

THE IMPACT OF SUPERIOR DEVELOPMENTAL FEEDBACK ON EMPLOYEES' INNOVATIVE BEHAVIOR: A STUDY OF IMMEDIATE AND DELAYED EFFECTS

SHUANG ZHAO AND MENG YING YE

School of Economics and Management
Dalian University
No. 10, Xuefu Street, Jinzhou New District, Dalian 116622, P. R. China
zhaoshuang@dlu.edu.cn; ymycareen@163.com

Received May 2022; accepted July 2022

ABSTRACT. *Under the influence of the outbreak of the new crown epidemic, intensified external competition and the acceleration of product iteration, how companies continue to develop in the turmoil needs to rely on employee innovation. In the past research, most of the scholars were cross-sectional designs, showing the total effect of this influence process, and failed to distinguish between immediate effects and delayed effects. Based on the theory of social exchange and social information processing, and from the perspective of the growth need strength, this article verifies that the superior developmental feedback has a positive impact on the sense of work gain and employees' innovative behaviors of the day and the next day, and that the growth need strength plays a positive moderating role.*

Keywords: Superior developmental feedback, Sense of work gain, Innovative behavior, Growth need strength

1. Introduction. Affected by the COVID-19, enterprises are facing a more complex and volatile external environment. Innovative behaviors are important for enhancing enterprises' core competitiveness and promoting the long-term development of enterprises [1,2]. At the same time, employees are responsible for the innovation of the enterprises. Therefore, how to effectively motivate employees to innovate has become a hot research topic in the volatility, uncertainty, complexity, ambiguity era. However, in the information age, although the availability of information has increased, it also puts forward higher requirements on the ability of recipients to identify. According to the present studies, leaders' feedbacks have significant impact on employees' cognitions and behaviors [3]. Developmental feedback from superiors means that superiors provide subordinates with valuable information about their growth, development, and progress [4]. Research proves that superiors are more reliable than other sources of feedback. Compared with employees, superiors have stronger market acumen, and can timely capture information in the market that is beneficial to employee innovation and feed it back to employees, further helping them to form creative ideas.

Many scholars have conducted research on the influence of superior developmental feedback on employees' innovative behaviors [5-7], but found that there are deficiencies in existing research. First, it ignores the mechanism of sense of work gain between the superior developmental feedback and the innovative behavior of employees [8]. Existing research emphasizes that superiors' developmental feedbacks stimulate employees' internal motivations to produce behaviors expected by the organization. Intrinsic motivations are more subjective variables such as innovative self-efficacy, emotions, interpersonal relationships,

and trust, and ignore the variable which has the integration of subjectivity and objectiveness. They failed to consider the mechanism of sense of work gain between the superior developmental feedback and innovative behavior [9]. However, compared with stimulating other intrinsic motivations, employees' sense of work gain is based on the subjective feelings of objective gains, and the degree of satisfaction of individuals is based on value judgments. Maslow's hierarchy of needs theory believes that only when individuals' low-level needs are met, later will we pursue the needs of the next level. Innovation, as risky behavior, requires employees to further pursue self-breakthrough after being satisfied. It can be seen that in understanding the relationship between superior developmental feedback and employees' innovative behaviors, work gains are valued. Therefore, discuss how to use superior developmental feedback to improve employees' sense of work gain and other positive cognitive experiences, and provide a new path for companies to improve employees' innovative behavior. Second, it ignores the boundary effect of the growth need strength on the superior developmental feedback to the sense of work gain. The existing literature focuses on the moderating effects of factors such as work characteristics (work autonomy), individual characteristics (such as proactive personality, responsibility, and openness), and external environment (organizational innovation atmosphere, team identity), ignoring the influence of growth need strength. The developmental feedback from superiors affects the boundary effect of sense of work gain. Growth need strength is the individual's desire to grow and develop from [10]. Individuals who have high growth need strength pay more attention to growth and development opportunities at work, are more sensitive to the value of opportunities provided by the organization, and actively develop opportunities at work to experience higher levels of work benefits. However, in the previous studies of scholars, there is a lack of discussion on the moderating mechanism of growth need strength. Therefore, this article introduces the growth need strength into the model of superior developmental feedback, sense of work gain, and employees' innovative behavior, and explores this motivational process from the perspective of demand. Third, there is a lack of research to distinguish the immediate and delayed effects of superior developmental feedback. The research on employee attitudes and behaviors related to superior developmental feedback mostly uses cross-sectional data or multi-temporal data. The existence of recall bias leads to the low ecological validity of the results [11]. Research cannot reveal the relationship between variables in the time dimension. According to the research of Wang et al., in organizational management, it is necessary to pay attention to the immediate effect of leader's behaviors on employees' behavior on the day. It should also pay attention to whether it has a delayed effect on the next day [12]. So, does superior developmental feedback only have an immediate effect on the sense of work gain and innovative behavior of the day, or does it have an impact on the day and the next day? In response to this problem, this article uses the experience sampling method as a research tool to promptly and dynamically investigate the superior developmental feedback, sense of work gain, and innovative behavior of the same individual in the context of each working day, revealing the immediate effect of the developmental feedback from the superior [13], distinguish the immediate and delayed effects of superior developmental feedback, and deepen the understanding of the immediate effect and long-term value of developmental feedback in managerial practice.

