International Research-Based Education Journal



Volume 6 No 2 year 2024

Available online at IRBEJ website: http://journal2.um.ac.id/index.php/irbej

Am I good at this?' Connecting ESL learners' interest and perceived competence in grammar learning.

Noor Asma Iffah Zakaria^{1*}

^{1*}Institute of Teacher Education International Languages Campus, Malaysia

*1(Noor Asma Iffah Zakaria)

☑asmaiffah.zakaria@ipgm.edu.my

Abstract: The accumulation of evidence suggests that the role of interest to serve as a crucial building block for both initial motivation and ongoing engagement. The psychological state that one is in while engaging in an activity or content (such as mathematics, music, or language), as well as the motivation to continue engaging in the activity or content, are both referred to as interest. Finally, our studies' findings reaffirm the centrality of interest as a motivating factor, stimulator for engagement, and influence how they perceive themselves in relation to their learning performance.

Keywords: ESL Learners, Learning

Performance, Language Creativity

INTRODUCTION

Language learning entails mastering the four foundational skills which are reading, writing, speaking, and listening. Additionally, acquiring linguistic knowledge is recognised as an essential component of language learning. Among others, the knowledge and skills have a lot to do with sharpening one's grammatical abilities and the knowledge of syntactical structures. Undoubtedly, in the language teaching and learning process, grammar is essential as it plays a significant role as the internal language structure (Al-Muttawa & Kailani,1989).

Among others, it functions as a key role in the refinement and development of the language learning. It does not only explain how words are used to construct sentences, but also how they are communicated to the recipient.

In the context of English language learning, grammar is often associated to formula sets and concepts that depicts the syntactical structure of words and sentences in making meaningful expressions (Cowan, 2008). Without sufficient grammar knowledge, students' language growth would be affected (Batstone and Ellis, 2009, Ellis, 2006 and Nassaji and Fotos, 2011). Hence, it is important that language learning courses to provide sufficient attention to grammar development and enable students to grasp it.

Despite this, there are some worries over the unfavourable views that students have towards grammar, as it is frequently viewed as being overly complex, challenging, and tedious. Factors associated to grammar learning have been studied extensively in the past (e.g., motivation, self-efficacy, cognitive domains, engagement, and environmental exposure). In addition, studies have shown that the majority of students study grammar not driven by their adaptive motivations, often including factors like interest or enthusiasm in relation to the task, but due to learning obligations such as accountability, willingness to impress, and denial of negative repercussion (Walker, Hoover-Dempsey, Whetsel, & Green, 2004). Prominent scholars of the self-determination theory, Ryan and Deci (2000) corroborated that these types of individual drives, also known as external forces, are brief and inferior to that which is intrinsically driven by aspects like curiosity, interest, sense of purpose – self-determination theory (Ryan & Deci, 2000).

There are, however, only a few research that have examined the role of interest and perceived competence in students' acquisition of grammar. In the present study, we evaluated the interest development models of students' grammar learning. More specifically, we tested a theoretical model that suggests that students' interest towards grammar learning is associated to their perceived competence and academic performance. The expectancy-value model (Eccles & Wigfield, 2002) – which advocates that students will make the decision to actively participate in active learning activities if they consider the importance of learning, perceive that they can effectively partake in active learning, which then positively influence their learning outcome – provides the theoretical framework for this study.

The word "interest" is commonly believed to refer to a keen curiosity for learning more about a certain topic. There are three aspects that make up a person's interest: emotional, value-related, and cognitive (Prenzel et al., 1986; Hidi, 2006; Ainley, 2017). Positive or enjoyable feelings derived from interaction with the focus of attention are an inference of the emotional

component. In a broad sense, this represents the psychological facet (Krapp, 2002). A person's desire to learn more about something they're interested in and build on what they already know about it is the cognitive side of interest (Pawek, 2009). As for the third, it relates to the subject's values and shows that the object of study is important to the person and is held in great esteem (Prenzel et al., 1986; Krapp and Prenzel, 2011).

Interest, which is frequently linked to a heightened emotional state of engagement and gives a predisposition to reengage with a certain object, event, or topic. The emotional state of interest makes people more likely to return to a previously enjoyed activity or subject matter. Interest, as it motivates individuals to engage with a certain course of action, has been identified by decades of research as a crucial component to effective learning. Therefore, it plays a crucial role in encouraging the growth of competence, the acquisition of knowledge, the activation of cognitive processes, the maintenance of focus and attention, and the adoption of efficient methods of learning (Hidi & Renninger, 2006; Renninger, 2007; Renninger & Hidi, 2011; Renninger & Su, 2012; Silvia, 2006).

