

83. Investigating pre-service EFL teachers' language mindset and epistemological beliefs

Seda SIVACI¹

APA: Sivacı, S. (2023). Investigating pre-service EFL teachers' language mindset and epistemological beliefs. *RumeliDE Dil ve Edebiyat Arařtırmaları Dergisi*, (Ö13), 1347-1356. DOI: 10.29000/rumelide.1379361.

Abstract

Learning a new language is widely recognized as a persistent, intricate, and demanding endeavor for learners. Along this journey, various challenges are expected to arise, potentially hindering effective communication. Therefore, Language Learning Mindsets (LLMs) are considered crucial indicators in understanding why learners react differently to these adversities. Additionally, LLMs encompass how learners respond to the learning process, influencing their goals, learning strategies, and effort, consequently impacting their motivation for language acquisition. The goal of this study is to explore the potential relationship between language mindsets (LLMs) and epistemological beliefs among pre-service English as a Foreign Language (EFL) teachers. To accomplish this, 141 pre-service English teachers participated in the study. Quantitative data were gathered using the Language Mindsets Inventory (LMI) and the Epistemological Beliefs Questionnaire. The quantitative data analysis involved the application of descriptive statistics and regression analyses. The findings demonstrated that the sub-dimensions of epistemological beliefs, namely, learning effort and certainty in knowledge, significantly predicted and positively influenced incremental views during the language learning process. Specifically, their respective impacts on the outcome variable concerning treatment differences were somewhat less pronounced but remained in the positive range. Moreover, while innate/fixed ability significantly influenced entity views of language learning, the sub-dimensions of learning process/expert knowledge and learning effort did not serve as significant predictors for entity views regarding language learning. These findings hold implications for the development of EFL teachers' beliefs, suggesting that their perception of innate learning ability, which is transferable, significantly affects their approach to language learning.

Keywords: Language mindset, epistemological belief, pre-service teachers, language learning

İngilizce öğretmeni adaylarının dil zihniyetlerinin ve epistemolojik inançlarının araştırılması

Öz

Yeni bir dil öğrenme süreci öğrencilere uzun, karmaşık ve zorlu bir deneyim sunar. Bu süreçte öğrenciler çeşitli zorluklarla karşılaşabilir, bu da etkili iletişimi engelleyebilir. Dil Öğrenme Zihniyetleri (DÖZ), öğrencilerin bu tür zorluklara farklı şekillerde nasıl yanıt verdiğini anlamamanın önemli bir göstergesidir. Ayrıca, bu zihniyetler öğrencilerin öğrenme sürecine nasıl tepki verdiklerini açıklar, bu da dil öğrenme motivasyonunu etkiler. Bu çalışma, İngilizce öğretmen adaylarının dil öğrenme zihniyetleri ile epistemolojik inançları arasındaki ilişkiyi incelemeyi amaçlamaktadır. 141 İngilizce öğretmen adayı bu çalışmaya katıldı. Nicel veriler, Dil Zihniyeti Envanteri (DZE) ve

¹ Dr. Öğr. Üyesi, Hasan Kalyoncu üniversitesi, Eğitim Fakültesi, İngilizce Öğretmenliği Bölümü (Gaziantep, Türkiye), seda.sivaci@hku.edu.tr ORCID ID: 0000-0002-2883-0343 [Araştırma makalesi, Makale kayıt tarihi: 31.08.2023-kabul tarihi: 23.10.2023; DOI: 10.29000/rumelide.1379361]

Epistemolojik İnançlar Anketi ile toplandı. Bulgular, öğrenme çabası ve kesinlik bilgisi gibi epistemolojik inançların alt boyutlarının artımlı dil öğrenme görüşlerini olumlu yönde etkilediğini gösterdi. Bununla birlikte, epistemolojik inançların diğer alt boyutları olan öğrenme süreci/uzman bilgisi ve doğuştan gelen/sabit yetenek bu görüşleri etkilemedi. Ayrıca, doğuştan gelen/sabit yetenek, dil öğrenme ile ilgili varlık görüşlerini olumlu yönde etkileyen önemli bir etken olarak belirlendi. Ancak öğrenme süreci/uzman bilgisi ve öğrenme çabası bu görüşleri etkilemedi. Bu sonuçlar, İngilizce öğretmeni adaylarının epistemolojik inançlarının öğretim uygulamaları üzerinde önemli bir etkisi olduğunu vurgulamaktadır.

