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Pancultural Nostalgia: Prototypical Conceptions Across Cultures

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Abstract

Nostalgia is a frequently-experienced complex emotion, understood by laypersons in the United Kingdom and United States of America to (1) refer prototypically to fond, self-relevant, social memories and (2) be more pleasant (e.g., happy, warm) than unpleasant (e.g., sad, regretful). This research examined whether people across cultures conceive of nostalgia in the same way. Students in 18 countries across 5 continents ($N = 1704$) rated the prototypicality of 35 features of nostalgia. The samples showed high levels of agreement on the rank-order of features. In all countries, participants rated previously-identified central (vs. peripheral) features as more prototypical of nostalgia, and showed greater inter-individual agreement regarding central (vs. peripheral) features. Cluster analyses revealed subtle variation among groups of countries with respect to the strength of these pancultural patterns. All except African countries manifested the same factor structure of nostalgia features. Additional exemplars generated by participants in an open-ended format did not entail elaboration of the existing set of 35 features. Findings identified key points of cross-cultural agreement regarding conceptions of nostalgia, supporting the notion that nostalgia is a pancultural emotion.

Keywords: Nostalgia; Emotion; Prototype; Culture

Pancultural Nostalgia: Prototypical Conceptions Across Cultures

In Japan, a woman drives past her childhood school and exclaims how *natsukashii* it is. In Ethiopia, a musician sings a *Tizita* ballad reliving memories of a lost lover. In the USA, a man smiles *nostalgically* as he listens to an old record that reminds him of his carefree teenage years. And in ancient Greece, the mythical hero Odysseus is galvanized by memories of his family as he struggles to make his way home from war (Homer, trans. 1921). To what extent are these four characters experiencing the same emotion? Is nostalgia universal?

Growing evidence indicates that nostalgia is a self-relevant emotion associated with fond memories (Hepper, Ritchie, Sedikides, & Wildschut, 2012; Sedikides, Wildschut, Arndt, & Routledge, 2006) and that it serves psychological functions (Routledge, Wildschut, Sedikides, & Juhl, 2013; Sedikides, Wildschut, Arndt, & Routledge, 2008). If nostalgia qualifies as an emotion and an adaptive psychological resource, it may be pancultural. The present article begins to address this issue by examining the equivalence of prototypical conceptions of nostalgia across a range of cultures.

The Universality of Emotion

The universality of emotion concepts has long attracted scholarly attention. Darwin (1872/1965) proposed that emotions evolved as adaptive responses to social living, and thus some emotions should be universal. In contrast, Harré (1986) argued that emotions are primarily cultural constructions and thus should vary according to the meanings and practices of different cultural settings. Although the issues are textured, two major lines of research have supported the universality view. The first line of research has identified universally recognized facial expressions, focusing on a core set of “basic” emotions (e.g., anger, joy, sadness; Ekman, 1992; Ekman & Friesen, 1971; Russell, 1991a). The second line of research has examined conceptions of emotion words (Fontaine, Scherer, Roesch, & Ellsworth, 2007; Kuppens, Ceulemans, Timmerman, Diener, & Kim-Prieto, 2006; Páez & Vegara, 1995). This lexical literature has established that, across cultures, *emotion* (and specific emotions) is a fuzzy category organized in a prototype structure, with no necessary or sufficient category members (i.e., features), but with more representative features being central to the prototype (Fehr & Russell, 1984; Russell, 1991a; Shaver, Schwartz, Kirson, & O’Connor, 1987; Shaver,

Wu, & Schwartz, 1992). Common underlying dimensions including valence and arousal emerge in such prototypes across languages (Fontaine et al., 2007; Kuppens et al., 2006; Russell, Lewicka, & Niit, 1989; Scollon & Tov, 2012).

Self-conscious emotions (i.e., those that rely on self-representations and social context) have divided scholars. Emotions such as guilt, shame, and pride reliably emerge in lexical categories, but were traditionally ignored by facial studies because they rely on contextual information (Edelstein & Shaver, 2007). However, more recently Ekman (1994) has recognized several as candidate basic emotions, and evidence has also identified expressions or poses for some (e.g., embarrassment; Haidt & Keltner, 1999). Tracy and Robins (2004) argued that self-conscious emotions serve evolutionary functions by regulating socially valued behavior. Similarly, Wierzbicka (1992) argued that self-conscious emotions can be expressed using basic and universally communicable building blocks of language. Thus, self-conscious emotions may be pancultural. Indeed, a few lexical studies have documented high cross-cultural consistency in conceptions of shame, guilt, embarrassment, pride, and jealousy (Edelstein & Shaver, 2007). The only differences involve different cultures having more or fewer words for an emotion, or viewing it as more or less socially desirable (Edelstein & Shaver, 2007; Fischer, Manstead, & Mosquera, 1999; Kim & Hupka, 2002; see Russell, 1991b, for a few ethnographic exceptions). However, self-conscious emotions are often excluded from larger-scale lexical studies, because participants do not initially rate them high enough on emotion-prototypicality (Edelstein & Shaver, 2007). Nostalgia is a self-conscious emotion that has suffered particular neglect in lexical and cross-cultural research, perhaps due to its tumultuous definitional history (Batcho, 2013; Frijda, 2007; Hepper, Ritchie, et al., 2012; Sedikides, Wildschut, & Baden, 2004). Below, we review evidence in support of the notion that nostalgia deserves cross-cultural attention.

