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Original article

## Attempt to validate the Self-Construal Scale in French: Systematic approach and model limitation

*Essai de validation en français de l'Échelle de Construction de Soi :  
approche systématique et limitation du modèle*

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### ABSTRACT

**Introduction.** – Independent and interdependent self-construals are included in individuals' self-definitions. The 24-item Self-Construal Scale (SCS) was developed by Singelis (1994) as a means of measuring the “two selves” of individual identity, namely the independent self and the interdependent self. It has been translated into a number of different languages including French. Yet, proper psychometric validation procedures of the scale in foreign languages are lacking which is problematic given the recurrently reported subscales poor reliabilities.

**Objective.** – The aim of the present paper is to present the steps followed in order to validate a French-translated version of Singelis' (1994) 24-item Self-Construal Scale. Following such a systematic validation approach enables us to locate psychometric weaknesses and assess to what extent a standard validation procedure can address these limitations.

**Method.** – Study 1 pertains to the translation of the inventory, item face-validity checks, and factor analyses. Study 2 aims to assess the inventory's test–retest stability, as well as its criterion-related validity based on correlations with Big Five personality traits.

**Results.** – Results evidenced that back-translation, face-validity check and item selection did not enhance the SCS to a valid psychometric level. Factor analyses revealed that a three-factor model proved a better fit with the collected data.

**Conclusion.** – Given the poor psychometric properties of the SCS and the emergence of theory refinements, future research should consider alternative conceptualizations of self-construal.

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### R É S U M É

**Introduction.** – Les constructions indépendantes et interdépendantes de soi font partie de la manière dont les individus se définissent. L'Échelle de Construction de Soi (ECS) composée de 24 items fut développée par Singelis (1994) comme un moyen de mesurer les « deux Soi » de l'identité, respectivement le Soi indépendant et le Soi interdépendant. L'échelle a été traduite dans différentes langues y compris le français. Cependant, aucune application de procédures de validation de l'échelle n'a été proposée dans ces langues, ce qui est problématique compte tenu des faibles fiabilités reportées dans diverses études.

**Objectif.** – Le but du présent article est de présenter les étapes suivies afin de valider une version française de l'Échelle de Construction de Soi incluant 24 items proposée par Singelis (1994). Suivre cette approche systématique de validation nous permet de situer les faiblesses psychométriques de l'échelle et d'évaluer dans quelle mesure une procédure standard de validation peut pallier ces limitations.

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*Méthode.* – L'étude 1 inclut la traduction de l'inventaire, la vérification de la validité apparente des items et les analyses factorielles. L'étude 2 a pour objectif d'évaluer la stabilité test–retest de l'inventaire, ainsi que sa validité de critère à partir de corrélations avec les traits de personnalité issue du Big Five.

*Résultats.* – Les résultats montrent que la traduction inverse, la vérification de la validité apparente et la sélection des items n'amènent pas l'Échelle de Construction de Soi à un niveau psychométrique valide. Les analyses factorielles révèlent qu'une structure en trois facteurs correspond mieux aux données collectées.

*Conclusion.* – Étant donné les propriétés psychométriques pauvres de l'Échelle de Construction de Soi et l'émergence d'ajustements de la théorie, les recherches futures devraient considérer des conceptualisations alternatives de la Construction de Soi.

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## 1. Introduction

Broadly defined, “self-construal refers to how individuals define and make meaning of the self” (p. 143) (Cross, Hardin, & Gercek-Swing, 2011). Self-construal relates to how individuals define and present themselves in public (Cross et al., 2011) building on the postulate that public self-presentation is intimately influenced by an individual's culture (Markus & Kitayama, 1991). This self-definition is assumed to vary across culture and across individuals within the same culture influencing people's cognition, emotion, and motivation (Markus & Kitayama, 1991).

Independent and interdependent self-construals – or two possible self-views – were first put forward by Markus and Kitayama (1991) as a means for considering how both individualistic and collectivistic norms and values are included in individuals' self-definitions. Individualism and collectivism are considered as two sides of a bipolar dimension at the cultural level (Triandis & Suh, 2002) but Markus and Kitayama (1991) conceptualized independent and interdependent self-construals as two non-exclusive facets at the individual level. Within this framework, Singelis (1994) defined self-construals as the “constellation of thoughts, feelings and actions concerning one's relationship to others, and the self as distinct from others” (p.581). The independent self-construal is considered as disassociated from social context. As stated by Singelis (1994), “individuals with highly developed independent self-construals will have as a referent their own abilities, attributes, characteristics, or goals rather than referring to the thoughts, feelings, or actions of others” (p.581). Conversely, the interdependent self-construal is described as socially-bound, with “a sense that the self and others are intertwined” (Singelis, 1994, p.581).

Several authors presented the creation of self-report scales allowing to measure self-construals. The three most used scales were developed by Singelis (1994), Leung and Kim (1997) and Gudykunst et al. (1996). The one developed by Gudykunst et al. (1996) has been developed in the explicit purpose of tapping cross-cultural differences: the measure is designed to have the same factor structure across cultures. The Twenty Statement Test (TST) (Kuhn & Thomas, 1954) has been used as an alternative open-ended self-report measurement of self-construals.

Considered as the “cultural whats” in studies of individual differences (Saribay, Rim, & Uleman, 2012), self-report measurements of self-construals have proven their value in social psychology research, offering opportunities to ascertain the impact of culture-related self-concepts on various aspects of cognition, motivation, and social behaviors at both within- and between-culture levels (Cross et al., 2011).

