

IMPACT OF ORGANIZATIONAL IDENTIFICATION ON UNETHICAL PRO-SUPERVISOR BEHAVIOR: MODERATING ROLE OF CHARISMA

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Purpose: Investigating the relationship between the organizational identification of employees and their inclination toward unethical pro-supervisor behavior in the context of a leader's charisma.

Design/methodology/approach: Quantitative study (N = 389) on a population representing different businesses in Poland. An analysis of correlation and moderation was carried out. The conceptual framework of the theory of social identification was applied.

Findings: The leader's charisma was found to be a moderator of the impact of staff's organizational identification on unethical pro-supervisor behavior. When the leader's charisma is high, greater identification with the organization translates into a lower inclination toward unethical pro-supervisor behavior.

Research limitations/implications: The study sample was not statistically representative, and the study was cross-sectional. Similar research should be conducted in the future that covers the supervisor-subordinate dyads.

Practical implications: Attention should be paid to unethical pro-supervisor behavior when developing ethical codes and good practices in companies. Positive aspects of charisma should be considered when evaluating a leader's competencies.

Originality/value: This paper helps better understand unethical pro-supervisor behavior determinants and indicates the role of charisma in the process.

Keywords: unethical pro-supervisor behavior, unethical pro-organizational behavior, organizational identification, inspiring charisma, transformational leadership.

Category of the paper: Research paper.

1. Introduction

Staff members' unethical behaviors are a vital issue in management science and business practice. Unethical behavior that results from a poorly manifested will to act for the organization's benefit is included in this group. Examples include the intentional delaying of payments to suppliers exceeding the contractual deadlines (Kreczmańska-Gigol, 2012) and

falsifying the exhaust gas emissions from car engines by Volkswagen Corporation (Siano et al., 2017). In the short term, these actions can be beneficial to the organization, but in the long term, they pose a risk of severe adverse consequences, including but not limited to loss of reputation or liability for damages (Crête, 2016). This kind of behavior is called unethical pro-organizational behavior (Umphress, Bingham, 2011), whereby unethical pro-supervisor behavior is its own specific variety (Johnson, Umphress, 2019). Employees can demonstrate unethical behaviors, such as lying to protect their supervisors or exaggerating the supervisor's work to help positively assess the supervisor's performance (Johnson, Umphress, 2019).

Expecting high performance from employees and placing great trust in them is a differentiating factor of charismatic leaders (Shamir, House, Arthur, 1993). The impact of the leader's charisma on subordinates is sometimes perceived as ethically ambiguous (Zhang et al., 2020), even though charisma makes a vital component of transformational leadership that belongs to normative (ethical) theories of leadership (Wren, 2006).

Organizational identification can be described as the convergence of individual and organizational values (Riketta, 2005). Overidentification can sometimes occur, leading to unethical behavior of the staff (Dukerich, Kramer, Parks, 1998). Organizational identification contributes to intensifying unethical pro-supervisor behavior (Johnson, Umphress, 2019). This is why the author of the current paper decided that investigating the relationship between the staff's organizational identification and inclination to unethical pro-supervisor behaviors constitutes a significant scientific issue. Charismatic leadership, in a range of varieties, gradually loses significance due to corruption scandals related to its overuse. That is why the study's author considered it an interesting research issue to check if the supervisor's charisma contributes to unethical pro-supervisor behavior in the context of organizational identification. The paper attempts to answer the questions above in light of original qualitative studies.