Both pedagogy and educational research have placed a significant emphasis on the concept of interest for a significant amount of time. For instance, the educator John Dewey understood the need of maintaining one's attention more than a century ago (Dewey, 1913). Since then, there has been a substantial development in the research on interest. In particular, the interest construct has evolved substantially through the research of scholars like Schiefele (1991), Prenzel (1992), Krapp (1999), and Ainley et al. (2002).

The most important takeaway from this research is that when people believe they have the ability to be successful in specific pursuits, they are more likely to participate in those pursuits, be resilient in the face of challenges, and excel in the performance of those pursuits (Bandura, 1997; Graham & Williams, 2009; Schunk & Pajares, 2009; Weiner, 1992). Eccles, Wigfield, and Schiefele (1998) characterized these constructs as reflecting the question "Do I want to do this activity and why?" . Students' motivation and participation in various activities would depend on their responses to these questions. If they have little interest in or motivation for something (for example grammar assignment), they are less likely to accomplish it, even if they think they are capable of doing it (see Elliot, 2005; Wigfield & Eccles, 1992; Wigfield, Tonks, & Klauda, 2009).

Seminal work by Reninger et al. (2002) highlighted that higher interest helps to focus on tasks and to complete them. Hidi and Renninger (2006) argued, "it impacts attention, goal setting, and learning strategies in ways that make it a particularly relevant variable for those focused on improving educational practice" (p. 121). Hence, it does not only trigger students'

emotional domains, but inform whether they would be cognitively 'present' in the learning process. This would then determine their behaviour (self-regulation behaviour and perseverance) and engagement (focused attention, and conciliation towards unfavouring learning hiccups) in the learning course (Hidi & Renninger, 2006; Kang, Scharmann, Kang, & Noh, 2010. Thus, having an interest in a subject generally results in improved academic performance in that subject (Denissen et al., 2007), as interest positively correlates with learning and encourages a deeper comprehension (Schiefele & Schreyer, 1994).

Hence, we think it is important to explore these constructs together for several reasons. Hidi and Renninger's interest development model focuses on learners' development of interest destitute of equitable emphasis of actual performance. The crux of their model is that interest has an inherent developmental nature which does not set in stone, rather multiple situational contexts may play a role to nurture it. It focuses on learners' engagement and reengagement in the course of learning, as indication of 'interest'. Learner's perceived competence, on the other hand, according to the expectancy-value model, advocates that when the learner can see the value (which inherently developed from their interest towards the subject-matter), they would or would not believe that they can do well, which in turns may stimulate to their actual performance.

The benefits of interest are most readily visible in the setting of an educational institution and academic work, particularly. The evidence for the previous studies that looked into the effect that interest plays in academic success. For instance, Schiefele et al. (1992) conducted a meta-study in which they looked at a total of 121 studies that were conducted in 18 different countries. They discovered that the average correlation value between interest and academic success was r = 0.31, which demonstrated the positive association factors. In another study by Bøe (2012, focusing on the influence of interest in students' selection of the subsequent courses, they found that having an interest in the course is one of the most critical factors. Specifically, students who have a greater interest in natural science are more likely to pursue studies in the natural sciences when they are in high school, and natural science classes in particular. In addition, over a period of four to seven years, a longitudinal study conducted by Harackiewicz et al. (2002) indicated that university students' interest in the introductory course had a substantial correlation with subsequent course enrolment as well as the academic major that they ultimately chose. These findings from the research highlight the significance of interest in connection to learning decisions and the level of success achieved in learning.

Scholars have argued that individual interest is crucial for the acquisition of a second language, especially when it comes to focusing on language domains such as grammar

knowledge, practise the language, engage and persevere in learning experiences, and develop positive attitudes toward grammar. Although relatively little research has been done to understand interest in the acquisition of a second language's grammar, scholars have argued that this is essential for the acquisition of a second language (Renninger, 2007; Renninger & Su, 2012). Learners who are interest driven tend to spend more time in behaviours related to conscious or unconscious grammar learning, are likely to devote more effort to the related tasks, and are, as a result, more likely to become skilled users of English grammar than their peers who are less interested in those activities. Interest in grammar learning is important for language acquisition because learners who are interest driven tend to spend more time in behaviours related to conscious or unconscious grammar learning (Ecalle, Magnan, & Gibert, 2006; Malloy, Marinak, Gambrell, & Mazzoni, 2013).

