

# The Four-Phase Model of Interest Development: Elaboration of a Measurement Instrument



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## INTRODUCTION

An intervention to stimulate interest development in students registered in the *French Improvement* course was developed. It was therefore necessary to have a reliable measurement instrument to assess the intervention's effectiveness. Hidi and Renninger (2006) developed an interest development theory, but a measurement instrument to assess the intervention had not yet been designed at the time it was being planned. This poster reports the process of developing and validating such a questionnaire.

## THEORETICAL FRAMEWORK

There's a consensus in the literature distinguishing situational interest and individual interest. Situational interest refers to sensations immediately triggered by the situation (Ainley, 2006), is very variable and may be short-lived (Hidi and Renninger, 2006). It may be explained by different factors such as unexpected, concrete, surprising, visual, consistent, easy to understand and valued information (Schraw et Lehman, 2001). Personal interest is a relatively stable motivational predisposition (Naceur et Schiefele, 2005; Schiefele, 1999). It pushes the person to engage in certain activities connected to the object of interest and results in learning (Ainley, Hidi et Berndorff, 2002; Renninger, 2000). Both types of interest are composed of emotions and cognitions (Hidi, 2006).

Hidi and Renninger (2006) developed a 4-phase interest development model, in which situational interest precedes individual interest in time. It explains that situational interest must first be triggered (Phase 1), then maintained (Phase 2), resulting in emerging (Phase 3) and well-developed (Phase 4) individual interest. It is proposed that in the initial phases, when interest development is stimulated by a new situation, it consists of more affects than cognitions and that the cognitive component is more and more present as interest is maintained and stabilizes (Hidi, 2006; Hidi and Renninger, 2006).

According to the Hidi and Renninger model, a new interest emerges when there is a connection between the characteristics of the environment and an individual's pre-existing interests. This study opted to use this model because the intervention to assess relied on the widespread interest in new technologies among today's youth to trigger an interest in French. An instrument was therefore designed that distinguished the four phases conceptualized by Hidi and Renninger (2006) (Study 1) and that enabled the theoretical developmental component to be measured (Study 2).

## STUDY 1: THE INSTRUMENT STRUCTURE

### METHOD

#### Winter 2011:

- Ten items representing each of the four phases of interest development was formulated based on the conceptual explanations distinguishing the four phases (Hidi and Renninger, 2006).
- These 40 items were submitted for evaluation to two psychology professors knowledgeable in the field of academic motivation. The 20 best items were retained.

#### Fall 2011:

- These 20 (five items per phase) seven-point Likert-type items (ranging from *strongly disagree* to *strongly agree*) were administered to 98 college students registered in the *French Improvement* course.
- An exploratory factor analysis was conducted on each scale, and four items were eliminated.
- The nine remaining situational interest items were subjected to an exploratory factor analysis (EFA) to verify the distinction between the two phases. Results are presented in **Table 1**.
- The remaining seven individual interest items were subjected to the same procedure. Results are presented in **Table 2**.

#### Fall 2012:

- The 16 items were administered to 159 other college students registered in the *French Improvement* course.
- A confirmatory factor analysis (CFA) confirmed the interest-factor pattern. The results of this CFA are presented in **Figure 1**.
- Correlations were conducted between the four interest scales, and between the interest scales and the data from a scale measuring the feeling of self-efficacy, to examine the construct validity of the scales developed. The results of these correlations support the expectations and are presented in **Table 3**.

## DISCUSSION ABOUT STUDY 1

The *French Interest Development Questionnaire* (FIDQ), composed of four scales each representing one of the four French interest development phases, enables the four phases to be measured separately. Confirmatory factor analyses support the postulated structure for each of the four scales. With respect to the faithfulness of the instrument, each FIDQ sub-scale shows a satisfactory internal consistency. In addition, the construct validity is supported by the relationships between the four FIDQ scales and a scale measuring the feeling of self-efficacy. It is therefore possible to conclude that the FIDQ is valid for a population of French-speaking college students with regards to their *French Improvement* course.

