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Frankie J. Weinberg Jay P. Mulki Melenie J. Lankau

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Frankie J. Weinberg
Department of Management, Loyola University New Orleans, New Orleans, Louisiana, USA

Jay P. Mulki
Marketing Group, Northeastern University, Boston, Massachusetts, USA, and

Melenie J. Lankau
Schools of Business, Wake Forest University, Winston-Salem, North Carolina, USA

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Abstract

Purpose – The purpose of this paper is to examine the role of mentor beliefs about effort related to the knowledge and learning process on their extent of mentoring at work, and to determine the role that the mentor's perception of psychological safety plays in tempering this relationship.

Design/methodology/approach – This study was conducted at an 820-member organization maintenance and operations organization consisting of a number of professions in which apprenticeship-style learning is prevalent. Data collection resulted in 570 members self-identifying as having mentored a less experienced colleague. Confirmatory factor analysis was used to confirm that the measurement instrument represents one unified factor, and a structural equation modelling approach was used to assess the relationships among the study's latent variables.

Findings – Results reveal that mentors who hold sophisticated effort-oriented beliefs are more likely to offer psychosocial support to their protégés. Further, although the relationship between effort-oriented beliefs and vocational support is not significant, the mentor's perception of a psychologically safe work environment significantly moderates both sets of relationships.

Research limitations/implications – As approximately 88 per cent of respondents work in service, as opposed to administrative groups, caution should be exercised in generalizing this study's findings to the general workforce population. Further, the present study did not differentiate mentors who identified a current or previous subordinate as their protégé from those whose protégés were not a subordinate, nor did the authors differentiate formal from informal mentoring relationships. Thus, further investigation is needed to determine whether our hypothesized relationships differ in any unique manifestations of mentoring relationships at work.

Practical implications – By providing a better understanding of the relationship between effort-oriented beliefs and mentoring at work, this study may help in the design of more effective mentoring relationships and ultimately enhance knowledge management and workplace learning.

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Originality/value – There is no previous research that investigates how one's cognitions about the effort associated with the knowledge and learning process, in particular, influence mentoring at work. This study provides a model for understanding and developing enhanced mentoring relationships, which are considered a critical element of organizational learning.

Keywords Mentoring, Epistemology, Workplace learning, Beliefs, Mentoring

Paper type Research paper

The practice of mentoring in organizations has received substantial attention over the past 30 years, as it is recognized as an important form of workplace learning (cf., Allen *et al.*, 2004; Lankau and Scandura, 2007; Tyler and McKenzie, 2011; Waaland, 2013; Weinberg and Locander, 2014). While much has been learned about the process and outcomes of mentoring, an understudied perspective has been the role of the mentor (Allen, 2007; Dobrow *et al.*, 2012; Weinberg and Lankau, 2011; Weinberg and Locander, 2014). What motivates individuals to devote energy and time into mentoring activities, and what factors determine why some organizational members seem to make better mentors than others? By investigating these questions, this study contributes to the stream of research that seeks to better understand mentor motives, intentions and efforts (Allen, 2003, 2007; Ragins and Cotton, 1993).

The theory of personal epistemologies, or one's beliefs about knowledge and learning, is a concept that has the potential to impact employees' knowledge sharing behaviors in the workplace (Bauer *et al.*, 2004; Tickle *et al.*, 2005; Zuber-Skerritt, 2005). The present study introduces the concept of *effort-oriented* epistemological beliefs and examines how mentors' beliefs affect the extent of mentoring support provided to protégés.

Effort-oriented epistemological beliefs and mentoring support

One's epistemological beliefs relate to an individual's notions regarding the origin and nature of knowledge and the ways in which knowledge is acquired. They drive the cognitive processes underlying one's learning strategies, which, in turn, influence how one approaches the learning process and tasks and the outcomes of the process (Hofer, 2002; Hofer and Pintrich, 1997; Nist and Holschuh, 2005; Schommer, 1990). Beliefs about knowledge and learning have been shown to impact approaches to and strategies for learning (Cano, 2005; Holschuh, 1998; Schreiber and Shinn, 2003), which are related to performance in multiple contexts (Schommer, 1990). Epistemological beliefs are discussed as ranging on a continuum from less sophisticated to more sophisticated. Sophisticated beliefs are associated with higher-level learning objectives, including self-regulated learning (Braten and Stromso, 2005) and utilization of better cognitive strategies (Tsai and Chuang, 2005).

A theme that persists throughout discussions of epistemologies is that of one's belief regarding the effort involved in the process of learning and contributing to knowledge. For instance, Kloosterman and Stage (1992) discuss how one's belief that problem-solving can be improved with effort impacts learners' motivation and strategy use. Further, Schommer *et al.* (1992) describe how individuals with less sophisticated belief systems tend to believe that learning occurs with one's first effort and that concentrated effort is a waste of time, and thus, these individuals would be likely to make little effort to interrelate knowledge. Kardash and Scholes (1996) also emphasize

personal beliefs and the disposition to engage in effortful cognitive processing as an important part of one's decision-making process. Finally, Bernardo (2008, pp. 104-105) explains learning and knowledge creation as "an evolving process that needs to be effortfully and reflectively pushed forward"). Given that mentors are facilitators of personal learning and professional growth in the workplace, a mentor's effort-oriented epistemological beliefs are likely to play an important role in determining the extent of energy he or she puts into mentoring efforts. As such, the present study offers a starting point at which we may begin to examine the how effort-orientated epistemological beliefs affect mentoring at work.