2. Literature review and development of hypotheses

2.1. Organizational identification and unethical pro-organizational behavior

Organizational identification is based on the theory of social identification (Tajfel, Turner, 1986). It is typically described as a convergence of individual and organizational values (Riketta, 2005). Organizational identification is defined as "perceiving unity with the organization or belonging to the organization" (Ashforth, Mael, 1989, p. 34). As a result of organizational identification, employees who strongly identify with the workplace follow organizational values and the employer (Ashforth, Mael, 1989). Nonetheless, there are some negative aspects of organizational identification; e.g., it was discovered that when the organizational identification level is high, overidentification can occur, which can lead, for

instance, to unethical pro-organizational behavior (Caprar, Walker, Ashforth, 2022; Dukerich, Kramer, Parks, 1998). The impact of organizational identification can be manifested by employees' rationalizing their unethical decisions (Conroy et al., 2017), especially if the decisions go along with a conviction that the organization is ready to pay back (Umphress, Bingham, Mitchell, 2010).

Umphress and Bingham (2011) noticed that employees could behave unethically to provide benefits to other entities, including but not limited to supervisory bodies or immediate supervisors. Employees' relationships with their supervisors are among the most influential relationships at work, and supervisory bodies are the primary and significant aspect of organizational life (Sluss, Aschworth, 2008). Employees can be willing to engage in unethical behaviors, such as hiding information that could put the supervisor's reputation at stake. In addition to such behaviors, unethical pro-supervisor behavior also includes omissions (Johnson, Umphress, 2019).

The results of research by Bryant and Merritt (2019) revealed that a high-quality relationship of social exchange between the leader and subordinate can increase the readiness to exhibit unethical behavior beneficial for the leader. A close relationship between the leader and the subordinate is significantly related to the subordinate's readiness for unethical pro-organizational behavior (Wang, Li, 2019). Positive impacts and phenomena such as organizational identification and organizational commitment can increase engagement in unethical pro-supervisor behaviors among some employees (Johnson, Umphress, 2019). Therefore, the following research hypothesis was proposed:

Hypothesis 1. The employee's identification with the organization contributes to the increase in the employee's engagement in unethical pro-supervisor behavior.

2.2. Inspiring charisma, organizational identification and unethical pro-supervisor behavior

Charismatic leaders model behavior for subordinates by being an example to follow. They demonstrate with their behavior what they require from their subordinates. Moreover, they can build their image of exceptional people having extraordinary skills. They communicate distant and ideological rather than pragmatic objectives for the organization. Another differentiating feature of charismatic leaders' behavior is expecting very high performance from employees and putting much trust in them (House, 1976). Consequently, charismatic leadership contributes to an emotional commitment to the leader, i.e., boosting the staff's motivation, increasing their self-esteem and believing that the goals will be reached (Shamir, House, Arthur, 1993).

Charisma, in this sense, is among the foundations of the transformational leadership concept. An idealized example to follow that is combined with inspiring motivation is called inspiring charisma. These factors are highly correlated and very much like the behavior

described as charismatic leadership (Bass, Riggio, 2006, pp. 24-25). This is why they are referred to as charisma further in the study.

An idealized role model is manifested by treating the leader as an example to follow and a respected and admired person. Subordinates can rely on such a leader because she or he represents high ethical standards. The leader takes shared risk with their team and is an integrated personality. The organization's objective and vision take precedence over the leader's personal goals. Inspiring motivation, in turn, means the leader motivates and inspires their followers by establishing ambitious challenges. Leaders often cocreate the vision with their followers and outline an attractive vision of the organization or team's future. The leader openly communicates the expectations of engaging in joint activities and inspires the team spirit this way (Gigol 2015, pp. 70-75).

The research results indicate the impact of two components of transformational leadership: inspiring motivation and idealized impact (i.e., the factors being components of inspiring charisma) on the increase in the number of unethical pro-organizational behaviors among employees (Graham, Ziegert, Capitano 2015). Emotion-engaging leadership entails the risk that employees might be tempted to contribute to the company's success in a commonly regarded unethical way (Effelsberg, Solga, Gurt, 2014).

