Psychometric properties of a French version of the Implicit Theories of Emotion Scale

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Ethical approval: This article does not contain any studies with animals performed by any of the authors. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

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Résumé :

Introduction: Inspiré des travaux de Carol Dweck sur les théories naïves de l'intelligence, le concept de théorie implicite des émotions fait référence aux croyances sur le fonctionnement général des émotions et, plus particulièrement, leur contrôlabilité. Certains individus considèrent les émotions comme incontrôlables, tandis que d'autres pensent qu'il est possible de les moduler. Ces croyances guident les stratégies de régulation des émotions utilisées par les individus et influencent le bien-être subjectif.

Objectifs: La présente étude explore les propriétés psychométriques de la version française de l'échelle d'évaluation implicite de la théorie des émotions développée par Tamir, John, Srivastava et Gross (2007).

Méthode: Au total, 177 participants adultes âgés de 18 à 72 ans (M = 34 ans) ont complété l'échelle d'évaluation de la théorie implicite des émotions ainsi que deux autres instruments: un questionnaire de bien-être subjectif et un questionnaire de stratégies de régulation émotionnelle.

Résultats : Les analyses factorielles ont identifié une structure unidimensionnelle. Les indices de fidélité interne (alpha = 0,81) et test-retest (r = 0,69) sont satisfaisants. L'étude a reproduit les principaux résultats d'études internationales contemporaines concernant le rôle médiateur de la réévaluation cognitive dans le lien entre les théories implicites et le bien-être.

Conclusion: La discussion met en évidence les intérêts cliniques et théoriques et l'utilité de l'échelle des théories implicites validée dans ce travail.

Abstract

Introduction: Inspired by Carol Dweck's work on naive theories of intelligence, the implicit theory of emotions refers to beliefs regarding the general functioning of emotions, specifically, their controllability. Some individuals view emotions as uncontrollable (entity theory), while others think that emotions can be modulated (incremental theory). These beliefs guide the emotional regulation strategies that individuals use and influence subjective well-being.

Objective: The present study explores the psychometric properties of the French version of the Implicit Theories of Emotion Scale developed by Tamir et al. (2007).

Method: One hundred seventy-seven participants aged 18 to 72 years old (M = 34 years old) completed the Implicit Theories of Emotion Scale in conjunction with two other questionnaires: subjective well-being and emotional regulation strategies.

Results: Factor analyses identified a one-dimensional structure; the internal reliability (*alpha* = .81) and test-retest reliability indices (r = .69) were satisfactory. The study replicated the main results of contemporary international studies concerning the mediating role of cognitive reappraisal and further documents the pivotal role of positive reappraisal in the association between implicit theories and well-being.

Conclusion: The discussion highlights clinical and theoretical interests and the usefulness of the Implicit Theories of Emotion Scale.

Keywords: Mindsets, Implicit theories of emotion, Emotional regulation strategies, Subjective well-being, Cognitive reappraisal.

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Implicit theories of emotions

Implicit theories refer to the beliefs formed by individuals about the modifiability and controllability of certain psychological dimensions. The concept was first deployed in the field of implicit theories of intelligence (Dweck and Leggett, 1988), in which two main mindsets were highlighted. The fixed mindset considers intelligence as an immutable entity that characterizes individuals definitively and differentiates them from each other. The growth mindset, on the other hand, sees intelligence as the result of the efforts and strategies deployed by the individual in reasoning and problem-solving situations. Intelligence is then conceived of as an emergent property of functioning, susceptible to progress and change. Adherence to either of these naive theories can be assessed by a scale along which individuals express the level of their agreement with the fixed (e.g., "Intelligence is a personal characteristic that cannot be significantly improved.") and the growth mindset perspectives (e.g., "No matter who an individual is, his or her intelligence can change significantly.").

Research has shown that these conceptions affect how individuals cope with situations in which their intellectual abilities are called upon (Dweck, 1999). These beliefs affect people's resilience, especially in challenging situations, by directing the way events are interpreted. This framework has been extended to other psychological dimensions, such as personality (Dweck, 2008), in which a similar distinction has been made between the entity and incremental belief systems. A recurring result of the research conducted, regardless of the psychological dimension considered, is that entity theories are associated with a decrease in efforts to regulate oneself or others, a logical consequence of the belief that these dimensions cannot be modified.