## REFERENCES

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## STUDY 2: THE DEVELOPMENTAL COMPONENT THE INSTRUMENT AIMS TO MEASURE

### METHOD

- Intervention consisted of teaching the *French Improvement* course in a digital learning environment by focusing on the use of various information and communications technologies (ICT) in class.
- At the same time, a control group took the course the traditional way, with no focus on using ICT in class.
- FIDQ was administered after each of four learning activities during the semester.
- A measurement of interest for the French course, which had already been validated, was also used to solidify the results analysis, given that this was the first time four-phase interest development was being measured:
  - Initial interest scale for French courses was administered at the very start of the first class.
  - General interest scale for the *French Improvement* course was administered at the very end of the semester (see Cabot (2010, 2012) for a description of these scales).
- A MANOVA was first conducted on the *triggered situational interest* data (Phase 1) for the four learning activities assessed: discover the dictionary (Time 1), word classes (Time 2), parts of a sentence (Time 3), past articles (Time 4), even though only 17 EG students and 28 CG students were present during these four classes. The results are not significant ( $F = .97; p > .05$ ).
- Repeated-measures MANOVA were conducted on the three other interest development phases. These results reveal that only the *well-developed individual interest* for the French language (Phase 4) reveals a significant overall time effect ( $F = 3.29; p < .05$ ) and a significant time x group interaction effect ( $F = 3.26; p < .05$ ).
- Even though it demonstrates only a trend, these results are not inconsistent with Hidi and Renninger's theory (2006). **Figure 2** illustrates this appreciation.
- A covariance analysis (ANCOVA) was conducted on the *French Improvement* course general interest data obtained at the end of the semester, taking into account the expected expectations expressed by the students at the very beginning of the semester using the *Initial Interest for French Courses* scale. Results are presented in the **table 4**.

## DISCUSSION ABOUT STUDY 2

It cannot be concluded from the results of this second study that the instrument designed captures the developmental component of Hidi and Renninger's theory. However, upon examining all the measurement times illustrated in **Graph 2**, it is clear that maintaining situational interest (Phase 2) enables individual interest to be developed, as the theory proposes.

## LIMITATIONS

The main limitation concerns the number of participants in all four Study 2 learning activities. Verifying the developmental component required students who had participated in every measurement time. The fact that the sample was composed precisely of students having difficulty being motivated in school may partially explain why more than half of them missed at least one of the four activities assessed. Conducting the study again with a larger sample may produce more affirmative results. Furthermore, the contrary to situational interest, it was difficult to develop items that clearly distinguished between the two phases of individual interest (Phase 3 and Phase 4). It would be good to consider other ways of operationalizing the distinction between these two phases so they are more clearly perceived as separate by the respondents.

FIGURE 1  
AFC Results – The 4 FIDQ Interest Scales.