In contrast, some research results have not confirmed leadership's direct impact on the staff's unethical pro-organizational behavior (e.g., Gigol, 2020), including charismatic leadership (Lee, Choo, Jeon, 2016). Cheng, Wei and Lin (2019) stated that supervisors' responsible leadership affects subordinates' attitudes in the process of social learning. It should be emphasized that the paper's author did not find any significant studies on the impact of charisma on unethical pro-supervisor behavior. Hence, the second hypothesis was formulated as follows:

Hypothesis 2. The leader's charisma is a moderator of the impact of employee identification with an organization on engaging in unethical pro-supervisor behavior.

3. Research methods and tools

3.1. Research procedure and respondents

The research was completed in two rounds. The first round involved employees of state-owned companies. This group was supposed to constitute half of the respondents. The respondents represented large capital groups in logistics, power engineering, and mining and metalworks. The rest of the respondents represented various companies and economic sectors; 49.1% of the respondents worked for state-owned companies, 23.7% worked for companies with Polish capital, 22.4% were employed in companies with foreign capital,

and 4.1% did not know the ownership of the company they worked for. Most of the studied population worked for medium-sized and large-sized companies, 61.6% of which had a headcount of over 250 people, and 20.8% employed between 50 and 249 people. The questionnaires in the second group were collected during training sessions and of postgraduate sessions in three universities of economics in the Mazowieckie region. The complete anonymity of the respondents was ensured. Then, the questionnaires were collected, and the results were digitalized and analyzed statistically using IBM SPSS Amos 25.0.0 software.

Three hundred eighty-nine (389) persons participated in the study: 204 women (52.4%) and 172 men (44.2%). Thirteen respondents (3.3%) did not indicate their gender. Table 1 summarizes the frequency distribution for the respondents' age and education level. Persons aged 20-29 years constituted the largest group. Most respondents (85.9%) had a tertiary level education.

Table 1.
Respondents' age and education.

Age	<i>n</i>	%	Education	<i>n</i>	%
20-29 years	155	39.8	Tertiary	334	85.9
30-39 years	87	22.4	Secondary	47	12.1
40-49 years	111	28.5	Vocational	3	0.8
50-60 years	18	4.6	No data	5	1.3
60 and more years	3	0.8	Total	389	100
No data	15	3.9			
Total	389	100			

n – number of respondents; % - share in the study sample.

Table 2 summarizes the frequency distribution for the respondents' positions and seniority in the company. Most people worked at specialist positions. Employees working for the company for at least seven years constituted the largest group.

Table 2.
Respondents' positions and job seniority in the company

Job seniority	<i>n</i>	%	Position	<i>N</i>	%
Less than one year	82	21.1	Manager/Director	90	23.1
1 to 3 years	103	26.5	Specialist/Lead Specialist	183	47.0
3 to 5 years	36	9.3	Salesman	8	2.1
5 to 7 years	28	7.2	Blue-collar worker	13	3.3
7 and more years	133	34.2	Administration worker	51	13.1
No data	7	1.8	Production worker	2	0.5
Total	389	100	Other	32	8.2
			No data	10	2.6
			Total	389	100

n – number of respondents; % - share in the study sample.

3.2. Research tools

Then, the applied research tools were verified because validation is a vital part of scientific projects (Czakon, 2019). To that end, a performance analysis was carried out, and factor loadings of the questionnaires were determined.

3.2.1. Charisma

Table 3 summarizes the values of the obtained factor loadings for each item in the questionnaires. The inspiring charisma questionnaire is a part of the MLQ 6-S questionnaire investigating transformational leadership (Bass, Avolio, 1992); it was derived from a previous publication by the current study's author (Gigol, 2015).

Table 3.

Values of factor loadings obtained in an exploratory factor analysis of inspiring charisma

Questionnaire item	Factor loading
5. I am proud to be associated with her or him.	0.91
3. I have complete faith in her or him.	0.89
1. She or he makes me feel good to be around her or him.	0.87
6. She or he helps me find the meaning of my work.	0.85
4. She or he provides appealing images about what we can do.	0.78
2. She or he can communicate in simple words what we could and should do.	0.78

The values of factor loadings for all analyzed items were higher than 0.70, which indicates a very good structure of the research tool (Hair et al., 2019, p. 153).