A study of mentor beliefs about the effort involved in knowledge and learning processes may provide a useful advancement of the mentoring literature. Unlike trait characteristics, beliefs about learning are trainable (Nist and Holschuh, 2005), and they have been found to influence learning outcomes (Schommer, 1990). Thus, a mentor's perceptions about the effort involved in the knowledge and learning process are likely to impact his or her understanding of how protégés will learn and consequently the level of mentoring support provided.

Theory and hypothesis development

Mentorship is considered a developmental teaching and learning context which serves as a mechanism for the transfer of tacit knowledge (Edmondson *et al.*, 2003; Hale, 2000; Hezlett, 2005; Lankau and Scandura, 2007; Swap *et al.*, 2001). Mentors are a critical source of learning from which organizational members learn about organizational issues (Chao *et al.*, 1992; Ostroff and Kozlowski, 1993) and mentoring serves as an effective way to encourage organizational learning (Bryant, 2005). Studies have demonstrated that both new hires and seasoned employees gain considerable technical knowledge and organizational knowledge from their mentors (Chao, 1997; Hezlett, 2005). These studies view mentoring relationships as a means by which organizations may share knowledge and build the intellectual capital necessary for workplace learning (Bryant, 2005).

Previous research has shown the existence of two distinct mentoring functions: vocational and psychosocial. Vocational support involves promoting a protégé's career-related performance (Kram, 1988). Psychosocial support involves role modeling and allowing a protégé to feel self-confident in building his or her sense of identity within the organization (Kram, 1985, 1988; Noe, 1988).

Mentor beliefs and vocational mentoring support

A mentor's capacity to provide vocational support to his or her protégé may be likened to a teacher providing curriculum-specific instruction. Teachers' personal belief systems have been shown to affect the ways in which they deliver curricula to pupils (Powell, 1996). In the case of workplace mentoring relationships, a mentor who recognizes that knowledge and learning are effort-driven processes is likely to internalize the responsibility to effortfully provide structured knowledge-sharing lessons to his or her protégé. Likewise, by insisting that a less knowledgeable worker increase his or her efforts toward important goals, a mentor acts as a coach, which is associated with the facilitation of learning (Feldman, 2001). When a mentor believes that each of his or her protégés should put forth considerable effort in exchange for gaining knowledge from a learning experience, that mentor would be likely to provide

opportunities for the protégé to engage in work-related learning activities. Moreover, one aspect of a sophisticated effort-oriented belief system involves recognizing an individual's innate ability to control his or her level of performance. Mullen (1998) found that mentors who recognized the abilities of their protégés and perceived the protégés as competent were willing to invest more time and effort into their mentoring. Thus, mentors with sophisticated effort-oriented belief systems may be more likely to put forth adequate time to mentor their protégés.

As mentoring relationships develop over time (Kram, 1985), sophisticated beliefs about the amount of effort required for knowledge and learning to come about would lead a mentor to conclude that considerable time and effort may be necessary before positive results surface. Thus, a mentor who recognizes that knowledge creation is a process that requires continual effort, rather than a "now-or-never" occurrence or one in which minimal effort is required, may be likely to spend additional time and effort with his or her protégé and integrate different lessons or theories. These integrated lessons may better enable the protégé to arrive at a more complete understanding and more comprehensive conclusions regarding job tasks. Such complex conclusions take time to reflect upon and to develop, and an individual who spends time to construct conclusions based on a complex, effortful thought process is more likely to perform better than someone whose thought processes are limited to surface-level facts. Therefore, consistent with expectancy theory (Vroom, 1964), a mentor who believes that knowledge acquisition is a continually effortful process is likely to understand how efforts made in the present will contribute to desired outcomes down the road (in this case, protégé learning). Thus, a mentor with sophisticated effort-oriented epistemological beliefs may be more likely to offer continual vocational support to his or her protégés. From this reasoning, we offer the following hypothesis:

H1a. A mentor's effort-oriented epistemological beliefs will positively relate to the level of vocational support he or she provides to a protégé, such that the more sophisticated the beliefs, the more vocational support provided.

Mentor beliefs and psychosocial mentoring support

Psychosocial support involves a mentor facilitating an environment in which the protégé may develop his or her own sense of identity (Kram, 1985, 1988; Noe, 1988). A mentor who believes that considerable effort is required for learning to occur will understand that considerable support and encouragement are needed as protégés may question their self-efficacy as they are challenged with the new ideas and information prevalent in a complex work environment. Furthermore, a mentor with a sophisticated effort-oriented belief system would likely encourage a protégé to review, reconsider and reflect upon his or her thoughts as an opportunity to better comprehend a topic and to possibly see something in a new way.

According to Boyatzis's (2007) intentional change theory, mentors may play a crucial role in allowing a protégé to make discoveries that ultimately encourage change and growth. By acknowledging that, through effort, a protégé can take away beneficial knowledge from interactions, a mentor is likely to approach the relationship in a positive manner that encourages self-reflection and changes in protégé actions and habits. The ensuing trusting relationship allows for protégé self-discoveries to take place (Boyatzis, 2007).