Anahtar kelimeler: Dil zihniyeti, epistemolojik inanç, öğretmen adayları, dil öğrenimi

Introduction

The impact of educators' personal beliefs on their teaching approaches, instructional methods, and overall attitude toward education is widely recognized. Consequently, educational research, particularly in the context of teacher training, emphasizes the utilization of a belief-centered theoretical framework, as proposed by Richardson in 1996. This framework highlights the capacity of educators' beliefs and attitudes to exert a substantial influence on diverse aspects of the teaching and learning process. These aspects encompass elements such as assessment, teaching strategies, instructional techniques, classroom environment, and the depth of interpersonal engagement.

In alignment with Bandura's proposition from 1989, an individual's behavior is a reflection of their fundamental beliefs and emotional predispositions in specific situations. Looking through this lens, epistemological beliefs, which encompass an individual's belief system regarding the essence of knowledge and the process of acquiring it, as elucidated by Hofer and Bendixen (2012), have assumed a pivotal role in the examination of the educational environment, as discussed by Chan and Elliot (2004). A comprehensive understanding of the epistemological beliefs of a teacher or teacher candidate can provide profound insights into their approach to pedagogy and their perspective on learning within the classroom setting.

In addition to examining the epistemological beliefs of educators, it is crucial to investigate the language learning beliefs held by language instructors or candidates to determine how these align with their epistemological convictions in the context of language acquisition. Several investigations emphasize the significance of educators' beliefs related to the formation of knowledge and their application in the realm of teaching and learning. These beliefs exert a tangible impact on pedagogical performance, influencing the choice of instructional strategies and methodologies (Bendixen & Rule, 2004; Deryakulu, 2014; Kırmızıgül & Bektas, 2019). As noted by Peterman in 1993, educators' preferences in instruction are the primary manifestation of their epistemological beliefs. Therefore, educators' epistemological beliefs play an integral role in shaping the roles of both instructors and learners, contributing to the construction of meaning within the classroom environment (Chan & Elliott, 2004).

When it comes to the domain of language acquisition, it's widely accepted that the process of acquiring a new language is a comprehensive, complex, and challenging journey for learners. Throughout this process, learners encounter a variety of formidable situations that frequently lead to suboptimal interactions. Consequently, Language Learning Mindsets (LLMs) are considered crucial indicators that clarify the differences in how learners respond to these challenging circumstances (Dweck, 2017; Mercer

& Ryan, 2010). In other words, LLMs offer valuable insights into how learners approach the learning process, shaping their goals, learning strategies, and the effort they put in (Ryan & Mercer, 2012).

Language Learning Mindsets (LLMs) are intricately linked to beliefs regarding the adaptability of language learning capabilities (Lou & Noels, 2019). To elaborate on the distinctions between fixed and growth mindsets, it is essential to explore the two implicit theories of intelligence proposed by Dweck (2008): entity and incremental. Entity theorists argue that intelligence is an immutable and predetermined trait that remains unchangeable, thus promoting fixed mindsets. They assert that even though individuals may acquire new knowledge, their intelligence is inherently fixed (Ablard & Mills, 1996; Dweck, Chiu & Hong, 1995). Consequently, when confronted with challenging situations or setbacks, they tend to attribute these difficulties to their innate intelligence. Learners with fixed mindsets tend to avoid difficult tasks and activities as they are driven by a strong desire to validate their intellectual abilities and avoid any appearance of cognitive inadequacy, as explained by Dweck (2008). In contrast, incremental theorists believe that intelligence is flexible and can be improved through effort and persistence. Learners with incremental or growth mindsets are more inclined to enthusiastically tackle new challenges, invest significant effort in mastering new content, expand the boundaries of their skill set, and apply their knowledge in practical contexts. Unlike those with fixed mindsets, they embrace challenges as opportunities to enhance their skills, even when faced with errors and failures.