3.2.2. Unethical pro-supervisor behavior

The questionnaire investigating unethical pro-supervisor behavior (Umphress, Bingham, Mitchell, 2010) was translated in consultation with three researchers working with human resources (HR). Table 4 summarizes the values of the obtained factor loadings for each questionnaire item.

Table 4.

Values of factor loadings obtained in an exploratory factor analysis concerning unethical pro-supervisor behavior

Questionnaire item	Factor loading
4. Because it benefited my supervisor, I have withheld negative information about my supervisor's performance from others.	0.86
3. Because it helped my supervisor, I have exaggerated the truth about my supervisor's performance to others.	0.82
5. Because it helped my supervisor, I have misrepresented the truth to make my supervisor look good.	0.80
2. Because my supervisor needed me to, I have not revealed to others a mistake he or she made that would damage his or her reputation.	0.78
1. Because it was needed, I have concealed information from others that could be damaging to my supervisor.	0.71
6. Because my supervisor needed me to, I spoke poorly of another individual who was a problem for my supervisor.	0.62

The lowest value of factor loading was obtained for Item 6. However, this value significantly exceeded the minimum level, which means that the scale can be regarded as sufficiently reliable (Hair et al., 2019, p. 153).

3.2.3. Organizational identification

A single-item measure of social identification (SISI) was used for studying organizational identification (Postmes, Haslam, Jans, 2012). It has good credibility, high reliability and high validity. Moreover, it is equally reliable for other approaches and definitions of organizational identification (Postmes, Haslam, Jans, 2012). The statement in the questionnaire was “I identify with my company”. A seven-point Likert scale was applied.

4. Results

4.1. Descriptive statistics of the analyzed variables

A statistical analysis of the research was carried out. Table 5 summarizes descriptive statistics for the analyzed interval variables. The summary was completed with the Kolmogorov–Smirnov test to verify the assumption of normal distribution of the analyzed variables and the Cronbach’s alpha reliability coefficient values.

Table 5.

Descriptive statistics of the studied variables

	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>Z</i>	<i>P</i>	<i>A</i>
Unethical pro-supervisor behaviors	1.65	0.75	1.00	5.00	0.19	0.001	0.86
Organizational identification	5.05	1.67	1.00	7.00	0.19	0.001	-
Charisma	3.31	1.03	1.00	5.00	0.07	0.001	0.92

M – mean value; *SD* – standard deviation; *min* – minimum value; *max* – maximum value; *Z* – Kolmogorov–Smirnov test value; *p* – statistical significance; *α* – coefficient of Cronbach’s alpha reliability coefficient.

Statistically significant deviations from normal distribution were discovered for all analyzed variables. All the obtained measurement reliability coefficients were adequately high.

Table 6 shows the Pearson (*r*) correlation coefficients between the analyzed variables determined with a bootstrapping method. The statistically significant correlations are highlighted.

Table 6.

Correlation coefficients between the analyzed variables determined with a bootstrapping method

	1.	2.	3.
1. Unethical pro-supervisor behavior	-		
2. Organizational identification	-0.095÷0.097	-	
3. Charisma	-0.093÷0.121	0.303÷0.498	-

The statistically significant correlations are marked in bold.

The leader's charisma did not correlate with unethical pro-supervisor behavior. The leader's charisma was correlated with organizational identification. Organizational identification, in turn, did not correlate with unethical pro-supervisor behavior.

