

## AN EXPLORATION OF THE PERCEIVED COLLECTIVE CONTINUITY SCALE IN REFERENCE TO NATIONAL AND REGIONAL GROUPS: AN ISSUE OF HISTORY VERSUS CULTURE

ADAM CHESTERMAN  
PICARDIE JULES VERNE UNIVERSITY

PATRICK RATEAU  
NÎMES UNIVERSITY

PAULA CASTRO  
UNIVERSITY INSTITUTE OF LISBON

AYMERIC PARANT  
PICARDIE JULES VERNE UNIVERSITY

MAROUSSIA EONNET  
ALEXE STEENKESTE  
ELSA CAUSSE  
NÎMES UNIVERSITY

---

The Perceived Collective Continuity (PCC) scale was developed to measure the perceived past-present-future consistency of groups, but studies often omit to report its latent structure, and no valid French version currently exists. As such, we explored its latent structure in reference to a national group (French people) and a regional group (Camargue people), while also developing a valid French version of the scale. EFAs and CFAs supported the two-dimensional definition of PCC (“History” and “Culture”) for the national group but not the regional group, for which only one factor was extracted. Further research is necessary in order to specifically determine the structure of PCC in reference to regional groups. Results are discussed in relation to potential structural differences between national and regional groups’ identities. The French version of the PCC scale can now be deployed in Francophone samples in reference to national groups.

Keywords: Perceived Collective Continuity (PCC) scale; Regional identity; National identity; French validation of PCC scale.

*Correspondence concerning this article should be addressed to Adam Chesterman, CRP-CPO (E.A. 7273), Picardie Jules Verne University, Chemin du Thil, CS 52501, 80025 Amiens, France. Email: [chesterman.adam@gmail.com](mailto:chesterman.adam@gmail.com)*

---

Perceived continuity refers to the perception of a relatively permanent identity over the course of individuals’ and groups’ lives (Sani, Bowe, Herrera, Manna et al., 2007). It does not however exclude change; rather, it takes form when one’s past, present, and future are consistent. Continuity is hence a fundamental aspect of identity (Smeeke & Verkuyten, 2013), both at the individual level (*self*-continuity) and at the group level (*collective* continuity). A lack of collective continuity can represent a fundamental threat

to the group's identity by compromising perceptions of the group as a stable entity (Breakwell, 1986). As such, partial or complete loss of collective continuity can threaten the very existence of a group (Wohl, Banscombe, & Reysen, 2010). As it is entwined with self-continuity and is involved in numerous levels of group processes, a loss of continuity can have consequences on well-being (Bluck & Alea, 2008; Chandler & Proulx, 2008; Haslam, Holme, Haslam, Iyer, Jetten, & Williams, 2008; Iyer & Jetten, 2011), and even on suicide rates (Chandler, Lalonde, Sokol, & Hallett, 2003).

In light of these considerations, collective continuity has important implications for questions of group perception and identity but it has been somewhat neglected by social psychology (Smeekes & Verkuyten, 2013). This changed with contributions by Sani (2008; Sani, Bowe, Herrera, Manna et al., 2007; Sani, Bowe, & Herrera, 2008) and Jetten (Jetten & Hutchison, 2011; Jetten & Wohl, 2012). In particular, Sani, Bowe, Herrera, Manna et al. (2007) proposed the Perceived Collective Continuity (PCC) scale, defined according to two dimensions that echo those of *self*-continuity originally proposed by Chandler and colleagues (Chandler et al., 2003; Chandler & Proulx, 2008). For these authors:

our sense of the personal self as diachronically persistent may be grounded on two different perceptions. One is the perception that the self has a deep, inherent essence that remains the same through time, despite obvious physical and psychological changes that people sustain in their life-span. The other perception concerns a sense that, although our own self is fluid and ever-changing, the different phases it goes through during its existence are meaningfully interconnected: they are part of a coherent, intelligible story. (Sani, Bowe, Herrera, Manna et al., 2007, p. 1119-1120)

These considerations led to the definition of PCC according to two dimensions: one *historical* (i.e., the different ages/events in a group's past are viewed as being causally related); the other *cultural* (i.e., a group's core values, norms, etc. are perceived as being transmitted within the group over generations). As Sani and colleagues remind us, this is consistent with observations made by numerous social scientists (i.e., Breisach, 1986; Lévi-Strauss, 1972; Lowenthal, 1985), which justify the distinction between historical and cultural continuity. In light of their observations (which are summarized by Sani, Bowe, Herrera, Manna et al., 2007), "different national or regional groups may pursue or claim collective continuity by stressing either one or the other dimension, depending on the specificity of the group" (p. 1121). In this way, it may be easier or more desirable for some groups to claim stronger historical, rather than cultural, continuity (if, e.g., they have undergone important social or political transformations), and vice-versa. Thus, each dimension of PCC may be related to different variables. For example, they suggest that aspects of cultural continuity, by providing a "sense of truthfulness and transcendence" (p. 1121), may be related to variables such as collective self-esteem (Luhtanen & Crocker, 1992); and that aspects of historical continuity, which can play a structuring and stabilizing role for the self, may be related to concepts such as one's sense of coherence (Antonovsky, 1987).

In this vein, PCC has been shown to affect attitudes toward ingroups and outgroups (Warner, Kent, & Kiddoo, 2016); to act as a defence mechanism against death awareness (Herrera & Sani, 2013; Sani, Herrera, & Bowe, 2009); to protect group members against identity threats (Smeekes, McKeown, & Psaltis, 2017); and to have positive effects on collective self-esteem that are mediated by perceived group entitativity (Sani, Bowe, & Herrera, 2007, 2008). Moreover, positive historical discontinuity and negative historical continuity can threaten social identity by raising collective angst (Roth, Huber, Juenger, & Liu, 2017). These examples establish PCC as a fundamental tool for the study of social identity and group processes, and thus largely justify its translation for deployment in Francophone samples.