In 2003, Levine, Bresnahan, Park, Lapinski, Wittenbaum, et al. (2003) presented multiple studies raising strong concerns about self-construals scales validity (including the three scales mentioned above). These exchanges (Gudykunst & Carmen, 2003; Kim & Narayan, 2003; Levine, Bresnahan, Park, Lapinski, Lee et al., 2003) brought various insights into strengths and

weaknesses of the self-construal construct. Against inconsistencies when comparing individual levels of independence-interdependence with individualism-collectivism national classifications (Levine, Bresnahan, Park, Lapinski, Wittenbaum et al., 2003), Kim and Narayan (2003) argued that self-construal were considered to go beyond national stereotypes. Various elements in the socialization process modulate how individuals identify with their culture, which induce a significant amount of self-construals variability within a culture (about 30% of a population do not fit with national stereotypes) (Gudykunst & Carmen, 2003). While Levine, Bresnahan, Park, Lapinski, Wittenbaum, et al. (2003) considered the insensitivity of the interdependent scale to priming as an evidence of construct invalidity, Kim and Narayan (2003) contended that self-construals scales were designed to measure trait-like aspects (stable) of self-construal. In this view, the Twenty Statement Test is affected by priming as it refers to the dynamic aspect of self-construal (Kim & Narayan, 2003). This consideration of stable and dynamic aspects of self-construals also provides an explanation for the absence of correlation between the TST and others self-construals scales. Lastly, Levine, Bresnahan, Park, Lapinski, Wittenbaum, et al. (2003) presented five measurement studies where absolute fit of the two dimensional model of self-construals is evaluated without any scale modifications. Noticing poor fit indices, exploratory factor analyses were used resulting in inconsistent multiple factor structures across studies. This approach was criticized by both Kim and Narayan (2003) and Gudykunst and Carmen (2003) who acknowledged weaknesses of the two dimensional model but consider it as the best parsimonious and interpretable model. According to Kim and Narayan (2003), the community agrees that the number of self-construals dimensions is more than one, and theory for interpretation is strong enough to consider two of them: independence and interdependence. Gudykunst and Carmen (2003) considered the relational self-construal as a viable third dimension given the convergence of a strong rationale with empirical evidences (Cross, Bacon, & Morris, 2000). To date, no multidimensional model beyond this last one [such as the one proposed in (Hardin, Leong, & Bhagwat, 2004)] have reached a consensus.

The aim of the present paper is to investigate the validity of the 24-item Self-Construal Scale (SCS, Singelis, 1994) for within culture research purposes in French. Among the three widely used scales, the one proposed in Gudykunst et al. (1996) is specifically designed for cross-cultural purposes. The scale proposed by Leung and Kim (1997) appeared to bring no validity improvement (Levine, Bresnahan, Park, Lapinski, Wittenbaum et al., 2003), which justify our choice to stick with the most widely used form of self-construal scale (SCS, Singelis, 1994).

The SCS has been translated into a number of different languages, including Japanese (Ozawa, Crosby, & Crosby, 1996), Chinese (Aaker & Schmitt, 2001), Singaporean, Hebrew and Israel Arabic (Kurman, 2001), Thai and Taiwanese (Neff, Pisitsungkagarn, & Hsieh, 2008), Korean (Sung & Choi, 2012), Greek (Nezlek,

**Table 1**  
Studies including a translation process of the Self-Construal Scale.

Studies	Questionnaire	Languages	Back-Tran.	Items Sel.	Items per scales	Cronbach's $\alpha$
Sato and Cameron (1999)	Singelis (1994)	Japanese	Yes	No	Inter: 12; Ind: 12	Inter = 75; Ind = 67
Aaker and Schmitt (2001)	Singelis (1994)	Chinese	Yes	Yes <sup>a</sup>	Inter: 11; Ind: 9	Inter = 90; Ind = 78
Kurman (2001)	Singelis (1994)	Singaporean	Yes	Yes <sup>b</sup>	Inter: 5; Ind: 11	Inter = 56; Ind = 60
		Israeli Druze	Yes	Yes <sup>b</sup>	Inter: 5; Ind: 11	Inter = 56; Ind = 61
		Israeli Jews	Yes	Yes <sup>b</sup>	Inter: 5; Ind: 11	Inter = 57; Ind = 64
Polyorat, Alden, and Alden (2005)	Singelis (1994)	Thai	Yes	No	Inter: 12; Ind: 12	Inter = 71; Ind = 61
Neff, Pisitsungkagarn, and Hsieh (2008)	Singelis (1994)	Thai	Yes	No	Inter: 12; Ind: 12	Inter = 77; Ind = 66
		Taiwanese	Yes	No	Inter: 12; Ind: 12	Inter = 69; Ind = 62
Nezlek, Kafetsios, and Smith 2008	Singelis (1994)	Greek	Yes	No	Inter: 12; Ind: 12	Inter = 56; Ind = 72
Kolstad and Horpestad (2009)	Singelis (1994)	Spanish	No	No	Inter: 12; Ind: 12	Inter = 57; Ind = 67
		Norwegian	No	No	Inter: 12; Ind: 12	Inter = 64; Ind = 69
Christopher et al. (2011)	Hardin (2004)	Thai	Yes	No	Inter: 14; Ind: 18	Inter = 79; Ind = 78
		American	Yes	No	Inter: 14; Ind: 18	Inter = 76; Ind = 72
Sung, Choi, and Tinkham (2012)	Singelis (1994)	Korean	Yes	No	Inter: 12; Ind: 12	Inter = 72; Ind = 70

<sup>a</sup> Keep items with "item-to-factor" correlation < 40.

<sup>b</sup> Remove items until reaching a correct Cronbach's alpha.

Kafetsios, & Smith, 2008), Spanish and Norwegian (Kolstad & Horpestad, 2009). French language versions of the scale have been used in recent studies (Bry, Follenfant, & Meyer, 2007; Fernández, Paez, & Gonzales, 2005; Le Conte & Bonnefoy, 2009) showing a clear interest from the French-speaking community in the Self-Construal construct.

As a scale for cross-cultural research, the SCS underlines the necessity for validated inventories in languages other than English. In many languages, the scale has shown recurrent weaknesses across cultures in its psychometrics properties. Inter-item reliabilities of the two subscales were often below an adequate level with Cronbach's alpha ranging from 0.53 to 0.90 (Cross et al., 2011). One limitation is the unique consideration of the two-factor self-construal structure whereas a three-factor structure could be a viable alternative (Gudykunst et al., 1996; Hardin, Leong, & Bhagwat, 2004; Kim, Hunter, Miyahari, & Horvath, 1996; Matsumoto, 1999). Another factor contributing to the scale's inconsistencies is the lack of systematic translation methodology (Vallerand, 1989). Table 1 reports 9 studies which include a translation process of the Self-Construal Scale: while most include a back-translation step, most do not go further in the validation of the scale. When the latent structure is explored, criteria for item exclusion (if any) and factor extraction methods appear to vary.

