Organizational Climate as a Mediating Factor Between Occupational Stress and Prosocial Organizational Behaviours in Knowledge-Based Organizations

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Abstract:

Purpose: *The present article aims to analyse the relationship between the stress experienced by the employees of knowledge-based organizations and the desire to demonstrate prosocial organizational behaviours, which are fundamental for knowledge sharing, as well as to examine the mediating effect of the organizational climate on that relationship.*

Design/methodology/approach: *An empirical, quantitative study was conducted among a sizable sample of knowledge workers (N=677) employed in over 150 knowledge-based organizations operating in Poland, which is the country with a strong knowledge-based economy. Two psychometric questionnaires and one author's own questionnaire were used. To verify the hypotheses, multiple linear regression and mediation with bootstrapping analyses were conducted.*

Findings: *The results of statistical analyses demonstrated that there is a negative correlation between the level of occupational stress and engagement in prosocial behaviours. Also, this relationship is fully mediated by an assessment of the organizational climate, especially the quality of communication, relations with colleagues and work organization.*

Practical implications: *The research results provide pragmatic guidelines for management practices in knowledge-based organizations, ones that may contribute to increasing prosocial organizational behaviours as a basis for information and knowledge exchange in the knowledge-based economy. It is particularly important to ensure the reduction of stress level; it is also vital to improve communication and relations between personnel and to make the organization and control of work more flexible.*

Originality/value: *This research significantly expands the literature on prosocial organizational behaviours, organizational climate and occupational stress, which is of a great importance in the knowledge-based economy. Moreover, the results show that, despite other research, there are organizational factors more significant than management style and approach, which are crucial for performing prosocial organizational behaviours.*

Keywords: *Occupational stress, organizational climate, prosocial organizational behaviours, knowledge workers, knowledge-based organizations, knowledge-based economy.*

JEL codes: *D83, L20, M12, M54, O15, P46.*

Paper Type: *Research article.*

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1. Introduction

The last forty years of intense technological development and progressive globalization have irreversibly changed the operating conditions for contemporary organizations. In the mid-twentieth century, under the influence of production automation and technological transformations, information processing became more important than the production process (Toffler, 2006). A particularly dynamic development of the service sector and trade, requiring the use of modern technology, formed the basis for the development of the information society and the knowledge-based economy (Kwiatkowska, 2015). Currently, most enterprises stand out on the market, not by the technology or production processes that they use, but mainly thanks to employees and their abilities to use and process information *"The foundation of an organization is not money, capital or technology: it is knowledge and education"* (Drucker, 2000).

Therefore, in the era of knowledge-based economy as well as learning and intelligent organizations, the key role is played by employees and their willingness to cooperate, share their knowledge and to offer help to one another, which facilitates the creation of an atmosphere that is conductive to information exchange. However, sharing or using knowledge is not an automatic process. It requires a favourable personnel policy, appropriate organizational conditions and the willingness and readiness on the part of employees to exchange information and help one another. Not infrequently, mutual help is an expression of an employee's good will, one that does not follow from their role in the company, but rather from their willingness and readiness to behave pro-socially towards others (Bateman and Organ, 1983). The willingness to behave in a prosocial manner may be lower if an employee feels burdened at work, stressed or alienated from the organizational community.

Nowadays, many factors, such as greater mobility, replacement of employees with machines and IT systems, privatization or forms of remote work increase job insecurity and the number of stressors in the workplace (Landsbergis *et al.,* 2017). Referring to the job demands-resources concept (JD-R) (Demerouti *et al.,* 2001), each job comes with specific stress-related risk factors which can be divided into two categories: job demands and job resources. Those employees who are under strain and stress usually share less help or knowledge (Brief and Motowidlo, 1986; Ipsen and Jensen, 2010; Raza *et al.,* 2015). It is therefore important to diagnose both the relationship between stress levels and willingness to help others, and to look at the organizational factors that affect this relationship.

2. Literature Review

2.1 Characteristics of Knowledge-Based Organizations

From the beginning of mankind, the acquisition and use of information has been a value that determines survival (Cortada, 1998). However, in economy, knowledge

became a dominant asset owing to the development of the post-industrial era, commercial and service sectors, followed by technological changes. Any company providing financial, medical, legal, construction, consulting or even entertainment products or services offers in fact the skills and ideas of its key employees (Quinn and College, 1992). Therefore, the foundation of modern economy is the creation, distribution and processing of information as well as the use of knowledge. According to OECD (1996), the priority for those countries that wish to develop their economies is to invest in the education of citizens, specialisation of employees, dissemination of modern technologies as well as building an information infrastructure and openness to innovation. This can be achieved, among others, by running and developing knowledge-based organizations.

Knowledge-based organizations, also known as *"smart enterprises"* (Quinn and College, 1992), *"knowledge-intensive organizations"* or *"knowledge companies"* (Alvesson, 1993) are those companies that collect, use, and process knowledge in order to create an output in the form of a product/service that meets customer expectations. Knowledge-based organizations use and modify the knowledge they have collected in relation to the market to achieve the best possible results (Wiig, 1999). These organizations should first of all take care of the knowledge flow (both tacit and explicit) that determines other flows like finances, customer satisfaction etc., and they should take care especially of those employees who are *"revenue creators"* (Neagu, 2008).