As well as highlighting the importance of temporal aspects in group processes, works specifically using the PCC scale have also contributed to its apparent convincing validity. However, the majority of

these studies has focused on national identities (Jetten & Hutchison, 2011; Jetten & Wohl, 2012; Roth et al., 2017; Sani et al., 2008, 2009; Smeekes & Vurkuyten, 2013, 2014a, 2014b, 2015), and even when referring to other groups, very few studies have to our knowledge reported on the PCC scale's latent structure. Most critically, exploratory factor analyses conducted to identify the PCC scale's latent structure were not reported upon its creation (Sani, Bowe, Herrera, Manna et al., 2007), despite being a newly proposed concept based on the dimensions of self-continuity (Chandler et al., 2003; Chandler & Proulx, 2008). This may however have been useful, as Sani and colleagues themselves observed the historical dimension's lower reliability ( $\alpha = .77$  in Study 1 and  $\alpha = .71$  in Study 2) compared to the cultural dimension ( $\alpha = .82$  in Study 1 and  $\alpha = .86$  in Study 2; Sani, Bowe, Herrera, Manna et al., 2007).

In light of these observations, we pursued two main objectives in this exploratory study. Firstly, we sought to explore the latent structure of the PCC scale in reference to a national group and a regional group. Secondly, we sought to contribute to the development of a valid and reliable French version of the PCC scale because, to our knowledge, no French version of this scale currently exists. To these ends, we administered a French version of the PCC scale to two independent samples: French students, who answered in reference to the French national group; and inhabitants of the Camargue Natural Regional Reserve, who responded in reference to the Camargue regional group. The Camargue Reserve was chosen for this study because its inhabitants have forged a strong cultural identity through traditional practices and a strong bond with their environment (Chesterman et al., 2017). The Camargue Reserve is located in the Rhône Delta in southern France and covers a relatively vast territory that was added to the European Natura 2000 network at the beginning of the 2000s. The Camargue identity is deeply entrenched in traditional activities that rely on the natural environment, such as fishing, salt-collecting, growing rice, tourism, and rearing Camargue bulls (for meat and taumachy) and horses (for riding). As a result of growing tourism, globalization, and climate change (Gambaiani, Mayol, Isaac, & Simmonds, 2008; Nicholls & Hoozemans, 1996; Poumadère, Mays, Pfeifle, & Vafeidis, 2008; Sabatier, 2008; Vaquer & Heurteaux, 1989), these activities are declining (Chesterman et al., 2017), thus warranting an exploration of PCC in this group.

## METHOD

### Participants

French undergraduate psychology students from a French university ( $N = 166$ ) answered the PCC scale<sup>1</sup> in reference to *French people* (national group). They were aged between 18 and 34 years ( $M = 19.69$ ,  $SD = 2.09$ ), and were 138 females and 28 males. Any respondents without French nationality or for whom French was not their first language were not included in the sample. They were approached on campus at the beginning of class, and were approached again four weeks later to answer the scale a second time in order to assess its temporal stability.

Inhabitants of the Camargue Natural Regional Reserve ( $N = 162$ ) responded to the PCC scale in reference to *Camargue people* (regional group). They were aged between 18 and 79 years ( $M = 43.19$ ,  $SD = 15.19$ ), and were 55 males and 107 females. Moreover, 88 were Camargue natives and 74 were non-natives, but all resided within the confines of the natural reserve. This was determined first by enquiring about respondents' origin, which was cross-checked with their town of birth and current hometown (i.e., participants were considered natives of the Camargue Reserve when they stated that they were originally from there, and when their hometowns and birth-towns were both within the borders of the park).

## Measures and Procedure

Participants in the student sample were approached on campus at the beginning of a lesson. Participants in the Camargue sample were either approached in public areas of the Camargue Reserve, or via an online questionnaire, which included the following measures.

*Perceived Collective Continuity.* In both groups, participants first answered a French version of the PCC scale that was developed following Vallerand's (1989) recommendations. These include reverse-translations by French/English bilinguals and clarity assessments by Francophones. The student group answered this scale in reference to French people (national group), and the Camargue inhabitants in reference to Camargue people (regional group). The French version of this scale, like the original version, is composed of 12 items measured on 7-point Likert scales, with six items for each dimension of PCC. The historical dimension includes two negative items (Items 6 and 12) which were reverse-coded prior to analysis.

This version of the PCC scale presented satisfactory internal reliability in the national group ( $\alpha = .80$ ), according to the criteria set by Nunnally (1978). This was also the case for the historical dimension ( $\alpha = .79$ ) and the cultural dimension ( $\alpha = .79$ ). Similarly, the PCC scale presented satisfactory reliability in the regional group ( $\alpha = .88$ ), but the historical dimension ( $\alpha = .64$ ) did not appear as homogenous as the cultural dimension ( $\alpha = .91$ ). In all cases, no item removals would have considerably improved the scale's reliability.

*Group Identification.* A measure of group identification was also administered in the national group, based on that proposed by Doosje, Ellemers, and Spears (1995), and later used by Sani, Bowe, Herrera, Manna et al. (2007). It includes four items (e.g., "I see myself as a member of the French group") measured on 7-point Likert scales, from 1 (*absolutely disagree*) to 7 (*absolutely agree*), and it presents satisfactory internal reliability ( $\alpha = .83$ ). In line with previous studies (Sani, Bowe, Herrera, Manna et al., 2007; Smeeke & Verkuyten, 2014a), and as a gauge of discriminant validity, we expected to observe a positive correlation between PCC and group identification in the national group.

*Complementary Information.* To finish, participants in the student sample provided supplementary information including age, gender, and nationality. They were also required to provide an identification code composed of their initials and date of birth, so that they could be identified four weeks later to answer the scale again while also preserving their anonymity.

Participants in the Camargue sample also provided their age, gender, and nationality, but also their origin, postcode, and town of birth. These criteria were used to distinguish between natives and non-natives of the Camargue park.