In this paper, translation steps that we followed in order to validate a French-translated version of Singelis' (1994) 24-item Self-Construal Scale are presented. Following this rigorous approach will enable us to locate psychometric weaknesses and assess to what extent a standard validation procedure can address these limitations. We thus methodically conducted two studies in an attempt to maximize both the conceptual and statistical validity of our inventory so as to ensure the replicability of our chosen procedure. Following guidelines set out by Vallerand (1989), study 1 pertains to the translation of the inventory, item face-validity checks, and factor analyses. Study 2 aims to assess the inventory's test-retest stability, as well as its criterion-related validity based on correlations with Big Five personality traits.

## 2. Study 1 – Factor validity and reliability

The aim of study 1 is to assess the latent structure of the French Self-Construal Scale. In its original form (Singelis, 1994), the SCS was designed as a two-factor inventory. Of the overall 24 items, 12 items belong to an "Independent" self-construal factor, and the remaining 12 belong to an "Interdependent" self-construal factor. Whilst we will assess fit of such a structure using our data, it appears necessary to remain open to alternative structures, factors, and number of items. Indeed, in their recent review, Levine, Bresnahan, Park, Lapinski, Wittenbaum, et al. (2003) evidenced

several validity issues related to self-construal subscales, from the poor fit of the two-factor structure (Gudykunst et al., 1996; Hardin et al., 2004; Kim et al., 1996; Matsumoto, 1999) to the limited conceptual justifications provided for the inclusion of certain items. Nevertheless, the literature provides a strong basis for interpreting only one alternative structure: a three-factor structure (i.e., independent, interdependent collective and interdependent relational). Consistent with these observations, the aim of study 1 is thus to attempt to replicate the initial two-factor structure upon which the original SCS was constructed (Singelis, 1994), refine the list of included items and explore potential alternative and better-fitting latent structures (considering with caution more than three-factor structures).

### 2.1. Translation of the scale

In compliance with the guidelines put forward by Vallerand (1989) when translating a personality inventory, the 24 original items of Singelis' (1994) Self-Construal Scale were translated from English to French, and back to English. The translation from English to French was performed by the third and fourth authors. Translation back to English was then achieved by three bilingual individuals: two being independent and one being the first author. Original and back-translated items were then compared, with appropriate amendments applied where deemed necessary. Only one item showed ambiguity in this translation process – *I feel comfortable using someone's first name soon after I meet them, even when they are much older than I am* – as the use of the first name is highly different across cultures. We changed the reference to the first name for the preferred use in French of "tu" (addressing somebody using the familiar form) versus "vous" (addressing somebody using the formal form). The subsequently obtained French items were then submitted to a sample ( $n = 40$ ) of French-speaking adults (23 female, 17 male) with an average age of 30.60 ( $SD = 7.09$ ). These adults were asked to rate the clarity of the items on a 6-point Likert scale ranging from 1 "not at all clear" to 6 "perfectly clear". In order to ascertain item clarity, item-specific means and standard deviations were computed in order to reveal recurrently problematic items. Items revealing clarity means approaching or below 3.5 or large standard deviation values would thus be amended as necessary. None of the items had to be amended. The final translated list of items is presented in Table 2.

### 2.2. Method

#### 2.2.1. Participants and procedure

For internal consistency and latent structure analyses, a total of 567 French-speaking students (340 female, 227 male) with an

**Table 2**  
List of the 24 items from the Singelis SCS (1994) translated in French and subscales to which they belong based on Singelis' (1994) original structure.

Subscales	Item ID	Items
Independence	1	Être unique et différent des autres de diverses manières me plaît [I enjoy being unique and different from others in many respects]
	2	Je peux tutoyer facilement quelqu'un que je viens juste de rencontrer, même s'il est bien plus âgé que moi [I feel comfortable using someone's first name soon after I meet them, even when they are much older than I am]
	3	Je préfère dire « Non » directement, plutôt que de discuter longtemps d'une question et d'être mal compris(e) [I'd rather say "No" directly, than risk being misunderstood]
	4	Avoir beaucoup d'imagination est important pour moi [Having a lively imagination is important to me]
	5	Je préfère être direct(e) et sans équivoque lorsqu'il s'agit de personnes que je viens de rencontrer [I prefer to be direct and forthright when dealing with people I've just met]
	6	Je suis à l'aise lorsqu'on me fait des louanges ou qu'on me félicite [I am comfortable with being singled out for praise or rewards]
	7	Prendre la parole en classe (ou pendant une réunion) n'est pas un problème pour moi [Speaking up during a class is not a problem for me]
	8	Je me conduis de la même façon, peu importe avec qui je suis [I act the same way no matter who I am with]
	9	Pour moi, être en bonne santé passe avant tout [I value being in good health above everything]
	10	Être en mesure de prendre soin de moi est une préoccupation essentielle pour moi [Being able to take care of myself is a primary concern for me]
	11	Ma propre identité, indépendamment des autres, est importante pour moi [My personal identity independent of others, is very important to me]
	12	Je me conduis de la même façon à la maison qu'à l'école (ou au travail) [I am the same person at home that I am at school]
Interdependence	13	Même si je suis fortement en désaccord avec les membres d'un groupe, j'évite d'argumenter [Even when I strongly disagree with group members, I avoid an argument]
	14	J'ai du respect pour les figures d'autorité avec lesquelles j'interagis [I have respect for the authority figures with whom I interact]
	15	Je respecte les gens qui sont modestes [I respect people who are modest about themselves]
	16	Je sacrifierais mon propre intérêt pour le bénéfice du groupe auquel j'appartiens [I will sacrifice my self-interest for the benefit of the group I am in]
	17	Je devrais prendre en considération les conseils de mes parents lorsque j'établis mon projet professionnel, mes plans de carrière (ou d'éducation) [I should take into consideration my parents' advice when making education/career plans]
	18	Si mon frère ou ma sœur échoue, je me sens responsable [If my brother or sister fails, I feel responsible]
	19	J'ai souvent le sentiment que mes relations avec les autres sont plus importantes que mes réussites personnelles [I often have the feeling that my relationships with others are more important than my own accomplishments]
	20	J'offrirais ma place assise dans un bus (métro, train...) à mon enseignant (ou mon patron) [I would offer my seat in a bus to my professor]
	21	Mon bonheur dépend de celui de mon entourage [My happiness depends on the happiness of those around me]
	22	Je resterais dans un groupe s'ils ont besoin de moi, même si je ne suis pas heureux (se) avec ce groupe [I will stay in a group if they need me, even when I'm not happy with the group]
	23	Il est important pour moi de respecter les décisions prises par le groupe [It is important to me to respect decisions made by the group]
	24	Il est important pour moi de maintenir une harmonie à l'intérieur de mon groupe [It is important for me to maintain harmony within my group]

