An Experimental Vignette Study of How Supervisor Developmental Feedback and Psychological Safety Influence Intention to Innovative Work Behavior in Education Technology Company

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Abstract

This study examines the influence of supervisor developmental feedback (SDF) and psychological safety (PS) on the intention to engage in innovative work behavior in educational technology (EdTech) companies in Indonesia through experimental vignette method (EVM). The participants of this study consisted of 287 employees from EdTech companies in the Jabodetabek area. Participants were provided with hypothetical scenario to form perceptions of manipulated scenarios. Data were collected using an Indonesian version of the intention to innovative work behavior scale after reading the hypothetical scenario. Descriptive statistical techniques and factorial ANOVA were used for data analysis. The results indicate that SDF significantly predicts intention to engage in innovative work behavior (F(1, 283)=27.86; p=.00). Similarly, PS also significantly predicts intention to innovative work behavior (F(1, 283)=164.41; p=.00). However, the interaction between SDF and PS does not have a significant effect on the intention to innovative work behavior (F(1, 283)=.74; p=.39). Understanding the influence of SDF and PS on innovative work behavior (IWB) can assist supervisors in creating a psychologically safe environment and providing developmental feedback to enhance employees' intention to engage in innovative work behavior.

Keywords: educational technology, experimental vignette method, intention to innovative work behavior, psychological safety, supervisor developmental feedback

Studi Vignette Eksperimental tentang Bagaimana Umpan Balik Pengembangan Supervisor dan Keamanan Psikologis Mempengaruhi Intensi Perilaku Kerja Inovatif di Perusahaan Teknologi Pendidikan

Abstrak

*Penelitian ini menguji pengaruh umpan balik pengembangan dari supervisor (*supervisor development feedback/*SDF) dan keamanan psikologis (*psychological safety*/PS) pada intensi untuk terlibat dalam perilaku kerja inovatif di perusahaan teknologi pendidikan Indonesia melalui metode* vignette *eksperimental. Partisipan penelitian ini adalah 287 karyawan perusahaan teknologi pendidikan di wilayah Jabodetabek. Partisipan diberi skenario hipotetik untuk membentuk persepsi skenario yang dimanipulasi. Pengumpulan data menggunakan Skala Perilaku Kerja Inovatif versi Bahasa Indonesia yang diberikan setelah partisipan membaca skenario hipotetik. Teknik statistik deskriptif dan anova faktorial digunakan untuk analisis data. Hasilnya menunjukkan SDF memprediksi secara signifikan intensi untuk terlibat dalam perilaku kerja inovatif (F(1, 283)=27.86; p=.00). Demikian juga dengan PS, yang secara signifikan memprediksi intensi perilaku kerja inovatif (F(1, 283)=164.41; p=.00). Hanya, interaksi antara SDF dan PS tidak menunjukkan efek yang bermakna terhadap intensi untuk perilaku kerja inovatif (F(1, 283)=.74; p=.39). Pemahaman tentang pengaruh SDF dan PS terhadap perilaku kerja inovatif dapat membantu supervisor dalam menciptakan lingkungan kerja yang aman secara psikologis dan menyediakan umpan balik pengembangan untuk meningkatkan intensi karyawan untuk terlibat dalam perilaku kerja inovatif.*

Kata kunci*: teknologi pendidikan, metode eksperimental* vignette*, intensi untuk berperilaku kerja inovatif, keamanan psikologis, umpan balik pengembangan dari supervisor*

Introduction

In this era of uncertainty, the demand for change and innovation has dramatically increased (Su et al., 2019). Innovation has become an essential strategy for survival during turbulent times (Lee et al., 2016), particularly in the education sector, which has undergone permanent changes following the pandemic (Li & Lalani, 2020). As a result, educational institutions have been compelled to innovate and embrace the use of online learning processes by integrating technology into education to ensure the sustainability of the learning process (Bhardwaj et al., 2020). Companies that provide education services by integrating technology are commonly known as educational technology (EdTech) companies. While formal education institutions face challenges adapting to new technology, the demand for EdTech companies is growing as customers increasingly prefer online learning methods (Bhardwaj et al., 2020).

However, the shift in customer preferences has not been adequately met with sufficient available resources (Bhardwaj et al., 2020). Consequently, there are still numerous educational needs among the Indonesian population that remain unfulfilled. A survey conducted by Ravenry (2020) supports this fact, indicating that 90% of EdTech companies in Indonesia primarily provide support for formal education, leaving a gap in skills development outside formal education. Additionally, a comparison by Bhardwaj et al. (2020) shows that the growth of educational technologies in Indonesia is relatively low compared to global competition. This is further exemplified by recent events where two major players in the EdTech sector in Indonesia had to implement downsizing strategies or permanently close (Nurhadi, 2022). Therefore, EdTech companies in Indonesia must accelerate innovation to meet the learning access needs of the Indonesian population and equip them for global competition (Bhardwaj et al., 2020).