Finally, a mentor who recognizes that knowledge creation is a process that requires continual effort, rather than a "now-or-never" occurrence or one in which minimal effort is required, is likely to exert additional effort toward his or her protégé to allow the knowledge to cumulate. Greater effort may result in increased interaction time and previous mentoring studies have demonstrated that time spent together is associated with higher levels of psychosocial support (Weinberg and Lankau, 2007). This may be due, in part, to the idea that learning occurs through observation of other people and modeling their behavior (Bandura, 1977). Further, consistent with Vroom's (1964) expectancy theory, a mentor who appreciates that effort relates to learning and knowledge accumulation may recognize his or her present efforts as contributing toward desired outcomes (e.g. protégé modeling behaviors), and thus may be more motivated to act as a role model to the learner. For these reasons, we posit the following hypothesis:

H1b. A mentor's effort-oriented epistemological beliefs will positively relate to the level of psychosocial support he or she provides to a protégé, such that the more sophisticated the beliefs, the more psychosocial support provided.

Psychological safety as a moderator

An individual experiences psychological safety if he or she feels safe to proactively display behaviors in a social context without the fear of negative consequences to his or her self-image, status or career (Baer and Frese, 2003; Brown and Leigh, 1996). When individuals face potential threat or embarrassment from speaking out, they tend to act in ways that hamper learning, but when they face environments they feel are safe for interpersonal risk-taking, they do tend to "ask for help, admit errors, and discuss problems" openly (Edmondson, 1999, p. 353). Empirical studies have supported this notion that employees' perceived psychological safety has a substantial impact on their proactive behaviors and engagement at work. For example, Kahn (1990) found that psychological safety impacts the degree to which people were engaged in work situations, while Detert and Burris (2007) found that perceived psychological safety mediated the relationship between managerial openness and employees' willingness to voice constructive criticism about their work environment. Whereas knowledge sharing in the form of mentoring may also be considered engaging, proactive and prosocial activities, it is likely that they, too, may be impacted by the employee's perception of a psychologically safe environment.

A mentoring context offers its own challenges to a mentor who may be interested in engaging in the prosocial activity of mentoring. As elaborated by Wanberg *et al.* (2003), mentoring relationships appear to have drawbacks to the mentor that must be considered. A first consideration is the possibility of risk to the mentor's reputation as he or she shares his or her experiences, including faults or blunders, openly (Zey, 1984). Further, fraternization may be frowned upon in the organization. Whereas Noe (1988) discusses this issue with regard to the public image associated with cross-gender relationships and the perceptions that peers may have about the relationship between the mentor and protégé, Allen *et al.* (1997) discuss this issue more in terms of favoritism. For example, a mentor may feel uncomfortable paying special attention to one particular person (Wanberg *et al.*, 2003). Lastly, Allen *et al.* (1997) discuss how a mentor's feelings of failure in the event of a failed relationship may pose a potential negative aspect of mentoring from the mentor's perspective. Given these potential drawbacks to engaging

in a mentoring relationship, it appears realistic to assume that a mentor's beliefs about knowledge and learning processes will be more strongly associated with mentoring activities when the mentor perceives their environment to be psychologically safe for engaging in these mentoring behaviors. Thus, we offer two final hypotheses:

H2a. A mentor's perception of psychological safety moderates the relationship between effort-oriented epistemological beliefs and the vocational mentoring support he or she provides to a protégé. The expected form of the interaction is that respondents will report a stronger relationship when experiencing a high degree of psychological safety.

H2b. A mentor's perception of psychological safety moderates the relationship between effort-oriented epistemological beliefs and the psychosocial mentoring support he or she provides to a protégé. The expected form of the interaction is that respondents will report a stronger relationship when experiencing a high degree of psychological safety.

Method

Participants and procedure

We conducted this study at an 820-member organization responsible for the maintenance and operation of the physical facilities, grounds and utilities of a large Southeastern US university. This population was selected for two reasons:

(1) First, the professions represented by this set of participants have a long history of using apprenticeship-style learning where more experienced members mentor less experienced individuals.

(2) Second, the education level of the majority of the organization's employees – a high school degree or some college experience – matches that of most participants in studies of epistemological beliefs.

Respondents were asked to identify whether they are presently or have recently been a mentor to someone in an organizational setting. Specifically, following the procedure used by Burke *et al.* (1993, pp. 887-888), respondents were given instructions designed to elicit consideration of a time in which they acted as a mentor. Data collection resulted in usable data from 570 organizational members representing 69.5 per cent of the entire organization. Of these respondents, 536 employees were identified as mentors and answered questions pertaining to the extent of mentoring they provide to their protégés.

Respondents' work experience ranged from less than a year to over 50 years with a mean of 25.41 (σ = 11.90) years. Over half (54 per cent) of the respondents were males and 36 per cent were females, while 10 per cent did not indicate their gender. Participant age ranged from 19-75 years, with an average age of 46.57 years (σ = 10.96). Further, 42.9 per cent of respondents were of African-American ethnicity compared to 42.4 per cent White/Caucasian. In addition, 1.8 per cent of respondents were of Hispanic descent, and 2.6 per cent indicated their ethnicity as "other", with 10.3 per cent not providing a response regarding their race. As the latter two response categories together represent only 4.4 per cent of the total sample, they were excluded from any bivariate race comparisons. Of the respondents who provided educational information, the majority (63 per cent) had a high school education, 18.6 per cent had some college education and 16.3 per cent had a college degree.