average age of 20.36 ( $SD=6.63$ ) were recruited on a voluntary basis. A first group of 231 participants (51 female, 180 male) with an average age of 19.34 ( $SD=1.39$ ) completed the questionnaire in pen-and-paper form, and the remaining 336 subjects (289 female, 47 male) with an average age of 21.06 ( $SD=10.24$ ) filled in an online version of the questionnaire. Participants were instructed to indicate their level of agreement with each of the 24 items on a 7-point Likert scale ranging from 1 "strongly disagree" to 7 "strongly agree".

### 2.2.2. Data analysis

Both confirmatory and exploratory factor analyses were performed in order to assess the latent structure of the newly-translated French Self-Construal Scale (SCS-Fr). Examination of our data set revealed severe deviations from multivariate normality (cf. mahalanobis distance test). Indeed, the largest value was 92.50, as compared to a critical value of 36.42. Confirmatory factor analyses (CFA) were conducted using LISREL version 9.1 for Windows, and used Diagonally Weighted Least Squares (DWLS) method of estimation and promax oblique rotation. DWLS estimation method

has been shown robust with multivariate non-normal ordinal data, reducing confirmatory factor analysis parameter estimate error (Míndrilá, 2010). Model fit was assessed using conventional goodness-of-fit criteria [thresholds for estimating model fit follow guidelines from (Brown, 2006)]: absolute fit assessed via Satorra-Bentler  $\chi^2$  (model fit is good when the test is not significant) and Standardized Root Mean Square Residuals (SRMR, model fit is good when below 0.08), parsimony fit via Root Mean Square Error of Approximation and its 90% confidence interval (RMSEA, model fit is good below 0.06, with 90%CI below 0.06) and comparative fit via Comparative Fit Index (CFI, model fit is good above 0.95) and the Tucker-Lewis index (TLI, model fit is good above 0.95). Exploratory factor analyses (EFA), conducted using SPSS version 20 for Windows, used Principal Factor analysis (PF) method of estimation and promax oblique rotation as recommended when multivariate normality is severely violated (Costello & Osborne, 2005). This estimation method was preferred to the Principal Component (PC) approach initially used by Singelis (1994) as it aims "to reveal any latent variables that cause the manifest variables to covary"

(Costello & Osborne, 2005, p. 2) by taking into account only the common variance of our variables. Item-specific contributions were also assessed based on their loadings on emergent factors. To our knowledge, no guidelines are available in the literature regarding the threshold to be used for item deletion. While using PC estimation method, Singelis (1994) initially used a threshold of 0.35. As our estimation method (PF) provides lower loadings on estimated factors, we opted for a lower threshold of 0.25. Thus, items loading below .25 on emergent factors were considered too unique (i.e. insufficient shared variance) and removed from further analyses. We followed a step-by-step approach in order to assess the original SCS as well as the contributions of item selection and alternative factor structures to model fit. The procedure is as such:

- CFA on the initial two-factor structure provided by Singelis (1994);
- EFA (to get item-specific contributions) and item deletion based on the two-factor structure loadings;
- CFA on the two-factor structure with the selection of item to assess model fit improvement;
- EFA to determine if an alternative factor structure emerges;
- CFA on this alternative factor structure.

### 2.3. Results

A first confirmatory factor analysis (CFA) was used to fit our data to Singelis' (1994) two-factor solution. This structure suggests that 12 items load onto an "Independent" self-construal factor, and the other 12 fit onto an "Interdependent" self-construal factor. Model fit fell short of satisfactory standards based on conventional goodness-of-fit criteria, with values of: Satorra-Bentler  $\chi^2$  ( $df=251$ ,  $n=567$ ) = 795.53,  $p < .001$ ; Standardized Root Mean Square residual (SRMR) = .068; Root Mean Square Error of Approximation (RMSEA) = 0.062 (90%CI = [0.057; 0.067]); Comparative Fit Index (CFI) = .69 and Tucker-Lewis index (TLI) = 0.66. Cronbach alphas for the "Independent" and "Interdependent" factors were respectively 0.54 and 0.59. Although the model showed acceptable parsimonious fit, absolute and comparative fit indicators were far from good.

Exploratory factor analyses (EFA) were subsequently used in order to test item-specific contributions to the two-factor solution. Based hereupon, items that did not load at  $> .25$  on either factors were discarded from further analyses, as they were not considered to contribute to the inventory. Items 2, 3, 6, 7, 8, 12, 13, 18 and 20 were removed with this EFA. Following this step, all items loaded higher than 0.25 on one of the two-factors. Using the remaining 15 items, Singelis' (1994) two-factor solution was again tested using CFA, with items 1, 4, 5, 9, 10 and 11 loading on the "Independent" self-construal factor (Cronbach  $\alpha = 0.52$ ) and items 14, 15, 16, 17, 19, 21, 22, 23 and 24 loading on the "Interdependent" self-construal factor (Cronbach  $\alpha = 0.66$ ). Fit still fell short of meeting conventional goodness-of-fit standards, with: Satorra-Bentler  $\chi^2$  ( $df=89$ ,  $n=567$ ) = 310.39,  $p < .001$ ; SRMR = .073; RMSEA = 0.066 (90%CI = [0.058; 0.074]), CFI = .87 and TLI = .84. However, a  $\chi^2$  difference test did reveal that item removal significantly improved absolute model fit, with  $\Delta\chi^2$  ( $\Delta df=162$ ,  $n=567$ ) = 482.99,  $p < .001$ , providing support to the upstream removal of problematic items. This was confirmed by the increase in SRMR and CFI.