*Temporal Stability.* Participants in the national group were approached again four weeks later in order to evaluate temporal stability by answering the PCC scale a second time. In this case, 62.65% of the original sample volunteered to answer the scale a second time ( $N = 104$ ). This new sample was composed of 86 females and 17 males (1 non-response), aged between 18 and 34 years ( $M = 19.96$ ,  $SD = 2.37$ ). Answers to the PCC scale should not differ statistically between the first and second administrations, as an indication of temporal stability.

## RESULTS

### National Group (French People)

Bartlett's test of sphericity,  $\chi^2(66) = 629.66$ ,  $p < .001$ , and the KMO index (.81) both supported exploratory factor analyses (EFA) in the national group. The initial unrotated solution obtained with prin-

principal component analysis (PCA) revealed satisfactory communalities ( $> .30$ ) for all items except Item 5 (.15). Here, two factors with eigenvalues superior to 1 explained 51.16% of the total variance (32.70% for the first factor; 18.46% for the second factor).

Next, a rotated solution was computed (direct oblimin rotation, as both dimensions of PCC were significantly correlated,  $r(166) = .28, p < .01, R^2 = .08$ ) which converged in six iterations, and revealed a factor structure compatible with the two-dimensional definition of PCC (Table 1).

TABLE 1  
 Pattern matrices of the French version of the PCC scale in reference to a national and a regional group (EFA – Principal component analysis, direct oblimin rotation)

Item	National group		Regional group	
	Factor 1	Factor 2	Factor 1	Factor 2
1	<b>.79</b>	-.07	<b>.80</b>	.04
2	.10	<b>.74</b>	<b>.52</b>	.11
3	<b>.74</b>	.10	<b>.88</b>	-.05
4	.04	<b>.73</b>	<b>.78</b>	.09
5	<b>.37</b>	.05	<b>.67</b>	.02
6	-.05	<b>.63</b>	-.07	<b>.87</b>
7	<b>.67</b>	-.06	<b>.80</b>	-.03
8	.10	<b>.73</b>	<b>.75</b>	-.08
9	<b>.80</b>	-.07	<b>.86</b>	.00
10	.17	<b>.62</b>	<b>.75</b>	-.08
11	<b>.78</b>	.11	<b>.87</b>	-.05
12	-.23	<b>.73</b>	.07	<b>.86</b>

Note. PCC = Perceived Collective Continuity scale. Values in bold indicate strong factor loadings ( $> .30$ ) for each item.

In this rotated solution, Items 1, 3, 5, 7, 9, and 11 loaded ( $> .30$ ) on the first factor (Culture, 49.89% of the total variance after rotation), and Items 2, 4, 6, 8, 10, and 12 loaded ( $> .60$ ) on the second factor (History, 12.66% of the total variance after rotation).

To determine the fit of data with the theoretical models tested through confirmatory factor analyses (CFA), we considered several goodness-of-fit indices: the comparative fit index (CFI), for which values higher than .90 indicate satisfactory fit (Hair, Black, Babin, & Anderson, 2009); the root mean square error of approximation (RMSEA), for which values lower than .05 are desirable (Browne & Cudeck, 1993); the standardized root mean square residual (SRMR), which should be lower than .08 (Wood, Linley, Maltby, Baliousis, & Joseph, 2008); and the  $\chi^2/df$  ratio which should ideally be between 2 and 3 and no higher than 3 (Carmines & McIver, 1981; Compagnone & Lo Monaco, 2015; Kline, 1998). To compare competing models, we calculated the Akaike and Bayesian information criteria (AIC and BIC), for which the model with the lowest values is considered to present the best fit (Schermelleh-Engel, Mossbrugger & Müller, 2003), and we conducted a Chi-square difference test. These analyses yielded satisfactory results (Table 2):  $\chi^2(53) = 96.23, p < .001; \chi^2/df = 1.81; CFI = .93; RMSEA = .07; SRMR = .06$ . Furthermore, the two-factor model (AIC = 6636.92, BIC = 6714.72) demonstrated significantly better fit than an alternative unidimensional model (AIC = 6825.58, BIC = 6900.27), as indicated by a significant Chi-square difference test,  $\chi^2(1) = 190.66, p < .001$ .

TABLE 2  
Factor loadings for each tested model of PCC obtained through CFAs

Item	National group			Regional group		
	2-factor model		1-factor model	2-factor model		1-factor model
	Factor 1 (History)	Factor 2 (Culture)	Factor 1 (PCC)	Factor 1 (History)	Factor 2 (Culture)	Factor 1 (PCC)
1	-.08	<b>.74</b>	<b>.66</b>	<b>.46</b>	.27	<b>.78</b>
2	<b>.67</b>	.28	<b>.45</b>	.29	.13	<b>.46</b>
3	.04	<b>.74</b>	<b>.73</b>	<b>.49</b>	.32	<b>.87</b>
4	<b>.65</b>	.21	<b>.38</b>	<b>.50</b>	.19	<b>.73</b>
5	.06	<b>.30</b>	<b>.31</b>	.29	.28	<b>.62</b>
6	<b>.47</b>	.15	.29	-1.07	<b>.93</b>	.03
7	-.03	<b>.54</b>	<b>.50</b>	<b>.52</b>	.22	<b>.78</b>
8	<b>.66</b>	.28	<b>.45</b>	<b>.40</b>	.24	<b>.68</b>
9	-.06	<b>.69</b>	<b>.64</b>	<b>.59</b>	.20	<b>.84</b>
10	<b>.52</b>	.31	<b>.45</b>	<b>.49</b>	.16	<b>.69</b>
11	.06	<b>.77</b>	<b>.76</b>	<b>.69</b>	.12	<b>.86</b>
12	<b>.57</b>	.00	.18	<b>.79</b>	<b>-.80</b>	-.10

Note. PCC = Perceived Collective Continuity scale; CFA = confirmatory factor analysis. Values in bold indicate strong factor loadings (> .30) for each item.