According to a survey conducted by Furstenthal et al. (2021), innovation has been found to contribute to overall business growth. The data shows that even during times of crisis, innovation can boost business growth by 10% to 30% annually (Furstenthal et al., 2021). Therefore, the role of innovation is crucial for a company's sustainability. Consequently, companies strive to identify conditions at workplace that can encourage their employees to innovate (Rathi, 2014). This shows the importance for companies to be able to predict the intention to innovate in their employees. Cummings (2010) states that individuals within the organization determine innovation at the company level. Thus, it can be concluded that innovation at an individual level plays a significant role in determining the success of organizational innovation, referred to innovative work behavior (IWB) (Strobl et al., 2020). Scott and Bruce (1994) define IWB as a series of stages comprising different activities. Janssen (2000) further describes IWB as stages involving creating, promoting, and implementing new ideas that benefit the individual's work role, group, or organization.

Intention is a motivational factor that influences behavior, indicating the level of an individual's urge and effort to engage in a particular behavior. Thus, the higher the intention, the more likely the person is to perform that behavior (Ajzen, 1991). The intention is built upon attitudes (positive or negative feelings towards the behavior), subjective norms (perceived social pressure to engage in the behavior), and individual motivation (Ajzen, 1991). Based on the theory of reasoned action and planned behavior, the intention is the closest construct that can predict the occurrence of a behavior (Ajzen, 1991). When individuals act within the same context, intention can accurately predict their behavior (Ajzen, 1991).

Several studies have extensively examined the relationship between intention

and behavior. For example, research has investigated the significance of the intention to vote for specific candidates and actual voting behavior in elections. Individuals who intend to vote for a particular candidate are likely to follow through and vote for that candidate during the election period (Lee et al., 2016). Armitage and Conner (2001) conducted a comprehensive analysis of 185 studies and found that intentions often predict overall behavior. Additionally, a recent study by Zhang et al. (2021) demonstrated a significant correlation between the intention to innovate and actual innovative behavior. Besides, as a unique point, this research tries to provide factual conditions that exist in real-life for both variables and manipulate participants' perceptions of both variables to see the differences between conditions. To facilitate these, researcher would present each participant with hypothetical scenario prior to measuring intention this method called as experimental vignette methods. These hypothetical scenarios are identical to predict attitude, which may not accurately reflect previous behavior (Rorie, Simpson, & Boppre, 2018). Meanwhile, measurements developed by Janssen (2000) indicated previous innovative work behavior that had been carried out by participants. Hence, to be able to predict innovative work behavior in individuals, IWB in this study will be measured through their intention to engage in innovative work behavior.

Based on the above explanation, in this study, the intention to engage in innovative work behavior is defined as an individual's intention to generate, promote, and implement new ideas that are purposeful and beneficial within their work role, group, or organization. Adapting three-stage model and measurement of IWB by Janssen (2000), intention to generate idea stage is indicated by the intention to generate diverse ideas that can be applied to various domains within the individual's work. Secondly, the promotion stage involves the individual's intention to actively engage in social settings, build coalitions, and seek support for the generated ideas. Lastly, the idea realization stage is characterized by the individual's intention to transform ideas into tangible prototypes or models that can be implemented within the organization.

Moreover, Javed et al. (2019) found that engaging in innovation often requires individuals to take risks and face potential negative judgments from others when presenting and implementing new ideas. Therefore, it is crucial to create an environment that encourages safe and open communication (Bak, 2020). Work climate where people feel comfortable to express and be themselves known as psychological safety (PS) (Edmondson, 2019). Choi and Lee (2020) discovered a strong relationship between PS and IWB within the environmental context. Furthermore, the degree to which employees perceive feedback from their direct supervisors, known as supervisor developmental feedback (SDF) (Zheng, et al, 2015; Zhou, 2003). Through its development, SDF consist of two dimensions, there are positive developmental feedback (PSDF) and negative developmental feedback (NSDF) (Zheng, et al 2015). Furthermore, feedback is seen as an indicator of open communication (Bak, 2020). The perception towards the feedback given is varied for every individual (Hasel & Grover 2017). This depends on the individual's confidence towards the safety condition within the environment (Edmondson, 2019). In previous research, Edmondson (2019) discovered that individuals that perceive the environment as a safe environment would interpret positive or negative feedbacks as an additional support for learning to improve their abilities, thus it would also encourage them to improve and continue to carry out such innovation (Crommelinck, 2013). This perception allows individuals to voice their thoughts and concerns (Nemanich & Vera, 2009; Walumbwa & Schaubroeck, 2009).

Previous research has relatively few studies examining the interaction between these variables. Additionally, previous research mainly explored the relationships only between SDF and IWB or PS and IWB through cross-sectional studies, which lacking a conclusive understanding of their influence and interaction with IWB (Xiao et al., 2021). Specifically, there is inconsistency in the outcomes regarding the relationships between SDF and IWB, with some aspects suggesting stronger relationships for PSDF while others suggest the opposite (Xiao et al., 2021). This discrepancy implies the existence of another variable that may affect the strength of these relationships (Fairchild & MacKinnon, 2009), necessitating a research design that captures the dynamics between these variables. Including a second variable within the same study allows the author to address questions regarding the potential impact of one independent variable on other independent variables through manipulation (Price et al., 2015). Therefore, this research will employ an experimental vignette study to explore the causal relationships between these variables (Atzmüller & Steiner, 2010). As mentioned previously, experimental vignette methodology is suitable for predicting attitudes and intentions toward specific situations (Eifler & Petzold, 2019). Thus, this study aims to investigate the influence of SDF and PS in predicting intention to IWB.