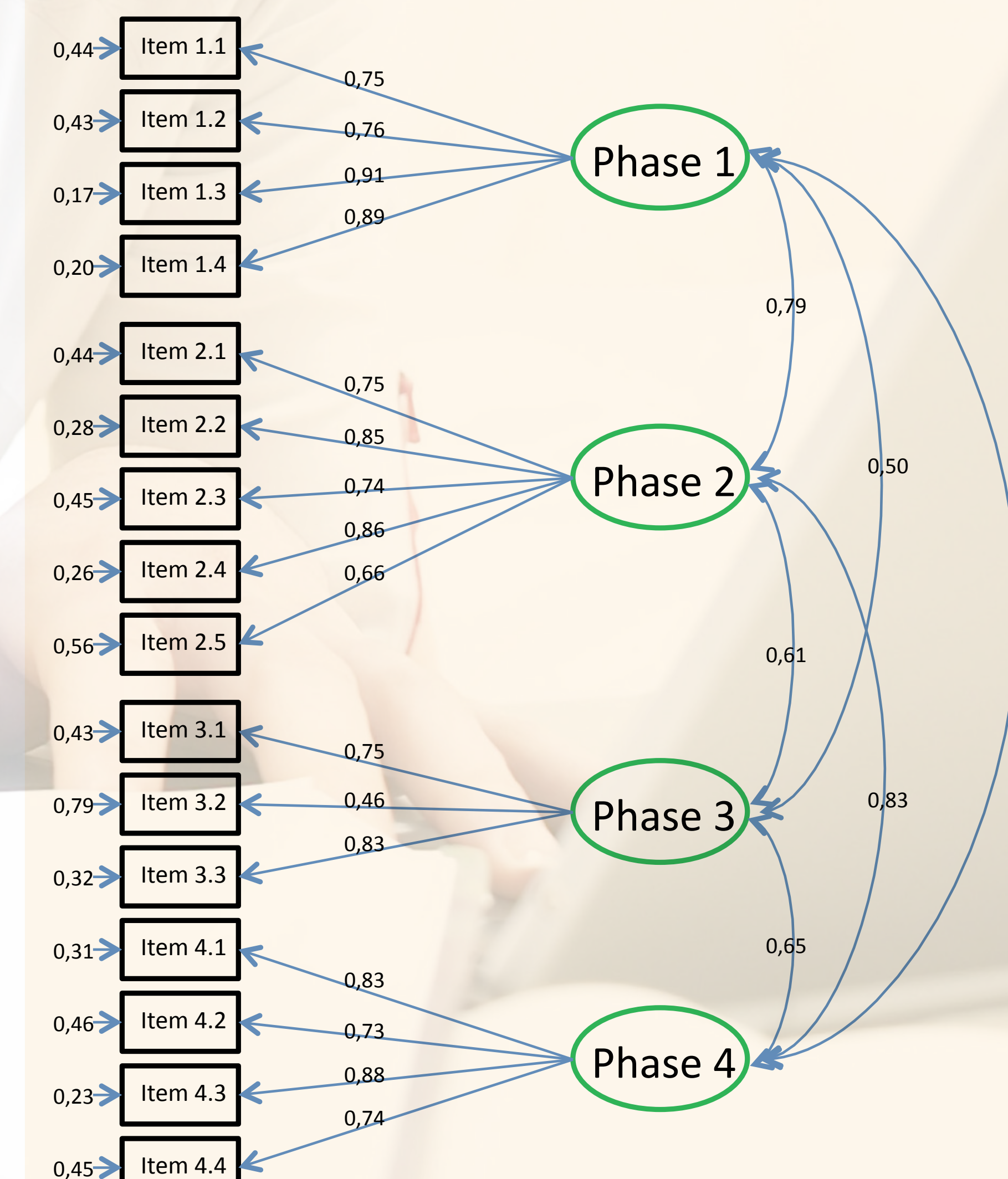
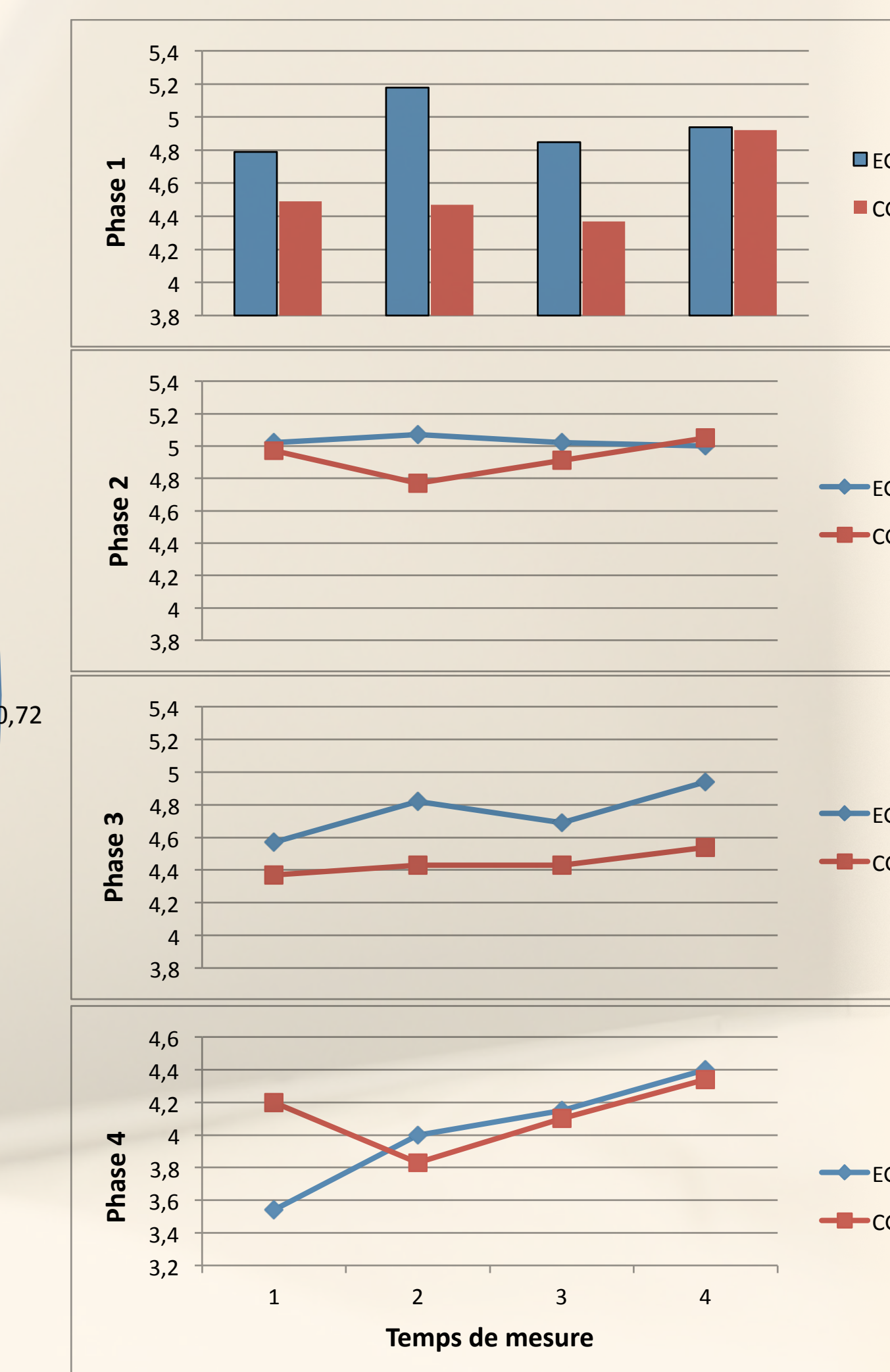