Based on the above analysis, the paper plans to use the empirical sampling method, based on society exchange theory and social information processing theory, to explore the immediate and delayed effects of superior developmental feedback on the sense of work gain and innovative behavior at the intra-individual level, and select the inter-individual level of growth need strength. Through research, it is found that the superior developmental feedback has both immediate and delayed effects on sense of work gain and employees' innovative behavior. Growth need strength positively moderates the relationship between superior developmental feedback and sense of work gain.

2. Theories and Research Hypotheses.

2.1. Developmental feedback from superiors and innovative behaviors of employees. The superior developmental feedback is the instructive feedback provided by the superior for the learning, growth, and development of the subordinates [4]. Employees' innovative behavior refers to the behavior of employees who put creative ideas into practice at work, and finally form new products, processes, or work processes [14]. As a guarantee and supportive external opportunity for employee innovation, feedback from superiors has a positive impact on the generation of employees' innovative behavior [7,15]. First of all, developmental feedback, as information-based feedback, creates a relaxing atmosphere within the organization and reduces the anxiety and fear caused by the risks and uncertainties of innovation. Secondly, the factors that ultimately determine the level of potential innovation capabilities of employees are employees' knowledge, skills, etc. During the process of innovation, employees need to search for a large amount of innovation-related knowledge and information, expand their own cognitive territory, and develop their abilities. Superiors' developmental feedback, as a supplement to the knowledge structure of employees, can better solve this problem. Thirdly, innovation has a high probability of failure. Employees are likely to psychological exhaustion and emotional exhaustion in the process of innovation. The developmental feedback from superiors can make employees have positive emotional experiences in a relaxing atmosphere and enhance their thinking activity. Finally, compared with other sources of feedback, superiors are more reliable [6]. When superiors provide employees with developmental feedback, they will perceive their superiors' respect [16], value, and trust, and they will be equal. The theory of social exchange believes that the behavior of a leader affects the performance of employees. When superiors provide employees with future-oriented feedback, it is easy to form a good social exchange relationship between them, at the same time, employees will have more innovative behaviors in return for the leadership's support. Therefore, the following hypothesis is proposed:

Hypothesis 1: *Developmental feedback from superiors of the day positively affects employees' innovative behaviors of the day.*

2.2. The mediating role of sense of work gain. The sense of work gain is the feeling and experience of employees in the work situation, and it is a comprehensive feeling and judgment of actual contribution and gain [17]. First of all, as the embodiment of the organization [18], the superior's behavior represents the organization's intentions to a certain extent. When developmental and instructive information is provided, it will improve employees' skills, professional knowledge, and comprehensive capabilities. And employees will obtain confidence and a sense of work gain. Secondly, future-oriented feedback from superiors can satisfy employees' self-esteem, emotions, sense of fairness, and recognition needs, strengthen their internal perception of identity, and promote the generation of positive emotions [19]. Therefore, superior developmental feedback will affect employees' work emotions in the day and make their emotion change. Positive emotions help employees complete their work better, deepen their cognition of work, and generate more sense of gain. Finally, developmental feedback is information-based feedback. Developmental information reduces the ambiguity of employees' job roles, makes it clearer how to realize the value of their own work, and is full of hope for future work. According to the principle of social exchange theory, when superiors provide more resources and opportunities for subordinates, in return, subordinates will repay superiors with better work experience, work performance, and work investment. Therefore, the following hypothesis is proposed:

Hypothesis 2: *The developmental feedback from superiors during the working day has a positive impact on the employee's sense of work of the day.*

Studies have shown that different mental states have a transmission effect between work situations, work characteristics, and employees' innovative behaviors [20]. Sense of work

gain is regarded as a positive psychological experience in the workplace [21], and employees have positive emotional states. The theory of emotional expansion believes that positive emotional states help individuals generate more novel ideas and produce more diverse behaviors. The instructional information provided by superiors makes employees feel that their own skills at work have been improved, which will produce a pleasant psychological experience. Employees are more likely to feel that the feedback from superiors is a resource rather than pressure and restraint [22]. It is easy to establish a good social exchange relationship between them. Based on the principle of reciprocity, individuals return to the organization's support with a positive work attitude and psychological feelings. Employees will use the organizational platform to organically integrate their career development with their long-term goals and have higher job satisfaction. Employees with a higher level of satisfaction will reduce their resistance to risks to a certain extent, use higher work enthusiasm and motivation to engage in more creative and challenging work, and then have the opportunity to generate ideas or creative ideas [23]. Therefore, the following hypotheses are proposed:

Hypothesis 3: *The sense of work gain of the day positively affects the employees' innovative behavior of the day.*

Hypothesis 4: *The sense of work gain of the day plays an intermediary effect on the positive relationship between the superior developmental feedback and the innovative behavior of the day.*

2.3. The moderating role of growth need strength. The growth need strength is the learning, growth, and development opportunities that individuals expect from [10]. As an important individual trait, it has stability and durability. The social information processing theory holds that individuals will interpret the information they have received. Employees with high growth need strength are more likely to interpret their superiors' intentions from the perspective of resource investment, actively position themselves, and clarify what will actually be paid in their work. Employees with high growth needs will actively learn new knowledge and new skills at work, are more sensitive to information that is conducive to their own growth and development at work, perform tasks outside their duties, make good use of all available resources, and strive to perform the best at work. At the same time, a supportive environment increases the possibility of individuals with high growth needs to realize themselves. Therefore, the following hypothesis is proposed:

Hypothesis 5: *Growth need strength positively moderates the relationship between superior developmental feedback and employees' daily work gain.*

2.4. Delayed effect of superior developmental feedback. In the field of management, the time scale between interactions is easily overlooked. Most studies use general effects and lack the distinction between immediate effects and delayed effects. As a kind of leadership behavior, superior developmental feedback has a long-term motivational effect on the individual's psychology, cognition, attitude, and behavior [12]. Developmental feedback makes employees feel the motivation from their superiors, which will affect their subsequent behaviors. This effect will continue to improve the employees' emotion, psychology, and abilities at work, and ultimately show an increasing sense of gain at work. The superiors need to provide employees with developmental feedback dynamically, which will make the employees' sense of work experience dynamic changes in the subsequent period of time, and the employees' work enthusiasm and interest will be maintained at a high level, which will promote their later performance of more innovative behavior [24]. Based on this, the following hypothesis is proposed:

Hypothesis 6: *The superior developmental feedback (Day_t) of the day has a significant positive impact on the sense of work gain (Day_{t+1}) and innovative behavior (Day_{t+1}) on the next day.*

3. Main Results. Based on the design idea of the empirical sampling method, the data of this study was obtained through continuous questionnaires of the subjects for 5 working days. Finally, 420 dynamic data of 84 subjects were obtained. They were used to examine the immediate effects of superior developmental feedback.

The main result is as follows: From M5 in Table 1, it can be seen that the superior developmental feedback has a significant positive impact on employees' innovative behavior ($\gamma = 0.135, p < 0.05$), and hypothesis 1 is verified; from M2, it can be seen that the superior developmental feedback has a significant positive impact on the sense of work gain ($\gamma = 0.253, p < 0.001$), and hypothesis 2 is verified; from M6, it can be seen that the sense of work gain has a significant positive impact on employees' innovative behavior ($\gamma = 0.453, p < 0.001$), and hypothesis 3 is verified. On the basis of M5, M7 was constructed by introducing the sense of work gain. The results showed that the developmental feedback from superiors had no significant impact on employees' innovative behaviors ($\gamma = 0.051, p > 0.05$), and the sense of work gain still positively affected employees' innovative behaviors ($\gamma = 0.437, p < 0.001$). According to the paper of Wen and Ye [25], the sense of work gain between the superior developmental feedback and employees' innovative behaviors plays a complete intermediary role, and hypothesis 4 is verified. At the same time, in M4 in the table, it can be seen that the interaction terms of superior developmental feedback and growth need strength significantly positively affect the relationship between superior developmental feedback and sense of work gain ($\gamma = 0.319, p < 0.001$), and hypothesis 5 is verified.