Based on his own research, Zack (2003) selected four characteristics of knowledge-based organizations: the *"process"* understood as a set of activities that enable the use and combination of knowledge in order to provide a satisfactory product or service; the *"place"*, i.e., the boundaries of an organization that often go beyond the traditional boundaries of the company, that assume interactions with customers, suppliers, partners and even competitors in order to acquire knowledge and to respond to the needs of the market; the *"purpose"* understood as the company's mission and strategy that places knowledge as the main point of reference; and the *"perspective"* the manner of perception and the organizational culture implemented that creates the framework for knowledge-based activities. Table 1 presents the main characteristic features of knowledge-based organizations.

In organizations based on knowledge, knowledge workers constitute the key capital. This concept was proposed by Drucker in 1959, who defined the knowledge worker as an educated practitioner, who possesses knowledge and is able to use it in the work process (Drucker, 1993). His position is designed to collect and apply information (Robbins and DeCenzo, 2001). Machlup (1962) described knowledge workers as those people who plan, design, manage, negotiate, count, write, control and perform many other activities that contribute to the creation and flow of knowledge. According to the definition proposed by Davenport (2005), a knowledge worker is a person with a high degree of expertise, education or experience, and the work they perform requires the creation, distribution and use of knowledge.

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Table 1. *Characteristics of knowledge-based organizations*

Organizational factors	Organizational culture features	Management characteristics	Characteristics of employees
• Flexible, flatten organizational structure, frequently a matrix type which promotes the collaboration between teams • Decentralization • Open system with flexible boundaries that enables to collect and exchange knowledge with customers, suppliers, partners and to adjust products/services to changing circumstances • Using communication systems that help one to collaborate both directly and virtually • Open for technology development and technology transfer	• High level of freedom to innovate and experiment • Flexible to quickly adjust to changes • Evaluation based not only on numerical effects but also on employees' involvement and activity • Mainly employee-oriented values: self-achievement, development and cooperation, • abandoning the value of obedience to organizational procedures or inter-employee competition.	• Open for interactions to exchange knowledge • Externally driven, with a perspective focused on customers and market needs • Stimulates interaction between employees and teamwork • Can apply different management styles, chiefly found on employee-orientation. • Moves away from strict control to autonomy and partnership • Empowering workers and being open for their ideas • Applying incentives promoting not only effectiveness, but also engagement and cooperation.	• Have formal knowledge (education), but also creativity, hard and soft skills (proportions vary by industry) • They are characterized by the need for independence: autonomy allows one to generate and process knowledge. • Ready for further development and learning • They are mobile and show more flexibility in their approach to work than employees not performing knowledge-based work.

Source: *Author's own study based on sources: Alvesson (1993); Davenport (2005); Davis, Botkin (1994), Quinn, College (1992), Neagu (2008), Nonaka, Takeuchi (1995); Zack (2003).*

Distribution concerns primarily tacit knowledge, which is believed to emerge from intuition, subjective reflections, as well as from procedural skills or specific know-how (Nonaka, 1994). Tacit knowledge is deeply rooted in the experience, value system and actions of the individual, making it difficult to verbalize (Nonaka and Takeuchi, 1995).

On the contrary, there is also the explicit knowledge, which is a form of structured and easy-to-transfer knowledge and which can be acquired from facts and information codified in the form of hypothesis, concepts, books, manuals, and other available sources (Maravilhas and Martins, 2019). Tacit and explicit knowledge is complementary and essential in the process of organizational development (Nonaka and Takeuchi, 1995). Development takes place in the process of interaction between both types of knowledge, which should also be transferred between people to enable a flow of intellectual capital.

Sharing or using knowledge, however, is not an automatic process. In particular, the codification of tacit knowledge and its formalisation requires a positive attitude of the personnel towards the company and its co-workers, an acceptance of the company's goals as well as trust that sharing one's knowledge will not bring losses to the employee. The companies' role in transferring knowledge is to create a supportive organizational environment which facilitates interactions between employees, encourages one to share ideas and to create new solutions (Nonaka and Takeuchi, 1995). In the flow of knowledge, trust between employees and prosocial motives, which are aimed at taking care of the welfare of the general public and not only of the individual, play an important role (Ding, Choi, and Aoyama, 2018). Helping other employees and taking care of the common good of the company is therefore one of the foundations of knowledge-based organizations. This can effectively be disrupted by the stress that employees are experiencing, which increases their impatience, their tendency to argue, as well as their isolation and withdrawal from their working relationships (Landsbergis *et al.,* 2017). It is therefore important to study the relationship between the stress experienced by knowledge workers and their willingness to accept prosocial behaviours, and to pay attention to the organizational factors that affect this relationship.

2.2 Prosocial Organizational Behaviours and Occupational Stress Among Knowledge Workers

Working in knowledge-based organizations, even when one holds a specialist position or does remote work, requires social exchange (Tews, Michel, and Stafford, 2018). Most positions are based on cooperation or teamwork, which allows a flow of knowledge. Even if an employee does not need to work directly with someone else in connection with his or her task, he or she benefits from being in a group, socialising or receiving support in the case of difficult assignments. This creates an environment that facilitates an exchange of experiences, while socialisation and mutual assistance is one of the main stages of tacit knowledge transfer (Nonaka and Takeuchi, 1995). Therefore, prosocial organizational behaviours of employees are important in the flow of knowledge.