Measurement instruments

To assess effort-oriented epistemological beliefs, we considered those nine items from Schraw *et al.* (1995) Epistemic Beliefs Inventory which focus specifically on one's beliefs regarding the extent of effort involved in learning or processing knowledge. These items, which relate to the individual's perception of the effort with which learning and the construction of knowledge come about, were modified when necessary for an organizational, rather than academic audience and were captured with a Likert-type instrument where 1 = "strongly disagree" and 5 = "strongly agree." Thus, in keeping with Schraw *et al.*'s (1995) inventory, strong agreement with these statements represents less sophisticated beliefs, whereas strong disagreement with these statements represents mature or sophisticated beliefs. For ease of analysis, however, the coding was reversed such that the higher scores equate to more sophisticated beliefs. Sample items include "If you haven't understood instructions the first time through, going back over them won't help" and "Working on a problem with no quick solution is a waste of time".

Mentoring functions were measured using an abbreviated version of an instrument developed by Noe (1988) and adapted by Allen (2003) to reword items from an academic to an organizational context and to specifically capture data from the mentor's perspective. Noe's (1988) original measure was designed to assess career and psychosocial mentoring functions as discussed by Kram (1985). Five items assessed vocational mentoring functions, and six items assessed psychosocial mentoring functions. Sample vocational support items include, "Assigned responsibilities to this person that increased his or her contact with people in the organization who could judge his or her potential for future" and "Gave this person assignments or tasks that prepared him/her for promotion". Sample psychosocial support items include "Conveyed empathy for the concerns and feelings that your protégé discussed with you" and "Encouraged him or her to talk openly about anxiety and fears that distract from his/her work". Respondents assessed (on a five-point Likert-type scale, where 1 = "to a very slight extent" and 5 = "to a very large extent") the extent to which they have engaged in these activities with a protégé. Finally, respondents were asked to report their perceptions of psychological safety in the organization by indicating on a Likert-type scale the degree to which a series of statements accurately described their organization (1 = very inaccurate, 7 = very accurate). We used a four-item instrument based on Edmondson's (1999) Team Psychological Safety scale, and modified to mention the organization as the referent, rather than the team (e.g. "Members of this organization are able to bring up problems and tough issues" and "No one in this organization would deliberately act in a way that undermines my efforts").

Exploratory factor analysis

Following the method used by earlier researchers (Bhuian *et al.*, 2005), an exploratory factor analysis was conducted using SPSS 21 for all the scales used in the model to assess the underlying factor structure of the scale items. The nine items from Schraw *et al.*'s (1995) Epistemic Beliefs Inventory that were originally identified as relating to one's beliefs regarding the extent of effort involved in learning or processing knowledge were factor analyzed. Analysis revealed two factors with Eigenvalues greater than 1. As part of the scale purification process, cross-loading and low loadings items were removed and the remaining items were scrutinized for face validity. Three of these items stood out as being related to one's beliefs about the ease/difficulty of effort and

willingness to put forth effort toward knowledge and learning outcomes. When all remaining non-cross-loading or low-loading items were rotated using Varimax rotation, the three items identified as most conceptually related to one's effort-oriented belief system all loaded onto a single factor with reasonable factor loadings, and thus, were retained. Together, these three items represent 57.7 per cent of the variance. Similar analyses were conducted for measures of psychological safety, vocational mentoring and psychosocial mentoring scales to retain items that loaded onto one factor each. These analyses resulted in the removal of one item from the psychosocial mentoring scale and two items from the vocational mentoring scale due to low path coefficients which indicated that these items had low relative effect in the model. All four items of the psychological safety measure loaded appropriately on one factor.

Measurement model

A confirmatory factor analysis (CFA) using AMOS 21 was used to assess the properties of the latent variables using the items retained from the exploratory factor analysis. The results of the CFA showed acceptable fit indices ($\chi^2 = 191.244$, df = 82, $p < 0.01$; RMSEA = 0.050, $CI_{90\%} = 0.041$ to 0.059; CFI = 0.96 TLI = 0.94). The measures in the measurement model are listed in Appendix and portrayed visually in Figure 1.

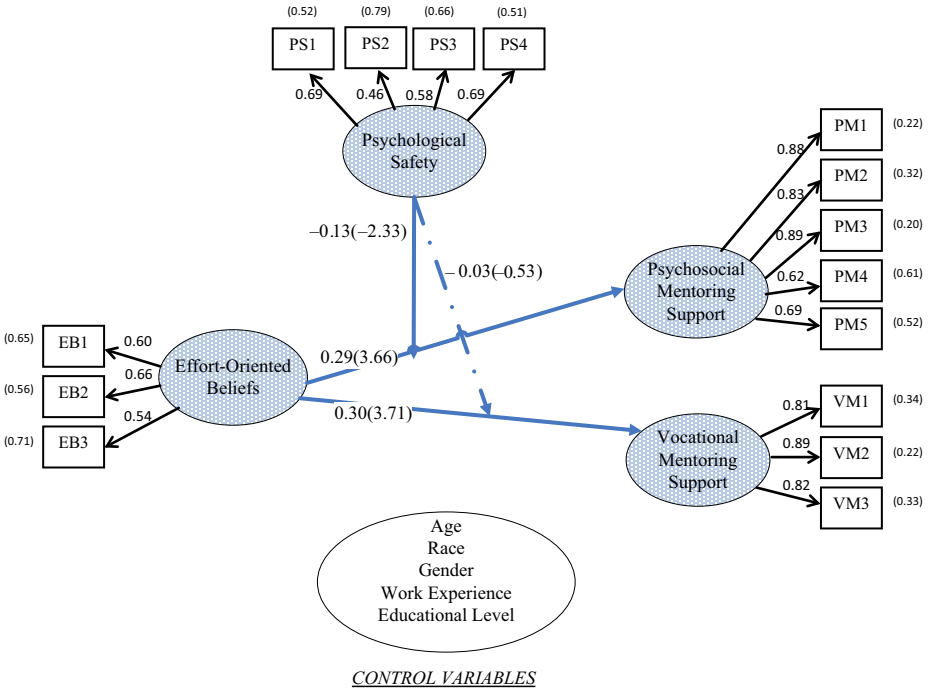
Reliability of each scale was assessed with Cronbach's alpha and all were found to be within an acceptable range (Nunnally *et al.*, 1967), as indicated on the diagonal in Table I. Discriminant validity was tested using the procedure suggested by Fornell and Larcker (1981). First, a test of the confidence intervals of the factor correlations determined that none of the 95 per cent confidence intervals of the factor correlations included one (Anderson and Gerbing, 1988). Second, the square root of a construct's Average Variance Extracted (AVE) exceeds correlations with other constructs of the research model. Finally, as shown Table I, both Maximum Shared Variance and Average Shared Variance are less than AVE, thus providing further support for discriminant validity (Hair *et al.*, 2010) and demonstrating the reliability and validity of the measures used in the study. Appendix displays the standardized path coefficients, skewness and kurtosis statistics and standard error terms for all observed variables and their associated latent constructs in the measurement model.