TABLE 1. Main results of the study

Variances	SWG				EIB		
	M1	M2	M3	M4	M5	M6	M7
Gender	-0.363*	-0.288*	-0.19*	-0.102	-0.402**	-0.278*	-0.269*
Age	-0.322**	-0.235**	-0.108	-0.043	-0.338**	-0.238**	-0.226*
Education	-0.1	-0.062	-0.033	-0.002	-0.147	-0.123	-0.116
Working years	0.217**	0.166**	0.063	0	0.246**	0.175*	0.168*
Rank	-0.268*	-0.230**	-0.155**	-0.147**	-0.248*	-0.147	-0.144
GNS			0.286***	0.344***			
SDF		0.253***		0.24***	0.135*		0.051
SWG						0.453***	0.437***
SDF*GNS				0.319***			

Notes: 1) GNS means growth need strength, SDF means superior developmental feedback, SWG means sense of work gain, EIB means employees' innovative behavior.

2) p value is the significance level, * represents $p < 0.05$, ** represents $p < 0.01$, *** represents $p < 0.001$.

3) The following is the same.

In order to verify the delayed effect of the superior developmental feedback, the study used 336 lag matching data to verify. Table 2 shows that the superior developmental feedback positively affects the next day's sense of work gain ($\beta = 0.318, p < 0.001$), and positively affects the employees' innovative behavior the next day ($\beta = 0.368, p < 0.001$), and hypothesis 6 is verified.

4. Conclusions. Based on social exchange theory and social information processing theory, this paper verifies that superior developmental feedback has both immediate and delayed effects on sense of work gain and employees' innovative behavior. At the same time, it is verified that the sense of work gain has an intermediary effect between the superior developmental feedback and innovative behavior, and the growth need strength has a positive moderating effect between the superior developmental feedback and the sense of work gain.

TABLE 2. The delay effect of superior developmental feedback

	SWG (Day _{t+1})	EIB (Day _{t+1})
	M8	M9
Constant	2.408	2.066
SDF (Day _t)	0.318***	0.368***
R^2	0.123	0.116
Adjusted R^2	0.12	0.113
F	46.736***	43.778***
p	0.000	0.000

Some management enlightenments can be drawn from this research: firstly, managers need to pay attention to the positive impact of developmental feedback on employees, and form a good communication relationship between managers and employees; secondly, pay attention to the employees' growth need strength and sense of work gain in the management process; finally, the behaviors, attitudes, and emotions of leaders will affect the working state and emotions of employees for a period of time. Effective emotional management is very important for leaders.

In the future, researchers can conduct extended research from the following aspects. First, it can continue to explore what variables exist that mediate or moderate the superiors' developmental feedback and the innovative behavior of employees. Second, consider other research methods, such as polynomial response surface analysis. The polynomial response surface analysis is the influence of the matching relationship between two or more variables on the dependent variable, which can better explain the interaction between the individual and the environment.

Acknowledgment. The authors also gratefully acknowledge the helpful comments and suggestions of the reviewers, which have improved the presentation.