Prosocial organization behaviours are employees' behaviours directed towards co-workers, teams or the company as a whole, to increase the overall welfare of the organization and its employees (Brief and Motowidlo, 1986). These behaviours mainly include offering help, sharing information or resources, cooperation, or voluntarily involvement in various initiatives. In the literature, there is another similar term related to prosocial behaviours, the organizational citizenship behaviours (Bateman and Organ, 1983). In the present article, the concept of prosocial organizational behaviours has been chosen because the definition of organizational citizenship behaviour assumes that employee prosocial behaviour occurs spontaneously and it is not rewarded (Morrison, 1996). However, motivation of employees to help others is a complex construct and this should not be narrowed down by the definition to selfless incentives (Rushton and Sorrentino, 1981).

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Prosocial behaviour may result from prescribed role in the organization or it may go beyond, which discharges the criterion of altruism. Most frequently, voluntary assistance in matters related to one's job or profession is referred to as prosocial behaviour (Podsakoff *et al.,* 2000). That is why the author's own research has focused on positive behaviours such as helping, sharing knowledge and willingness to cooperate, which have an impact on the effectiveness of work done not only by individuals but also by organizations, regardless of whether behaviours are role-prescribed or they constitute an extra role (Brief and Motowidlo, 1986).

Furthermore, in the era of a knowledge-based economy, it is important to recognize the foundations of knowledge sharing and, according to Teh and Yong (2011), this includes helping one another. Therefore, it is important to analyse what has a negative and positive impact on willingness to offer help and to demonstrate prosocial behaviours. The literature notes that those people who are more satisfied with their work are more likely to exhibit prosocial behaviours (Bateman and Organ, 1983), which may suggest that a lower job satisfaction correlates with a lower desire to help others.

One of the main factors that reduce job satisfaction is stress in the workplace (Jain, Giga and Cooper, 2013; Karabatak and Alanoğlu, 2019; Meier and Spector, 2013; Tuten and Neidermeyer, 2004), which also affects a lower willingness to exhibit prosocial behaviours (Brief and Motowidlo, 1986; Ipsen and Jensen, 2010; Raza *et al.,* 2015). Being under stress is associated with experiencing negative emotions such as fear or frustration (Hart and Cooper, 2001), which redirects energy from helping others or building relationships with colleagues to dealing with one's tension. In order to understand the idea of organizational stress, it is important to define it.

Stress is usually explained from three perspectives (Cox *et al.,* 2000):

1) As a stimulus: an unpleasant or harmful external factor known as a stressor. A stress trigger may include a noise level, a life-threatening situation or an illness. The stimulus produces tension experienced by an individual that can be harmful and irreversible. This approach to stress is known as an engineering approach.
2) As a reaction to a stressor: these are psychophysical, emotional and behavioural reactions in response to a stressful stimulus. Such reactions may include headaches, accelerated heartbeat, feelings of anxiety, deterioration of concentration, or behaviours such as an escape or a fight. This approach is known as a physiological approach.
3) As a relationship between individuals and their environment: stress occurs when a situation is assessed as one that requires adaptation or that exceeds the capabilities of an individual. Within this approach, one can distinguish interactive stress, i.e. related to the characteristics of the human - environment interaction, and transactional stress, which emphasises those mechanisms that determine this interaction.

In the context of occupational stress, an approach that treats stress as a relationship (transaction) between the employee (their coping ability) and the organizational environment and stress factors is the most appropriate one. However, in management studies, occupational stress is often referred to as a process between stressors (different stimuli) and psychological, behavioural, or physiologic reactions (known as strains), which lead to health issues extended in time. (Spector and Jex, 1998; Landsbergis *et al.,* 2017). The stressors and strain approach, although one of the main concepts used to explain occupational stress, has been criticised for an insufficient focus on those factors that influence stress perception and the variables that can increase or decrease stress perception by influencing one another (Hart and Cooper, 2001). Hence, organizational stress is more frequently viewed from the perspective of a transaction between environmental factors and the ability to cope with the tension that they cause. Coping is therefore a cognitive and behavioural process that depends on both stressors and the individual's characteristics (Lazarus, 1993). Work-related stress is seen as the organism's response to a number of demands in the workplace and occupational pressures that exceed an individual's ability, knowledge and coping abilities (Leka, Griffiths, and Cox, 2003).

One of the transactional concepts that explain workplace stress is called the job demands-resources model (JD-R) (Demerouti *et al.,* 2001). This approach assumes that each job comes with specific stress-related risk factors which can be divided into two categories: job demands and job resources. The individual is protected from overload and exhaustion by their resources (intellectual and cognitive skills, behavioural strategies, social support, work control level, participation in the decision-making process, diversity of tasks), which allow to mitigate the costs incurred due to job demands. Importantly, each employee can perceive the level of demands and their own resources differently, which explains why the same work situation can cause various reactions in different employees. The more burdens there are, and the fewer resources employees have, the more the level of exhaustion and stressful tension increases (Bakker *et al.,* 2005).

