

Title	アントレプレナーシップ教育のための教員養成プログラム : エビデンスに基づくフレームワーク形成
Author(s)	島岡, 未来子; 鬼頭, 朋見; SAYAMA, Hiroki; JIN, Fuhe; CHAO, Nick; TSAI, Chou-Yu
Citation	年次学術大会講演要旨集, 37: 647-651
Issue Date	2022-10-29
Type	Conference Paper
Text version	publisher
URL	<a href="http://hdl.handle.net/10119/18671">http://hdl.handle.net/10119/18671</a>
Rights	本著作物は研究・イノベーション学会の許可のもとに掲載するものです。This material is posted here with permission of the Japan Society for Research Policy and Innovation Management.
Description	一般講演要旨

2 B 2 0

アントレプレナーシップ教育のための教員養成プログラム：エビデンスに基づくフレームワーク形成

**Faculty Development Program for Entrepreneurship Education: An Evidence-based Framework to Enhance Personal Growth**

○島岡未来子, 鬼頭朋見 (早大), SAYAMA Hiroki, JIN Fuhe, CHAO Nick, TSAI Chou-Yu  
(Binghamton Univ., State Univ. of New York)

**1. INTRODUCTION**

Entrepreneurship programs in higher education have increased significantly over the past few decades (Nowiński et al., 2019) and there is a strong need for higher education institutions to offer appropriate training and development for faculty members to achieve the goal of entrepreneurship education. As the importance of faculty development programs has been identified, this research aims to provide an evidence-based framework to evaluate the effectiveness of a faculty development program offered to support the innovation ecosystem of the greater Tokyo area.

One of the primary goals of this faculty development program is to strengthen participants' perceived behavioral control, creative self-efficacy, and error coping strategies (communication about errors and error strain; Rybowskiak, Garst, Frese, & Batinic, 1999), as those are associated with creativity and innovation. High perceived behavioral control gives faculty members a higher capacity to control the creative process, which is critical to cultivating students' entrepreneurship intentions for future ventures (Devonish et al., 2010; Liñán, 2004). Further, high creative self-efficacy makes faculty members strongly believe in their ability to generate creative outcomes (Tierney & Farmer, 2002), which helps students manage uncertainties in the entrepreneurial process. Regarding error coping strategies, communication about errors proactively handles errors (e.g., discussing errors openly), and low error strain can reduce stress levels while facing mistakes (Rybowskiak et al., 1999). Therefore, faculty members with solid error coping strategies can help students effectively conquer mistakes and frustrations while pursuing different alternative solutions. Taken together, we assert that observing changes in perceived behavioral control, creative self-efficacy, communication about

errors, and error strain can be used as outcomes to reflect the effectiveness of this faculty development program.

We systematically apply a longitudinal design to evaluate how these four program outcomes change over time in the current research. In addition, as personal characteristics can vary the learning process (see Wegmann et al., 2020), we investigate the moderating role of faculty members' growth mindset (i.e., predisposition that ability can be developed through an inward focus on understanding, mastering of tasks, and valuing self-improvement; Dweck, 2006), uncertainty avoidance (i.e., the extent to which individuals feel threatened by and try to avoid uncertain and ambiguous situations; Hofstede, 1980), and gender on the development trajectory of those outcomes. Finally, given that coaching training has been implemented as an elective module in the program, we also investigate whether faculty who received this training can engender different trajectories of personal growth over time. In sum, our proposed evidence-based framework serves as a means to evaluate the impact of this faculty development program and identify critical individual differences in participants' personal growth.

## 2. METHODS

***Procedure and Sample*** The participants comprised 24 faculty members, six graduate students, seven administrators, and four practitioners from 9 universities and four research institutions in Japan. Participants were provided the approved IRB statement of consent before dispersing the assessments. Participants were informed that their involvement in this study was voluntary and that their responses would remain confidential. Participants were administered measures of three program outcomes (entrepreneurship awareness, efficacy beliefs, and error copying skills) three times: before the program (Time 1), middle of the program (Time 2), and after the program (Time 3). Using a three-time longitudinal design enables us to track the within-individual change in the evaluation of program outcomes over time.

In addition, we collected personal characteristics (growth mindset, uncertainty avoidance, and gender) at Time 1. At Time 3, we recorded whether faculty members received coaching training. 41 members participated in the first assessments (Time 1), 37 members participated in the second

assessments (Time 2), and 33 members participated in the final assessments (Time 3). Using a five-point Likert-type scale, we asked participants to rate the extent to which they agreed with a series of statements. The scale ranged from “Strongly Disagree” to “Strongly Agree.”

**Statistical Analyses *Random coefficient modeling.*** Following the work of Bliese and Ployhart (2002) and Ployhart, Holtz, and Bliese (2002), we applied a multilevel structure to conduct an unconditional two-level linear growth model (i.e., within-individual and between individual levels of analyses). This two-level growth model is recommended for analyzing within-individual change over time and between-individual cross-level moderating effects. This statistical analysis has been applied to assess skill development in training and professional programs (see Kao, Tsai, & Schinke, 2021; Wegmanns et al., 2020). We used the multilevel package (Bliese, 2016) in R (R Core Team, 2021) to conduct the analyses.

### 3. RESULTS

Regarding the growth of program outcomes, as shown in Table 1 (Model 1), perceived behavioral control ( $\beta_1 = .14, p < .01$ ) and creative self-efficacy ( $\beta_1 = .11, p < .01$ ) significantly increase over time. However, communication about errors ( $\beta_1 = .07, p = .08$ ) and error strain ( $\beta_1 = .01, p = .77$ ) did not change over time. These results indicate that this faculty development program can positively develop members’ perceived behavior control and create self-efficacy (see Figures 1a-1b).