In a final attempt to improve model fit, and based on suggestions that more elaborate latent structures may best account for the SCS, a new EFA was carried out on the remaining 15 items. The best choice of number of factors retained was made based on the scree test rules (Cattell, 1966). The scree plot suggested that a 3-factor solution may be most appropriate (see Fig. 1). Subsequent factor rotation yielded a first factor with items 1, 4, 5, 10, and 11, a second factor consisting of items 9, 14, 15, 17, 23 and 24, and a third

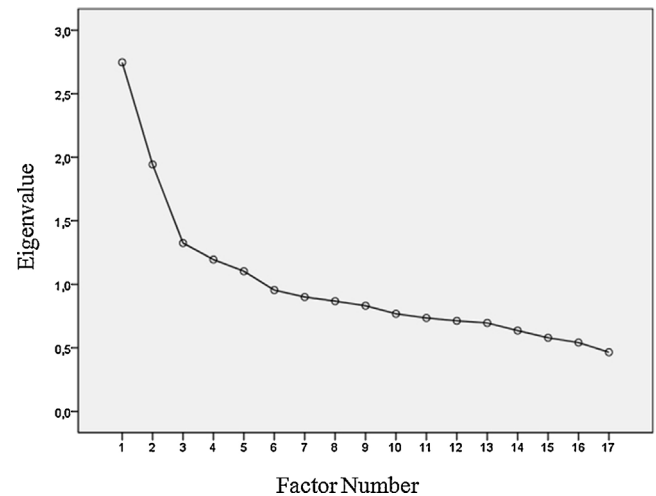


Fig. 1. Scree plot resulting from an EFA on the 17 selected items.

and final factor comprising items 16, 19, 21 and 22. The first factor appears to relate to Singelis' (1994) independent self-construal and the second and third factors relate to two interdependent facets of self-construal. As item 9 is suggested to belong to the former but rather fitted incoherently on the latter, it was removed from further analyses without consequence on the factor structure.

Improvement of fit was assessed by conducting a third and final CFA based on the remaining 14 items using the 3-factor solution suggested by the EFA. By conventional standards, model fit was acceptable, with: Satorra-Bentler  $\chi^2$  ( $df=74$ ,  $n=567$ ) = 160.69,  $p < .001$ ; SRMR = .051; RMSEA = 0.046 (90%CI = [0.036; 0.055]), CFI = .92 and TLI = .90. Whilst the Satorra-Bentler  $\chi^2$  remains significant, Ullman (1996) suggests that if it approaches 2 when divided by its associated degrees of freedom, model fit may be considered satisfactory. A  $\chi^2$  difference test revealed that the 3-factor solution represented a significant improvement on Singelis' (1994) two-factor solution, with  $\Delta\chi^2$  ( $\Delta df=15$ ,  $n=567$ ) = 149.70,  $p < .001$ . SRMR and RMSEA meet goodness-of-fit standards and CFI and TLI approach it. In terms of internal consistencies, Factor 1 (1, 4, 5, 10, and 11) yielded an alpha value of .48, and those for factors 2 (items 14, 15, 17, 23 and 24) and 3 (items 16, 19, 21 and 22) were of .56 and .54, respectively.

### 2.4. Discussion

The aims of this first study were to attempt to replicate the initial two-factor structure of the Singelis SCS (1994) and to uncover the best-fitting latent structure for the newly-translated French SCS (SCS-Fr). Combining both confirmatory and exploratory approaches, we discarded 9 items to replicate at best the initial two-factor structure, resulting in a 15-item version (9 items for the "Interdependent" scale, 6 items for the "Independent" scale). Encouraged by poor model fit parameters and internal consistencies, further analyses revealed that a three-factor structure based on 14 items is the most appropriate for the French version of the scale. Further to this, the first factor exclusively comprises items relating to an independent self-construal and the two remaining factors comprise items from Singelis' (1994) "Interdependent" self-construal factor.

The content of the two-factors based on the original interdependent scale informs us about their discriminant validity. Factor 2, composed of items 9, 14, 15, 17, 23 and 24, includes various references to the hierarchy and the need to respect it for the group sake (e.g., "respect for the authority figures", "respect decisions", "maintain harmony", "take into consideration my parent's advice" where

parents can be considered as authority figures here). Conversely, factor 3, composed of items 16, 19, 21 and 22, includes references to a more personal engagement with the group without references to some kind of verticality (e.g., “my relationships with others are more important than my own accomplishments”, “I will sacrifice my self-interest”, “my happiness depends on the happiness of those around me”). This three-factor solution appears reminiscent of previous work conducted both on self-construals in general as well as on the SCS. Indeed, in their study of culture- and gender-related differences in self-construals, [Kashima et al. \(1995\)](#) suggest that three construals of the self – namely independent, relational, and collective – may be more appropriate and information-rich than the traditional two-factor construct. In other words, the “Interdependent” factor suggested by [Singelis \(1994\)](#) may subsume two distinct factors, “Relational” and “Collective”. Further to this, factor analyses using a 30-item version of the SCS appear to confirm the existence of two-factors relating to interdependent self-construal, namely “Relational” and “Maintaining Harmony” ([Hardin et al., 2004](#)). Based upon these proposed structures, and considering the content of our remaining items, we believe that factor 1 relates to “Independence” (I, 5 items) and factors 2 and 3, interdependent in nature, relate to “Maintaining Harmony” (MH, 5 items) and “Relational” (R, 4 items). Whilst conceptually reminiscent of [Kashima et al.’s \(1995\)](#) “Collective” factor, we contend that the heading “Maintaining Harmony” disambiguates the factor and its items.