Frequently, it is organizational factors that affect an employee's mood and emotional state, including a higher level of stress, which then translates into a desire or aversion to prosocial behaviour (Brief and Motowidlo, 1986). It is important that prosocial behaviour is an expression of one's goodwill and willingness to help: those employees who treat prosocial behaviour as an instrumental tool to obtain something, e.g., a debt of gratitude, are more likely to reduce their effectiveness in the workplace than those acting pro-socially out of a desire to help (Van der Borgh, De Jong, and Nijssen, 2019). With regard to the job demand-resource model, voluntary assistance to colleagues can be seen by an individual as a resource, whether emotional, cognitive or physical, that increases self-confidence and helps one to engage in work (Xiu *et al.,* 2019), and thus it may reduce the level of stress experienced. Mutual emotional support is particularly important, which reduces tension and also promotes lower turnover (Tews, Michel, and Stafford, 2018). Helping co-workers, above all in professional assignments, is beneficial for

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employees. They can demonstrate their knowledge and resources, develop their own skills and access the resources possessed by another person (Van der Borgh, De Jong, and Nijssen, 2019).

Readiness for prosocial organizational behaviour may therefore depend on a number of factors, including the role played, the quality of relations with co-workers and the stressors in the workplace (Brief and Motowidlo, 1986). The display of prosocial behaviour, as well as the feeling of stress, may also depend on the personality or mood of employees (Bateman and Organ, 1983). While influencing the individual traits and experiences is a difficult process in an organization, it is most appropriate to look at those organizational factors that affect the relationship between stress and the willingness to exhibit prosocial organizational behaviours. As assumed by Pfeffer (1994), organizational factors have a stronger impact on employee behaviour than intrapersonal factors. Therefore, it is important to recognize the organizational context that influences prosocial behaviour as well as experiencing of stress.

2.3 Factors that Affect Occupational Stress and Pro-social Behaviours: Organizational Climate

Both the level of stress and the willingness to accept prosocial organizational behaviours are influenced by numerous factors, which can be divided into work content, personal factors, and organizational factors (Lukić and Lazarević, 2018). The latter ones are particularly important in the context of explaining the phenomena under discussion.

Organizational stressors are generally divided into two groups: work content and work context (Leka, Griffiths, and Cox, 2003). Work content includes factors specific to a given job, e.g., monotonous or unpleasant tasks, workload, time pressure, lack of control or lack of participation in the decision-making process, long working hours, or poorly organised shift work (Colligan and Higgins, 2005; Leka, Griffiths, and Cox, 2003; Spector and Jex, 1998; Warr, 1994).

Work context includes job security (especially in developed countries, where many service workers, e.g., in the financial sector, have their own businesses, and they work under contract or as freelancers), disturbed career development, uncertainty about one's role in the organization, unfavourable organizational culture, poor relationships with co-workers and superiors, lack of support, isolated work, experiencing injustice in the workplace, as well as specific factors such as discrimination, mobbing, or harassment (Leka, Griffiths, and Cox, 2003; Landsbergis et *al.,* 2017).

Knowledge workers are particularly burdened by an ambiguity of their role or task, a high complexity of tasks, while being controlled by superiors (Sørensen and Holman, 2014; Demerouti *et al.,* 2001), high time pressure and dependence on superiors, clients or co-workers (Grant and Parker, 2009), as well as intensive

mental work taking a longer period of time as well as emotional and cognitive involvement in the performance of the tasks assigned (Demerouti *et al.,* 2001)

Those factors that disrupt the willingness to help co-workers include, above all, unsatisfactory relationships with co-workers, unclear roles, a feeling of alienation or faulty implementation, especially when one is a new employee in the organization (Hannif *et al.,* 2006; Tews, Michel, and Stafford, 2018). The promotion of a competitive culture may also be important in explaining prosocial behaviours. In some companies, an introduction of rivalry between teams is supposed to trigger their creativity and innovation (Nonaka and Takeuchi, 1995; Pfeffer and Sutton, 2000). However, Pfeffer and Sutton (2000) note that, in reality, internal competition between employees and departments leads to a reduced loyalty to the company, decreased teamwork and a poorer dissemination of knowledge. It is important to build work communities and an atmosphere of trust, which increases employee engagement and cooperation (Mintzberg, 2009).

In order to investigate which organizational factors have a particular impact on employee stress levels and their willingness to engage in prosocial organizational behaviours, the organizational climate construct was used. Organizational climate is a set of observations and opinions shared by employees on managerial practice, procedures, relationships between employees and management staff, and other attributes of an organization (Kopelman, Brief, and Guzzo, 1990; Payne, Pheysey, and Pugh, 1971; Rosenstiel and Bögel, 1992). Some authors claim that the organizational climate is the same as the organizational culture, yet these two constructs are different. The organizational climate was created in an attempt to characterize the influence of the environment on the motivation and behaviour of an employee, while the organizational culture is a concept accepted from anthropology and transferred to organizational grounds (Reichers and Schneider, 1990). The organizational climate is a relatively permanent feature of an organization, but unlike organizational culture, it is formed in a shorter period of time, and it may be modified more easily (Denison, 1996). Culture cannot be observed in the same way as the organizational climate because it is a set of symbols and values that form the ideologies of the members of an organization (Schein, 1999), while the subject of research into the organizational climate is the employee's observations concerning perceivable organizational attributes and managerial activities (Denison, 1996). Hence, the common perception of organizational factors affects actions undertaken by employees and the atmosphere they share (Moran and Volkwein, 1992).