4.2. Charisma versus organizational identification and unethical pro-supervisor behaviors

The bootstrapping method was used to study moderation (Hayes, 2013). The study sample (N = 389) was numerous enough to study the moderation effect (MacKinnon, Coxe, Baraldi, 2012). The model was verified with the Hayes Process macro in model No. 1 (Hayes, 2013) using SPSS software. Charisma was analyzed as the moderator of the relationship between organizational identification and unethical pro-supervisor behaviors. Moderation effects were verified by analyzing the statistical significance of interaction effects between the moderator, i.e., charisma, and the explaining variable, i.e., organizational identification. The results are summarized in Table 7. A statistically significant interaction effect was obtained in the model where organizational identification was analyzed as the explaining variable and unethical pro-supervisor behaviors were the explained variable. The relationship between organizational identification and unethical pro-supervisor behaviors was statistically insignificant at the low charisma level, i.e., one standard deviation below the average, $B = -0.07 \div 0.19$; at the average charisma level it was at the average level for the entire study sample, $B = -0.17 \div 0.06$; and negative at the high charisma level, i.e., one standard deviation above the average, $B = -0.32 \div 0.02$. At a high charisma level, the higher the organizational identification level is, the lower the level of unethical pro-supervisor behaviors is. The results are summarized in Table 7 and illustrated in Figure 1.

Table 7.

Results of moderation analysis

Explaining variable	Moderator	Explained variable	Interaction effect	Interaction effect
Organizational identification	Charisma	Unethical pro-supervisor behavior	Organizational identification x Unethical pro-supervisor behaviors	-0.20÷-0.01

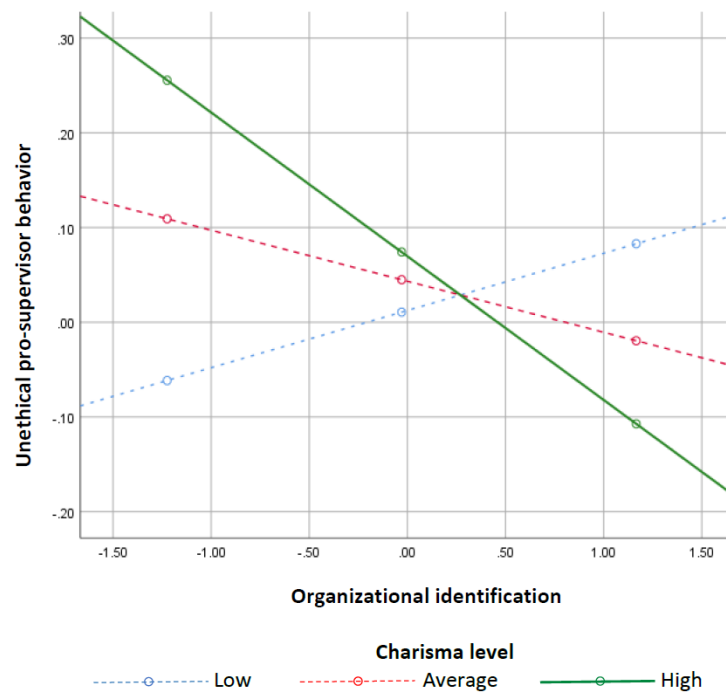


Figure 1. Relationship between organizational identification and unethical pro-supervisor behavior in a group of people with low, average and high levels of direct supervisors' charisma.

5. Discussion and research limitations

If the results were analyzed exclusively based on correlation analysis, it could be concluded that only the impact of the leader's charisma on the subordinates' organizational identification was demonstrated, as summarized in Table 6 and pointed out in the reference literature. Nonetheless, studies on charisma as the moderator of the relationship between organizational identification and unethical pro-supervisor behavior suggest that the relationship varies for different levels of the supervisor's charisma. A high level of the supervisor's charisma reverses the relationship between organizational identification and inclination toward unethical pro-supervisor behavior. However, it does not apply to unethical pro-organizational behavior, as demonstrated in many examples of research (e.g., Gigol, 2020).

One should be careful about drawing generalized conclusions from the research, as the study sample was not statistically representative, and the study was cross-sectional. More in-depth knowledge of the subject matter should be acquired through long-term research on supervisor-subordinate dyads.