Individuals with fixed mindsets perceive intelligence as an innate talent that is predetermined, while those who embrace growth mindsets prioritize hard work over innate talent (Ryan & Mercer, 2012). In the context of language acquisition, research indicates that individuals with fixed mindsets, who firmly believe in the immutability of intelligence, tend to shy away from challenging tasks, easily give up, and often experience heightened anxiety during the language learning process (Bai & Wang, 2021; Lou & Noels, 2019; Mercer & Ryan, 2010). On the contrary, individuals who adopt growth mindsets firmly believe that their cognitive abilities can be enhanced through consistent practice and active engagement with challenging tasks, leading to increased self-assurance and resilience (Lou & Noels, 2017; Papi et al., 2019).

While research on language mindsets among language learners has been limited (Lou & Noels, 2017), it's essential to highlight that language mindsets differ from those prevailing in other domains (Ryan & Mercer, 2012). Mercer and Ryan (2010) discovered that the language mindsets of English as a foreign language learners don't neatly fit into either the entity or incremental categories; instead, they seem to encompass elements of both. Furthermore, participants in their study expressed beliefs regarding the impact of age on language acquisition, particularly the notion of a 'critical period' for acquiring a foreign language. Building on these findings, Lou and Noels (2017) outlined three dimensions of language mindsets, including: a) general language intelligence beliefs (GLB), b) second language aptitude beliefs (L2B), and c) age sensitivity beliefs concerning language acquisition (ASB). While these dimensions may initially seem separate, they are interconnected, with GLB focusing on whether general language learning intelligence is inherently fixed, L2B addressing the immutability of second language acquisition, and ASB considering the influence of age on language learning aptitude.

As noted by Lou and Noels (2017), there is a notable scarcity of research specifically addressing fixed versus malleable beliefs concerning language ability. Additionally, there is a clear absence of studies examining the convergence of epistemological beliefs and language mindsets among prospective English as a Foreign Language (EFL) educators. In light of these gaps, the current study aims to enhance scholarly discussions by investigating the connection between the epistemological beliefs of pre-service

EFL educators and their language mindsets. To achieve this, the study aims to address the following research inquiries:

1. Is there a significant relationship between pre-service EFL teachers' epistemological beliefs and their language learning mindsets?
2. To what extent do pre-service EFL teachers' epistemological beliefs influence their language learning mindsets?

Method

The principal aim of this study is to explore the association between the epistemological beliefs of prospective teachers in the field of English as a Foreign Language (EFL) and their language mindsets. Simultaneously, the study seeks to ascertain the extent to which these epistemological beliefs impact their language mindsets. To fulfill this objective, a meticulously designed correlational survey study was employed for the current research, given its capacity to provide valuable insights that can serve as the foundation for subsequent examinations of this intricate relationship (Büyüköztürk, KılıçÇakmak, Akgün, Karadeniz, & Demirel, 2013, p. 185).

The data for this study emanated from a group of 141 prospective EFL teachers, comprising 105 females and 36 males, all of whom were enrolled in the English Language Teaching (ELT) Department at different universities in Turkey. Participant selection was conducted using a convenience sampling technique, and their involvement in the study was entirely voluntary. The study received ethical approval from the Hasan Kalyoncu University Scientific Research and Publication Ethics Committee, under approval number 2022-24, dated 10.08.2022.