Method

This research has received ethical clearance from the Committee of Ethics, Faculty of Psychology (138/FPsi.Komite Etik/PDP.04.00/2022). The participants on this study are employees who work in an EdTech company or a tech-based education service provider in Indonesia, supporting both formal and non-formal education. According to Januszewski and Molenda (2013), educational technology involves the ethical practice of providing learning facilities and enhancing the performance of the learning process through the creation, utilization, and management of relevant technology processes and resources.

Prior to the study, there is an adjustment in regards with the likert categories (e.g., likert number 6 (six) originally indicating always, replaced with strongly agree) and minor revision in items to indicate the intention to innovative work behavior (e.g., 'Creating new ideas for difficult issues (idea generation)' to 'I would create new ideas for difficult issues (idea generation)'). These changes made according to Su, et al (2019), where innovative work behavior was measured by intention. Therefore, the pilot study was conducted to check whether the adjustment of the measurement has the amount of acceptable reliability. A pilot study was conducted to measure the reliability of the intention to engage in innovative work behavior scale. The pilot study was conducted to 184 employees generally. The reliability test of the scale yielded a Cronbach's alpha coefficient of .74. This Cronbach's alpha is fulfilling the standard of reliability coefficient required (Kaplan M.R & Saccuzzo P.D, 2017)which it is required to reach minimum 0.70 for Cronbach's alpha value, when reaching this numbers, it means that there is a degree of consistency or agreement among the items. In other words, the items tend to measure the same underlying (Kaplan M.R & Saccuzzo P.D, 2017)

This study utilized an online Experimental Vignette Method (EVM), combining scenario-based studies (paper people studies) with a survey to assess individuals' intentions toward innovative work behavior. The EVM involves presenting participants with a well-structured and realistic scenario to assess their intentions, behaviors, and attitudes. By employing this method, researchers can effectively manipulate and control independent variables (Atzmüller and Steiner, 2010; Aguinis and Bradley, 2014). The study employed a between-subject, 2x2 factorial design, specifically two group types of PSDF group vs. NSDF group and 2 group

types of high PS vs. low PS. According to Charness et al. (2012), the between-subject design demonstrates strong external validity and realistically represents individual decision-making. Furthermore, statistical analysis suggests no significant difference between between-subject and within-subject designs (Charness et al., 2012). The research aims to test three comparison plans: (1) SDF main effect; (2) PS main effect; (3) interaction between SDF and PS for each research group to determine the effect size. The experimental vignette method was conducted online using a survey shared on social media, with 60 participants randomly selected to receive rewards in an e-wallet. **The participants listed who are entitled to be selected to receive rewards are those who have completed the overall questionnaires. The list was then randomly selected with randomizer tools (random.org/list) to select the first 60 participants' data. Data collection spanned approximately three weeks.** Demographic characteristics such as gender, age, education, overall work tenure, and work tenure in the current company were included to ensure participants from desired backgrounds, following previous research on SDF (Su et al., 2019), PS (Edmondson, 1999), and IWB in Indonesia (Etikariena, 2018).

The survey began with an informed consent section, followed by participants providing demographic information, as mentioned earlier. Subsequently, as the uniqueness of experimental vignette methods, participants were randomly assigned to different scenarios by selecting one of the four black-and-white geometric patterns to avoid gender bias (Yeung & Wong, 2018). After selecting the pattern, participants read a scenario consisting of one paragraph representing the independent variables, followed by completing a 9-item intention to innovative work behavior measurement based on the given scenario. Hence, researcher will be able to see participants' perception toward manipulated scenario that consist of the different level of each independent variable as the uniqueness of EVM.

The participants in this study consist of 287 employees who work in an EdTech company or a tech-based education service provider in Indonesia, supporting both formal and non-formal education. To improve internal validity, participants will be randomly assigned to each manipulation group (Gravetter & Forzano, 2012). There were four vignette scenarios created for this study: scenario 1 (PSDF - high PS), scenario 2 (PSDF - low PS), scenario 3 (NSDF - high PS), and scenario 4 (NSDF - low PS). Each scenario depicts a meeting session with behaviors exhibited by the leader towards the subordinates. The scenarios were designed without stating gender to minimize the influence of confounding variables. The selection of scenario materials was based on the findings of (Siedlecka & Denson, 2019), which indicated that imagery (reading a written vignette containing hypothetical situations) was the most effective in inducing basic emotions among different stimuli types.

The scenarios were carefully crafted to ensure identical situations, representing different combinations of SDF and PS categories. For example, in the PSDF - high PS vignette, the scenario described a leader who appreciates an employee's idea for a department program, provides suggestions for improvement, encourages further discussion, and attentively listens to the employee's opinions. These scenarios were developed based on concept of PSDF developed by Zheng et al. (2015), which emphasizes an appreciation of past performance or actions and suggestions for future development. The PS scenarios were also developed based on conceptualization of high PS proposed by Edmondson (2019), where the leader encourages further discussion, invites input, and provides opportunities to share ideas.