6. Conclusions

The study suggests that there are bright sides of charisma. A leader who inspires action builds an emotional bond with the employee. The leader is perceived as an involved person and an integrated personality and does not cause an increase in unethical pro-supervisor behavior resulting from a high level of identification with the organization. In this sense, inspiring charisma belongs to ethical theories of leadership.

References

1. Ashforth, B., Mael, F. (1989). Social identity theory and the organization. *Academy of management review*, Vol. 14, Iss. 1, pp. 20-39, doi: 10.5465/amr.1989.4278999.
2. Bass, B., Avolio, B. (1992). *Multifactor Leadership Questionnaire MLQ-6S*. Redwood City: Mind Garden.
3. Bass, B., Riggio, R. (2006). *Transformational Leadership*. Mahwah: Lawrence Erlbaum Associates.
4. Bryant, W., Merritt, S. (2021). Unethical pro-organizational behavior and positive leader–employee relationships. *Journal of business ethics*, Vol. 168, Iss. 4, pp. 777-793, doi: 10.1007/s10551-019-04211-x.
5. Caprar, D., Walker, B., Ashforth, B. (2022). The Dark Side of Strong Identification in Organizations: A Conceptual Review. *Academy of Management Annals*, doi: 10.5465/annals.2020.0338.
6. Cheng K., Wei F., Lin Y. (2019). The trickle-down effect of responsible leadership on unethical pro-organizational behavior: The moderating role of leader-follower value congruence. *Journal of business research*, Vol. 102, pp. 34-43, doi: 0.1016/j.jbusres.2019.04.044.
7. Conroy, S., Henle, C., Shore, L., Stelman, S. (2017). Where there is light, there is dark: A review of the detrimental outcomes of high organizational identification. *Journal of organizational behavior*, Vol. 38, Iss. 2, pp. 184-203, doi: 10.1002/job.2164.
8. Crête, R. (2016). The Volkswagen scandal from the viewpoint of corporate governance. *European journal of risk regulation*, Vol. 7, Iss. 1, pp. 25-31, doi: 10.1017/S1867299X0000533X.
9. Czakon, W. (2019). Walidacja narzędzia pomiarowego w naukach o zarządzaniu. *Przegląd Organizacji*, Vol. 4, pp. 3-10, doi: 10.33141/po.2019.04.01.