The implicit conceptualization of emotions takes a comparable form. Some individuals understand emotions as uncontrollable phenomena that are direct consequences of events and over which they have no influence. Other individuals, on the other hand, see emotions as something that can be modulated and have a clearer sense of ownership of their emotional experience. Tamir et al. (2007) developed a scale to assess these beliefs about the controllability of emotions based on an instrument used in the field of intelligence: the Implicit Theories of Emotion Scale. The scale consists of two incremental statements (e.g., "If they want to, people can change the emotions that they have.") and two entity statements (e.g., "No matter how hard they try, people can't truly change the emotions that they have."), with which the participants are asked to express their level of agreement on a Likert-type scale. According to the implicit theory framework, the scale has a bipolar unidimensional structure, so the fixed mindset score items are inverted to obtain an average measure of adherence to the incremental view of emotions. The reliability measures were found to be acceptable ($\alpha = .75$; Tamir et al., 2007). To our knowledge, the factor validity of the scale has not yet been assessed. However, Tamir et al. (2007) argued in favor of a single underlying construct, since the pairwise interitem correlations across the two sets (entity and incremental items) were as large as those within each set. The test-retest reliability measures were not reported in the original publication, but more recent data suggest that emotion theories are fairly stable: Kneeland and Dovidio (2020) reported a correlation of .53 in a sample of college students over a semester. Since its publication, the scale has been used by several research teams, and a significant body of evidence has accumulated to show that the core beliefs assessed by the scale are related to important outcomes that we now consider.

Implicit theories of emotion, well-being and emotional regulation strategies

Implicit theories of emotions have been found to be associated with psychological well-being. For example, Tamir et al. (2007) found that people with an incremental theory experience positive emotions more often than people with an entity theory do. De Castella et al. (2014) showed that people suffering from social anxiety have, on average, a more fixed mindset than other people do,

and within this group, patients who believe they have little control over their emotions report higher levels of perceived stress and anxiety. More recently, Smith et al. (2018) conducted one of the first intervention studies explicitly aimed at changing the implicit theory of emotions. Their results show that the induction of an incremental theory improves subjective well-being. King and dela Rosa (2019) also showed in a correlational study that, when individuals adopt an entity theory of emotions, they report a satisfactory state of well-being less often (negative correlation). Ford et al. (2018) obtained converging results in a longitudinal study conducted with adolescents: The entity theory of emotions appears to be significantly predictive (eighteen months later) of adolescents' depressive symptomatology (evaluated by their parents). This effect was mediated by the degree of use of the cognitive reappraisal strategy.

Indeed, a coherent body of research now suggests that the effect of implicit theories is primarily exerted through the emotional regulation strategies that individuals mobilize. Emotional regulation processes aim to maintain, modify or avoid emotional states and to restore individual-situation transactions (e.g., Le Vigouroux et al. 2017; Pavani et al., 2016). Their links with well-being are empirically well established. One of the main hypotheses currently being examined is that the naive theory of emotions implicitly adhered to by an individual would lead him or her to favor certain regulatory strategies over others and that the differentiated use of these strategies would modulate the probability of the emergence of a state of well-being. In particular, an incremental belief in the controllability of emotions would encourage individuals to seek ways of actively coping with negative emotions with so-called adaptive strategies (e.g., cognitive reappraisal), while a fixed mindset would, conversely, invite the implementation of less active or inappropriate strategies (e.g., avoidance or expressive suppression). Several recent studies provide empirical support for this hypothesis and highlight the central role of cognitive reappraisal. Kneeland et al. (2016a) first showed, in an experimental study, that the induction of an implicit theory of emotions has a causal effect on the nature of the subsequently preferred regulation strategies. Three other correlational studies have linked implicit theories, the cognitive reappraisal strategy and measures of well-being (Ford et al.,

2018; King and Dela Rosa, 2019; Tamir et al., 2007). Their results (Table 1) show a positive and small-to-moderate relationship between these dimensions.

Table 1:
Correlation coefficients of the Implicit Theory of Emotions Scale, well-being and cognitive reappraisal

	Implicit theory of emotions and well-being	Implicit emotion theory and cognitive reappraisal
Tamir et al. (2007)	.24	.35
Ford et al. (2018)	.14	.17
King and dela Rosa (2019)	.14	.13
Average value of the English version	**.17**	**.22**
Value obtained for the French version	**.24**	**.21**

The current study

Given the promising directions for future research and the clinical implications of the implicit theories of emotion (Kneeland et al., 2016b; Ford & Gross, 2019), we considered it useful for French-speaking researchers and psychologists to have an instrument assessing those beliefs. Moreover, such an instrument could contribute to crosscultural studies, given that the way people manage their emotional experiences is influenced by cultural differences in affect valuation (Tsai, 2007). Therefore, we developed a French version of the Implicit Theories of Emotion Scale. The main objective of the present study was to explore the psychometric qualities of this instrument before recommending its use in research conducted with French-speaking participants. First, we examined its factor validity and reliability by analyzing the single- and two-factor structures, respectively. The objective is to test whether the structure with two factors separating incremental and entity items is better fitted than the single-factor structure. Second, to document its convergent validity, we tested the French scale's ability to replicate the main results obtained with the English version that links implicit theories of emotion, regulation strategies and well-being.