The impression of the organizational climate is affected by numerous factors. According to Rosenstiel and Bögel (1992), German researches have who thoroughly studied the concept of organizational climate, there are six main dimensions of work that influence employees' attitudes and behaviours (Durniat, 2012):

1. Co-workers: relationships, mutual trust, and community of relationships among employees.

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2. Superiors: relationships with superiors, general impression referring to whether or not the management staff is oriented towards people rather than towards tasks.
3. Work organization: work structure, delegation of responsibility, and level of control over employees.
4. Flow of information and communication: model of communication and level of information transparency.
5. Representation of employees' interests: respect shown to the rights of employees and representatives of professional groups.
6. Remuneration and opportunities for development: promotion, training, evaluation.

Using the climate concept proposed by Rosenstiel and Bögel (1992), a research was conducted to investigate how the dimensions of the climate affect the relationship between occupational stress and prosocial organizational behaviours. Based on a literature analysis, the following hypotheses were formulated:

H1: The higher the level of occupational stress, the lower the willingness to perform prosocial organizational behaviours.
H2: Occupational stress and prosocial organizational behaviours are affected by an assessment of the organizational climate's dimensions.
H3: An assessment of organizational climate mediates the relationship between the level of occupational stress and prosocial organizational behaviours.

3. Methodology

3.1 Research Design

In order to verify the hypotheses, a survey was conducted among a sizable group of knowledge workers (N=677) employed in over 150 different knowledge-based organizations operating in Poland. The research was conducted in the years 2018 and 2019, and it covered the whole country. The respondents filled out surveys using paper or electronic formats. Three research tools were used: a questionnaire for organizational climate research by Rosenstiel and Bögel (1992), in a Polish adaptation by Durniat (2012), a questionnaire for organizational stress research in a Polish language version *"Perceived Stress at Work"* (Chirkowska-Smolak and Grobelny, 2016) and an author's questionnaire to measure willingness to engage in prosocial behaviours.

The level of organizational stress was determined using a Polish adaptation of the Perceived Stress Scale (PSS-10) questionnaire developed by Cohen, Kamarck, and Mermelstein (1983), whose Polish version is known as Perceived Stress at Work (Chirkowska-Smolak and Grobelny, 2016). The questionnaire comprises ten questions concerning an assessment of the relationship between demands in the work environment and the capabilities of an individual. The respondents were asked to mark their answers to each of the questions on the 5-point Likert scale, where 1 means "never", 2 – "very rarely", 3 – "sometimes", 4 – "fairly often", and 5 – "very

often". The answers were scored on a scale of 0-4 points. Four of the ten questions were formulated positively, e.g., *"During the last month, how often did you feel that you were able to cope with professional difficulties?",* and six were formulated negatively, e.g., *"During the last month, how often did you feel that difficulties at work multiplied to such an extent that you could not overcome them?".* The total score on the scale was obtained by counting the sum of points scored for all the answers. In the validation studies of the Polish version of the questionnaire (Chirkowska-Smolak *et al.,* 2016), a high reliability was obtained, the Cronbach alpha coefficient was 0.85 (n=537). In the author's own research (N=677) the Cronbach alpha coefficient was 0.80, which also proves a high reliability of the questionnaire.

Organizational climate was assessed using Durniat's (2012) Polish adaptation of Rosenstiel and Bögel's (1992) Organizational Climate Questionnaire. The questionnaire comprises 55 statements; the respondents were asked to mark their responses to these statements on a 5-point Likert scale, where 1 means "disagree", 2 – "rather disagree", 3 – "rather agree", 4 – "agree", and 5 – "strongly agree". The results as a whole, and on particular dimensions, are obtained by adding the sum of the points scored, including items requiring a reversal of the score. The Polish validity studies demonstrated an extremely high reliability of the questionnaire; the Cronbach alfa coefficient after the second cultural adaptation (n=367) was 0.96 (Durniat, 2012). In the author's own study, (N=677), the reliability of the general result of the questionnaire was 0.97, which is also a very high result.

In order to analyse the willingness to perform prosocial organizational behaviours among knowledge employees, a questionnaire was prepared by the author, which included 5 statements, to which the respondent could refer on the four-level Likert scale, where 1 meant: "I don't agree", 2: "I rather disagree", 3: "I rather agree", 4: "I agree". The questionnaire included the following items: *"I am willing to help my colleagues to solve their professional problems", "I prefer to keep the information and knowledge about my work for myself", "I am willing to introduce and train new employees", "I do not help others and I do not share my knowledge because this can be used against me", "I take care of the flow of information in the company, which allows all employees to develop".* The Cronbach alfa coefficient was 0.73, which is a prove of a satisfactory reliability of the questionnaire.

3.2 Sample

In order to verify the hypotheses, the research was conducted in more than 150 different knowledge-based organizations operating in Poland. The sample comprised 677 knowledge workers representing various professional groups in 10 different fields: management, engineering, information technology, marketing and sales, law, medicine, architecture, human resources, finance, and education. Companies operating in Poland were covered by the analyses because, based on the Organization for Economic Co-operation and Development reports, Poland is a

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developed country with a high education level. Poland's productivity strongly increased starting from 2000s and, right now, citizens are experiencing an outstanding technological progress, which has significantly improved standards of living and working (Goujard and Guérin,2018). In recent years, Poland has focused on innovations, directing over 20 billion euros in years 2014-2020 to regional and central governmental projects aimed to stimulate innovations (Brandt, 2018). The dynamic economic development of Poland points to the need of strengthening the flow of knowledge and taking care of organizational factors that will foster prosocial behaviours.