Results

After the measurement model was established, a correlation analysis was conducted using SPSS 21 to assess the relationships between the constructs and demographic variables used in the model. The correlations and descriptive statistics are displayed in Table I. Effort-oriented epistemological beliefs are positively related to vocational mentoring support ($p < 0.05$) and psychosocial mentoring support ($p < 0.01$). Age, race and position type were each negatively correlated with effort-oriented epistemological beliefs, indicating that younger workers and those who are white or in professional (rather than service) positions tend to hold more sophisticated effort-oriented belief systems. Finally, higher education level was positively related to effort-oriented epistemological beliefs.

Structural model

A structural equation model (SEM) was run using AMOS 21 to test the main effect relationships among the constructs in the hypothesized model, namely, effort-oriented epistemological beliefs, vocational mentoring and psychosocial mentoring. Because the



Notes: For the measurement model, standardized path coefficients are reported, along with measurement error in parentheses. For the structural model, standardized beta coefficients are reported, along with t-values in parentheses

Figure 1.
Effort-oriented beliefs and mentoring

second and third psychosocial mentoring support items both refer to sharing through discussion, the error terms of these observed variables was allowed to covary. Similarly, as the fourth and fifth observed variables in this same construct both refer to communicating feelings, the error terms of these two observed variables were, likewise, allowed to covary. Respondents' gender, work experience, race and educational level were used as control variables, as they are known to impact employee attitudes and behaviors (Barrick *et al.*, 1994; Flaherty and Pappas, 2002). Also, as epistemological beliefs may change with age and exposure to different types of learning opportunities (Nist and Holschuh, 2005), both age and type of position (professional versus service/blue-collar) were controlled. The results of the structural model (illustrated as the relationships between constructs in Figure 1) indicate an acceptable fit with the data: $\chi^2 = 401.89$, df = 133; RMSEA = 0.061, with 90 per cent confidence intervals of 0.055-0.068; TLI = 0.89 and CFI = 0.91 (McDonald and Ho, 2002).

Results demonstrate that both of the main effect hypotheses (*H1a* and *H2a*) were supported. Effort-oriented epistemological beliefs have a positive relationship with both psychosocial mentoring ($\beta = 0.29$, $t = 3.66$) and vocational mentoring ($\beta = 0.30$, $t = 3.71$), indicating that mentors who hold mature or sophisticated beliefs about the amount of effort involved in learning knowledge creation are more likely to offer both forms of mentoring support to their protégés. Race (White = 0, Black = 1) was

Table I. Correlation matrix and descriptive statistics

No.	Variable	1	2	3	4	5	6	7	8	9
1	Effort-oriented beliefs	0.64								
2	Psychological safety	−0.02	0.70							
3	Vocational mentoring support	0.10*	0.20**	0.88						
4	Psychosocial mentoring support	0.15**	0.15**	0.51**	0.90					
5	Age	−0.22**	0.06	0.01	−0.05	–				
6	Work experience	−0.05	0.06	−0.01	0.05	0.65**	–			
7	Race (White = 0, Black = 1)	−0.22**	0.03	0.12*	−0.08	0.15**	−0.16**	–		
8	Professional (0) vs blue collar (1)	−0.16**	0.00	−0.04	−0.15**	0.00	−0.09	0.28**	–	
9	Educational level	0.20**	−0.04	0.03	0.17**	−0.15**	0.06	−0.37**	−0.51**	–
10	Gender (Male = 0, Female = 1)	−0.05	−0.01	−0.07	−0.03	0.17**	−0.02	0.33**	0.05	−0.20**
	Mean	3.79	4.23	2.86	3.40	46.57	25.41			
	SD	0.65	1.17	1.09	0.99	10.96	11.90			
	Average variance extracted (AVE)	0.30	0.44	0.71	0.65					
	Maximum shared variance (MSV)	0.04	0.07	0.35	0.35					
	Average shared variance (ASV)	0.02	0.04	0.14	0.15					
	Square root of AVE	0.55	0.66	0.84	0.81					

Notes: **Significant at 0.01; *significant at 0.05; and Cronbach's α italicized on the diagonal

positively associated with both psychosocial mentoring ($\beta = 0.17$, $t = 2.64$) and vocational mentoring ($\beta = 0.24$, $t = 3.72$), indicating that African-American respondents reported providing greater mentoring to their colleagues as compared to White employees. Age was positively related to vocational mentoring ($\beta = 0.20$, $t = 2.35$), and gender (male = 0, female = 1) was negatively associated with vocational mentoring ($\beta = -0.17$, $t = -3.00$) suggesting that older employees and males reported providing higher work-related mentoring support to protégés. Table II shows the standardized path coefficients among the constructs and control variables used in the model.