Data collection

Throughout the data collection phase of the investigation, two principal tools were employed to assess the perceptions and beliefs of pre-service teachers. In the initial instance, the "Language Mindset Inventory," developed by Lou and Noels (2017), was administered to the research participants to evaluate their language mindsets in three specific dimensions. This inventory encompasses 18 items, further categorized into three sub-dimensions: general language intelligence beliefs, second language aptitude beliefs, and age sensitivity beliefs related to language learning. However, it is imperative to emphasize that these items are tailored to examine two distinct aspects of language learning, namely, incremental (9 items) and entity (9 items). The internal consistency of this inventory for the present study was assessed via Cronbach's Alpha, yielding a coefficient of .73, as depicted in Table 1.

The second tool utilized in this study was the "Epistemological Beliefs Scale," originally developed by Chan and Elliot (2004) and adapted to the Turkish context by Aypay (2009). This scale consists of 30 items categorized into four sub-dimensions, namely, Innate/Fixed Ability, Learning Effort, Learning Process/Expert Knowledge, and Certainty Knowledge. Participants were instructed to furnish Likert-type responses, with options ranging from 1 (strongly disagree) to 5 (strongly agree). For the specific investigation, the scale's reliability was reassessed using Cronbach's Alpha, yielding a coefficient of .84, as outlined in Table 1. Cronbach Alpha results of the Tools

	Cronbach Alpha
Incremental	.587

Entity	.567
Language Learning Mindsets	.739
Learning Process/Expert Knowledge	.776
Innate/Fixed Ability	.838
Learning Effort	.672
Certainty Knowledge	.746
Epistemological Beliefs	.842

Data analysis

The data gathered for this study underwent analysis through SPSS. An initial evaluation was performed to assess the data's adherence to a normal distribution. This evaluation entailed an examination of the kurtosis and skewness coefficients for the score series of the variables under scrutiny. The outcomes of this evaluation revealed that the kurtosis and skewness coefficients for the score series fell within the range of -1 to +1, indicating that the score series displayed a normal distribution (Büyüköztürk, 2011; Can, 2014).

In the context of this study, regression analysis was employed to investigate the impact of epistemological beliefs on language mindsets. To assess the strength of the relationship between the variables included in the regression analysis, correlation analysis was carried out. The outcomes of this analysis indicated that the variables displayed a low level of correlation, as evidenced by correlation coefficients (r) below .80. Furthermore, it was observed that the Tolerance values associated with the score series related to the sub-dimensions of epistemological beliefs exceeded 0.2, and the Variance Inflation Factor (VIF) was less than 10. These results collectively suggest the absence of multicollinearity issues in the dataset (Büyüköztürk, 2011; Can, 2014). Additionally, as part of the data analysis process, descriptive statistics, including measures such as the mean, standard deviation, skewness, and kurtosis coefficients, were computed for the variables.

Findings

In the study, the mean scores, standard deviation values, kurtosis, and skewness coefficients derived from the scales used to assess the epistemological beliefs and language learning mindsets of the pre-service EFL teachers were computed. The results are presented in Table 2.

Table 2. Descriptive Statistics of Variables

	N	Mean	Sd.	Skewness	Kurtosis
Incremental	141	3.96	0.62	0.41	0.63
Entity	141	3.80	0.62	0.54	0.65
Language Learning Mindsets	141	3.88	0.56	0.65	1.06
Learning Process / Expert Knowledge	141	4.03	0.52	-0.18	-0.65
Innate/Fixed Ability	141	3.02	0.81	0.17	-0.07
Learning Effort	141	3.96	0.64	-0.15	-0.48

Certainty Knowledge	141	3.16	0.77	-0.05	-0.03
Epistemological Beliefs	141	3.58	0.45	0.79	0.87