3.3 Analyses and Results

In order to verify the hypotheses, Pearson correlations and linear regression analyses, as well as a parallel mediation model with three mediators, were performed. The SPSS V.26 statistical software was used to conduct correlation and regression analyses, while the parallel mediation was performed using the Process function V.3.4 (model 4). In the conducted analysis, the level of occupational stress constituted an independent variable, and the performance of prosocial organizational behaviours constituted a dependent variable. In line with the expectations, based on the theoretical assumptions presented, the independent and dependent variables were found to be negatively correlated (r= -0. 382, p<0.01). The performance of prosocial organizational behaviours was therefore positively correlated with all of the six dimensions of the organizational climate (see Table 2).

Table 2. *Pearson correlation coefficients between pro-social organizational behaviours and other variables*

Variable	Oc.stress	Co-workers	Superiors	Work org.	The flow of information and communication	Representing employees' interests	Remuneration and development
Prosocial organizational behaviours	-,382**	,473**	,475**	,445**	,459**	,434**	,425**

*Note:** p<0.001*
Source: Own research.

The obtained correlation results confirm the H1 hypothesis. With increased stress levels, the willingness to demonstrate prosocial organizational behaviours is reduced. In order to examine what percentage of the prosocial organizational behaviours' variable is explained by an assessment of the organizational climate and its dimensions, a linear regression model was conducted. A linear regression analysis helps one to determine which explanatory variables should be used and

which are to ignore when explaining the variation in the dependent variable (Hayes, 2018). The results are presented in Table 3.

Table 3. *Multiple linear regression estimating pro-social organizational behaviours from an assessment of organizational climate dimensions.*

Model	R	R^2	Adjusted R^2	Std. error of the estimate
1	,649	,421	,419	2,00921
Predictors: (constant), communication, co-workers, work organization				

Source: *Own research.*

Three climate dimensions entered the model: *"communication", "co-workers" and "work organization"*. A significant regression equation was found (F(3.673)= 163.314, p < .000), with R2 = .649. This means that the obtained regression model explains 64.9% of the variance in prosocial organizational behaviours, which shows a good fit of the model. The respondents' willingness to demonstrate prosocial behaviour is equal to 8.090 (constant) + 0.094 (communication)+ 0.113 (co-workers) + 0.083 (work organization). It follows that with an increase by one point in the evaluation of communication (the results were calculated on a point scale), willingness to perform prosocial organizational behaviours increases by 0.094 point; with an increase by one point in the evaluation of relationships with co-workers, prosocial organizational behaviours increases by 0.113 point; and with an increase of an assessment of the work organization, prosocial organizational behaviours increase by 0.083 point.

The main objective of the research was to analyse the mediating effect of mediators on the relationship between occupational stress and prosocial organizational behaviours; therefore, a decision was made to examine the parallel multiple mediator model, because, despite the correlation, none of the mediators casually influences another (Hayes, 2018). As the variable variance of prosocial organizational behaviours is explained by the 3 dimensions of the organizational climate, a decision was taken to introduce 3 mediators into the model.

In the current study, in order to test the mediation effect of organizational climate dimensions on the relationship between occupational stress and prosocial organizational behaviours, three steps were conducted based on James and Brett (1984) and Baron and Kenny, (1986):

1) regressing the occupational stress (independent variable) on prosocial organizational behaviours (a dependent variable);
2) regressing the occupational stress on mediators: communication, co-workers and work organization;
3) regressing mediators on prosocial organizational behaviours.

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All the steps conducted yielded significant results which confirmed the H2 hypothesis. Both organizational stress and prosocial organizational behaviours are affected by organizational climate dimensions. These results enabled the researchers to test parallel mediation (Figure 1).

Figure 1. *Diagram of the parallel multiple mediator model for the interaction between occupational stress and pro-social organizational behaviours*
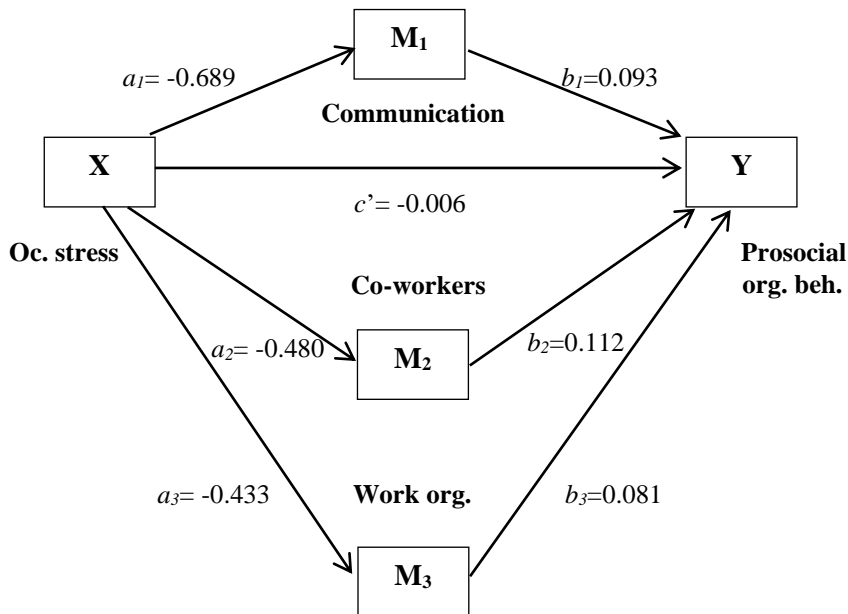
Source: *Own research.*