FIGURE 2  
Average Scores at Each Interest Phase, for Each Learning Activity, Per Group.



	Factors	
	1	2
<b>Phase 2: Maintained Situational Interest</b>		
In general, I find this French course interesting.	.910	
In general, I like taking this French course.	.894	
In general, I feel good in this French course.	.880	
I manage to pay attention fairly often in this French course.	.714	
Sometimes, my attention is sustained for a fairly long time during this French course.	.633	
<b>Phase 1: Triggered Situational Interest</b>		
I appreciated this learning activity.		-.975
I enjoyed this learning activity.		-.962
I found this learning activity interesting.		-.914
This learning activity piqued my curiosity.		-.861
<b>Initial eigenvalues</b>	5.76	1.29
<b>Explained variance</b>	63.96	14.33
<b>Alphas (internal consistency)</b>	.89	.95

Note: N = 79  
 Extraction Method: Principal Component Analysis.  
 Rotation Method: Oblimin with Kaiser Normalization.  
 KMO Statistic: 0.871; significant Bartlett Test at 0.000.

	Factors	
	1	2
<b>Phase 4: Well-Developed Individual interest</b>		
I always want to know more about the French language.	.951	
I am so interested when I learn about the French language, I lose track of time.	.916	
I am always interested by anything involving the French language.	.823	
I am fascinated by the French language.	.744	
<b>Phase 3: Emerging Individual Interest</b>		
I sometimes use my knowledge of the French language outside a school setting.		.953
Sometimes I use my knowledge of the French language without having been asked.		.931
It doesn't take much effort for me to produce an assignment in French.		.449
<b>Initial eigenvalues</b>	4.25	1.00
<b>Explained variance</b>	60.68	14.23
<b>Alphas (internal consistency)</b>	.90	.78

Note: N = 82  
 Extraction Method: Principal Component Analysis.  
 Rotation Method: Oblimin with Kaiser Normalization.  
 KMO Statistic: 0.838; significant Bartlett Test to 0.000.

TABLE 3. Pearson Correlation Coefficients between the Four Interest Scales and the Feeling of Self-Efficacy.

	1	2	3	4	5
1. Triggered Situational Interest (Phase 1).	1				
2. Maintained Situational Interest (Phase 2).	.722**	1			
3. Emerging Individual Interest (Phase 3).	.498**	.574**	1		
4. Well-Developed Individual Interest (Phase 4).	.657**	.710**	.599**	1	
5. Feeling of Self-Efficacy.	.142	.182	.416**	.297**	1

Note: N = 105; \*\*p < 0.01.

TABLE 4. Means, (Standard Deviations) and Separate Effects of Interest Expectations at the Beginning of the Semester and of the Group on General Interest for the French Improvement Course: F values, P value and Effect Sizes (ANCOVA).

	EG (n = 42)	CG (n = 32)	F (1, 71)	$\eta^2_p$
Covariable: Interest	3.42	3.54	4.77*	.06
Expectations in French.	(.17)	(.24)		
	5.22*	4.62*		
Group	(1.28) <sup>2</sup>	(1.21) <sup>2</sup>	4.92*	.07
	5.23 <sup>1</sup>	4.60		

\* p ≤ .05; R<sup>2</sup> adjusted: .09.

<sup>1</sup> Adjusted Means.

<sup>2</sup> Dependent Variable: Appreciation of *French Improvement* course.

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