10. Dukerich, J., Kramer, R., Parks, J. (1998). The dark side of organizational identification. In: D. Whetten, P. Godfrey (Eds.), *Identity in Organizations: Building Theory Through Conversations* (pp. 245-256). Thousand Oaks: Sage.
11. Effelsberg, D., Solga, M., Gurt, J. (2014). Transformational leadership and follower's unethical behavior for the benefit of the company: A two-study investigation. *Journal of business ethics*, Vol. 120, Iss. 1, pp. 81-93 doi: 10.1007/s10551-013-1644-z.
12. Gigol, T. (2015). *Kryzys przedsiębiorstwa a przywództwo*. Warszawa: Difin.
13. Gigol, T. (2020). Influence of authentic leadership on unethical pro-organizational behavior: The intermediate role of work engagement. *Sustainability*, Vol. 12, Iss. 3, 1182, doi: 10.3390/su12031182.
14. Graham, K., Ziegert, J., Capitano, J. (2015). The effect of leadership style, framing, and promotion regulatory focus on unethical pro-organizational behavior. *Journal of business ethics*, Vol. 126, Iss. 3, pp. 423-436, doi: 10.1007/s10551-013-1952-3.
15. Hair, J., Black, W., Babin, B., Anderson, R. (2019). *Multivariate data analysis*. Andover: Cengage.
16. Hayes, A. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: Guilford Publications.
17. House, R. (1976). Theory of Charismatic Leadership. In: J. Hunt, L. Larson (Eds.), *Leadership: The Cutting Edge* (pp. 189-207). Carbondale: Southern Illinois University.
18. Johnson, H., Umphres, E. (2019). To help my supervisor: Identification, moral identity, and unethical pro-supervisor behavior. *Journal of business ethics*, Vol. 159, Iss. 2, pp. 519-534, doi: 10.1007/s10551-018-3836-z.
19. Kreczmańska-Gigol, K. (2012). The threat of payment gridlocks in Poland and business ethics. *Journal of management and financial sciences*, Vol. 10, pp. 34-46.
20. Lee, K., Choo, S., Jeon, S. (2016). The influence of transformational leadership on unethical pro-organizational behavior – mediating effect of organizational identification. *Journal of digital convergence*, Vol. 14, Iss. 2, pp. 83-98, doi: 10.14400/JDC.2016.14.2.83.
21. MacKinnon, D., Cox, S., Baraldi, A. (2012). Guidelines for the investigation of mediating variables in business research. *Journal of business and psychology*, Vol. 27, Iss. 1, pp. 1-14, doi: 10.1007/s10869-011-9248-z.
22. Postmes, T., Haslam, S., Jans, L. (2013). A single-item measure of social identification: Reliability, validity, and utility. *British journal of social psychology*, Vol. 52, Iss. 4, pp. 597-617, doi: 10.1111/bjso.12006.
23. Riketta, M. (2005). Organizational identification: A meta-analysis. *Journal of vocational behavior*, Vol. 66, Iss. 2, pp. 358-384, doi: 10.1016/j.jvb.2004.05.005.
24. Shamir, B., House, R., Arthur, M. (1993). The Motivational Effects Of Charismatic Leadership: A Self-Concept Based Theory. *Organization science*, Vol. 4, Iss.1, pp. 577-594, doi: 10.1287/orsc.4.4.577.

25. Siano, A., Vollero, A., Conte, F., Amabile, S. (2017). "More than words": Expanding the taxonomy of greenwashing after the Volkswagen scandal. *Journal of business research*, 71, pp. 27-37, doi: 10.1016/j.jbusres.2016.11.002.
26. Sluss, M., Ashforth, B. (2008). How relational and organizational identification converge: Processes and conditions. *Organization Science*, Vol. 19, Iss. 6, pp. 807-823, doi: 10.1287/orsc.1070.0349.
27. Tajfel, H., Turner, J. (1986). The social identity theory of intergroup behavior. In: S. Worchel, W. Austin (Eds.), *Psychology of Intergroup Relations* (pp. 7-24). Chicago: Nelson-Hall.
28. Umphress, E., Bingham, J. (2011), When employees do bad things for good reasons: Examining unethical pro-organizational behaviors. *Organization science*, Vol. 22, Iss. 3, pp. 621-640, doi: 10.1287/orsc.1100.0559.
29. Umphress, E., Bingham, J., Mitchell, M. (2010). Unethical behavior in the name of the company: The moderating effect of organizational identification and positive reciprocity beliefs on unethical pro-organizational behavior. *Journal of applied psychology*, Vol. 95, Iss. 4, pp. 769-780, doi: 10.1037/a0019214.
30. Wang, Y., Li, H. (2019). Moral leadership and unethical pro-organizational behavior: A moderated mediation model. *Frontiers in psychology*, Vol. 10, 2640, doi: 10.3389/fpsyg.2019.02640.
31. Wren, J. (2006). A quest for a grand theory of leadership. In: G. Goethals, G. Sorenson (Eds.), *The Quest for a general theory of leadership* (pp. 1-38). Northampton: Edward Elgar.
32. Zhang, X, Liang, L, Tian, G, Tian, Y. (2020). Heroes or Villains? The Dark Side of Charismatic Leadership and Unethical Pro-organizational Behavior. *International Journal of Environmental Research and Public Health*, Vol. 17, Iss. 15, 5546, doi: 10.3390/ijerph17155546.