Moderation analysis

To test the moderating impact of psychological safety in the relationship between effort-oriented epistemological beliefs and the two identified types of workplace mentoring (*H2a* and *H2b*), an interaction variable was created. Consistent with the Jöreskog and Yang (1996) approach to testing moderation effects in SEM analysis, and with suggestions made by Williams *et al.* (2009), the constructs of psychological safety and effort-oriented epistemological beliefs were each mean-centered and a moderator variable was created by multiplying these mean centered values (Ackfeldt and Malhotra, 2013; Svendsen and Prebensen, 2013; and Hewett *et al.*, 2006). To test the moderation, a structural equation model was run with the moderating variable included. Results show a satisfactory fit for the moderated model: $\chi^2 = 488.65$, df = 181; RMSEA = 0.056, 90 per cent, with confidence intervals of 0.050 to 0.062; TLI = 0.87 and CFI = 0.92 (McDonald and Ho, 2002). As shown in Table II, results of the analysis

Independent variable		Dependent variable	Standardized β	*t*-value
Effort-oriented beliefs	→	Psychosocial mentoring support	**0.29**	**3.66**
Psychological safety	→	Psychosocial mentoring support	**0.26**	**4.24**
Effort-oriented beliefs	→	Vocational mentoring support	**0.30**	**3.71**
Psychological safety	→	Vocational mentoring support	**0.29**	**4.56**
Effort × psych safety	→	Psychosocial mentoring support	**−0.13**	**−2.33**
Effort × psych safety	→	Vocational mentoring support	−0.03	−0.53
Demographic variables				
Work experience	→	Psychosocial mentoring support	−0.06	−0.73
Gender (Male-Female, 0-1)	→	Psychosocial mentoring support	−0.02	−0.33
Age	→	Psychosocial mentoring support	0.10	1.17
Race (White-Black, 0-1)	→	Psychosocial mentoring support	**0.19**	**2.94**
Educational level	→	Psychosocial mentoring support	0.07	1.06
Professional (0) or Service/blue collar (1)	→	Psychosocial mentoring support	−0.12	−1.92
Work experience	→	Vocational mentoring support	−0.12	−1.57
Gender (Male-Female, 0-1)	→	Vocational mentoring support	**−0.17**	**−3.00**
Age	→	Vocational mentoring support	**0.20**	**2.35**
Race (White-Black, 0-1)	→	Vocational mentoring support	**0.27**	**4.03**
Educational level	→	Vocational mentoring support	0.02	0.35
Professional (0) or service/ Blue collar (1)	→	Vocational mentoring support	−0.05	−0.85

Note: The bold font represents significant paths

Table II. Standardized path coefficients and *t*-values

indicated that psychological safety does not moderate the relationship between effort-oriented epistemological beliefs and vocational mentoring ($b = -0.03, t = -0.53$), indicating that *H2a* was not supported. However, the moderation effect of psychological safety on the relationship between effort-oriented epistemological beliefs and psychosocial mentoring was statistically significant ($b = -0.13$, $t = -2.33$) in the manner predicted, such that the relationship is stronger under conditions where the mentor perceives high levels of psychological safety. This provides support for *H2b*.

Discussion

Results of the study indicate that mentors who hold more sophisticated beliefs about the effort involved in knowledge and learning processes offer greater vocational and psychosocial support to their protégés, and that mentor perceptions of psychological safety appear to moderate this mentoring process only with regard to psychosocial support, such that mentors who perceive higher levels of psychological safety are more likely to act on their beliefs and provide this form of confidence- and identity-building support to protégés.

The finding that mentors' effort-oriented epistemological beliefs potentially influence the amount of vocational support provided (as predicted in *H1* and confirmed by the results) is important, as receipt of vocational mentoring support has consistently been linked to not only protégé career and job satisfaction but also with compensation, salary growth, promotions and satisfaction with one's mentor (Wanberg *et al.*, 2003). Moreover, the significant link between mentor effort-oriented epistemological beliefs and psychosocial support they provide to their protégés (as predicted in *H2* and confirmed by the results) could also have a potentially important implication for workplace outcomes. Weinberg and Lankau (2011, p. 1,554) recently found that, even in a formal mentoring program, "where all of the mentoring relationships tend to revolve around an organizational desire for advancing protégé careers [e.g. vocational-type support]", it was the mentors who provided the greatest levels of psychosocial support who were rated as the most effective by their protégés. Further, psychosocial support has been positively associated with numerous career outcomes (see Allen *et al.*, 2004 for a more exhaustive discussion of the benefits associated with psychosocial support). The present study has identified a cognitive belief structure that appears to potentially motivate individuals to provide both forms of mentoring support.