Reviewing the criticism brought on by the original SCS ([Levine, Bresnahan, Park, Lapinski, Wittenbaum et al., 2003](#); [Matsumoto, 1999](#)), the newly-translated SCS-Fr is characterized by low internal consistencies even with an item selection procedure and whether we consider its two or its three-factors structure. Although model fit significantly improved, the detailed and methodical approach we undertook to explore the latent structure did not reveal a much better solution. These results provide additional evidences of the lack of self-construals constructs validity. One potential explanation for this scale weakness is the absence of specified in groups (e.g., family, friends) or situations ([Gudykunst & Carmen, 2003](#)). Questioning about an ambiguous general “other” leaves wide room for interpretations which could induce inconsistencies in responses. Interestingly, this criticism appears to be even more relevant in the French culture: “the French mix individualism with selective group orientation values” ([Ting-Toomey, 1991](#)). Future research could investigate this potential intertwining between self-construals dimensions and social situations and groups. The next part of the present paper focuses on the three-factor structure as it is the best-fitting structure with a good interpretability level.

### 3. Study 2 – Criterion-related validity and test–retest stability

Following internal validation of the translated inventory, [Vallerand \(1989\)](#) recommends conducting criterion-related validity and test–retest stability tests on separate samples. Guidelines regarding test–retest stability may be comfortably followed. Ascertaining criterion-related validity of the SCS-Fr may, however, not be as straightforward. Indeed, [Bresnahan et al. \(2005\)](#) show that different measures of self-construal lack convergent validity between themselves, yielding correlation values no more robust or reliable than those entertained with unrelated constructs. These observations in mind, we tried to find other measures to compare our SCS-Fr to.

#### 3.1. Method

##### 3.1.1. Participants and procedure

Two separate samples were recruited in order to assess the newly-translated SCS-Fr’s (1) test–retest reliability and (2) the

premises of criterion-related validity. The test–retest sample comprised 66 young French-speaking adults (30 female, 36 male) with an average age of 19.21 years ( $SD = 1.67$ ). Subjects filled out the SCS-Fr at two different time-points, with a test-time interval of 3 months. In order to further put the inventory’s stability to the test, order of items was randomized between test-times.

Premises of criterion-related validity were assessed thanks to a sample of 68 young French-speaking adults (39 females, 29 males) with an average age of 29.53 years ( $SD = 7.39$ ). Subjects completed online versions of the SCS-Fr and the validated French version of BFI (BFI-Fr, [Plaisant, Courtois, Réveillère, Mendelsohn, & John, 2010](#)), a 45-item Likert scale inventory where individuals’ personality is rated across the Big Five personality traits.

##### 3.1.2. Measures

As self-construal scales measure stable, trait-like constructs (at least in Western cultures, [Levine, Bresnahan, Park, Lapinski, Wittenbaum et al., 2003](#)), we decided to choose another measure of stable traits to evaluate the convergent validity: personality traits that are internally based, relatively stable characteristics that define an individual’s personality ([Griggs, 2011](#)). As the five factors model appear to be universal and the best way to measure personality traits, we contend that investigating the correlational pattern between the SCS-Fr and Big Five personality traits may provide initial support for our inventory’s criterion-related validity, essentially that which pertains to the two interdependence factors, *MH* and *R*.

The Big Five is a widely used personality taxonomy which characterizes an individual’s personality across five broad traits, namely Extraversion (E), Agreeableness (A), Conscientiousness (C), Neuroticism (N), and Openness (O). We used a French validated version of the scale ([Plaisant et al., 2010](#)) that was relevant for our French population. In their validation of the Relational-Interdependent Self-Construal scale (RISC), [Cross et al. \(2000\)](#) contend that the measures of Agreeableness and Extraversion, the most prosocial of the Big Five traits, should positively correlate with measures of interdependent self-construal. To the best of our knowledge, no previous studies have studied the “Independent” scale from the Singelis SCS and the Big Five traits together within a Western culture making it hard to construct assumptions about potential correlations. However, based on theoretical descriptions of the independent self by [Markus and Kitayama \(1991\)](#) as “expressing one’s unique configuration of needs, rights and capacities” (p. 226), one might expect a positive correlation with the Openness trait which captures the individual’s sense of originality and creativity. Studies on individualism/collectivism also support this assumption, whereby “openness emerges more readily in individualist cultures, particularly among student samples that tend to be idiosyncratic, than in collectivist cultures” ([Triandis & Suh, 2002](#), p. 150).

##### 3.1.3. Data analysis

Test–retest stability was tested using between-time bivariate correlations and Wilcoxon signed-rank test. Criterion-related validity was ascertained with bivariate correlations computed between SCS-Fr and BFI-Fr subscales. All analyses were carried out with SPSS version 20.0 for Windows.

#### 3.2. Results

As can be seen in [Table 3](#), all three *I*, *MH*, and *R* subscales at test-time 1 were moderately correlated with themselves at test-time 2, with respective *r*-values of .35, .30, and .53. Further to this, Wilcoxon signed-rank tests revealed no significant differences in the mean scores for either *I* or *R* subscales between test-times ([Table 3](#)). A significant difference was, however, found between the means of *MH* subscale at times 1 and 2. However, the

**Table 3**  
Bivariate correlations and Wilcoxon signed-rank test for SCS-Fr subscales.

SCS-Fr	Test		Retest		Test–retest	
	M	SD	M	SD	r	Z
I	30.30	5.072	29.53	4.152	.349**	-1.427
MH	27.55	3.411	26.27	3.381	.299*	-2.762*
R	21.76	4.455	21.17	3.723	.527**	-1.151

For SCS-Fr: I: independent self-construal; MH: maintain harmony self-construal; R: relational harmony self-construal.

\*  $p < .05$ .  
\*\*  $p < .005$ .

**Table 4**  
Bivariate correlations between the French Self-Construal Scale (SCS-Fr) and the French Big Five Inventory (BFI-Fr) subscales.