Because cognitive reappraisal appears to play a mediating role and because the concept encompasses two additional specific strategies (positive reappraisal and perspective-making), a secondary aim of the study was to differentiate their mediating contributions. Cognitive reappraisal

in general consists of reworking our representation of a situation to change its meaning and consequently the emotions associated with it. This change can be achieved in two ways (Shiota and Levenson, 2009). Positive reappraisal consists of interpreting the situation in a more positive way (e.g., "I try to see the positive points of the situation."), while perspective-making consists of interpreting the situation in a less negative way or with detachment (e.g., "It's not that bad."). Both strategies are conceptualized as adaptive but with contrasting benefits: Perspective-making reduces the emotional experience, whereas positive reappraisal changes the quality of the emotional response (Shiota and Levenson, 2012). Previous studies on implicit theories and regulation strategies have approached cognitive reappraisal as a whole. To reach a finer grained understanding of the cognitive reappraisal effects, the present study sought to investigate the respective contributions of its two components. Given the difference in the effectiveness of their ability to increase positive emotions, we hypothesized that positive reappraisal would mainly drive the relationship between emotional mindsets and psychological well-being.

Method

Participants and procedure

One hundred seventy-seven participants (151 women and 26 men), aged 18 to 72 years old ($M = 34.95$; $SD= 13.98$) responded to all of the evaluation instruments. Eighty-six were employed, 62 were students, 18 were unemployed, and 11 were retired, with a range of educational degrees from "Brevet des Collèges" (Certificate of General Education) to doctorate. To examine the test-retest reliability of the Implicit Theory of Emotion Scale, 35 individuals completed the questionnaire a second time after an interval of 21 to 27 days ($M = 22.30$; $SD = 3.80$).

The participants were not compensated and were recruited through the investigator's social networks using online advertisements or email. The inclusion criteria were as follows: women or men over the age of eighteen and fluent in French. The participants were provided with text informing

them of the objectives and modalities of the study and were asked to give their consent to participate in the research. The questionnaires were submitted through the Lime Survey application and could be completed anonymously on a tablet or computer.

All procedures performed in this study are in accordance with the ethical standards of the Ethical Committee of the University of Lille Human and Social Sciences and the 1964 Helsinki Declaration and its later amendments or comparable ethical standards (Ethique committee approval: n°. 2018-303-S63). Informed consent was obtained from all individual participants included in the study.

Measures

The Implicit Theories of Emotion Scale (Tamir et al., 2007)

The French version of the Implicit Theories of Emotion Scale was constructed in three steps informed by Vallerand (1989). The back-translation technique requires that the original scale first be translated into the desired language. Second, the obtained items are retranslated into the original language to ensure that the translation process did not alter the meaning of the original statements. A final version is then obtained through collaborative work with the aim of preserving both the linguistic features and the meaning of the original scale. The Implicit Theories of Emotion Scale was first translated from English to French by an expert psychologist. A back-translation into English was provided by another expert who was functionally bilingual and who regularly performs professional translation activities. The two English versions were then compared to ensure that the meaning was preserved of the initial scale statements and that the translation did not affect the content validity of the instrument. The two experts jointly made final adjustments to the French version, consisting of the four items in Table 2, which the participants answered on a Likert-type scale ranging from 1 "strongly disagree" to 6 "strongly agree.". The total scale is scoring in incremental belief. The scores for the adherence to the entity items (No matter how hard they try, people can't truly change the

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emotions that they have/ The truth is, people have very little control over their emotions) were therefore inverted ranging from 6 for "strongly disagree" to 1 "strongly agree.".

Table 2.
English and French versions of the Implicit Emotions Theory Scale

N°	Dimension	English version item	French version item
1	Entity	No matter how hard they try, people can't truly change the emotions that they have.	*Même si on essaye, on ne peut pas vraiment changer les émotions qu'on ressent.*
2	Incremental	Everyone can learn to control their emotions.	*Tout le monde peut apprendre à contrôler ses émotions.*
3	Entity	The truth is, people have very little control over their emotions.	*En vérité, on a peu de contrôle sur nos émotions.*
4	Incremental	If they want to, people can change the emotions that they have.	*Si on le souhaite, on peut changer nos émotions.*

The Cognitive Emotions Regulation Questionnaire—CERQ (Garnefski et al., 2001)