REFERENCES

- [1] W. R. Lee, S. B. Choi and S. W. Kang, How leaders' positive feedback influences employees' innovative behavior: The mediating role of voice behavior and job autonomy, *Sustainability*, vol.13, no.4, 1901, 2021.
- [2] F. Xu and X. Wang, Leader creativity expectations and follower radical creativity: Based on the perspective of creative process, *Chinese Management Studies*, vol.13, no.1, pp.214-234, 2019.
- [3] S. Wang and X. Zhang, Impact mechanism of supervisor developmental feedback on employee workplace learning, *Managerial and Decision Economics*, vol.43, no.1, pp.219-227, 2022.
- [4] J. Zhou, When the presence of creative coworkers is related to creativity: Role of supervisor close monitoring, developmental feedback, and creative personality, *Journal of Applied Psychology*, vol.88, no.3, pp.413-422, 2003.
- [5] W. Su, X. Lin and H. Ding, The influence of supervisor developmental feedback on employee innovative behavior: A moderated mediation model, *Frontiers in Psychology*, vol.10, 1581, 2019.
- [6] N. Eva, H. Meacham, A. Newman et al., Is coworker feedback more important than supervisor feedback for increasing innovative behavior?, *Human Resource Management*, vol.58, no.4, pp.383-396, 2019.
- [7] H. U. Bak, Supervisor feedback and innovative work behavior: The mediating roles of trust in supervisor and affective commitment, *Frontiers in Psychology*, vol.11, 559160, 2020.
- [8] W. Su and X. Lin, The influence of superior developmental feedback on subordinates' innovation behavior: The chain mediating role of LMX and innovation intention, *East China Economic Management*, vol.33, no.1, pp.129-136, 2019.
- [9] L. C. Thuan, Stimulating employee creativity by providing developmental feedback, *International Journal of Organizational Analysis*, vol.29, no.2, pp.354-367, 2021.
- [10] J. R. Hackman and G. R. Oldham, Development of the job diagnostic survey, *Journal of Applied Psychology*, vol.60, no.2, pp.159-170, 1975.
- [11] J.-Y. Duan and W.-P. Chen, Ambulatory-assessment based sampling method: Experience sampling method, *Advances in Psychological Science*, vol.20, no.7, pp.1110-1120, 2012.

- [12] Y. Wang, K. Zhang, J. Zhang et al., Leadership credibility: The watershed of delegation effects and the formation mechanisms of negative sides, *Management World*, vol.35, no.2, pp.185-196, 2019.
- [13] T. A. Judge, L. S. Simon, C. Hurst et al., What I experienced yesterday is who I am today: Relationship of work motivations and behaviors to within-individual variation in the five-factor model of personality, *Journal of Applied Psychology*, vol.99, no.2, pp.199-221, 2014.
- [14] S. G. Scott and R. A. Bruce, Determinants of innovative behavior: A path model of individual innovation in the workplace, *Academy of Management Journal*, vol.37, no.3, pp.580-607, 1994.
- [15] M. J. Zhou and S. K. Li, Can supervisor feedback always promote creativity? The moderating role of employee self-monitoring, *2013 6th International Conference on Information Management, Innovation Management and Industrial Engineering*, Xi'an, China, 2013.
- [16] K. L. Sommer and M. Kulkarni, Does constructive performance feedback improve citizenship intentions and job satisfaction? The roles of perceived opportunities for advancement, respect, and mood, *Human Resource Development Quarterly*, vol.23, no.2, pp.177-201, 2012.
- [17] J. Yang and G. Wang, Peasant workers' work gain: Theoretical construction and empirical examination, *Issues in Agricultural Economics*, vol.477, no.9, pp.110-122, 2019.
- [18] B.-S. Cheng, D.-Y. Jiang and J. H. Riley, Organizational commitment, supervisory commitment, and employee outcomes in the Chinese context: Proximal hypothesis or global hypothesis?, *Journal of Organizational Behavior*, vol.24, no.3, pp.313-334, 2019.
- [19] B. S. Luturlean, A. P. Prasetyo and R. Saragih, The effect of human resource practice, perceived organizational support and work-life balance in enhancing employee's affective commitment, *J. Mgt. Mkt. Review*, vol.4, no.4, pp.242-253, 2019.
- [20] S. Zhu and L. Long, Research review and prospects of employees' innovative work behavior, *Journal of Wuhan University of Technology: Information and Management Engineering Edition*, vol.31, no.6, 2020.
- [21] P. Zhu and J. Liu, Employees' sense of work gain: Structure, measurement, antecedents and consequences, *Human Resources Development of China*, vol.37, no.7, pp.65-83, 2020.
- [22] Z. Zhang, T. Qing and Y. Gu, Research on the mechanism of person-job matching on employees' job happiness, *Forum on Statistics and Information*, vol.32, no.2, 2017.
- [23] S. Ahmadi, Y. Nami and R. Barvarz, The relationship between spirituality in the workplace and organizational citizenship behavior, *Procedia – Social and Behavioral Sciences*, vol.114, no.1, pp.262-264, 2014.
- [24] A. Oke, N. Munshi and F. O. Walumbwa, The influence of leadership on innovation processes and activities, *Organizational Dynamics*, vol.38, no.1, pp.64-72, 2009.
- [25] Z. Wen and B. Ye, Mediating effect analysis: Method and model development, *Advances in Psychological Science*, vol.22, no.5, pp.731-745, 2014.