Although the moderation analysis supported our prediction that mentors' sophisticated belief systems will be most likely to translate to psychosocial mentoring support under conditions where the mentor perceives a high degree of psychological safety (*H2b*), a look at the moderated plot in Figure 2 reveals a more nuanced story. Specifically, it appears that when a mentor has both low psychological safety and a less sophisticated belief system, the mentor is less likely to provide high levels of psychosocial mentoring. Interestingly, mentors whose belief systems are more aligned with the notion that knowledge and learning may require considerable effort (i.e. those who have a sophisticated effort-oriented belief system) tend to provide somewhat similar psychosocial support to their protégés, regardless of their perception of psychological safety.

Thus, it appears that mentors who hold sophisticated beliefs about the knowledge and learning process being an effortful one may be more likely to take a risk to provide the type of support that allows their protégés to feel self-confident to build their identity

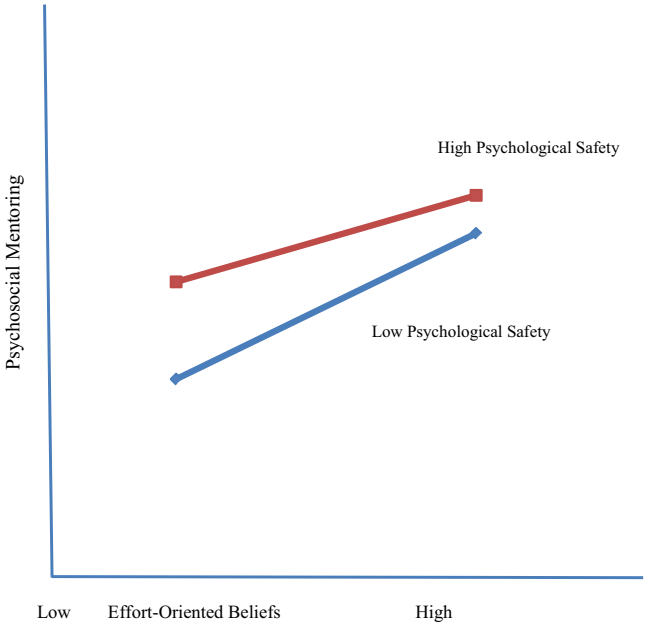


Figure 2.
Moderating impact of psychological safety

at work, even if the mentor believes that he or she may experience negative repercussions for speaking their mind at work. This stresses the importance of having high effort-oriented epistemologies, as they appear to have the capacity to overpower the effects of perceived climate-related issues. Also worth noting is that this moderation effect is not present with regard to vocational mentoring (as predicted in *H2a*), suggesting that the positive relationship between a mentor's sophisticated effort-oriented belief system and the degree to which he or she provides career-related mentoring support appears to be uninfluenced by the mentor's perception of psychological safety at work.

Limitations of the study

Despite this study's strengths, a number of limitations are worth mentioning which may limit the generalizability of our results. First, although the sample of physical plant workers represents a population of employees who often learn through apprenticeship/mentorship type contexts and who have, on average, similar education levels to those participants typically examined in studies of epistemological beliefs, this selection of workers in one type of organization may be a central limitation to our study. Moreover, a large percentage of these employees work in service/blue-collar groups compared to the number of professional/administrative groups. With only 9.33 per cent of the participants linked to professional work groups, the present study did not capture the full range of a total workforce population. Although there were a relatively small number of professional/administrative employees present in the study compared to the much larger number of service workers, limiting our capacity to run *post hoc* subgroup analyses, a preliminary examination of the correlational data indicates some potential differences between these two subdivisions of labor in the sample. Correlational data

indicate that service group members appear to report significantly less sophisticated effort-oriented beliefs and offer less psychosocial mentoring support than their counterparts. Future research into the ways in which these two subdivisions of labor differ with regard to their effort-oriented belief systems and their behaviors associated with mentoring could prove useful to the study and practice of applied organizational behavior.

Further, while we were able to provide an initial investigation into the degree to which one's beliefs about the effort required in knowledge and learning relationships influence their mentoring behaviors at work, future research efforts may provide a more nuanced examination of effort-oriented epistemologies. For example, although we were able to develop a reasonably valid scale to represent effort-oriented beliefs by drawing on previously studied aspects of epistemologies, future research is needed to further refine the measurement instrument for this construct.

The present study did not differentiate mentors who identified a current or previous subordinate as their protégé from those whose protégés were not a subordinate. As task-oriented support is often considered an in-role behavior for a supervisor, it is possible that the relationship between a mentor's beliefs and the vocational support he or she provides may be more pronounced if the protégé is or was a direct subordinate. Further, the model presented in this study did not distinguish between formal and informal mentoring relationships. Future researchers interested in exploring the link between beliefs and mentoring may wish to distinguish between these two contexts to determine whether there is any difference with regard to the manifestation of formal and informal mentoring behaviors based on the beliefs of the mentor. Finally, the present study is limited to capturing mentors' reports of their beliefs and mentoring behaviors. A natural progression from the present study would be to use matched-pairs analysis (Edwards and Parry, 1993) to determine whether differences between mentor beliefs and protégés' have an impact on the extent of mentoring reported by either party.