This scale is composed of a 36-item questionnaire on cognitive emotional regulation strategies. The CERQ is a second-order structure with two factors, adaptive and nonadaptive strategies, and facets of these two factors. Therefore, the strategies explored are grouped into two subscales. The first corresponds to a set of five cognitive reaction modes identified in the literature as adaptive: acceptance (e.g., "I think I have to accept the situation." / "Je pense que je dois accepter la situation."), positive focus (e.g., "I think nicer things than what I have experienced" / "Je pense à quelque chose d'agréable plutôt qu'à ce qui s'est passé."), planning (e.g., "I think about what I can do best." / "Je pense à la meilleure façon de faire."), positive reappraisal (e.g., "I think that I can become a stronger person as a result of what has happened" / "Je pense pouvoir devenir une personne plus forte suite à ce qui s'est passé."), and perspective-making (e.g., "I think that other people go through much worse experiences." / "Je pense que d'autres passent par des expériences bien pires."). The second subscale corresponds to a set of four strategies, conversely identified as nonadaptive from the point of view of their effects on affect and well-being: self-blame (e.g., "I think about the mistakes I have made in this matter." / "Je pense aux erreurs que j'ai commises par rapport à ce qui s'est passé."), rumination (e.g., "I often think about how I feel about what I have experienced." / "Je pense sans cesse aux sentiments que la situation a suscités en moi."), catastrophizing (e.g., "I keep thinking about how terrible what I experienced was." / "Je repense sans cesse au fait que ce que j'ai vécu est terrible.") and blaming others (e.g., "I feel that others are responsible for what has happened." / "J'ai le sentiment que les autres sont responsables de ce qui s'est passé."). The responses are assessed on a five-point frequency scale ranging from 1 "almost never" to 5 "almost always." The internal consistency of the French version of the CERQ is between .68 and .87 (Jermann et al., 2006), and in this sample, it is between .68 and .90 (Table 3).

The Psychological Well-Being Scale (Ryff, 1989)

This scale assesses general psychological well-being through six dimensions: environmental mastery / competence (e.g., "In general, I feel in charge of the situation in which I live."), autonomy

(e.g., "I am not afraid to voice my opinions, even when they are in opposition to the opinions of most people."), feelings of independence and self-determination, personal growth (e.g., "In general, I feel that I continue to learn more about myself as time goes by."), positive relationships with others (e.g., "Most people see me as loving and affectionate."), the meaning of life (e.g., "I feel good when I think of what I've done in the past and what I hope to do in the future.") and self-acceptance (e.g., "When I look at the story of my life, I am pleased with how things have turned out."). This scale, initially comprised of 120 items, has an abridged version of 36 items translated into French by Bouffard and Lapierre (1997) and shows internal consistency coefficients between .83 and .91 (Dubé et al., 2007). The answers are expressed on a 6-point Likert-type scale ranging from 1 "strongly disagree" to 6 "strongly agree."

Data Analyses

The results were analyzed in four stages with JASP (Version 0.14.1 software for Windows; JASP Team, 2020) and JAMOVI software version 1.8.1. (Şahin & Aybek, 2019) for the bootstrap analyses. The first three analyses concern the test of the first objective of this research, to determine the psychometric quality of this scale, and the last tests the second objective of differentiating the mediating contributions of the cognitive reappraisal strategies. First, the confirmatory factor analysis tests the psychometric internal validity of the French version of the Implicit Theory of Emotion Scale. We began by running the Kaiser Meyer Olkin (KMO) test of sampling adequacy to ensure data factorability for the comparative fit index (CFI), Tucker–Lewis index (TLI), standardized root mean square residual (SRMR) and root mean square error of approximation (RMSEA). We tested a two-factor solution: one with a single factor for the four items and one with two factors separating incremental and entity items. Second, reliability was explored by examining the results of the internal consistency and test-retest reliability was analyses by Pearson correlations. Third, the convergent and empirical validity of this scale was analyzed by correlations between the implicit theory of emotion and cognitive strategies of emotional regulation and well-being. To document its convergent validity,

we tested the ability of the French scale to replicate the main results obtained with the English version that links implicit theories of emotion, regulation strategies and well-being. Fourth, to analyze the mediating role of emotion and cognitive strategies between the implicit theory of emotion and well-being, bootstrap analyses with 1000 samples were applied. This test analyses the mediating contribution of the two cognitive reappraisal strategies (i.e., positive reappraisal and perspective-making) in the relationship between emotional mindset and psychological well-being to investigate the respective contributions of its two components.