The level of interest taken in a task or activity within the same area, or the value placed on it, is connected with how competent one is perceived to be in that task or activity (Deci & Ryan, 1987; Eccles, 1983; Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002). However, research also suggests that even if learners believe that they are competent at an activity and are able to perform it effectively, they may still not engage much in that activity if they are not very interested in it or do not value it highly (Wigfield & Cambria, 2010). Hence, the notion of perceived competence is fairly intertwined with interest in learners' motivation towards learning.

According Wigfield's and Eccles's (2000) Expectancy-Value theory, motivation is the result of the interaction between two factors: value and expectancy. According to this notion, value denotes the significance of a specific objective from the perspective of a person. For example, student could view learning grammar as both a critical skill and fun activity. Hence, they place a higher value on grammar and will be more likely to want to learn and practice it. On the other hand, a person's level of expectation on their own success in reaching a goal is referred to as their "expectancy." Even if they believe that learning English grammar is vital, students who have the belief that they would not likely be able to gain the necessary knowledge or become competent in English grammar will have less motivation to learn it. Hence, beliefs about one's own capabilities as well as beliefs about the jobs themselves are factors that play a role in this. Thus, this theory emphasizes that motivation as a manifestation of individual's attitudes and opinions of themselves.

In the current study, we hypothesize that learners' interest towards grammar learning would be related to their perceived grammar competence. This in in line with the assumptions of the expectancy-value model. Accordingly, this study validated the interest scale in the area

of grammar learning. This study tested an alternative model by inserting perceived competence, and scores of the course.

Method

Participants

Participants included two hundred and sixty-seven ESL students (217 females 50 males). The students were studying in a preparatory course, undertaking compulsory grammar courses in two consecutive semesters as a prerequisite for a teaching degree programme. At the point data collection, they have completed the fundamental grammar course in the preceding semester and were doing their compulsory advanced grammar course. Their performance at the end of the semester course were taken as a measure of sample's actual performance.

Procedure

Permission to administer the surveys to students was granted by the relevant departments of the institute. After explaining the content and anonymity of the survey, the individual consent by each participant was obtained. The students were made aware that their names, survey responses, demographic information, and grades of their high school examination and the course would be visible to only the researcher, while maintaining their anonymity. All the information was needed to allow matching all the constructs of the study. The sample was selected randomly, with very high response rate. They responded to the survey via an online form. After the students completed the survey, the researcher transferred their responses to a Microsoft Excel sheet (metadata), SPSS 28, and AMOS for data analysis.

Method

Responses on all items were on a 5-point Likert scale ranging from 1 (not at all) to 5 (very much). All the measures were based on existing measures previously published, with additional demographic information. Several measures were modified to focus on grammar learning. Cognitive interviews were conducted to three intended participants and two experts from the field (background: research expert & content expert).

Interest constructs

Five constructs of interest were measured – information-seeking, motivation, persistence, self-regulation, and value. All 21 items from the original interest scale were used. The only adaptation made is the specifying the interest towards the specific course of learning, which is the grammar course. (*Appendix 1*)

Perceived grammar competence

This is self-assessed grammar competence based on 5-Likert scale. Score-5 indicates very good, while score-1 indicates weak.

Scores

There are two objective measurement scores used in this study: initial overall English score, and course score. The initial overall English score refers to the students English score in their high school examination (*SPM*). This examination assesses students based on four main language skills – reading, writing, listening, and speaking. Hence, this score would indicate students' overall proficiency of the language, while grammar knowledge is tested implicitly based on the skills measured. The second objective score is the students' scores of their grammar course taken in the semester (the semester when the data was collected). The score indicates their performance in the grammar course.