As illustrated in Table 2, the mean scores related to language learning mindsets reveal that the participants predominantly perceive language acquisition as a progressive process ($M=3.96$, $SD=0.62$), rather than regarding it as an inherent and fixed trait ($M=3.80$, $SD=0.62$). Concerning epistemological beliefs, pre-service EFL teachers place significant emphasis on the sub-dimensions of Learning Process/Expert Knowledge ($M=4.03$, $SD=0.52$) and Learning Effort ($M=3.96$, $SD=0.64$). These two sub-dimensions take precedence over the others, with Certainty Knowledge ($M=3.16$, $SD=0.77$) and Innate/Fixed Ability ($M=3.02$, $SD=0.81$) being considered to a lesser extent. It is noteworthy that the kurtosis and skewness coefficients for all the scores were found to fall within the acceptable range, which is greater than -1 and less than +1.

Furthermore, to assess the degree of relationship between the language learning mindsets and the epistemological beliefs held by pre-service EFL teachers, Pearson correlation coefficients were computed through correlation analysis. The results of this analysis are presented in Table 3.

Table 3. The relationship between Language Learning Mindsets and Epistemological Beliefs

	1	2	3	4	5	6
Incremental	1					
Entity	.611**	1				
Learning Process / Expert Knowledge	.302**	.230**	1			
Innate/Fixed Ability	.336**	.545**	.044	1		
Learning Effort	.450**	.267**	.609**	.050	1	
Certainty Knowledge	.500**	.497**	.081	.535**	.367**	1

The analysis of the relationship between the language learning mindsets of pre-service EFL teachers and their epistemological beliefs, as presented in Table 3, reveals several noteworthy observations. There is a moderately positive and statistically significant relationship between incremental beliefs and both certainty knowledge ($r=0.500$; $p<0.01$) and learning effort ($r=0.450$; $p<0.01$). However, a somewhat weaker, yet still positive correlation exists between incremental beliefs and innate/fixed ability ($r=0.336$; $p<0.01$) and learning process/expert knowledge ($r=0.302$; $p<0.01$). Conversely, a significant, moderate, and positive correlation is observed between entity beliefs and innate/fixed ability ($r=0.545$; $p<0.01$) and certainty knowledge ($r=0.497$; $p<0.01$). Additionally, there is a lower level of positive correlation between entity beliefs and both learning effort ($r=0.267$; $p<0.01$) and learning process/expert knowledge ($r=0.230$; $p<0.01$).

To explore the second research question, a multiple linear regression analysis was performed to examine the influence of the sub-dimensions of epistemological beliefs (Learning Process/Expert Knowledge, Innate/Fixed Ability, Learning Effort, Certainty Knowledge) on the language learning mindsets (incremental, entity). The results of this analysis can be found in Table 4.

Table 4. Multiple Linear Regression Analysis Results of Epistemological Beliefs and Incremental Beliefs

Adres	Address
RumeliDE Dil ve Edebiyat Araştırmaları Dergisi Osmanağa Mahallesi, Mürver Çiçeği Sokak, No:14/8 Kadıköy - İSTANBUL / TÜRKİYE 34714	RumeliDE Journal of Language and Literature Studies Osmanağa Mahallesi, Mürver Çiçeği Sokak, No:14/8 Kadıköy - ISTANBUL / TURKEY 34714
e-posta: editor@rumelide.com	e-mail: editor@rumelide.com,
tel: +90 505 7958124, +90 216 773 0 616	phone: +90 505 7958124, +90 216 773 0 616

Model	B	Std. Error	B	t	p	Tolerance	VIF
Constant	1.277	.377		3.388	.001		
Learning Process / Expert Knowledge	.136	.107	.113	1.271	.206	.592	1.689
Innate/Fixed Ability	.113	.064	.148	1.769	.079	.673	1.486
Learning Effort	.249	.094	.257	2.640	.009	.498	2.009
Certainty Knowledge	.256	.074	.318	3.468	.001	.562	1.779