Results

Factorial analysis of the French version of the Implicit Theory of Emotion Scale

The first objective of this research was to explore the psychometric qualities of the French scale factor structure. Two factor solutions were tested to better understand the scale structure: a single factor or two factors separating incremental and entity items (Table 2). Bartlett's sphericity test and the sample adequacy measure (KMO = .75) suggested that the data collected were suitable for a factor analysis. By retaining the number of factors whose eigenvalue is greater than 1, the factor analysis indicated that a one-factor structure accounts for 63.9% of the total variance. The item saturations, reported in Table 3, were all greater than .60. The confirmatory factor analysis indicated that this single-factor structure presented a good fit adjustment with the different indices considered:[1] $X^2 (2, N = 177) = 2.67$, $p = .26$; $CFI = .998$; TLI = .993; $SRMR = .015$; and $RMSEA = .04$. In addition, the analysis of a two-factor solution, corresponding to the dissociation of incremental and entity items, was tested: The CFI (.998) and SRMR (.015) were comparable, but the RMSEA (.05) indicated a lower level of adjustment.

Table 3
Descriptive analyses by item of the Implicit Theory of Emotion Scale and the factorial saturations, descriptive statistics and alphas of the other scales in this study

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1 Adjustment can be considered good when the chi-square is not significant, the SRMR index is less than .05, the RMSEA is less than .05 and the CFI and TLI is greater than .97 (Schermelleh-Engel et al., 2003).

	Mean	Std. Deviation	Skewness	Kurtosis	Alpha	Loadings (uniqueness)
Implicit Theory of Emotion	4.25	1.19	-.05	-.14	**.81**	
Entity item 1	3.19	1.56	.36	-.98		- .88 (.25)
Entity item 2	3.05	1.49	.28	-.95		- .80 (.29)
Incremental item 1	4.01	1.40	-.54	-.40		.89 (.23)
Incremental item 2	4.55	.98	-.92	.89		.60 (.35)
Psychological Well-Being					**.93**	
Self-acceptance	4.03	1.06	-.56	-.14	.84	
Competence	4.26	.97	-.34	-.43	.79	
Positive relationships with others	4.59	.99	-.42	-.58	.81	
Meaning of life	4.26	1.07	-.48	-.45	.79	
Autonomy	4.32	.89	-.34	.32	.71	
Personal growth	4.74	.83	-1.03	2.01	.76	
CERQ: Cognitive Regulation					**.91**	
Nonadaptative regulation	2.52	.60	.55	.08	.82	
Other-blame	1.89	.76	1.30	2.49	.90	
Self-blame	2.81	1.02	.42	-.87	.86	
Catastrophizing	2.01	.92	1.14	1.00	.84	
Rumination	3.38	.89	-.096	-.59	.69	
Adaptative regulation	3.37	.71	-.212	-.45	.90	
Acceptance	3.44	.84	-.085	-.65	.68	
Positive refocusing	2.32	.98	.590	-.43	.91	
Planning	3.48	.93	-.170	-.73	.81	
Perspective-making	3.05	1.02	-.084	-.93	.81	
Positive reappraisal	3.35	1.06	-.225	-.82	.90	

Consistent with the authors' hypothesis regarding the implicit theory of emotion scale (Tamir et al., 2007), the participants' responses seem to be based on a general bipolar factor of implicit emotion theory. The scores for the adherence to the entity items were therefore inverted to calculate an average index of incremental belief for each participant. On this scale, the loading ranged from .60 to .89 (see Table 3), which was satisfactory since it was above the accepted cutoff of .40.

The internal consistency (Table 3) was good ($\alpha = .81$), as was the time constancy, with a test-retest Pearson correlation index of .69 ($p < .001$). On average, the participants expressed a growth mindset more strongly than they did a fixed conception ($M = 4.22$; $SD = 1.20$), and they did so to a stronger extent than they did in the original study by Tamir et al. (2007; $M = 3.33$). Furthermore, neither a gender effect ($t (175) = .51$, $p = .61$, Cohen's $d = .11$) nor a significant correlation with age ($r = - .09$, ns) was evident in the results.

Convergent validity with emotional and well-being constructs

We tested the convergent validity of the French scale to replicate the main results obtained with the English version that links implicit theories of emotion, regulation strategies and well-being. As expected, the empirical validity analyses focused on the links between the implicit theory of emotion and cognitive strategies of emotional regulation and well-being. The correlations are shown in Table 4 and were performed using mean estimates based on raw data.

First, implicit emotion theory is associated with psychological well-being and adaptive emotional regulation strategies. Furthermore, the correlations obtained are consistent with the average values observed thus far in the literature. For relationships with psychological well-being, individuals who report more adherence to incremental beliefs also report better relationships with others, higher meaning of life and more personal growth over time. Regarding emotional regulation strategies, individuals who report more adherence to incremental beliefs use the positive reappraisal strategy more often, while the use of perspective-making seems independent of individuals' beliefs about their emotions. On the other hand, our results indicate the absence of a relation between the implicit theory of emotions and nonadaptive strategies.