This version of the PCC scale ( $M = 44.27$ ,  $SD = 8.39$ ) was positively correlated with group identification ( $M = 22.11$ ,  $SD = 5.57$ ;  $r(166) = .28$ ,  $p < .01$ ;  $R^2 = .08$ ), so that the higher the level of PCC, the higher the level of group identification and vice-versa. This was the case for the cultural dimension ( $M = 21.43$ ,  $SD = 5.57$ ;  $r(166) = .38$ ,  $p < .01$ ;  $R^2 = .14$ ), but not for the historical dimension ( $M = 22.84$ ,  $SD = 3.94$ ;  $r(166) = .98$ ,  $p = .981$ ,  $R^2 = .004$ ).

#### Temporal Stability

Four weeks later, the student sample was solicited again in order to evaluate the PCC scale's temporal stability. As previously stated, 62.65% of the original student sample accepted to answer the scale a second time ( $N = 104$ ), and we expected the second administration to not differ significantly from the first.

Results were submitted to paired-sample  $t$ -test and revealed no difference between the first ( $M = 43.9$ ,  $SD = 8.17$ ) and second ( $M = 43.96$ ,  $SD = 8.12$ ) administration of the French version of the PCC scale,  $t(103) = -.92$ ,  $p = .357$ , which were significantly and positively correlated,  $r = .997$ ,  $p < .001$ ,  $R^2 = .99$ . Moreover, the cultural dimension did not differ between the first ( $M = 20.86$ ,  $SD = 6.09$ ) and second ( $M = 20.89$ ,  $SD = 6.07$ ) administrations of the scale,  $t(103) = -.78$ ,  $p = .435$ , which were again significantly and positively correlated,  $r = .997$ ,  $p < .001$ ,  $R^2 = .99$ . This was also the case for the historical dimension (respectively,  $M = 23.05$ ,  $SD = 4.28$ ;  $M = 23.07$ ,  $SD = 4.29$ ;  $t(103) = -.41$ ,  $p = .685$ ;  $r = .994$ ,  $p < .001$ ,  $R^2 = .98$ ). These results provide an encouraging indication as to the temporal stability of the French version of the PCC scale.

Regional Group (Camargue People)

To begin, we observed no significant differences between natives' and non-natives' overall PCC,  $F(1, 160) = 34.8, p = .491$ , which was also the case for the cultural dimension,  $F(1, 160) = .03, p = .871$ , and the historical dimension,  $F(1, 160) = 1.66, p = .199$ . In this group, unrotated PCA extracted two factors that accounted for 62.61% of the total variance. It should however be noted that the second factor only accounted for 12.66% of the total variance. All initial communalities were acceptable ( $> .30$ ) with the exception of Item 2 which was slightly low (.29). From here, we computed a rotated solution with direct oblimin rotation as both dimensions of PCC were significantly correlated:  $r(162) = .62, p < .001, R^2 = .39$ . This solution revealed a latent structure that differed from that of the national group (Table 1).

Specifically, all items loaded heavily ( $> .50$ ) on the first factor, except for the two reverse-coded items (6 and 12), which loaded heavily ( $> .80$ ) on the second factor. Thus, in reference to the regional group, the reverse-coded items appeared to converge to form a method factor (Magazine, Williams, & Williams, 1996), suggesting that the best solution for explaining regional PCC may be one-dimensional. This is also supported by the large proportion of variance explained by the first extracted factor. In fact, with these two reverse-coded items removed, PCA extracted only one factor that accounted for 59.80% of the overall variance, clearly supporting the unidimensionality of PCC in reference to the regional group. Therefore, we submitted the data to CFA in order to compare the competing one-factor and two-factor models (Table 3).

TABLE 3  
 Confirmatory factor analyses comparing a one- and two-factor model of PCC

	Two-factor model – 12 items	One-factor model – 12 items
$\chi^2$	$\chi^2(53) = 152.05, p < .001$	$\chi^2(54) = 167.93, p < .001$
$\chi^2/df$	2.86	3.11
CFI	.91	.89
RMSEA	.11	.11
SRMR	.07	.08
AIC	4971.28	4985.17
BIC	5048.47	5059.30
$\chi^2$ difference test	$\Delta\chi^2 = 15.88, p < .001$ .	

Note. PCC = Perceived Collective Continuity scale; CFI = comparative fit index; RMSEA = root-mean-square error of approximation; SRMR = standardized root-mean-square residual; AIC = Akaike information criterion; BIC = Bayesian information criterion.

According to CFAs (Table 3), PCC in reference to the regional group appears to be one-dimensional. In this way, the data only seem compatible with a two-factor solution when the method factor items (6 and 12) are included in the model. In this case, the two-factor solution presents a better fit than the one-factor solution ( $p < .001$ ), but the second factor appears to be a method factor as only the reverse-coded items load on it highly ( $> .80$ ) in the regional group (Table 2). This indicates that PCC in reference to regional groups may be one-dimensional, and that the originally proposed latent structure of PCC loses meaning when applied to regional groups.

## DISCUSSION

The main aim of this exploratory study was to compare the latent structure of the PCC scale when deployed in reference to a national *versus* regional group, while also contributing to the development of a valid French version of the PCC scale.

### Distinguishing between National and Regional Perceived Collective Continuity

In the national group (French people), the French version of the PCC scale appears to adhere to the theoretical definition of PCC, with one historical and one cultural dimension. Further contributing to its validation, this version of the PCC scale was significantly and positively correlated with group identification, as was the original version of the scale (Sani, Bowe, Herrera, Manna et al., 2007), and it appears stable over time. Moreover, contrary to previous observations, we did not observe lower reliability for the historical dimension compared to the cultural dimension.