The moderating effects of personal characteristics (i.e., growth mindset, uncertainty avoidance, gender, and coaching training) on the growth trajectory of program outcomes (i.e., perceived behavioral control, creative self-efficacy, communication about errors, and error strain) are shown in Table 1 (Model 2). Growth mindset has positive moderating effects on the growth trajectory of perceived behavioral control ( $\gamma_{11} = .16, p < .01$ ) and creative self-efficacy ( $\gamma_{11} = .11, p < .01$ ). Figures 2a and 2b show that when growth mindset is high, perceived behavioral control and creative self-efficacy can increase over time, whereas when growth mindset is low, perceived behavioral control and creative self-efficacy remain the same over time. Taken together, these results indicate that members with high growth mindset can have growth in perceived behavioral control and creative self-efficacy in this faculty development program.

Uncertainty avoidance negatively moderates the growth trajectory of perceived behavior control ( $\gamma_{11} = -.21, p < .05$ ). Figure 2c indicates that when uncertainty avoidance is high, perceived behavioral control remains the same over time. In contrast, perceived behavioral control increases over time when uncertainty avoidance is low. These results indicate that members with low uncertainty avoidance grew their perceived behavioral control in this faculty development program.

Gender has moderating effects on the growth trajectory of communication about errors ( $\gamma_{11} = -.20, p < .05$ ) and error strain ( $\gamma_{11} = -.21, p < .05$ ). The results in Figure 2d indicate that male members increase communication about errors over time, whereas female members have the same communication about errors over time. Figure 2e indicates that male members increase error strain over time, but female members decrease error strain over time. These results indicate that male members are willing to communicate errors but feel more error strain over the faculty development program. In contrast, female members have the same communication about errors but decreased error strain over the faculty development program.

Coaching training positively moderates the growth trajectory of creative self-efficacy ( $\gamma_{11} = .17, p < .05$ ). Figure 2f indicates that for members who received no coaching training, creative self-efficacy remains the same over time, whereas, for members who received coaching training, creative self-efficacy increases over time. These results imply that coaching training benefits the growth of creative self-efficacy in this faculty development program.

#### 4. DISCUSSION

Our proposed framework provides a unique way to systematically evaluate the growth in four outcomes of a faculty development program for entrepreneurship education. Our results demonstrate that this faculty development program effectively enhances perceived behavioral control and creative self-efficacy regardless of participants' differences. However, it does not impact the change of error coping strategies (communication about errors and error strain). Our longitudinal design and investigation of the change in these four program outcomes offer a way to evaluate the quality and effectiveness of this faculty program.

## REFERENCES

- Black, J., & Mischel, L. (2020). Grassroots entrepreneurial program: developing best practices. *Journal of Small Business & Entrepreneurship*, 1-18.
- Bliese, P. (2016). *Multilevel modeling in R (2.6): A brief introduction to R, the multilevel package and the nlme package*. [http://cran.r-project.org/doc/contrib/Bliese\\_Multilevel.pdf](http://cran.r-project.org/doc/contrib/Bliese_Multilevel.pdf)
- Bliese, P. D., & Ployhart, R. E. (2002). Growth modeling using random coefficient models: Model building, testing, and illustrations. *Organizational Research Methods*, 5(4), 362-387.
- Ployhart, R. E., Holtz, B. C., & Bliese, P. D. (2002). Longitudinal data analysis: Applications of random coefficient modeling to leadership research. *The Leadership Quarterly*, 13(4), 455-486.
- Devonish, D., Alleyne, P., Charles-Soverall, W., Marshall, A. Y., & Pounder, P. (2010). Explaining entrepreneurial intentions in the Caribbean. *International Journal of Entrepreneurial Behaviour and Research*, 16(2), 149-171.
- Dweck, C. S. (2006). *Mindset: The new psychology of success*. New York: Random House.
- Liñán, F. (2004). Intention-based models of entrepreneurship education. *Piccola Impresa/Small Business*, 3(1), 11-35.
- Jones, C. (2010). Entrepreneurship education: Revisiting our role and its purpose. *Journal of Small Business and Enterprise Development*, 17(4), 500-513.
- Jung, J. M., & Kellaris, J. J. (2004). Cross-national differences in proneness to scarcity effects: The moderating roles of familiarity, uncertainty avoidance, and need for cognitive closure. *Psychology and Marketing*, 21(9), 739-753.
- Kao, S. F., Tsai, C.-Y., & Schinke, R. (2021). Investigation of the interaction between coach transformational leadership and coaching competency change over time. *International Journal of Sports Science and Coaching*, 16(1), 44-53.
- Hofstede, G. H. (1980). *Culture's consequences: International differences in work-related attitudes*. Beverly Hills, CA: Sage.
- Rybowiak, V., Garst, H., Frese, M., & Batinic, B. (1999). Error orientation questionnaire (EOQ): Reliability, validity, and different language equivalence. *Journal of Organizational Behavior*, 20(4), 527-547.
- Nowiński, W., Haddoud, M. Y., Lančarič, D., Egerová, D., & Czeglédi, C. (2019). The impact of entrepreneurship education, entrepreneurial self-efficacy, and gender on entrepreneurial intentions of university students in the Visegrad countries. *Studies in Higher Education*, 44(2), 361-379.
- Tierney, P., & Farmer, S. M. (2002). Creative self-efficacy: Its potential antecedents and relationship to creative performance. *Academy of Management Journal*, 45(6), 1137-1148.
- Wegmann, J., Marshall, J., Tsai, C.-Y., & Dionne, S. (2020). Health education and changing stress mindsets: The moderating role of personality. *American Journal of Health Education*, 51(4), 244-256.