Table 4

Correlation between implicit theory of emotion, regulation strategies and well-being

		1		2		3		4		5		6		7		8		9		10	
1	**Implicit Theory of Emotion**	—																			
	Psychological Well-Being																				
2	Self-acceptance	.13		—																	
3	Competence	.07		.56	***	—															
4	Positive relationships with others	.22	**	.49	***	.42	***	—													
5	Meaning of life	.22	**	.55	***	.61	***	.52	***	—											
6	Autonomy	.01		.44	***	.32	***	.21	**	.28	***	—									
7	Personal growth	.28	***	.63	***	.42	***	.53	***	.57	***	.41	***	—							
8	**Adaptative regulation**	.19	*	.59	***	.35	***	.48	***	.38	***	.33	***	.51	***	—					
9	Positive reappraisal	.24	**	.57	***	.30	***	.41	***	.37	***	.36	***	.52	***	.84	***	—			
10	Perspective-making	.14		.37	***	.11		.30	***	.12		.14		.25	***	.73	***	.49	***	—	
11	**Nonadaptative regulation**	-.10		-.47	***	-.39	***	-.22	**	-.27	***	-.25	***	-.20	**	-.34	***	-.29	***	-.30	***

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 5: To illustrate the effect of implicit theories, the methodological approach proposed by Tamir et al. (2007) and regularly used in mindset research (Dweck et al., 1995) was revisited. This approach consisted of contrasting and differentiating the individuals who most strongly adhered to fixed theories versus those most convinced of growth theories. Thus, two groups were formed whose membership scores were higher (the "incremental theorists" group, $N = 30$, $M = 5.82$) or lower (the "entity theorists" group, $N = 33$, $M = 2.57$) than one standard deviation from the average score on the Implicit Theory of Emotion Scale. Supporting the correlation analyses presented above, the results (Fig. 1) highlight a different pattern of preferred emotional regulation strategies in the two groups: Adaptive strategies were mobilized more often by incremental theorists than they were by entity theorists ($t (61) = 3.34$; $p = .001$; Cohen's $d = .84$). The difference between the two groups in the use of nonadaptative strategies was not significant ($t (61) = 1.55$; $p = .12$; Cohen's $d = .39$).
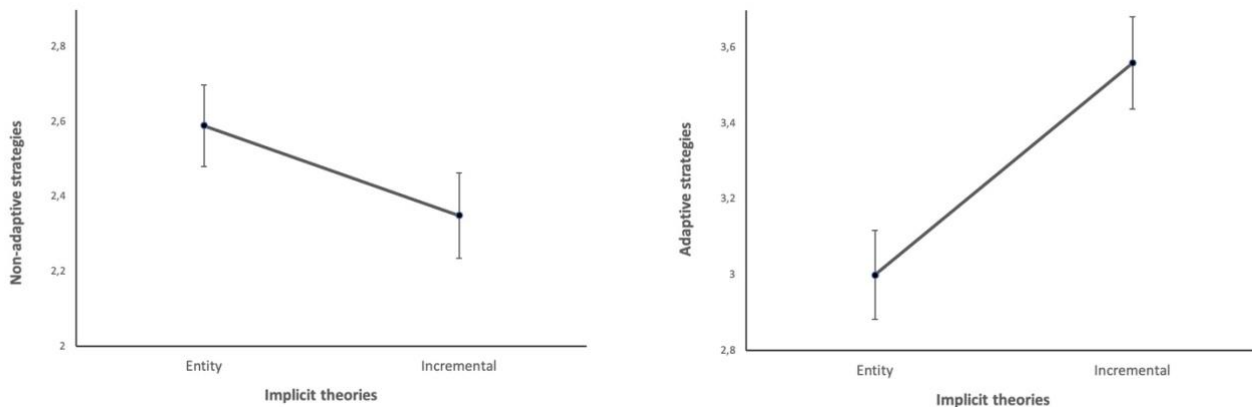

Figure 1.

Means and standard errors for the adaptive and nonadaptive emotional regulation strategies scales of the CERQ as a function of implicit theories.

Second, the results (Table 4) indicated that all six dimensions of psychological well-being [self-acceptance (*alpha* = .84), competence (*alpha* = .79), positive relationships with others (*alpha* = .81), meaning of life (*alpha* = .79), autonomy (*alpha* = .71) and personal growth (*alpha* = .76)] were very closely associated with the participants' emotional regulation strategies: The dimensions had medium-to-large positive correlations with adaptive strategies and small-to-medium correlations with nonadaptive strategies. The adaptive and nonadaptive strategies were negatively and moderately correlated with each other.