Subject-matter experts assessed the content validity of the vignettes. Additionally, focus group discussions (FGDs) were conducted to evaluate the method and scenarios. FGDs are commonly used to explore participants' complex personal experiences, beliefs, perceptions, and attitudes (Nyumba et al., 2018). The FGD participants were selected to match the characteristics of the actual participants in the research, ensuring that the vignettes accurately represented real-life situations (Nyumba et al., 2018). In this study, FGDs were conducted with eight employees working in an EdTech company who completed the intention to innovative work behavior scale and provided feedback on the scenarios. Figure 1 presents an example of a scenario in the Indonesian Language.

Instructions:
Anda adalah seorang karyawan yang bekerja di perusahaan bidang pendidikan berbasis teknologi. Saat ini, perusahaan Anda sedang memasuki periode baru, sehingga seluruh departemen diminta untuk memformulasikan program dan target yang hendak dicapai pada periode ini. Oleh karena itu, saat ini Atasan Anda mengadakan sesi rapat. Berikut adalah proses terjadinya rapat:

Scenario:
Rapat dimulai dengan Atasan Anda terlebih dahulu memaparkan kondisi dan tujuan perusahaan saat ini. Kemudian, Ia mengajak Anda dan rekan tim untuk memberikan usulan rencana program. Anda berinisiatif berpendapat. Setelah menyampaikan pendapat, Atasan Anda mengapresiasi originalitas pendapat Anda diikuti dengan masukan tambahan agar lebih efisien. Rapat selesai dengan keputusan yang disepakati bersama. Sebelum menutup rapat, Atasan Anda juga menekankan bahwa jika kedepannya terdapat masalah, Anda dapat segera menghubunginya untuk berdiskusi.

Figure 1. Example of Vignette Scenario

The intention to engage in innovative work behavior will be measured using a unidimensional scale developed by Janssen (2000) and adaptation for Indonesian participant by Etikariena and Muluk (2014). The scale consists of nine items, including three items related to idea generation, three to idea promotion, and three to idea realization. In this research, IWB will be assessed through participants' intentions, following a similar approach conducted by Su et al. (2019). For example, the item for idea generation would be "I would create new ideas for difficult issues," and for idea promotion, it would be "I would seek approval for innovative ideas." For idea realization, it would be "I would implement innovative ideas into practical applications." Participants will rate their responses on a scale of 1 (Never) to 6 (Always), indicating how frequently they would engage in each activity. A pilot study will be conducted to ensure the reliability of the scale after making the necessary adjustments. The survey will conclude with a debriefing question, emphasizing the confidentiality of the information provided and including the researcher's contact details.

The researchers conducted homogeneity assumption tests prior to hypothesis testing. The data analysis consisted of two stages: describing the data using descriptive statistics and testing the hypotheses using factorial ANOVA. One model was tested to predict the intention to engage in innovative work behavior. All analyses were performed using SPSS 26.

Result

This study involved 287 participants from an EdTech company in the Jabodetabek area, Indonesia. The demographic characteristics of the participants are presented in Table 1.

Table 1.
Demographic Characteristics of Participants (N = 287)

Variables	Categories	n	%
Gender	Male	119	41.5
	Female	168	58.5
Age	15-24	55	19.2
	25-44	221	77.0
	> 44	11	3.8
Education Level	Diploma	20	7.0
	Bachelor	248	86.4
	Master	19	6.6
Total Work Tenure	< 2 years	83	28.9
	3-10 years	187	65.2
	> 10 years	17	5.9
Work Tenure in Current Company	< 2 years	172	59.9
	3-10 years	114	39.7
	> 10 years	1	0.3
Position	Managerial	192	67.0
	Non-Managerial	95	33.0

Before conducting the factorial ANOVA analysis, we conducted a heterogeneity test using Levene's test. Levene's test indicated that the variances of the groups were not equal ($F(3, 283) = 0.474$, $p = 0.701$), suggesting that the variance in intention to engage in innovative work behavior is approximately equal across different combinations of PS and SDF. Subsequently, we performed the factorial ANOVA to test all of the hypotheses. The results are presented in Table 2.

Table 2.
Mean and Standard Deviation of PS and SDF in Predicting Intention to Innovative Work Behavior

	PS		SDF	
	High	Low	PSDF	NSDF
M	47,34	43,05	46,06	44,31
SD	3,07	2,84	3,52	3,58

Table 3 shows a significant difference in the intention to engage in innovative work behavior between groups. The mean intention to innovative work behavior in the high PS condition (M = 47.34, SD = 3.07) is higher than in the low PS condition (M = 43.05, SD = 2.84). Similarly, in terms of SDF, the mean for PSDF (M = 46.06, SD = 3.52) is higher than for NSDF (M = 44.31, SD = 3.58). To determine whether both variables can significantly predict

intention to innovative work behavior, the main effect and interaction effect are examined, as presented in Table 4.