The results based on 5,000 bootstrapped samples (with p-value <0.05 considered as statistically significant) indicated that the total indirect effect (which is the measure of the amount of mediation) is -0.153. The direct effect of occupational stress on prosocial organizational behaviours, independent of the mediators proposed, is -0.006 (se=.015, p=.708), whereas the total effect (which is a total sum of the direct and indirect effect of X on Y) is -.158 (se=015, p<.000). All the coefficients of the model are presented in Table 4.

The results demonstrate that the following mediators: communication, relations with co-workers and work organization assessment completely mediated the effect of occupational stress on the involvement in prosocial organizational behaviours. The results therefore confirm the H3 hypothesis: occupational stress no longer affects prosocial organizational behaviours after introducing mediators, which makes the path c'= 0.006.

Table 4. *Regression coefficients, standard errors, and model summary information for the parallel multiple model of the interaction between occupational stress and prosocial organizational behaviours*

	Dependent variables										
	M_1 (communication)			M_2 (co-workers)			M_3 (work organization)			Y (pro-social org. behaviours)		
Explanatory variables		Coeff.	SE		Coeff.	SE		Coeff.	SE		Coeff.	SE
X oc. stress	a_1	-.689**	.042	a_2	-.480**	.037	a_3	-.433**	.025	c'	.017*	.015
M_1 communi-cation		-	-		-	-		-	-	b_1	. 093**	.015
M_2 co-workers		-	-		-	-		-	-	b_2	. 112**	.015
M_3 work organizatio n		-	-		-	-		-	-	b_3	.081**	.025
Constant	i_{m1}	50.846**	1.144	i_{m2}	44.241 **	1.026	i_{m3}	36.735* *	.675	i_y	6.156**	.444
		R^2= 0.289 F(6,750)=274.563, p=.000			R^2= 0.197 F(6,750)=165.96 7, p=.000			R^2= 0.316 F(6,750)=312.4 61, p=.000			R^2=0,421 F(6,720)= 122.364, p=.000	

Note:** $p<0.00$,* $p=0.708$
Source: *Own research.*

4. Discussion

According to literature-based assumptions, the independent variable- the stress level, is strongly correlated with the dependent variable: willingness to perform prosocial organizational behaviours. The higher the stress level is, the less willing employees are to help one another, to share knowledge or support one another in their assignments. In Soo and Ali's (2017) study on stress perception and prosocial behaviour at work, the results demonstrated that experiencing emotional stress (emotional exhaustion, distancing yourself from others) significantly weakens the performance of positive spontaneous activities towards organizations and other employees. Because of stress, too, absenteeism of many employees increases, which makes it impossible to effectively build bonds and to help one another.

However, according to Xiu *et al.* (2019), the prosocial behaviour of employees, especially helping one another, reduces the feeling of insecurity and stress experienced, and thus it contributes to building personality resources. The authors, however, did not clearly indicate the direction of the relationship: as to whether a stressed employee reduces their stress level by helping others, or whether this is only once thy have received help (while not offering it on their own) that they reduce their own tension. Therefore, in the author's own research, a linear regression analysis was conducted, which demonstrated that in the case of relations between the

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two variables, it is the stress level that explains one's willingness to engage in prosocial behaviours, and not the other way round.

The results furthermore demonstrated that the relationship between stress and prosocial organizational behaviours is completely mediated by an assessment of the organizational climate, namely three dimensions: communication, co-workers and work organization. This means that regardless of the level of perceived stress, one's willingness to engage in prosocial organizational behaviours decreases with a lower assessment of these dimensions. This is confirmed by the considerations by other researchers: employees not only need to be willing to become involved in prosocial behaviours but they must also be able to demonstrate these (Morrison, 1996). It is not enough to merely introduce stress management practices without taking care of work design and working conditions (Ipsen, Jensen, 2012). The quality of communication and information flow, relations with co-workers and work organization (the number of tasks and employee assessment methods) proved to be important mediators. What is worth noticing, among all tested organizational climate's dimensions, superiors' management style and approach was not the significant mediator. Many academic sources indicate that managers' attitudes and leadership style influence engagement and community among employees (Mintzberg, 2009), however, the research results shows that not the manager's approach is the most important but his/her impact on other organizational factors, that are more relevant for prosocial behaviours and knowledge sharing.

The relationship between stress and the willingness to engage in prosocial behaviours is most strongly influenced by the communication structure. This result can be explained by the fact that an appropriate communication infrastructure is necessary to exchange knowledge (Davenport and Prusak, 1998; Neagu, 2008). Without the possibility of clear communication, the transfer of knowledge or the establishment of relationships is difficult, and frustration and stress can increase. Better communication is fostered by collectivity and directness, i.e., face-to-face communication rather than virtual forms (Ipsen and Jensen, 2012).