Mediation analysis with cognitive reappraisal

A secondary objective of the study was to identify the mediating role of cognitive reappraisal between emotional mindsets and psychological well-being and, more specifically, the different contributions of positive reappraisal and perspective-making. The hypothesis is that positive reappraisal would have a more important relationship between emotional mindsets and psychological well-being compared to perspective-making. In the results within adaptive regulation strategies, the global score seemed more in line with positive reappraisal than with perspective-making. In addition, perspective-making was positively linked with only three dimensions of psychological well-being (self-acceptance, positive relationships with others and personal growth), whereas positive reappraisal was positively and moderately linked to the six dimensions of psychological well-being. To differentiate the contribution of these two subsets of cognitive reappraisal strategies (i.e., positive reappraisal and perspective-making) to the relationship between emotional mindset and psychological well-being, mediation analyses were carried out. The models were produced using a bootstrap method with 1000 samples to test the indirect effects. We thus estimated two mediation models on the observed variables with three outcomes (Fig. 2 & Table 5) based on the previous results (Table 4). The first model specifies positive reappraisal, and the second model specifies perspective-making as the mediating variables of the relation between the implicit theory of emotion and the dimension of well-being. The results of the first model highlighted that the strategy of positive reappraisal mediated

the three relationships between the implicit theory of emotions and positive relationships with others, meaning of life and personal growth (the indirect relationship was statistically significant with the bias-corrected bootstrap 95% confidence intervals excluding 0 ; Table 5). The results of the second model highlight that this was not the case for the perspective-making strategy (Table 5).
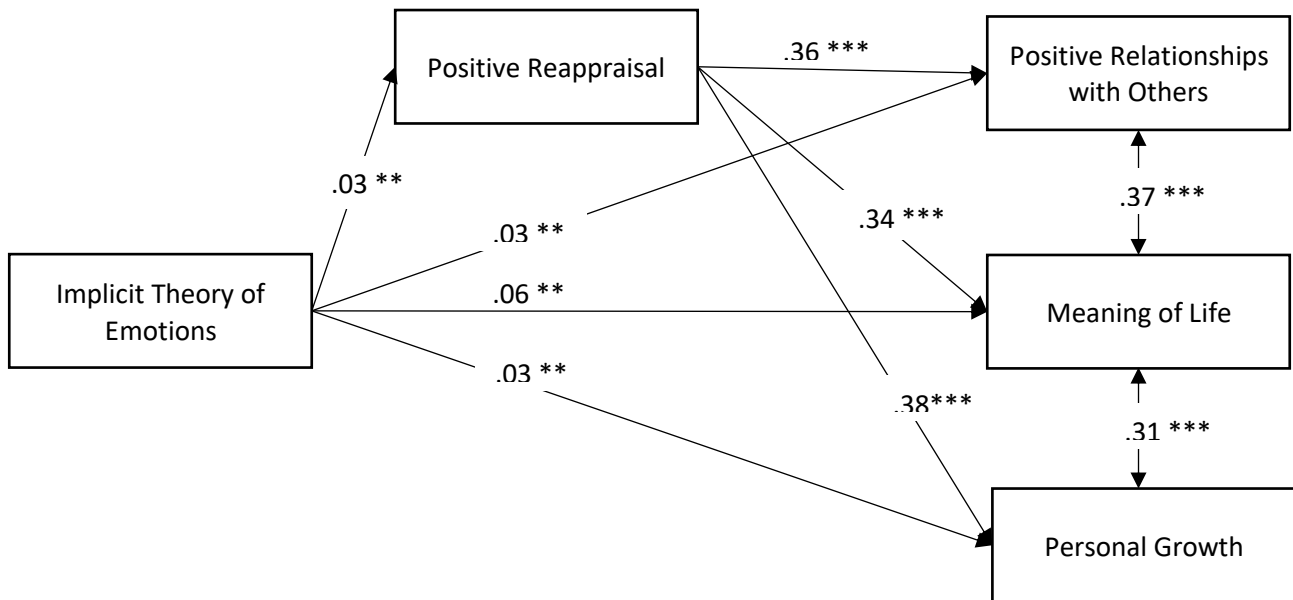

Figure 2.

Summary of the mediation model (with standardized estimates) via positive reappraisal.