Results

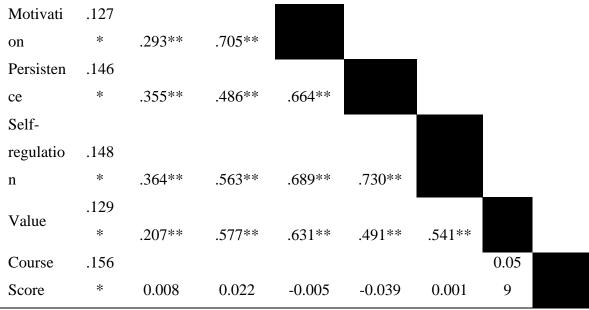
Descriptive statistics and correlations

Table 1 presents the descriptive statistics of the variables in the study and the correlation among variables. The independent variables – perceived competence, information-seeking, motivation, persistence, self-regulation, and value moderately positively associated among themselves.

Table 1

Descriptive Statistics and Correlations for Study Variables

	Initi al scor e	Perceive d Compete	Informati on- seeking	Motivat ion	Persisten ce	Self- regulati on	Valu e	Cours e Score
Initial								
score								
Perceive								
d								
Compete	.135							
nce	*							
Informati								
on-	.149							
seeking	*	.272**						



Note:

*Initial score = English score in high school national examination; perceived competence = self-rated English grammar competence; [perceived competence, information-seeking, motivation, persistence, self-regulation, value] = constructs of interest; course score = final score of grammar course

Table 1 presents the bivariate analysis of the study variables. All measured interest constructs indicate significant associations with appropriate psychometric characteristics. The initial English score is significant to all constructs tested. Students' perceived grammar competence is significant to all constructs of interest, but not the course score. And, the course score is not significant to all construct of interest and students' perceived grammar competence, but only to their initial English score in the national examination. Despite the insignificant associations, the course score was inserted in the alternative model of the subsequent analysis, and the estimates of the model were analyzed.

Path analysis

Path analysis was conducted using AMOS7. (Arbuckle, 2006). Three different models were tested. In Model 1, all interest items were assigned to the five latent factors. This was based on the literature on the interest construct of the original instrument (Hidi & Renninger, 2006). In Model 2, an alternative model was proposed. The pathways between the interest constructs and learners' perceived grammar competence were explored. And, in Model 3, students' students' course score was inserted. Finally, the model fit of Model 1 and two alternative models were compared according to Kline (2005) proposed measures.

^{*}p < .05. **p < .01.

^{*}N = 267. Participants were on average of 19 years old.

Model 1

A confirmatory factor analysis (CFA) was utilised in order to investigate the instrument. When constructing an instrument, it is usual practise to make use of a CFA as a tool to investigate the dimensionality of a scale as well as the relationship of items to one another (Brown, 2015). In contrast to a principal component analysis (PCA), a CFA provides the researcher with the ability to tailor the components and structure of the study to the theoretical framework of the construct under investigation (Worthington and Whittaker, 2006).

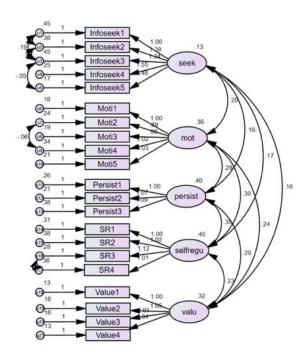


Figure 1 indicates all interest items that were assigned to the five latent factors. Model fit of this model was assessed according to measures by Kline (2015).

Table 2

Model fit measures of Model 1

	χ^2	P	df	χ^2/df	CFI	TLI	SRMR	RMSEA
Model 1	335.70	.000	173.00	1.940	.954	.944	.049	.059

Alternative models

Whereas the analysis supported our hypothesized theoretical model, such analysis cannot rule out the possibility that other models would fit the data as well, or even better, than the hypothesized model, it is recommended to compare its findings to those from an alternative

model. Therefore, to provide further support for the hypothesized theoretical model. We a tested model to put the one we put forth. This alternative model 2 is based on the theory that students' interest towards the subject-matter would influence their perceived competence.

After the factor structure of the test instrument was examined in study 1, the construct – perceived grammar competence was inserted in the model as an alternative model. Reliability and validity of the items will be tested in study 2

Model 2:

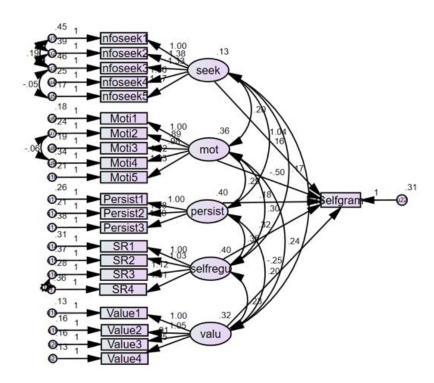


Figure 2 shows that students' perceived grammar competence was inserted. Model fit of this model was assessed according to measures by Kline (2015).