R=.599; R²=359; F=19.002; p=.000

As depicted in Table 4, the F-value for the regression model established to examine the influence of epistemological beliefs on incremental language learning perspectives is statistically significant (F=19.002; p<0.05). The model accounts for 35.9% of the variance in incremental language learning beliefs. The results of the regression analysis reveal that both learning effort ($\beta=0.257$; p<0.05) and certainty knowledge ($\beta=0.318$; p<0.05), sub-dimensions of epistemological beliefs, act as significant predictors positively affecting incremental language learning perspectives. Conversely, it was determined that the sub-dimensions of learning process/expert knowledge ($\beta=0.113$; p>0.05) and innate/fixed ability ($\beta=0.148$; p>0.05) did not emerge as significant predictors of incremental language learning beliefs.

Following this, another multiple linear regression analysis was employed to investigate the impact of epistemological beliefs on entity beliefs concerning language learning. The results of this analysis are depicted in Table 5.

Table 5. Multiple Linear Regression Analysis Results of Epistemological Beliefs and Entity Beliefs

Model	B	Std. Error	B	t	p	Tolerance	VIF
Constant	1.239	.369		3.360	.001		
Learning Process / Expert Knowledge	.187	.105	.154	1.777	.078	.592	1.689
Innate/Fixed Ability	.311	.063	.404	4.963	.000	.673	1.486
Learning Effort	.061	.092	.063	.666	.507	.498	2.009
Certainty Knowledge	.199	.072	.245	2.757	.007	.562	1.779

R=.628; R²=394; F=22.135; p=.000

As presented in Table 5, the F-value for the regression model established to explore the potential influence of epistemological beliefs on entity beliefs, which encompass the perception of language learning as a fixed, innate ability, is statistically significant (F=22.135; p<0.05). The model accounts for 39.4% of the variance in entity beliefs concerning language learning. According to the findings from the regression analysis, it is evident that both innate/fixed ability ($\beta=0.404$; p<0.05) and certainty knowledge ($\beta=0.245$; p<0.05), sub-dimensions of epistemological beliefs, emerge as significant predictors that positively affect entity beliefs regarding language learning. Conversely, the sub-dimensions of learning process/expert knowledge ($\beta=0.154$; p>0.05) and learning effort ($\beta=0.063$; p>0.05) within the realm of epistemological beliefs were not identified as significant predictors of entity beliefs concerning language learning.

Discussion and conclusion

The principal aim of this study was to explore the correlation between the epistemological beliefs of pre-service EFL teachers and their language mindsets, as well as to evaluate the degree to which their epistemological beliefs shape their language learning mindsets. To address the research inquiries, the study utilized regression analysis to investigate the influence of epistemological beliefs on language mindsets, and it employed correlation analysis to examine the connections between the variables incorporated in the regression analysis.

The outcomes regarding the first research query revealed several significant observations. Notably, there was a moderately positive and statistically significant association between incremental beliefs and both certainty knowledge and learning effort. Furthermore, a positive, albeit of a relatively lower magnitude, relationship was observed between incremental beliefs and innate/fixed ability, as well as learning process/expert knowledge. In addition to this, a significant, moderate, and positive correlation was identified between entity beliefs and both innate/fixed ability and certainty knowledge. However, there was a positive but somewhat weaker correlation between entity beliefs and learning effort and learning process/expert knowledge. These findings indicate that pre-service EFL teachers recognize the importance of integrating challenging tasks to enhance language skills, which mirrors their belief that learning requires effort. This resonates with Dweck's (2000) argument that individuals with an incremental mindset are more inclined to embrace challenging tasks, demonstrating a willingness to exert effort to complete them. Conversely, those holding entity beliefs tend to presume that knowledge is inherent and does not necessitate as much effort, aligning with a more teacher-centered approach to teaching and learning, underscoring the significance of expert knowledge.