SCS-Fr	BFI-Fr				
	E	A	C	N	O
I	.163	.019	.107	-.156	.282*
MH	.107	.599**	.167	-.090	-.028
R	.066	.254*	-.207	.278*	.086

For BFI-Fr: E: extraversion; A: agreeableness; C: conscientiousness; N: neuroticism; O: openness. For SCS-Fr: I: independent; MH: maintain harmony; R: relational.

\*  $p < .05$ .  
\*\*  $p < .01$ .

significance of the between-time mean difference of 1.28 may be due to its relatively narrow dispersion (Table 4), and therefore not be symptomatic of the inventory's instability across time.

The bivariate correlations between SCS-Fr subscales and BFI-Fr subscales are summarized in Table 4. SCS-Fr's *I* subscale only correlates significantly with BFI-Fr Openness ( $r = .28, p < .05$ ), and both *MH* and *R* subscales correlate significantly and positively with BFI-Fr Agreeableness, with  $r = .60 (p < .005)$  and  $r = .25 (p < .05)$ , respectively. Finally, the SCS-Fr *R* subscale and BFI-Fr Neuroticism are significantly and positively correlated ( $r = .28, p < .05$ ).

### 3.3. Discussion

The present data appears to provide moderate support for the test–retest stability of the SCS-Fr and initial support for its criterion-related validity. Indeed, subscale scores correlated moderately across times and no significant mean differences were found for either *I* or *R* subscales. A significant between-time difference was found for the *MH* subscale, however, as stated above, we feel this may be due to the tighter relative distribution in the scores, and thus may not be cause for concern. To the best of our knowledge, no test–retest stability results for the Singelis SCS (1994) are available in the literature for purpose of comparison. For reference, the RISC scale (Cross et al., 2000) shows good stability over a 2-month period (test–retest reliability is .73 and .63). The moderate correlations might be due to our bigger test-time interval. Lastly, as indicated by Cross et al. (2000), measures of self-construals potentially entertain specific relationships with affective states such as self-confidence and self-esteem. Our moderate test–retest reliability may result from such state-like dimensions of the SCS scale. Lastly, the weak internal consistencies of the SCS-Fr subscales might induce extra variability impairing the test–retest process: “poor reliabilities reduce the power of statistical tests; it also generally attenuates effect sizes below their true (population) value. Unreliability in the scores of two different variables, X or Y, attenuates their observed correlation” (Kline, 2011, p. 70).

The correlational analysis between SCS-Fr and BFI-Fr subscales provides a first basis for criterion-related validity. Indeed, the hypothesis derived from Cross et al. (2000) that the interdependent subscales would correlate positively with Agreeableness was

verified. No such relationship, however, was found with Extraversion. Although not hypothesized *a priori*, the positive correlation between SCS-Fr *R* and BFI-Fr *N* echoes relationships found between interdependence and vulnerability to anxiety and depression. Indeed, Yoon and Lau (2008) suggest that a highly interdependent profile may expose individuals to other-imposed pressures and expectations, thus leading to heightened concern over making mistakes. Such an interpretation would appear consistent with the content of SCS-Fr *R* items. Finally, a positive correlation was found between SCS-Fr *I* and BFI-Fr Openness, as posited based on the existing literature. This suggests that the stronger an individual's independent self-construal, the stronger the individual's sense of originality and creativity (Plaisant et al., 2010), which corroborates with past research on self-construals (Cross et al., 2011). Those results provide initial support for convergent validity of the SCS-Fr as a measure of a stable trait, but more research is required to firmly assess convergence with alternative variables such as communication behaviors.

### 4. Conclusion

The overall aim of the present paper was to present the steps followed in order to successfully translate and validate a French version of Singelis' (1994) 24-item Self-Construal Scale. Whilst study 1 pertained to the inventory's internal consistency and latent structure, study 2 related to its criterion-related validity and test–retest stability.

Factor analyses—both exploratory and confirmatory—carried out in study 1 suggested that a 16-item three-factor structure may present the most appropriate fit for the SCS-Fr, namely a 6-item “Independent” self-construal factor (*I*), a 5-item “Maintain Harmony” self-construal factor (*MH*), and a 5-item “Relational” self-construal factor (*R*). However, future research considering a two unipolar axis conceptualization of the self-construal might opt for the 17-items two-factors structure with a 7-item “Independent” self-construal factor and a 10-item “Interdependent” self-construal factor. In both cases, internal consistencies are poor, a fact now recognized in the SCS literature (Cross et al., 2011). However, past literature mostly acknowledged this fact without attempting to assess it. The systematic approach undertaken in this paper provides additional evidence for the limited validity of the Self-Construal Scale across cultures – more specifically in France – that goes beyond a mere lack of cross-cultural adaptation via validation procedures. This result calls for a re-conceptualization of Self-Construals as measured by the SCS, not only via a different structure, but further via a refinement of their relative concepts. Self-interdependence has been proposed to be better broken down into a collectivist and a relational self (Cross et al., 2000; Kashima et al., 1995) in accordance with our two-factors “Maintain Harmony” and “Relational”; and Harb and Smith (2008) added the horizontal-vertical dimensions to account for preferences in equality versus hierarchy. Self-independence has also been criticized as a homogeneous construct. Building on various theorizations of autonomy (e.g., Beyers, Goossens, Vansant, & Moors, 2003 or Chirkov, Ryan, Kim, & Kaplan, 2003), Kagitcibasi (2005) advocates that a clear distinction should be made between independence as separateness (or interpersonal distance) and independence as volitional agency (or self-governance). Whereas the former is a dimension with separateness and connectedness as two opposing poles, the later ranges from heteronomy to autonomy. The development of psychometric tools taking into account these conceptual distinctions may constitute a key future development. Lastly, the lack of internal consistencies of SCS-Fr might be due to the potential lack of differentiation of the independence and interdependence facets in the French culture. Levine, Bresnahan, Park, Lapinski, Wittenbaum et al., 2003 call “western bias” the fact that the

orthogonality of these two dimensions is an occidental approach to the self. Although France is clearly on the western side of cross-cultural research, some authors outlined specificities of the French culture which refer to a more eastern approach of the self: “French culture exhibits a curious blending of both low-context and high-context interaction characteristics. The French simultaneously prize the values of individualism and collectivism. They are autonomous, but at the same time group- and family-oriented” (Ting-Toomey, 1991). This possible intertwining of individualism and collectivism is a key issue, which should be addressed by future self-construal research.