In the regional group, the latent structure of the French version of the PCC scale was not the same as in the national group. Specifically, PCC appeared one-dimensional, indicating that the distinction between cultural and historical dimensions may not be relevant in reference to regional groups with a strong cultural identity. In the regional group, this was supported by the low reliability of the historical dimension compared to the cultural dimension. France is a formal and institutionalized political entity whose history is collectively learned through the education system and remains readily available. Thus, history can constitute a pertinent basis for the expression of collective continuity in reference to French people. Regional history, however, such as Camargue history, is probably less visible than traditional practices and regional knowledge. In this way, tourism, globalization, and climate change can cause regional identities to be “less discernible as distinct historically rooted spatial entities” (Terlouw, 2012, p. 707), which may explain why the historical dimension is not so clear in reference to a regional group (respondents appear to identify more strongly with aspects of cultural continuity). Thus, we suggest that PCC behaves differently in regional and national groups, because the historical dimension becomes less salient for more specific, smaller groups. There is indeed some tentative evidence that reducing the scale of reference of the PCC scale can reduce the validity of the historical dimension. In particular, Herrera, Sani, and Bowe (2011) developed a Perceived Family Continuity scale based largely on the PCC scale, with items that referred “either to the perception that family in-group traditions, norms, beliefs, values, and habits are trans-generationally transmitted and are temporally persistent [...] or to a more general sense of connection between the past, present, and future history of the family” (p. 390). Principal component analysis, however, did not identify these two cultural and historical dimensions, to the point that a one-factor solution explaining over 40% of the overall variance was preferred. This could potentially be due to a lack of relevance of the historical items of the PCC scale when they refer to groups that are not national and all-encompassing, which is supported by the results of our study. Therefore, in reference to a regional identity, the expression of collective continuity may not hinge on two distinct dimensions, one cultural, the other historical. In fact, Camargue inhabitants, as a specific cultural group, may develop culturally appropriate ways to satisfy identity motives, such as continuity (Vignoles, Regalia, Manzi, Golledge, & Scabini, 2006).

This observation must however be considered in relation to some limits identified in this study. In particular, due to the unpredictability of field studies, the Camargue sample was composed both of native and non-native inhabitants, whereas the national sample was composed solely of French natives. As such, we rec-



ommend that future studies re-examine the PCC scale's latent structure with a large enough sample of natives in a regional group, which was unfortunately not possible here. Moreover, undergraduate students completed secondary school more recently than members of the Camargue sample, and as such, may more readily distinguish between historical events in France and cultural traditions, values, and beliefs. As such, the non-confirmation of the two-factor structure in the Camargue sample may be due to differences between the Camargue sample and the student sample. We thus recommend that future research explores the latent structure of the PCC scale in reference to a national group that is not comprised solely of students, which was unfortunately not possible here.

To finish, the predictive validity of the PCC scale requires further exploration, as it was only explored here in the national group with a measure of group identification. Further predictive validation of the French version is required. In this way, Sani Bowe, Herrera, Manna et al. (2007) propose that "an ingroup that is perceived as having historical and cultural continuity should enhance one's own sense of self-continuity and, in turn, this enhanced sense of self-continuity should increase one's own social identification and emotional ties with, and evaluation of, the ingroup" (p. 1123). This suggests that other measures, such as self-esteem and self-continuity, can further contribute to exploring the predictive validity of the French version of the PCC scale. Moreover, a measurement of group entitativity may also be useful, as "the perceived continuous existence of a collective is normally seen as an antecedent of its perceived entitativity" (Haslam, Rothchild, & Ernst, 2000, p. 123), meaning that the two constructs should be significantly and positively correlated, which was the case for the original version of the PCC scale. Furthermore, continuity has previously been identified as a factor of place meanings (Gustafson, 2001) and people-place bonds (Twigger-Ross & Uzzell, 1996), such as place identity (Breakwell, 1986; Korpela, 1989; Lalli, 1992; Uzzell, 1996). There appears to be a consensus that places, by providing a sense of continuity over time, contribute to shaping people-place bonds and, more generally, a sense of identity (Bluck & Alea, 2008; Gustafson, 2001; Hay, 1998; Low, 1990; Scannell & Gifford, 2010; Taylor, 2003; Ujang, 2012; Wang & Xu, 2015). Thus, a sense of collective continuity may be related to stronger people-place bonds, which warrants exploration in order to further investigate the PCC scale's predictive validity.

In any case, these results suggest that the PCC scale (Sani, Bowe, Herrera, Manna et al., 2007) is adapted to the study of national identities, but that it requires further development to be adapted to regional identities. As such, the French version of the PCC scale can be deployed in Francophone samples in reference to national identities, but precaution should be taken if used in reference to regional identities. In these groups, PCC should at the very least be considered as a unidimensional concept. In both cases, the French version would benefit from further analyses in terms of its predictive validity.

#### Observations for Further Refining the Measure of PCC

The presence of reverse-coded items in only one dimension of the PCC scale can be related to its development process, particularly because, to our knowledge, EFAs were overlooked. The presence of these items in only one dimension is due, in our view, to the initial development procedure of the original scale (Sani, Bowe, Herrera, Manna et al., 2007). An initial 36-item, two-factor model was submitted to repeated CFAs, and items were reduced until their removal no longer led to a significant decrease of the Chi-square value. As the sole criteria for item selection, the final scale was unbalanced in that only one dimension included reverse-coded items. There is evidence that reverse-coded items can reduce the apparent validity of a measure (Pilotte & Gable, 1990; Schriesheim & Hill, 1981; Schriesheim, Eisenbach, & Hill, 1991), and can

even converge in some cases on a separate *method factor* (e.g., Magazine et al., 1996), as was apparently the case in the Camargue sample. Moreover, if such items are included in measurement tools to avoid biases such as the acquiescence bias (e.g., Bentler, Jackson, & Messick, 1971), then they should also be included in both dimensions of the PCC scale. This appears to be a consequence of the scale development process, relying solely on  $\chi^2$  model assessments through CFAs. In light of these considerations, we suggest that the previously reported lower reliability of the historical dimension may in fact be due to the presence of two reverse-coded items rather than a fundamental issue in the definition of PCC, at least in reference to national groups. We recommend that they either be removed in future studies, or that new reverse-coded items be also incorporated into the cultural dimension of the scale. To our knowledge, no alternative instruments for the measurement of PCC currently exist despite the importance of this concept in various aspects of group identity (e.g., Smeekes & Verkuyten, 2013). This means that researchers should be mindful of this limitation until a more balanced scale can be developed or until reverse-coded items are also added to the cultural dimension (either by rephrasing items already present in the scale or by adding new ones).