In addressing the second research question, the outcomes of the multiple linear regression analysis unveiled that learning effort and certainty knowledge, as sub-dimensions of epistemological beliefs, emerged as significant predictors that positively impact incremental language learning perspectives. Conversely, the sub-dimensions of learning process/expert knowledge and innate/fixed ability did not manifest as significant predictors of incremental language learning views. This suggests that individuals who have faith in the potential for skill improvement over time and through a learning process, rather than relying on fixed abilities from birth, are more inclined to integrate these beliefs into their language learning viewpoints.

The second regression analysis also demonstrated that innate/fixed ability significantly influences entity beliefs regarding language learning, whereas learning process/expert knowledge and learning effort were not identified as significant predictors of entity beliefs concerning language learning. This implies that EFL teachers who hold the conviction that learning ability is innate and fixed are likely to transfer this belief to language learning.

Taking into account these findings, it becomes essential to acknowledge the significance of comprehending and exploring the epistemological beliefs of pre-service teachers, particularly in the realm of EFL teaching, given their substantial influence on pedagogical approaches (Pajares, 1992; Richardson, 1996). Furthermore, it's crucial to recognize that beliefs are not rigid; they can evolve and change over time (Conley et al. 2004; Sosu and Gray, 2012). Therefore, teacher education programs should have a transition towards more learner-centered and challenging activities that emphasize the role of learner effort in successful learning. Prospective teachers should receive training to become more versatile educators who don't solely depend on pre-existing knowledge. Enhancing the quality of teacher

education programs and supporting the learning processes of prospective teachers is paramount for more effective learning and professional growth (Cheng, Tang, & Cheng, 2015; Cross, 2009). Teacher educators should consider the beliefs of pre-service teachers during their training (Bryan, 2003).

Recognizing the constraints of this study is crucial, particularly the limited number of data collected from pre-service EFL teachers. Expanding the research with a larger participant pool would yield a more extensive insight into the subject. Furthermore, as this study was primarily descriptive in nature, enhancing the findings with qualitative data could facilitate a more profound exploration of the topic.

References

- Ablard, K. E., & Mills, C. J. (1996). Implicit theories of intelligence and self-perceptions of academically talented adolescents and children. *Journal of Youth and Adolescence*, 25(2), 137-148. <https://doi.org/10.1007/BF01537340>
- Aypay, A. (2011). Turkish adaptation of the teaching and learning perceptions scale and the relationships between epistemological beliefs and teaching and learning conceptions. *Educational Sciences in Theory and Practice*, 11(1), 7-29.
- Bai, L., & Wang, Y. X. (2021). Combating language and academic culture shocks—International students' agency in mobilizing their cultural capital. *Journal of Diversity in Higher Education*. Advance online publication. <https://doi.org/10.1037/dhe0000409>
- Bandura, A. (1989). Human agency in Social Cognitive Theory. *American Psychologist*, 44(9), 1175-1184.
- Bendixen, L. D., & Rule, D. C. (2004). An Integrative Approach to Personal Epistemology: A Guiding Model. *Educational Psychologist*, 39(1), 69-80.
- Bryan, L. A. (2003). Nestedness of beliefs: Examining a prospective elementary teacher's belief system about science teaching and learning. *Journal of Research in Science Teaching*, 40(9), 835-868. <https://doi.org/10.1002/tea.10113>
- Büyüköztürk, Ş., Kılıç Çakmak, E., Akgün, Ö.E., Karadeniz, Ş., ve Demirel, F., (2013). *Bilimsel Araştırma Yöntemleri (14. Baskı)*. Ankara: Pegem Akademi Yayınevi.
- Büyüköztürk, Ş. (2011). *Sosyal Bilimler İçin Veri Analizi El Kitabı - İstatistik, Araştırma Deseni, Spss Uygulamaları ve Yorum (15. Baskı)*. Ankara: Pegem Akademi.
- Chan, K.W., & Elliott, R.G. (2004). Relational Analysis of Personal Epistemology and Conceptions about Teaching and Learning. *Teaching and Teacher Education*, 20, 817-831.
- Cheng, Annie Y N., Tang, Sylvia Y F, & Cheng, May M H. (2015). Changing conceptions of teaching: A four-year learning journey for student teachers. *Teachers and Teaching*, 22(2), 177-197.
- Conley, A.M.M, Pintrich, P.R., Vekiri, I., Harrison, D. (2004) Changes in epistemological beliefs in elementary science students. *Contemporary Educational Psychology*, 29, 186-204.
- Deryakulu, D. (2014). Epistemolojik İnançlar. In Y. Kuzgun, and D. Deryakulu (Eds.), *Eğitimde Bireysel Farklılıklar*. Nobel Yayınevi.
- Dweck, C. S., Chiu, C.-y., & Hong, Y.-y. (1995). Implicit theories and their role in judgments and reactions: A World from two perspectives. *Psychological Inquiry*, 6(4), 267-285. https://doi.org/10.1207/s15327965pli0604_1
- Dweck, C. S. (2000). *Self-Theories: Their Role in Motivation, Personality, and Development*. Psychology Press.
- Dweck, C. (2008). *Mindsets and Math/Science Achievement*. New York: Carnegie Corporation of New York, Institute for Advanced Study, Commission on Mathematics and Science Education.
- Hofer, B. K., & Bendixen, L. D. (2012). Personal epistemology: Theory, research, and future directions. In K. R. Harris, S. Graham, T. Urdan, C. B. McCormick, G. M. Sinatra, & J. Sweller (Eds.), *APA*