Table 3.
Mean and Standard Deviation of the Interaction between PS and SDF in Predicting Intention to Engage in Innovative Work Behavior

Independent Variable				95% Confidence Interval	
PS	SDF	M	SEM	Lower Bound	Upper Bound
High	PSDF	48.08	.33	47.42	48.74
	NSDF	46.60	.33	45.94	47.26
Low	PSDF	44.08	.33	43.42	44.73
	NSDF	42.02	.33	41.36	42.69

Based on the results, the effects of PS were found to be statistically significant (F(1, 283) = 164.41, p = .00). Similarly, the effects of SDF were also statistically significant (F(1, 283) = 27.86, p = .00). To provide a further description, the main effect of PS had an effect size of .36, indicating that 36% of the variance in intention to engage in innovative work behavior scores was explained by PS. Similarly, the main effect of SDF had an effect size of .09, meaning that 0.9% of the variance in intention to engage in innovative work behavior scores was explained by SDF. However, the interaction effect was insignificant (F(1, 283) = .74, p = .39), suggesting that there was no combined effect of PS and SDF on intention to engage in innovative work behavior. Nevertheless, it is noteworthy that both PSDF (M = 44.08) and NSDF (M = 42.02) in the low PS condition had lower means compared to PSDF (M = 48.08) and NSDF (M = 46.60) in the high PS condition, as shown in Table 3. To visualize the interaction between variables, Figure 2 depicts the graph illustrating the dynamics between the variables.

Table 4.
Results of Factorial ANOVA: Main Effects and Interaction Effects of PS and SDF on Intention to Engage in Innovative Work Behavior

	Intention to Innovative Work Behavior					
	SS	df	MS	F	p	ηp2
PS	1319.89	1	1319.89	164.41	.00*	.36
SDF	223.70	1	223.70	27.86	.00*	.09
PS x SDF	5.95	1	5.95	.74	.39	.00

Note. Type III Sum of Squares; *p < .01.

As shown in Figure 2, the mean of SDF and non-SDF in the low PS condition is lower than both SDF in the high PS condition. Based on these findings, we can conclude that H1 and H2 are supported, while H3 is not.

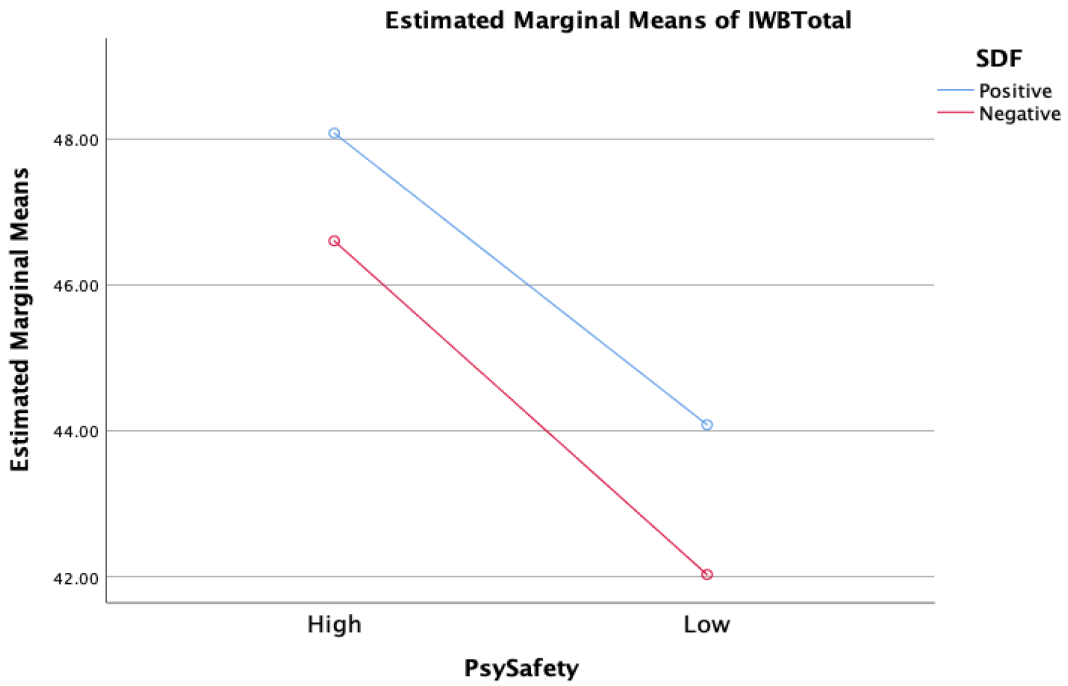

Figure 2. Estimated Marginal Means of Intention to Innovative Work Behavior in the Interaction of Independent Variables

Discussion

The antecedents of IWB have become crucial in the current business landscape, particularly in the post-pandemic era, where businesses face challenges and the need for innovation to ensure survival. This research demonstrates that SDF and PS significantly predict the intention to engage in innovative work behavior. Additionally, the interaction between SDF and PS reveals mean differences between groups. These findings have several implications.

Firstly, the significant effect between PS and intention to innovative work behavior highlights the role of leaders in shaping the work environment, which in turn influences individuals' intention to communicate and implement their ideas. This study concludes that there are different means between high and low PS, with low PS leading to lower intention to engage in innovative work behavior. This aligns with Edmondson (1999) that leaders' behaviors contribute to PS. Leaders who stimulate intellectual engagement, provide personalized support, and respond non-defensively to questions and challenges create a safe environment for their team. Consequently, a psychologically safe environment encourages individuals to seek ways to improve their performance (Carmeli et al., 2014).