Table 5:

Mediation Analysis: Indirect and direct effects of implicit theory of emotion on three dimensions of psychological well-being via positive reappraisal or perspective-making

Mediators	Outcomes	Indirect effect (a x b)				Direct effect (c')			
		Estimate	SE	95% CI	*p*	Estimate	SE	95% CI	*p*
Positive Reappraisal	Positive relationships with others	.02	.01	[.01, .04]	.005	.03	.02	[-.01, .06]	.07
	Meaning of life	.02	.01	[.01, .04]	.007	.04	.02	[-.002, .07]	.05
	Personal growth	.06	.02	[.02, .09]	.003	.03	.01	[.01, .05]	.01
Perspective -making	Positive relationships with others	.01	.01	[-.001, .02]	.06	.04	.02	[.004, .07]	.01
	Meaning of life	.003	.003	[-.002, .01]	.31	.05	.02	[.01, .08]	.005
	Personal growth	.01	.004	[-.001, .02]	.11	.05	.02	[.02, .07]	.07

Discussion

The first objective of this study was to validate a French version of the Implicit Theories of Emotion Scale. The psychometric properties demonstrated in a representative adult population are encouraging. The structural analyses confirmed that the participants' responses were guided by an implicit theory factor ranging from an entity to an incremental perspective of emotional control. The four items were well saturated by this factor, allowing us to obtain a score in which individuals' beliefs are polarized. The responses to the items appear to be consistent with each other and relatively stable over time, with good consistency and test-retest reliability. In terms of nomological validity, several results of the study showed that the French version assessing emotional mindsets made it possible to replicate relationships already demonstrated with preferred regulation strategies and well-being. Furthermore, the association forces were comparable to those observed with the original instrument.

The results showed that the link between the emotional mindset and regulation mechanisms was driven by the relative use of adaptive rather than nonadaptive strategies. This finding was in line with previous works indicating that, whereas cognitive reappraisal is influenced by emotional mindsets, this is not the case for expressive suppression (Ford et al., 2018). Among the various adaptive strategies, the role of cognitive reappraisal as a whole is confirmed, but the concept encompasses several more specific strategies because changing one's thoughts about an event can be done in several ways.

Regarding our secondary objective, this study refined the analysis and showed that the more specific positive reappraisal strategy has a pivotal role. In contrast, the perspective-making dimension of reappraisal was not involved in the pattern of the relationship between mindset and well-being. As Shiota and Levenson (2012) framed it, the perspective-making contributes to reduced emotional responding, but positive reappraisal goes further in trying to reverse the quality of emotional responding. Our results suggest that relying on such an ambitious emotional enterprise requires being strongly convinced and aware that our emotional experience is under our control. This

strategy seems to promote positive relationships with others, greater life meaning and personal growth. However, we remain cautious about this interpretation. Indeed, the mediation analyses that we carried out concern crosssectional data. Therefore, future studies must be able to confirm our results, in particular by adopting a longitudinal strategy (e.g., experience sampling method) that would support the mediating role of positive reappraisal between the implicit theory of emotions and well-being.

The theoretical interpretation is that, when individuals initially consider emotions as out-of-control phenomena, they are less motivated to look for ways to actively modulate them. As the emergence of well-being is partly based on the implementation of cognitive strategies that transform the meaning of events and their effects, emotional mindsets may have long-lasting outcomes. The use of active regulation strategies not only restructures the emotional experience but also helps nourish feelings of agency in subjective life. This relationship system is likely then the site of retroactive loops. The repeated experience of regulating one's emotions probably contributes to strengthening initial beliefs and amplifying the tendency to polarized effects in either the fixed or the growth mindset, as the results suggested when we observed the two most convinced groups of "theorists."

As such, these beliefs could constitute a therapeutic lever capable of producing cascading effects. For Walton (Walton, 2014; Walton & Crum, 2020), the modification of implicit theories is a good example of psychological practices grouped under the concept of "wise interventions." The "wise" aspect relates to the fact that the interventions are based on a coherent theoretical model supported by research data and that they focus efforts on the most influential dimensions. Through this concept, Walton invites psychologists to focus their attention and their interventions on the central variables identified by the research as being at the heart of a network of influences and therefore able to produce lasting reorganizations of individual functioning. The first experimental intervention studies mentioned in the introduction are currently few in number (Jamieson et al. 2018), but they produce effects that are consistent with these predictions.

The present study has limitations due to the correlational and crosssectional nature of our data. The limitations also include contacting people through their social networks, with the result that less than 15% of the participants were men. Thus, future studies should further confirm this validation and replicate the findings using larger samples. However, by providing a validated assessment instrument in French and by refining the analysis of the way emotional mindsets influence well-being through the more specific positive reappraisal strategy, this study hopes to contribute to the pursuit of this promising research field.

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