- educational psychology handbook, Vol. 1. Theories, constructs, and critical issues* (227–256). American Psychological Association.
- Kırmızıgül, A. S., and Bektas, O. (2019). Investigation of Pre-service Teachers' Epistemological Beliefs. *Cypriot Journal of Educational Sciences*, 14(1), 146-157.
- Lou, N.M., & Noels, K.A. (2019). *Language Mindsets, Meaning-Making, and Motivation*. In *The Palgrave Handbook of Motivation for Language Learning*.
- Lou, N. M., & Noels, K. A. (2017). Measuring language mindsets and modeling their relations with goal orientations and emotional and behavioral responses in failure situations. *Modern Language Journal*, 101(1), 214-243. <https://doi.org/10.1111/modl.12380>
- Lou, N.M., & Noels, K.A. (2019). *Language Mindsets, Meaning-Making, and Motivation*. In *The Palgrave Handbook of Motivation for Language Learning*.
- Mercer, S., & Ryan, S.B. (2010). A mindset for EFL: learners' beliefs about the role of natural talent. *Elt Journal*, 64, 436-444.
- Papi, M., Bondarenko, A., Mansouri, S., Feng, L., & Jiang, C. (2019). Rethinking L2 Motivation Research: The 2 × 2 Model Of L2 Self-Guides. *Studies in Second Language Acquisition*, 41(2), 337-361. <https://doi.org/10.1017/S0272263118000153>
- Richardson, V. (1996). The role of attitudes and beliefs in learning to teach. In J. Sikula (Ed.), *Handbook of Research on Teacher Education* (2nd ed., pp. 102–119). Macmillan.
- Ryan, S., Mercer, S. (2012). Implicit Theories: Language Learning Mindsets. In: Mercer, S., Ryan, S., Williams, M. (Eds.), *Psychology for Language Learning*. Palgrave Macmillan. https://doi.org/10.1057/9781137032829_6
- Schommer-Aikins, M. (2004). Explaining the Epistemological Belief System: Introducing the Embedded Systemic Model and Coordinated Research Approach. *Educational Psychologist*, 39(1), 19-29.
- Sosu, E., & Gray, D. (2012). Investigating change in epistemic beliefs: An evaluation of the impact of student teachers' beliefs on instructional preference and teaching competence. *International Journal of Educational Research*, 53, 80-92.