Table 3 *Model fit measures of Model 2*

	χ^2	P	df	χ^2/df	CFI	TLI	SRMR	RMSEA
Model 2	358.753	.000	189.00	1.898	.953	.942	.040	.058

Another alternative model was tested, Model 3. In this model, students' course score was inserted.

Model 3:

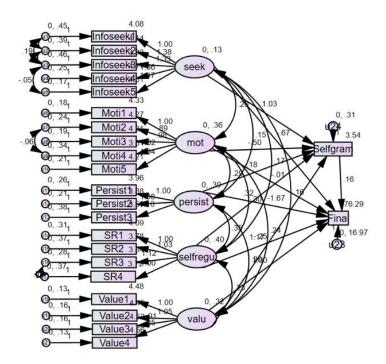


Table 4 *Model fit measures of Model 3*

	χ^2	p	df	χ^2/df	CFI	TLI	SRMR	RMSEA
Model 4	373.496	0.00	205.00	1.822	.953	.937		.056

Model Comparison

All three models, Model 1 and two alternative models indicate reasonable fit. The CFA revealed a high correlation between the five higher- order factors of the construct of interest (>0.7). The regression weights are also high for all items (>0.5), with an average of 0.75 (Figure 1). The fit indices differ slightly between the two models. However, Model 2 and Model 3 obtained slightly better values for all indices. The exact fit indices for both models can be found in Table 2.

Table 4 *Model fit comparison of the three tested models*

	χ^2	p	df	χ^2/df	CFI	TLI	SRMR	RMSEA
Model 1	335.70	.000	173.00	1.940	.954	.944	.049	.059
Model 2	358.753	.000	189.00	1.898	.953	.942	.040	.058
Model 3	373.496	0.00	205.00	1.822	.953	.937		.056

Note: All models used the same sample 267 participants.

Discussion & Implication

An increasing body of research has been supporting the measure of interest as a multidimentional construct, encompassing both cognitive and non-cognitive elements. For instance, several research that surveyed the various components of the interest construct dealt with each of those characteristics as if they were separate factors (e.g., Linnenbrink-Garcia et al., 2010; Holstermann et al., 2012). In contrast, the instruments that are used in other research that also covers the various components of the construct are treated in a unidimensional manner (Schiefele, 1990; Schiefele and Krapp, 1996; Kleespies et al., 2021). In more recent study, Kleespies et al. (2021), they evaluated interest as both unidimentional and multidimensional. For a very thorough review on this topic, we recommend Rowland et al. (2019). In the present study, students' grammar learning interest was measured as a multidimensional construct, encompassing the aspects of information-seeking, motivation, persistence, self-regulation, and value. The results demonstrated good model fit, indicating the substantiation of theory and suitability of the factor structure in the context of the study.

In this study, we hypothesized that the five aspects of students' interest towards grammar learning would be related to the students' perceived competence of the course. With the assumption that, when they are interested and driven towards the learning of the course, they would have better belief in their ability to perform in the course. The findings indicated that information-seeking, motivation, persistence, self-regulation, and value associated to the grammar learning are significantly related to how the students perceived their competency of the course. As corroborated by the Wigfield's and Eccles's (2000) expectancy-value model, learners' perceptions of competence are associated with the amount of interest taken in and the value of the task placed on. This finding is also consistent with the substantial body of research that demonstrates favourable correlations between the level of perceived competence and the extent and quality of engagement in behaviour (Bandura, 1997).

Having established the association between interest (measured as information-seeking, motivation, persistence, self-regulation, and value associated to the learning course) and perceived grammar competence, we also hypothesized that these two measured constructs would be related to the students' course performance. Interestingly, this study found no association between any aspects of interest measured, students' perceived competence of the course, and their course performance. Despite the model indicates better fit with the inclusion of the construct, the findings show insignificant pathway to the course score, which suggests there could be incoherence in the pathways.

The insignificant pathways between all interest constructs and students' perceived grammar competence to the course score would suggest that there could be incoherence between the students' expectation of what it takes to succeed in the overall grammar competence, their perception over their own grammar competence and the course score of the grammar course. This suggests there exists a breaking chain between learning expectation of effort and success, and the objective assessment of the course, which would call for further research.