On the other hand, this research also sheds light on the impact of leaders who exhibit doubt in their subordinates and focus primarily on themselves, reflecting low PS conditions. Such leaders tend to be hesitant to communicate problems or, in the context of this research, show reluctance toward engaging in IWB. This finding aligns with the PS theory proposed by Edmondson (1999). It is consistent with the research conducted by Almeida et al. (2022), which found a significant negative correlation between self-centered and uncaring leadership behavior and individuals' dedication to improving performance and problem-solving. Therefore, it is recommended that leaders actively promote PS by encouraging open discussions and involving subordinates to enhance their intention to engage in innovative

work behavior.

Secondly, our findings reveal a significant effect between SDF and intention to engage in innovative work behavior. Specifically, our results indicate that focusing on criticism when delivering feedback (referred to as negative supervisor developmental feedback or NSDF) is likely to result in lower intention to engage in innovative work behavior among participants, which aligns with previous findings that have shown mixed outcomes. This may be attributed to the perception that negative feedback diminishes a person's sense of autonomy and intrinsic motivation, as it is often perceived as an attempt to exert control and enforce conformity to externally imposed standards (Fong et al., 2019). Additionally, our research demonstrates that PSDF can predict a higher intention to engage in innovative work behavior. Thus, the results suggest that employees in EdTech companies prefer leaders who begin feedback with appreciation, followed by constructive aspects for improvement and the necessary support to foster intention to engage in innovative work behavior, rather than initiating feedback by criticizing the work.

Furthermore, our study reveals mean differences between groups, indicating that participants who received PSDF in a high PS environment tend to exhibit a higher intention to engage in innovative work behavior than participants in other groups. This suggests that employees are more likely to have the intention to engage in innovative work behavior when leaders appreciate their contributions, offer suggestions, and actively encourage them to ask questions, thereby creating an environment conducive to fostering intention to engage in innovative work behavior. Notably, our research findings also highlight the impact of NSDF. Although not as strong as the impact of PSDF, NSDF provided in a high PS environment can also stimulate the intention to engage in innovative work behavior. This implies that supervisors can provide negative feedback followed by straightforward suggestions or guidance in addition to appreciation. This finding aligns with the results from Xiao et al. (2021), suggesting that NSDF can signal to individuals the existence of performance gaps and, with clear direction, can motivate them to bridge those gaps and meet expectations. These findings have practical implications for leaders in providing positive and negative feedback to enhance their subordinates' intention to engage in innovative work behavior.

Contrary to initial expectations, although there was a mean difference between the vignette groups, the interaction between PS and SDF yielded no significant results. This implies that the match between different types of SDF (positive and high PS or negative and low PS) does not trigger different intentions to engage in IWB among participants. Several possible explanations can be considered for this unexpected finding, such as the construal-level theory, different perspective regarding the variables within the vignettes, and possible extraneous variable, such as tenure might intrude the interaction between variables.

First, construal-level theory suggests that hypothetical scenarios can lead individuals to psychologically distance themselves from the described events, resulting in more generalized interpretations of the situations rather than specific ones (Trope & Liberman, 2010). Since the vignettes used hypothetical stories to manipulate the message's content, it is possible that participants interpreted the content in broader terms regardless of the scenario type. As a result, the combination of both variables may have been perceived as similar, evoking similar responses.

Additionally, this study utilized paragraphs consisting of six sentences that merged both variables. According to Wason et al. (2002), this can make it difficult for participants to differentiate between each component of the variables, affecting their judgment or decision-

making. Furthermore, using a first-person perspective in the vignettes can lead to an attribution error, as individuals tend to believe they have more control over the situation than the characters involved (Wason et al., 2002). Therefore, future research should consider using separate sentences for each variable and adopt a third-person point of view.

Apart from these limitations, the present study has other constraints. For instance, the absence of manipulation checks at the end of the questionnaire limited the researcher's ability to monitor the participants' understanding of the vignette scenarios. Furthermore, the sample size for each scenario was limited, which should be considered in future research. There are also opportunities for future studies to explore the influence of demographic factors on the dynamics between SDF and PS. For example, research done (Woods, 2017) shows that employee tenure moderated the relationship between a person's characteristics and innovative work behavior, which the longer the tenure tends to influence the degree of their innovative work behavior. Another demographic factor that should be considered is the generational differences or age differences between leaders and their subordinate. Having leaders and subordinates who are of similar ages can, in some cases, contribute to a more comfortable and relatable working relationship. This is because similar age groups often share common life experiences, cultural references, and generational perspectives, which can lead to greater understanding and rapport (Khangembam, 2022). Furthermore, based on that research, employee who works in startup with similar ages tend to feel more empowered due to the same shared experiences (Khangembam, 2022). Therefore, these factors can be a buffer to negative feedback or low psychological safety, because each employee would have more common understanding on their leader's condition.

Thus, for further research can include the demographic factors into the analysis or provide more control for such variables. It can be conducted by measuring the main-effect of each demographic data into the study to consider which demographic that probably influence the relationship between variables. Additionally, investigating SDF and PS's role in each IWB stage would provide valuable insights. Finally, expanding the sample beyond EdTech settings would give the results a broader impact.