As previously mentioned, the PCC scale was created on the basis of the dimensions of self-continuity (i.e., “narrative” and “stability”). However, our results suggest that the corresponding narrative dimension of PCC (i.e., “history”) is adapted to reflect national groups’ specificities. Thus, the scale may not be suitable in reference to other groups, which underlines the need for a multidimensional collective continuity scale. For instance, motivated identity construction theory (Vignoles et al., 2006) suggests that individuals seek out continuity-maintaining cognitions and behaviors, and avoid those which threaten their sense of continuity. For collective identities, this means that the relevance of social groups depends on an overlap between collective continuity and continuity as an identity motive. Recent work has indeed shown that identity motives are “culturally flexible universals” (Becker et al., 2012, p. 849), meaning that they exist in all groups and are expressed differently depending on cultural factors. The multidimensionality of self-continuity (Becker et al., 2018) calls for a multidimensional measure of collective continuity. We encourage initiatives to develop such an instrument beyond the specificities of national groups.

## CONCLUSION

From this exploratory study, we conclude that the PCC scale introduced by Sani, Bowe, Herrera, Manna et al. (2007) does involve two dimensions (“historical” and “cultural”), but only in reference to a national group. The scale’s latent structure appeared one-dimensional when deployed in reference to a regional group. As such, we propose that the PCC scale, as a two-dimensional measure, is currently only appropriate for use in reference to national groups. If it must be deployed in other groups before a more suitable, multidimensional measure can be developed, we recommend it be considered as a one-dimensional instrument, where two reverse-coded items can converge to form a method factor. We encourage future research to focus on the development of a PCC scale that is adapted to all social groups.

In reference to a national group, the French version of the PCC scale appears to possess satisfactory psychometric qualities and, like the original version (Sani, Bowe, Herrera, Manna et al., 2007), is positively correlated with group identification. However, this scale requires further exploration if not deployed in reference to a national group, as we observed a very different latent structure that was incompatible with the definition of PCC in reference to a regional group. Beyond national/regional PCC differences, this French version would benefit from further deployment in order to strengthen its predictive validity, but it can now be administered in Francophone samples in reference to national groups.

NOTE

1. The French version of the PCC scale is available by contacting the authors.

FUNDING

This research was supported by the French Ministry for Ecology, Sustainable Development and Energy, within the project “Memotrade: Social Memory of Water-Related Trades and Practices: Local knowledge and Climate Change Adaptation” (ERANET/CIRCLE-MED2/0003/2013).

REFERENCES

- Antonovsky, B. (1987). *Unraveling the mystery of health: how people manage stress and stay well*. San Francisco, CA: Jossey-Bass.
- Becker, M., Vignoles, V. L., Owe, E., Brown, R., Smith, P. B., Easterbrook, M., . . . Yamakoglu, N. (2012). Culture and the distinctiveness motive: Constructing identity in individualistic and collectivistic cultures. *Journal of Personality and Social Psychology, 102*, 833-855. <https://doi.org/10.1037/a0026853>
- Becker, M., Vignoles, V. L., Owe, E., Easterbrook, M. J., Brown, R., Smith, P. B., . . . , Camino, L. (2018). Being oneself through time: Bases of self-continuity across 55 cultures. *Self and Identity, 17*(3), 276-293. <https://doi.org/10.1080/15298868.2017.1330222>
- Bentler, P. M., Jackson, D. N., & Messick, S. (1971). Identification of content and style: A two-dimensional interpretation of acquiescence. *Psychological Bulletin, 76*(3), 186-204. <https://doi.org/10.1037/h0031474>
- Bluck, S., & Alea, N. (2008). Remembering being me: The self-continuity function of autobiographical memory in younger and older adults. In F. Sani (Ed.), *Self continuity: Individual and collective perspectives* (pp. 55-70). New York, NY: Psychology Press.
- Breakwell, G. M. (1986). *Coping with threatened identities*. London, UK: Methuen.
- Breisach, E. (1986). *Historiography: Ancient, medieval, and modern*. Chicago, IL: The University of Chicago Press.
- Browne, M. W. & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Field methods in cross-cultural research* (pp.136-162). Beverly Hills, CA: Sage.
- Carmines, E. G., & McIver, J. D. (1981). Analysing models with unobserved variables: analysis of covariance structures. In G. W. Bohinsted & E. F. Borgatta (Eds.), *Social measurement: current issues* (pp. 65-115). Beverly Hills, CA: Sage Publications.
- Chandler, M. J., Lalonde, E., Sokol, B. W., & Hallett, D. (2003). Personal persistence, identity development, and suicide: a study of native and non-native North American adolescents. *Monographs of the Society for Research in Child Development, 68*(2), vii-viii. <https://doi.org/10.1111/j.1540-5834.2003.00246.x>
- Chandler, M. J., & Proulx, T. (2008). Personal persistence and persistent peoples: Continuities in the lives of individual and whole cultural communities. In F. Sani (Ed.), *Self-continuity: Individual and collective perspectives* (pp. 213-226). New York, NY: Psychology Press.
- Chesterman, A., Rateau, P., Eonnet, M., Sire, A., Steenkeste, A., & Castro, P. (2017). *Adaptation to climate change from a natural and social science perspective: Water in French coastal Mediterranean areas*. Memotrade final report, France. Nîmes, France: Nîmes University.
- Compagnone, P. D., & Lo Monaco, G. (2015). Validation française du questionnaire d'évaluation de l'environnement invalidant durant l'enfance: The Invalidating Childhood Environments Scale (ICES). *Revue Européenne de Psychologie Appliquée, 65*(1), 43-52.
- Doosje, B., Ellemers, N., & Spears, R. (1995). Perceived intragroup variability as a function of group status and identification. *Journal of Experimental Social Psychology, 31*, 326-339. <https://doi.org/10.1006/jesp.1995.1018>
- Gambaiani, D. D., Mayol, P., Isaac, S. J., & Simmonds, M. P. (2008). Potential impacts of climate change and greenhouse emissions on Mediterranean marine ecosystems and cetaceans. *Journals of the Marine Biological Association of the United Kingdom, 89*(1), 179-201. <https://doi.org/10.1017/S0025315408002476>
- Gustafson, P. (2001). Meanings of place: everyday experience and theoretical conceptualisations. *Journal of Environmental Psychology, 21*, 5-16. <https://doi.org/10.1006/jevp.2000.0185>
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2009). *Multivariate Data Analysis (7th Edition)*. Upper Saddle River, NJ: Prentice Hall.