The second important mediator was the relationships with colleagues. The opportunity to socialize, to get to know one another and to establish positive relations forms the basis for demonstrating pro-social behaviours (Morrison, 1996). In addition to this, friendly relations with co-workers are considered to be a key resource to help reduce tensions caused by work overload or other stressors as well as to encourage positive organizational behaviours (Pooja *et al.,* 2016). On the basis of their own research, Ipsen and Jensen (2012) noted that work in knowledge-based organizations is frequently individualised (an employee is supposed to search for knowledge on their own, to be a specialist in their field, which is stimulated by motivation systems) and, as a result, knowledge workers enjoy great autonomy at work, but also a sense of alienation and lack of group initiatives. Therefore, lack of opportunities for teamwork means a difficult flow of information and innovation.

The third important mediator, work organization, refers to the structuring of tasks, the amount of work to be done and the method of performance assessment and work supervision. Excessive workload and inefficient work organization takes up time and energy, which an employee could devote to engaging in helping others or transferring their knowledge. Knowledge workers notice that they have limited possibilities and willingness to share knowledge if the number of tasks exceeds their resources and the sense of an inefficient organization of working time, or an inability to reconcile all the requirements causes feelings of guilt and tension (Ipsen and Jensen, 2010). Social organizational behaviour that positively affects employees' well-being can only occur if job demands are perceived as low or mild; otherwise, employees devote their resources to dealing with the demands of their work, which reduces their psychological readiness to engage in social behaviour (Xiu *et al.,* 2019). Davenport (2005) argues that managers of knowledge workers should modify the way they supervise work, i.e., move from supervision to a joint performance of duties with their subordinates, and abandon rigid hierarchy in favour of creating communities with workers.

5. Practical Implications

The research provides practical implications for those managers in knowledge-based organizations who wish to increase the flow of knowledge and innovation among their employees. This will not be possible in the case of high levels of stress or lack of prosocial behaviours; to share knowledge, employees may not be overburdened and stressed, and they also need to establish genuine relationships with colleagues, which is aided by demonstrating prosocial organizational behaviours.

First of all, it is particularly important to ensure work design and to improve the organizational climate, and only then to implement stress prevention strategies. It is worth taking care of proper communication in the organization and building authentic relations between employees: despite extensive possibilities of virtual contact, it is face-to-face meetings and direct communication that are of a great value to prosocial behaviours. The basis of such communication is to be formed by transparency and avoiding gossip or insinuations, which have a negative impact on building bonds. Without the possibility of direct communication, it is much more difficult to solve professional problems, make contact and, more importantly, to develop it to such an extent that people want to help one another, support and share tacit knowledge.

Interestingly, although the style of communication is formed by the culture of the organization and the rules introduced by the management, managers cannot directly create such communication rules that will trigger prosocial organizational behaviours. Employees need a social exchange based on mutual trust and common purpose and not a sense of duty (Morrison, 1996). Therefore, the role of a knowledge worker manager is most frequently to support communication and to create an autonomous space in which employees develop their own communication

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rules and group dynamics. The management can only set out a framework for communication and cooperation such as team meetings twice a week or joint breaks outside the office, while allowing employees to integrate according to their own rules. Thus, employees will be able to undergo a group process and to establish relationships that become grounds for mutual help.

At the same time, what the management may have an influence on, and which is equally crucial for the flow of knowledge and prosocial behaviours, is task planning and work overload monitoring. Even the most pro-social employees will not be able to help others if they are confronted with an excess of assignments that exceed their performance capacity. To this end, what needs to be monitored is objective indicators of work such as delays in the execution of assignments, the number of mistakes made, the rate of employee absenteeism, as well as the level of satisfaction and stress among employees. It is worth creating space for exchanging opinions about work organization or the supervision methods of the work done subordinates: frank conversations or listening to employees can help to adapt work organization to their needs and capabilities, as well as to increase the sense of security or loyalty to the company. Thus, less overburdened employees may spend more time interacting and building relationships rather than dealing with their own tension.

6. Limitations and Further Research

A limitation of the study consists in the use of self-assessment questionnaires, as answers tend to be influenced by the mood of the respondents and their personal traits (Burke, Brief, and George, 1993). Although experiencing stress, expressing the desire to perform prosocial behaviour or the organizational climate assessment are subjective parameters that should be assessed as much as possible through self-assessment, it would be worthwhile to compare these with objective measures, especially those related to organizational factors (e.g., communication infrastructure, task structuring) in order to draw conclusions in the form of pragmatic recommendations. It would also be worthwhile to repeat the measurement using self-assessment questionnaires after a period of time, which reduces the distortion of the results under the influence of the mood the respondent was experiencing at the time. To minimise the subjectivity factor, a large study group was used in the current study (N=677) and conclusions were drawn based on many responses.

In further research, it would be beneficial to expand the sample size even more and to compare knowledge-based organizations from different European countries. It would enable to compare organizational factors that affect work and the flow of knowledge workers and to diagnose possible differences between organizations operating in different markets. The research should also be extended to other factors that have an impact on the willingness to demonstrate prosocial behaviour, e.g. the work content, personality variables and external variables such as economic transformations, political or health situation, the effects of which can be observed during the current pandemic situation. It would also be valuable to add further

independent variables to the model, e.g. sharing tacit knowledge, which would make it possible to analyse the relevance of the logical sequence assumed based on literature, according to which prosocial organizational behaviours have a positive and direct impact on knowledge sharing.

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