In structuring a course, there should be a reciprocity between learning intentions, perceived performance, and objective learning outcomes. These three elements would justify the needs for the course, the coverage of the content, and the validity of the assessment. Nevertheless, the findings indicate incoherence between learners' perceived competence of the course performance, learners' vocation to perform in the course. Hence, it questions the inherent meaningfulness of the assessment in relation to students' learning.

Conclusion

Previous research recognizes the important role of interest and perceived competence to form positive learning outcomes and continuous engagement. Grammar is one of the focal areas in language learning. Unfortunately, grammar is often seen as a sore issue as it is associated to being too technical. The findings of the current study highlight the important role of cognitive and non-cognitive aspects of interest, most particularly the influence of these aspects in supporting students' perceived competence of themselves towards the learning of grammar. This is an important insight for educators who aim to encourage more positive attitudes towards grammar learning by tapping on the development of interest. This study emphasizes that interest is not a constant characteristic of a learner, rather it is a developmental phenomenon as theorized by Hidi and Renninger (2002, 2006). This understanding is also important for other research seeking to identify students potential and meaningful characteristics that contribute to the better performance and continuous engagement.

References

- Ainley, M. (2017). "Interest: knowns, unknowns, and basic processes," in The Science of Interest, eds
- P. A. O'Keefe and J. M. Harackiewicz (New York, NY: Springer International Publishing), 3–24. doi: 10.1007/978-3-319-55509-6_1
- Ainley, M., Hidi, S., and Berndorff, D. (2002). Interest, learning, and the psychological processes that mediate their relationship. J. Educ. Psychol. 94, 545–561. doi: 10.1037/0022-0663.94.3.545

- Al-Mutawa, N. and T. Kailani, (1989). Methods of Teaching English to Arab Students. Hong Kong: Longman.
- Bandura, A. (1997). Self-efficacy: The exercise of control. New York, NY: W. H. Freeman.
- Batstone, R., & Ellis, R. (2009). Principled grammar teaching. System: An International Journal of
- Educational Technology and Applied Linguistics, 37(2), 194-204.
- Bøe, M. V. (2012). Science choices in Norwegian upper secondary school: what matters? Sci. Educ. 96, 1–20. doi: 10.1002/sce.20461
- Cowan, R. (2008). Teachers' grammar of English with answers. Cambridge: Cambridge University Press.
- Dewey, J. (1913). Interest and effort in education. Boston: Riverside. diSessa, A. (2000). Changing minds: Computers, learning, and literacy. Cambridge, MA: MIT Press.
- Ellis, R. (2006). Current issues in the teaching of grammar: An SLA perspective. TESOL Quarterly, 40, 83–107.
- Eccles, J. S., Wigfield, A., & Schiefele, U. (1998). Motivation to succeed. In W. Damon (Series Ed.) & N. Eisenberg (Volume Ed.) Handbook of child psychology (5th ed., pp. 1017–1095). New York, NY: Wiley.
- Harackiewicz, J. M., Barron, K. E., Tauer, J. M., & Elliot, A. J. (2002). Predicting success in college: A longitudinal study of achievement goals and ability measures as predictors of interest and performance from freshman year through graduation. Journal of Educational Psychology, 94, 562–575. http://dx.doi.org/10.1037/0022-0663.94.3.562
- Hidi, S. (1990). Interest and its contribution as a mental resource for learning. Rev. Educ. Res. 60, 549–571. doi: 10.3102/0034654306000 4549
- Hidi, S. (2006). Interest: a unique motivational variable. Educ. Res. Rev. 1, 69–82. doi: 10.1016/j.edurev.2006.09.001
- Hidi, S., and Renninger, K. A. (2006). The four-phase model of interest development. Educ. Psychol.41, 111–127. doi: 10.1207/s15326985ep4102_4
- Kleespies, M. W., Montes, N. Á, Bambach, A. M., Gricar, E., Wenzel, V., and Dierkes, P. W. (2021). Identifying factors influencing attitudes towards species conservation—a transnational study in the context of zoos. Environ. Educ. Res. 27, 1421–1439. doi: 10.1080/13504622.2021.1927993
- Krapp, A. (2002a). An educational-psychological theory of interest and its relation to self-determination theory. In E. Deci & R. Ryan (Eds.), The handbook of self-determination research (pp. 405–427). Rochester, NY: University of Rochester Press.

