reports.

Third, the presented models may be underspecified, because other perceptual variables could moderate some of the relationships. The studied personality traits explained only a part of the CWB variance (both in relation to the organizational and interpersonal CWB, as well as the subjective categories of CWB), which proves their limited influence on these behaviors. This confirms that other variables (not only individual, but also situational) influence counterproductive behavior at work. In the future, the models should be expanded with such variables. Fourth, current research presents only one way of measuring CWB. There are many others of employee behaviors that are potentially harmful to the organization and its stakeholders that could be considered counterproductive. Future research should broaden the measurement of CWB significantly to include other harmful behaviors. Finally, the use of a measuring scale created in specific cultural conditions (it applies to CWB-C scale) requires adaptation to the specific cultural conditions.

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