Implications for future research

In examining the relationship between epistemological beliefs and mentoring behaviors, we have brought to light a potential new area worthy of further investigation – individuals' beliefs about the effort involved in acquiring knowledge and achieving learning outcomes. This new conceptualization of effort-oriented epistemological beliefs has the potential to improve our understanding of the cognitive processes that underlie workplace learning and proactive behaviors at work. By focusing on this specific, focused area within individuals' belief system, researchers may begin to make inferences regarding individuals' motivation to share knowledge at work. However, to establish a causal link between the focus variables in this study and to better understand the boundary conditions that may constrain these relationships, future research should emphasize a longitudinal design in addition to subgroup analysis based on some of the study's control variables. Specifically, it is suggested that future research investigate whether the relationship between effort-oriented epistemological beliefs and mentoring behaviors follows the theory of propositional control (Ajzen and Fishbein, 1970) such that one's beliefs provide motivation for mentoring intention and, ultimately, one's on-the-job behaviors such as mentoring provided to protégés and whether these potentially causal relationships vary across different groups of organizational workers.

Implications for practice

A better understanding of the relationship between these cognitive and behavioral variables could be used to design more effective mentoring relationships. Results highlight the importance of sophisticated mentor beliefs as likely antecedents to higher levels of mentoring behaviors, both directly (as per our first set of hypotheses) and indirectly (i.e. stronger psychosocial mentoring in a context of a psychologically safe workplace, as per *H2b*). As such, this study's main practical contribution is that it focuses attention on an aspect of the mentor's cognitive belief system that management can influence through training (Nist and Holschuh, 2005). Learning relationships are important to organizations in as far as they influence workplace learning and training in an attempt to "serve the learning organization's quest for success in the knowledge economy" (Servage, 2005, p. 305). Specific content in a mentor training program should target perceptions and beliefs about the continuous learning demands that employees encounter and the effort and support that is necessary from both mentors and protégés to produce effective learning outcomes. Whereas a learning theory perspective defines learning as "the process of using a prior interpretation to construe a new or revised interpretation of the meaning of one's experience to guide future action" (Mezirow, 1996, p. 162), interpreting meaning relies upon one's ability to understand one's frame of reference and (Taylor, 2000), in this case, his or her underlying epistemologies. As workplace learning entails, in part, the ability of a "system to sense and interpret its changing environment and to apply this shared knowledge in order to […] develop the capabilities of its people" (Marsick, 1997, p. 2), training mentors to help a company's workers to develop from within and to value the capabilities and efforts of its members enables the type of organizational development synonymous with organizational learning (Dymock, 1999). Finally, another practical implication of this study is the importance of the climate for supporting learning relationships, as evidenced by the support for *H2b*. Helping others to learn and succeed in an organization can involve risk and challenges. Managers should be aware of the climate they build so that members feel that there is a safe environment for them to experiment with mentoring and learning strategies with their protégés.

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Appendix

Construct	Standardized path coefficients	Measurement error	Skewness	Kurtosis
Vocational mentoring support				
1. Gave this person assignments that increased written and personal contact with senior management	0.811	0.342	−0.00	−0.84
2. Assigned responsibilities to this person that increased his or her contact with people in the organization who could judge his or her potential for future	0.886	0.215	−0.07	−0.75
3. Gave this person assignments or tasks that prepared him/her for promotion	0.820	0.328	−0.16	−0.82
Psychosocial mentoring support				
1. Encouraged him or her to talk openly about anxiety and fears that distract from his/her work	0.883	0.220	−0.32	−0.61
2. Shared your personal experiences as an alternative perspective to this person's problems	0.826	0.318	−0.30	−0.51
3. Conveyed empathy for the concerns and feelings that he or she discussed with you	0.892	0.204	−0.30	−0.58
4. Kept feelings and doubts this person shared with you in strict confidence	0.624	0.611	−0.77	−0.31
5. Conveyed feelings of respect for this person as an individual	0.691	0.523	−0.62	−0.37
Effort-oriented epistemological beliefs				
1. If you haven't understood instructions the first time through, going back over them won't help	0.594	0.647	−1.26	2.02
2. Working on a problem with no quick solution is a waste of time	0.662	0.562	−0.90	1.03
3. People can't do very much about how smart they are	0.541	0.707	−0.33	−0.90
Psychological safety				
1. Members of this organization are able to bring up problems and tough issues	0.690	0.524	−0.63	−0.21
2. It is safe to take a risk in this organization	0.460	0.788	−0.07	−0.80
3. No one in this organization would deliberately act in a way that undermines my efforts	0.581	0.662	−0.04	−0.83
4. Working with members of this organization, my unique skills and talents are valued and utilized	0.694	0.518	−0.54	−0.29

Table AI. Measures in the measurement model

About the authors

Frankie J. Weinberg is an Assistant Professor of Management at Loyola University, New Orleans. He received his PhD from the University of Georgia. His research interests include dyadic and team-level interactions at work, including mentoring, leadership, spiritual development and gendered communication, as well as team processes and social networks. Frankie J. Weinberg is the corresponding author and can be contacted at: weinberg@loyno.edu

Jay P. Mulki is an Associate Professor of Marketing in the D'Amore-McKim School of Business at Northeastern University and a Senior Research Associate at the University of South Australia. He received his PhD from the University of South Florida, Tampa. His research interests include sales and sales management.

Melenie J. Lankau is the Senior Associate Dean of MBA Programs and Diversity and an Associate Professor of Leadership and Organizational Behavior at Wake Forest University School of Business. She received her PhD from the University of Miami. Her research interests include mentoring, workforce diversity, leadership and team effectiveness.