The data collected in study 2 allowed to moderately establish the newly-translated inventory’s test–retest stability, a property of the scale which might be due to poor internal consistencies of the scales which inherently limit the observed test–retest correlations. Another potential cause of this discrepancy is the potential specific relationships between self-construals and affective states such as self-confidence and self-esteem Cross et al. (2000). Future use of the SCS-Fr may therefore aim to further investigate these potential relationships with other scales. This study also provides good premises to criterion-related validity, but also limited as it was conducted with only one other scale. In order to firmly test this criterion-related validity on the French population, further research including measures of prosocial tendencies and/or behaviors may be conducted (van Baaren, Maddux, Chartrand, de Bouter, & van Knippenberg, 2003).

The main limitation of our study resides in the fact that the majority of our participants are students. Even though Oyserman, Coon, and Kemmelmeier (2002) showed that students and older adults did not differ widely in collectivism and individualism; and Levine, Bresnahan, Park, Lapinski, Lee et al. (2003) showed that neither age nor occupation explain the poor results of their meta-analysis, this fact limits the generalization of our results and may be a potential source for the poor internal consistency of the scale. Further studies should be conducted with more diverse populations varying in age, socio-professional background and ethnicity to capture a larger spectrum of the self-construals present in the French population. Such studies would enable to complete the series of validity tests of the self-construal scales with measurement invariance indices (e.g., factor structure invariance).

From a methodological point of view, this paper outlines a lack of guidelines in the literature regarding the threshold to be used for item deletion based on factor loadings. While Singelis (1994) initially used a threshold of 0.35 with a Principal Component estimation method, we chose a lower threshold of 0.25 in association with a Principal Factor estimation method. This estimation method, based on the common variance within the data set, provides lower loadings on estimated factors, hence justifying the lower cut-off value. Higher thresholds were however tested for exploration’s purpose. Whereas a threshold of 0.20 led to the same result, a threshold of 0.30 was too restrictive to preserve the original questionnaire’s factors (13 items deleted out of 24).

Authors interested in the Self-Construal construct should consider the various limitations revealed in this study. We attempted to replicate at best factor structure of the Singelis (1994) scale without succeeding to provide a proper “validation” of it. Perhaps more precise conceptualizations of the concepts of interdependence and independence could enhance the psychometric validity of the SCS. However, when experimental conditions call for the use in French of the originally theorized SCS from Singelis (1994), one might consider the three or two dimensions presented in this paper, for example when the focus of the study is on the influence of our perception of ourselves on preferences in design (Zhang, Feick, & Price 2006), stereotypes (Bry et al., 2007) or perception of the seriousness of environmental issues (Le Conte & Bonnefoy, 2009).

**Disclosure of interest**

The authors declare that they have no competing interest.

**Appendix A. Factor Loadings (FL) and Squared Multiple Correlations (SMC) from the three computed CFAs. Model A: two-factor structure with the 24 items from the original scale, Model B: two-factor structure with items deletion (15 items remaining), Model C: three-factor structure with 14 items**

	Model A			Model B			Model C			
	Factor 1 (FL)	Factor 2 (FL)	SMC	Factor 1 (FL)	Factor 2 (FL)	SMC	Factor 1 (FL)	Factor 2 (FL)	Factor 3 (FL)	SMC
Item 1	.27	–	.07	.30	–	.09	.32	–	–	.09
Item 2	.14	–	.02	–	–	–	–	–	–	–
Item 3	.20	–	.04	–	–	–	–	–	–	–
Item 4	.36	–	.13	.49	–	.24	.43	–	–	.19
Item 5	.39	–	.15	.27	–	.07	.22	–	–	.05
Item 6	.13	–	.02	–	–	–	–	–	–	–
Item 7	.24	–	.06	–	–	–	–	–	–	–
Item 8	.32	–	.10	–	–	–	–	–	–	–
Item 9	.36	–	.13	.47	–	.22	–	–	–	–
Item 10	.38	–	.14	.49	–	.24	.44	–	–	.20
Item 11	.41	–	.17	.58	–	.34	.65	–	–	.42
Item 12	.30	–	.09	–	–	–	–	–	–	–
Item 13	–	–.07	.00	–	–	–	–	–	–	–
Item 14	–	.41	.17	–	.47	.23	–	.43	–	.19
Item 15	–	.39	.16	–	.48	.23	–	.42	–	.18
Item 16	–	.46	.21	–	.45	.20	–	–	.60	.36
Item 17	–	.29	.08	–	.29	.09	–	.27	–	.08
Item 18	–	.10	.01	–	–	–	–	–	–	–
Item 19	–	.27	.07	–	.24	.06	–	–	.33	.11
Item 20	–	.22	.05	–	–	–	–	–	–	–
Item 21	–	.47	.22	–	.46	.21	–	–	.53	.29
Item 22	–	.35	.12	–	.34	.12	–	–	.43	.19
Item 23	–	.53	.28	–	.57	.32	–	.55	–	.30
Item 24	–	.64	.41	–	.71	.51	–	.67	–	.45



**Appendix B. Latent factor correlations from the three computed CFAs. Model A: two-factor structure with the 24 items from the original scale, Model B: two-factor structure with items deletion (15 items remaining), Model C: three-factor structure with 14 items**

	Model A		Model B		Model C		
	Factor 1	Factor 2	Factor 1	Factor 2	Factor 1	Factor 2	Factor 3
Factor 1	1.00	.29	1.00	.35	1.00	.35	-.04
Factor 2	–	1.00	–	1.00	–	1.00	.67
Factor 3	–	–	–	–	–	–	1.00

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