- Haslam, C., Holme, A., Haslam, A., Iyer, A., Jetten, J., & Williams, W. H. (2008). Maintaining group memberships: Social identity continuity predicts well-being after stroke. *Neuropsychological Rehabilitation, 18*, 671-691. <https://doi.org/10.1080/09602010701643449>
- Haslam, N., Rothchild, L., & Ernst, D. (2000). Essentialist beliefs about social categories. *British Journal of Social Psychology, 39*, 113-127. <https://doi.org/10.1348/014466600164363>
- Hay, R. (1998). A rooted sense of place in cross-cultural perspective. *Canadian Geographer, 42*(3), 245-266. <https://doi.org/10.1111/j.1541-0064.1998.tb01894.x>
- Herrera, M. & Sani, F. (2013). Why does ingroup identification shield people from death anxiety? The role of perceived continuity and group entitativity. *Social Psychology, 44*, 320-328. <http://dx.doi.org/10.1027/1864-9335/a000128>
- Herrera, M., Sani, F., & Bowe, M. (2011). Perceived family continuity: Implications for family identification and psychological well-being. *International Journal of Social Psychology, 26*(3), 387-399. <https://doi.org/10.1174/021347411797361275>
- Hobsbawm, E. (1990). *Nations and nationalism since 1780: Programme, myth, reality*. Cambridge, UK: Cambridge University Press.
- Iyer, A., & Jetten, J. (2011). What's left behind: Identity continuity moderates the effect of nostalgia on well-being and life choices. *Journal of Personality and Social Psychology, 101*(1), 94-108. <https://doi.org/10.1037/a0022496>
- Jetten, J., & Hutchison, P. (2011). When groups have a lot to lose: Historical continuity enhances resistance to a merger. *European Journal of Social Psychology, 41*, 335-343. <https://doi.org/10.1002/ejsp.779>
- Jetten, J., & Wohl, M. J. A. (2012). The past as a determinant of the present: Historical continuity, collective angst, and opposition to immigration. *European Journal of Social Psychology, 42*, 442-450. <https://doi.org/10.1002/ejsp.865>
- Kline, R. B. (1998). *Principles and practice of structural equation modelling*. New York, NY: Guilford Press.
- Korpela, K. M. (1989). Place identity as a product of environmental self-regulation. *Journal of Environmental Psychology, 9*, 241-256. [https://doi.org/10.1016/S0272-4944\(89\)80038-6](https://doi.org/10.1016/S0272-4944(89)80038-6)
- Lalli, M. (1992). Urban related identity: Theory, measurement and empirical findings. *Journal of Environmental Psychology, 12*, 285-303. [https://doi.org/10.1016/S0272-4944\(05\)80078-7](https://doi.org/10.1016/S0272-4944(05)80078-7)
- Lévi-Strauss, C. (1972). *The Savage Mind*. Oxford, UK: Oxford University Press.
- Low, S. M. (1990). Cross-cultural place attachment: a preliminary typology. In Y. Yoshitake, R. B. Bechtel, T. Takahashi, & M. Asai (Eds.), *Current issues in environment-behavior research*. Tokyo, Japan: University of Tokyo.
- Lowenthal, D. (1985). *The past is a foreign country*. Cambridge, UK: Cambridge University Press.
- Luhtanen, R., & Crocker, J. (1992). A collective self-esteem scale: Self-evaluation of one's own social identity. *Personality and Social Psychology Bulletin, 18*, 302-318. <https://doi.org/10.1177/0146167292183006>
- Magazine, S. L., Williams, L. J., & Williams, M. L. (1996). A confirmatory factor analysis examination of reverse-coding effects in Meyer and Allen's affective and continuance commitment scales. *Educational and Psychological Measurement, 56*(2), 241-250. <https://doi.org/10.1177/0013164496056002005>
- Nicholls, R. J., & Hoozemans, F. M. J. (1996). The Mediterranean: Vulnerability to coastal implications of climate change. *Ocean and Coastal Management, 31*(2-3), 105-132. [https://doi.org/10.1016/S0964-5691\(96\)00037-3](https://doi.org/10.1016/S0964-5691(96)00037-3)
- Nunnally, J. C. (1978). *Psychometric Theory* (2nd Ed.). New York, NY: McGraw Hill.
- Pilotte, W. J., & Gable, R. K. (1990). The impact of positive and negative item stems on the validity of a computer anxiety scale. *Educational and Psychological Measurement, 50*, 603-610. <https://doi.org/10.1177/0013164490503016>
- Poumadère, M., Mays, C., Pfeifle, G., & Vafeidis, A. T. (2008). Worst case scenario and stakeholder group decision: A 5-6 meter sea-level rise in the Rhone Delta, France. *Climatic Change, 91*(1-2), 123-143.
- Roth, J., Huber, M., Juenger, A., & Liu, J. (2017). It's about valence: Historical continuity of historical discontinuity as a threat to social identity. *Journal of Social and Political Psychology, 5*(2), 320-341. <https://doi.org/10.5964/jssp.v5i2.677>
- Sabatier, F. (2008). Modelling the impact of the climatic changes on the dune erosion. The case of the Camargue. *La Houille Blanche, 1*, 40-49.
- Sani, F. (2008). *Self-continuity: Individual and collective perspectives*. New York, NY: Psychology Press.
- Sani, F., Bowe, M., & Herrera, M. (2007). Perceived collective continuity and social well-being: exploring the connections. *European Journal of Social Psychology, 38*(2), 365-374. <https://doi.org/10.1002/ejsp.461>
- Sani, F., Bowe, M., & Herrera, M. (2008). Perceived collective continuity: Seeing groups as temporally enduring entities. In F. Sani (Ed.), *Self-continuity: Individual and collective perspectives* (pp. 159-172). New York, NY: Psychology Press.