- Krapp, A., and Prenzel, M. (2011). Research on interest in science: theories, methods, and findings. Int. J. Sci. Educ. 33, 27–50. doi: 10.1080/09500693.2010. 518645
- Krapp, A. (1999). Interest, motivation and learning: an educational-psychological perspective. European Journal Psychology Education 14, 23–40. doi: 10.1007/BF03173109
- Krapp, A. (1992). Interesse, Lernen und Leistung. Neue Forschungsansätze in der Pädagogischen psychologie. Z. Päd. 5, 747–770.
- Linnenbrink-Garcia, L., Durik, A. M., Conley, A. M., Barron, K. E., Tauer, J. M., Karabenick, S. A., & Harackiewicz, J. M. (2010). Measuring situational interest in academic domains. Educational and Psychological Measurement, 70, 647–671. http://dx.doi.org/10.1177/001316440 9355699
- Nassaji, H. & Fotos S. (2011). Teaching grammar in second language classrooms: Integrating form-focused instruction in communicative context. London: Routledge Taylor & Francis Group.
- Prenzel, M. (1992). "The selective persistence of interest," in The Role of Interest in Learning and Development, eds K. A. Renninger, S. Hidi, and A. Krapp
- Pawek, C. (2009). Schülerlabore als Interessefördernde Außerschulische Lernumgebungen für Schülerinnen und Schüler aus der Mittel- und Oberstufe. Ph.D. thesis. Kiel: Christian-Albrecht University.
- Prenzel, M., Krapp, A. & Schiefele, U. (1986). Grundzüge einer pädagogischen Interessen theorie. Z. Päd. 32, 163–173.
- Ryan, E. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of motivation, social development, and well-being. The American Psychologist, 55, 68–78.
- Renninger, K. A., & Hidi, S. (2002). Student interest and achievement: Developmental issues raised by a case study. In A. Wigfield & J. S. Eccles (Eds.), Development of achievement motivation (pp. 173–195). New York: Academic.
- Renninger, K. A., and Hidi, S. (2011). Revisiting the conceptualization, measurement, and generation of interest. Educ. Psychol. 46, 168–184. doi: 10.1080/00461520.2011.587723
- Renninger, K. A., and Hidi, S. (2002). "Student interest and achievement: developmental issues raised by a case study," in Educational Psychology Series. Development of Achievement Motivation, eds A.

- Rowland, A.A., Knekta, E., Eddy, S.L., & Corwin, L.A. (2019). Defining and Measuring Students' Interest in Biology: An Analysis of the Biology Education Literature. CBE Life Sciences Education, 18.
- Schiefele, U., & Krapp, A. (1996). Topic interest and free recall of expository test. Learning and Individual Differences, 8, 141–160.
- Schiefele, U. (1991). Interest, learning, and motivation. Educ. Psychol. 26, 299–323. doi: 10.1080/00461520.1991.9653136
- Schiefele, U., and Schreyer, I. (1994). Intrinsische lernmotivation und lernen. Ein überblick zu ergebnissen der forschung [Intrinsic motivation to learn and learning: a review of recent research findings]. German Educational Psychologist. 8, 1–13. doi: 10.1007/978-3-531-20002-6 40-1
- Schunk, D. H., & Pajares, F. (2009). Self-efficacy theory. In K. R. Wentzel, & A. Wigfield (Eds.).
- Handbook of motivation at school (pp. 35–54). New York, NY: Routledge.
- Walker, J. M. T., Hoover-Dempsey, K. V., Whetsel, D. R., & Green, C. L. (2004). Parental involvement in homework: A review of current research and its implications for teacher, after school program staff, and parent leaders. Harvard Family Research Project retrieved from. www.gse.harvard.edu/hfrp/projects/fine/resources/homework.html on September 20, 2006.
- Weiner, B. (1992). Human motivation: Metaphors, theories, and research. Newbury Park, CA: Sage Publications.
- Wigfield, A., & Eccles, J. (1992). The development of achievement task values: A theoretical analysis. Developmental Review, 12, 265–310.
- Wigfield and J. Eccles (Cambridge, MA: Academic Press), 173–195. doi: 10.1016/B978-012750053-9/50009-7
- Wigfield, A., & Eccles, J. S. (2000). Expectancy–value theory of achievement motivation.

 Contemporary Educational Psychology, 25(1), 68–81.

 https://doi.org/10.1006/ceps.1999.1015