Conclusion

This study aims to investigate the impact of SDF and PS on the intention to engage in innovative work behavior. Based on the research findings, it is expected that practitioners in EdTech company can foster PS in the workplace by encouraging employees to express their opinions, providing assistance during challenging times, and actively participating in discussions. Additionally, considering the demonstrated influence of SDF on intention to innovative work behavior, practitioners in EdTech company are also encouraged to reconsider how they provide feedback to individuals and teams. According to this research, to enhance the intention to engage in innovative work behavior, positive and negative developmental feedback should be accompanied by clear directions and suggestions. For future research, exploring the EVM method, conducting manipulation checks, and involving participants from a broader range of companies is recommended to allow for more generalized research findings.

Reference

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Almeida, J. G., Hartog, D. N. Den, De Hoogh, A. H. B., Franco, V. R., & Porto, J. B. (2022). Harmful Leader Behaviors: Toward an Increased Understanding of How Different Forms of Unethical Leader Behavior Can Harm Subordinates. *Journal of Business Ethics*, *180*(1), 215–244. https://doi.org/10.1007/s10551-021-04864-7

Armitage, C. J., & Conner, M. (2001). Efficacy of the Theory of Planned Behaviour: A meta-analytic review. *British Journal of Social Psychology*, *40*(4), 471–499. https://doi.org/10.1348/014466601164939

Atzmüller, C., & Steiner, P. M. (2010). Experimental Vignette Studies in Survey Research. *Methodology*, *6*(3), 128–138. https://doi.org/10.1027/1614-2241/a000014

Bak, H. (2020). Supervisor Feedback and Innovative Work Behavior: The Mediating Roles of Trust in Supervisor and Affective Commitment. *Frontiers in Psychology*, *11*. https://doi.org/10.3389/fpsyg.2020.559160

Bhardwaj, R., Yarrow, N., & Calì, M. (2020). *EdTech in Indonesia: Ready for Take-off?* World Bank Group.

Carmeli, A., Sheaffer, Z., Binyamin, G., Reiter-Palmon, R., & Shimoni, T. (2014). Transformational Leadership and Creative Problem-Solving: The Mediating Role of Psychological Safety and Reflexivity. *The Journal of Creative Behavior*, *48*(2), 115–135. https://doi.org/10.1002/jocb.43

Charness, G., Gneezy, U., & Kuhn, M. A. (2012). Experimental methods: Between-subject and within-subject design. *Journal of Economic Behavior & Organization*, *81*(1), 1–8. https://doi.org/10.1016/j.jebo.2011.08.009

Choi, S. H., & Lee, J. M. (2020). The effect of work-life balance on organizational commitment and organizational citizenship behavior: the mediating role of psychological safety. *Journal of Digital Convergence*, *18*(3), 83–92.

Cummings, A. (2010). *Building innovation capabilities for cashew nut processing in El Salvador* .

Edmondson, A. (1999). Psychological Safety and Learning Behavior in Work Teams. *Administrative Science Quarterly*, *44*(2), 350–383. https://doi.org/10.2307/2666999

Edmondson, A. C. (2019). *The Fearless Organization: Creating Psychological Safety in the workplace for learning, Innovation, and growth*. John Wiley & Sons, Inc.

Eifler, S., & Petzold, K. (2019). Validity Aspects of Vignette Experiments: Expected "What If" Differences Between Reports of Behavioral Intentions and Actual Behavior. In *Experimental Methods in Survey Research* (pp. 393–416). Wiley. https://doi.org/10.1002/9781119083771.ch20

Etikariena, A. (2018). The effect of psychological capital as a mediator variable on the relationship between work happiness and innovative work behavior. In *Diversity in unity: Perspectives from psychology and behavioral sciences* (pp. 379–386). Routledge.

Etikariena, A., & Muluk, H. (2014). Correlation between Organizational Memory and Innovative Work Behavior. *Makara Human Behavior Studies in Asia*, *18*(2), 77. https://doi.org/10.7454/mssh.v18i2.3463

Fairchild, A. J., & MacKinnon, D. P. (2009). A General Model for Testing Mediation and Moderation Effects. *Prevention Science*, *10*(2), 87–99. https://doi.org/10.1007/s11121-008-0109-6

Fong, C. J., Patall, E. A., Vasquez, A. C., & Stautberg, S. (2019). A Meta-Analysis of Negative Feedback on Intrinsic

Motivation. *Educational Psychology Review*, *31*(1), 121–162. https://doi.org/10.1007/s10648-018-9446-6

Furstenthal, L., Hirt, M., & Roth, E. (2021). *Innovation: Your launchpad out of the COVID-19 crisis*. McKinsey & Company.

Gravetter, F. J., & Forzano, L.-A. B. (2012). *Research methods for the behavioral sciences*. Cengage Learning, Inc.

Janssen, O. (2000). Job demands, perceptions of effort-reward fairness and innovative work behaviour. *Journal of Occupational and Organizational Psychology*, *73*(3), 287–302. https://doi.org/10.1348/096317900167038

Januszewski, A., & Molenda, M. (2013). *Educational technology: A definition with commentary*. Routledge.