- Sani, F., Bowe, M., Herrera, M., Manna, C., Cossa, T., Miao, X., & Yuefang, Z. (2007). Perceived collective continuity: Seeing groups as entities that move through time. *European Journal of Social Psychology, 37*, 1118-1134. <https://doi.org/10.1002/ejsp.430>
- Sani, F., Herrera, M., & Bowe, M. (2009). Perceived collective continuity and in-group identification as defence against death awareness. *Journal of Experimental Social Psychology, 45*, 242-245. <https://doi.org/10.1016/j.jesp.2008.07.019>
- Scannell, L., & Gifford, R. (2010). Defining place attachment: A tripartite organizing framework. *Journal of Environmental Psychology, 30*, 1-10. <https://doi.org/10.1016/j.jenvp.2009.09.006>
- Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research Online, 8*(8), 23-74.
- Schriesheim, C. A., & Hill, K. D. (1981). Controlling acquiescence response bias by item reversals: The effect on questionnaire validity. *Educational and Psychological Measurement, 41*, 1101-1114. <https://doi.org/10.1177/001316448104100420>
- Schriesheim, C. A., Eisenbach, R. J., & Hill, K. D. (1991). The effect of negation and polar opposite item reversals on questionnaire reliability and validity: An experimental investigation. *Educational and Psychological Measurement, 51*, 67-78. <https://doi.org/10.1177/0013164491511005>
- Smeekes, A., McKeown, S., & Psaltis, C. (2017). Endorsing narratives under threat: Maintaining perceived collective continuity through the protective power of ingroup narratives in Northern Ireland and Cyprus. *Journal of Social and Political Psychology, 5*(2), 282-300. <https://doi.org/10.5964/jspp.v5i2.682>
- Smeekes, A., & Verkuyten, M. (2013). Collective self-continuity, group identification and in-group defence. *Journal of Experimental Social Psychology, 49*, 984-994. <https://doi.org/10.1016/j.jesp.2013.06.004>
- Smeekes, A., & Verkuyten, M. (2014a). Perceived group continuity, collective self-continuity, and in-group identification. *Self and Identity, 13*, 663-680. <https://doi.org/10.1080/15298868.2014.898685>
- Smeekes, A., & Verkuyten, M. (2014b). When national culture is disrupted: Cultural continuity and resistance to Muslim immigrants. *Group Processes & Intergroup Relations, 17*, 45-66. <https://doi.org/10.1177/1368430213486208>
- Smeekes, A., & Verkuyten, M. (2015). The presence of the past: Identity continuity and group dynamics. *European Review of Social Psychology, 26*(1), 162-202. <https://doi.org/10.1080/10463283.2015.1112653>
- Taylor, S. (2003). A place for the future? Residence and continuity in women's narratives of their lives. *Narrative Inquiry, 13*(1), 193-215. <https://doi.org/10.1075/ni.13.1.07tay>
- Terlouw, K. (2012). From thick to thin regional identities? *Geojournal, 77*, 707-721. <https://doi.org/10.1007/s10708-011-9422-x>
- Twigger-Ross, C. L., & Uzzell, D. L. (1996). Place and identity processes. *Journal of Environmental Psychology, 16*, 205-220. <https://doi.org/10.1006/jevp.1996.0017>
- Ujang, N. (2012). Place attachment and continuity of urban place identity. *Procedia – Social and Behavioural Sciences, 49*, 156-167. <https://doi.org/10.1016/j.sbspro.2012.07.014>
- Uzzell, D. L. (1996). Conferring a sense of place identity: The role of museums. *The International Journal of Heritage Studies, 1*(4), 219-228. <https://doi.org/10.1080/13527259608722151>
- Vallerand, R. J. (1989). Vers une méthodologie de validation trans-culturelle de questionnaires psychologiques : Implications pour la recherche en langue française [Towards a transcultural validation method of psychological questionnaires: Implications for research in French]. *Canadian Psychology, 30*(4), 662-680. <https://doi.org/10.1037/h0079856>
- Vaquier, A., & Heurteaux, P. (1989). Recent modification of the aquatic vegetation in the Etang du Vaccarès, Camargue, France in relation with the human disturbances. *International Journal of Limnology, 25*(1), 25-38. <https://doi.org/10.1051/limn/1989002>
- Vignoles, V. L., Regalia, C., Manzi, C., Gollidge, J., & Scabini, E. (2006). Beyond self-esteem: Influence of multiple motives on identity construction. *Journal of Personality and Social Psychology, 90*, 308-333. <https://doi.org/10.1037/0022-3514.90.2.308>
- Wang, S., & Xu, H. (2015). Influence of place-based sense of distinctiveness, continuity, self-esteem and self-efficacy on residents' attitudes toward tourism. *Tourism Management, 47*, 241-250. <https://doi.org/10.1016/j.tourman.2014.10.007>
- Warner, R. H., Kent, A. H., & Kiddoo, K. L. (2016). Perceived collective continuity and attitudes toward outgroups. *European Journal of Social Psychology, 46*, 595-608. <https://doi.org/10.1002/ejsp.2202>
- Wohl, M. J. A., Branscombe, N. R., & Reysen, S. (2010). Perceiving your group's future to be in jeopardy: Extinction threat induces collective angst and the desire to strengthen the ingroup. *Personality and Social Psychology Bulletin, 36*, 898-910. <https://doi.org/10.1177/0146167210372505>
- Wood, A. M., Linley, P. A., Maltby, J., Baliousis, M., & Joseph, S. (2008). The authentic personality: A theoretical and empirical conceptualization and the development of the authenticity scale. *Journal of Counselling Psychology, 55*(3), 385-399. <https://doi.org/10.1037/0022-0167.55.3.385>