Javed, B., Naqvi, S. M. M. R., Khan, A. K., Arjoon, S., & Tayyeb, H. H. (2019). Impact of inclusive leadership on innovative work behavior: The role of psychological safety. *Journal of Management & Organization*, *25*(1), 117–136. https://doi.org/10.1017/jmo.2017.3

Khangembam, V. (2022). *Organizational Culture: Reasons for Young Employees to work at Start-Ups*.

Kaplan M.R & Saccuzzo P.D. (2017). *Psychological Testing: Principles, Applications, and Issues* (9th Edition). Cengage Learning.

Khangembam, V. (2022). *Organizational Culture: Reasons for Young Employees to work at Start-Ups*.

Lee, I.-C., Chen, E. E., Tsai, C.-H., Yen, N.-S., Chen, A. L. P., & Lin, W.-C. (2016). Voting Intention and Choices: Are Voters Always Rational and Deliberative? *PLOS ONE*, *11*(2), e0148643. https://doi.org/10.1371/journal.pone.0148643

Li, C., & Lalani, F. (2020). *The COVID-19 pandemic has changed education forever. this is how.* World Economic Forum.

Nemanich, L. A., & Vera, D. (2009). Transformational leadership and ambidexterity in the context of an acquisition. *The Leadership Quarterly*, *20*(1), 19–33. https://doi.org/10.1016/j.leaqua.2008.11.002

Nurhadi, M. (2022). *8 startup indonesia bubar dan phk karyawan, terbaru ada pahamfy dan mpl*. Suara.Com.

Nyumba, T. O., Wilson, K., Derrick, C. J., & Mukherjee, N. (2018). The use of focus group discussion methodology: Insights from two decades of application in conservation. *Methods in Ecology and Evolution*, *9*(1), 20–32. https://doi.org/10.1111/2041-210X.12860

Price, P., Jhangiani, R., & Chiang, I. (2015). *Research Methods of Psychology – 2nd Canadian Edition*. Victoria, B.C. BCcampus.

Rathi, A. (2014). To encourage innovation, make it a competition. *Harvard Business Review*.

Ravenry. (2020). *I360 : Report Edutech Industry in Indonesia is the second of a series of report*.

Scott, S. G., & Bruce, R. A. (1994). Determinants of Innovative Behavior: A Path Model of Individual Innovation in the Workplace. *Academy of Management Journal*, *37*(3), 580–607. https://doi.org/10.2307/256701

Siedlecka, E., & Denson, T. F. (2019). Experimental Methods for Inducing Basic Emotions: A Qualitative Review. *Emotion Review*, *11*(1), 87–97. https://doi.org/10.1177/1754073917749016

Strobl, A., Matzler, K., Nketia, B. A., & Veider, V. (2020). Individual innovation behavior and firm-level exploration and exploitation: how family firms make the most of their managers. *Review of Managerial*

Science, *14*(4), 809–844. https://doi.org/10.1007/s11846-018-0309-9

Su, W., Lyu, B., Liu, Y., Chen, H., & Fan, J. (2019). Supervisor developmental feedback and employee performance: The roles of feedback-seeking and political skill. *Journal of Psychology in Africa*, *29*(5), 435–442. https://doi.org/10.1080/14330237.2019.1665879

Trope, Y., & Liberman, N. (2010). Construal-level theory of psychological distance. *Psychological Review*, *117*(2), 440–463. https://doi.org/10.1037/a0018963

Walumbwa, F. O., & Schaubroeck, J. (2009). Leader personality traits and employee voice behavior: Mediating roles of ethical leadership and work group psychological safety. *Journal of Applied Psychology*, *94*(5), 1275–1286. https://doi.org/10.1037/a0015848

Wason, K. D., Polonsky, M. J., & Hyman, M. R. (2002). Designing Vignette Studies in Marketing. *Australasian Marketing Journal*, *10*(3), 41–58. https://doi.org/10.1016/S1441-3582(02)70157-2

Woods, S. A. , M. M. J. , A. N. & S. B. (2017). *Innovative work behavior and personality traits: Examining the moderating effects of organizational tenure*. *33*, 1–15. https://doi.org/https://doi.org/10.1108/JMP-01-2017-0016

Xiao, Y., Liu, S., & Dai, T. (2021). Positive and Negative Supervisor Development Feedback, Team Harmonious Innovation Passion and Team Creativity. *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.681910

Yeung, S. P., & Wong, W. I. (2018). Gender Labels on Gender-Neutral Colors: Do they Affect Children's Color Preferences and Play Performance? *Sex Roles*, *79*(5–6), 260–272. https://doi.org/10.1007/s11199-017-0875-3

Zhang, Z., Liu, M., & Yang, Q. (2021). Examining the External Antecedents of Innovative Work Behavior: The Role of Government Support for Talent Policy. *International Journal of Environmental Research and Public Health*, *18*(3), 1213. https://doi.org/10.3390/ijerph18031213

Zheng, X., Diaz, I., Jing, Y., & Chiaburu, D. S. (2015). Positive and negative supervisor developmental feedback and task-performance. *Leadership & Organization Development Journal*, *36*(2), 212–232. https://doi.org/10.1108/LODJ-04-2013-0039