Why Nostalgia Merits Cross-Cultural Examination

First, although scholarly definitions of nostalgia lacked consensus until relatively recently, nostalgia is now widely defined as an emotion (for reviews, see Batcho, 2013; Routledge et al., 2013). The term was coined from the Greek words *nostos* (return) and *algos* (suffering), to describe adverse symptoms of Swiss mercenaries fighting far from home

(Hofer, 1688/1934). Historically, nostalgia was conceptualized as a disorder or conflated with homesickness (Castelnuovo-Tedesco, 1980; McCann, 1941), but in the late 20th century it began to receive independent attention (Davis, 1979; Kaplan, 1987) and was redefined as “a sentimental longing or wistful affection for the past” (New Oxford Dictionary of English, 1998, p. 1266). Contemporary scholars view nostalgia as a self-relevant, social, complex emotion (Batcho, 1998; Frijda, 2007; Hertz, 1990; Sedikides et al., 2004; Wildschut, Sedikides, Arndt, & Routledge, 2006). Hepper, Ritchie, et al. (2012) studied lay conceptions of nostalgia in the UK and USA and found that, like other emotions, they form a prototype structure, including several affective features. Specifically (in the USA and UK), nostalgia prototypically arises when reminiscing about a fond and personally meaningful memory from one’s past, usually pertaining to childhood or a close relationship. The prototypical emotion is a blend of happiness and loss, accompanied by several peripheral affect-laden features (e.g., warmth, sadness). Hepper, Ritchie, et al. then used a median-split of prototypicality ratings to delineate relatively central versus peripheral features of nostalgia. In line with prototype theory (Rosch, 1978), central (vs. peripheral) features were better recalled, were more quickly classified as related to nostalgia, better conveyed a sense of nostalgia, better characterized participants’ nostalgic experiences, and induced nostalgic feelings. Overall, lay conceptions in the UK and USA dovetail with the scholarly view that nostalgia is an emotion. If other self-conscious emotions are universal, nostalgia should be also.

Second, nostalgia is prevalent in everyday life across cultures. The majority of UK undergraduates and adults aged 18-91 experience nostalgia at least once a week and modally three times a week (Hepper, Robertson, Wildschut, Sedikides, & Routledge, 2014; Wildschut et al., 2006), and the majority of Japanese adults report feeling nostalgic when they hear old music (Kusumi, Matsuda, & Sugimori, 2010). Moreover, nostalgia references are embedded in culture across the globe. Literary examples include Homer’s (trans. 1921) *Odyssey*, Old English poetry (Trilling, 2009), Chilean poet Pablo Neruda (1924/2003), and Chinese Confucian writings (Legge, trans. 1971). Folk and popular music examples include Tizita songs in Ethiopia (Woubshet, 2009) and the popular tradition in The Netherlands for the “Top 2000” radio show to collate the nation’s favorite songs each December (Draaisma,

Vingerhoets, & Wijnjes, 2011). Cultural practices designed to invoke nostalgia include the Hindu ritual Tarpan, which honors ancestors in order to bring strength and solace (Jagannathan, 2005). Finally, everyday discourse about national history recognizes nostalgia, such as for the former East Germany (*Ostalgie*; Gebauer & Sedikides, 2009) and the communist era of the Polish People's Republic (Esche, Timm, & Topalska, 2009). Thus, nostalgia is a frequent characteristic of human experience and permeates global arts and cultural practices.

Third, growing evidence indicates that nostalgia serves key psychological functions (Routledge et al., 2013; Sedikides et al., 2008). Correlational and experimental studies show that nostalgia repairs negative mood and boosts positive mood (Wildschut et al., 2006); provides self-worth and self-affirmation (Vess, Arndt, Routledge, Sedikides, & Wildschut, 2012; Wildschut et al., 2006); buffers existential threat, boredom, and boosts perceived meaning in life (Juhl, Routledge, Arndt, Sedikides, & Wildschut, 2010; Routledge, Arndt, Sedikides, & Wildschut, 2008; Routledge et al., 2011; Van Tilburg, Igou, & Sedikides, 2013); and counteracts loneliness while increasing social connectedness, support, and interpersonal competence (Seehusen et al., 2013; Wildschut et al., 2006; Wildschut, Sedikides, Routledge, Arndt, & Cordaro, 2010; Zhou, Sedikides, Wildschut, & Gao, 2008; Zhou, Wildschut, Sedikides, Shi, & Feng, 2012). Far from rendering one "stuck in the past," nostalgia engenders approach motivation and optimism about the future (Cheung et al., 2013; Stephan et al., in press). Further, nostalgia impacts interpersonal behaviors such as increased charity donations, helping, relationship promotion, and reduced prejudice (Hepper, Wildschut, & Sedikides, 2012; Stephan et al., in press; Turner, Wildschut, & Sedikides, 2012; Turner, Wildschut, Sedikides, & Gheorghiu, 2013; Zhou et al., 2012). Thus, nostalgia serves an adaptive regulatory function.

In summary, nostalgia is widely recognized as an emotion, appears prevalent in human experience, and serves pivotal psychological functions. The latter evidence has been gathered from samples in China (Zhou et al., 2008, 2012), Ireland (Van Tilburg et al., 2013), The Netherlands (Routledge et al., 2011), the UK (Hepper, Ritchie, et al., 2012; Wildschut et al., 2006), and USA (Routledge et al., 2008). Together, these lines of evidence imply that

conceptions and experiences of nostalgia might be pancultural. However, other scholars have argued that conceptions and experiences of nostalgia may vary across cultures, implying that the UK/USA prototype (Hepper, Ritchie, et al., 2012) would not apply in other countries. For example, Sprengler (2009, p. 1) claimed that “There are too many variables at work that inform different understandings and variants of the term . . . What nostalgia means in Japanese culture may be quite different than what it means in American culture.” Research has yet to examine cross-cultural conceptions of nostalgia. Given the burgeoning evidence for its potential as a psychological resource, it is timely to begin doing so.

The Present Investigation

We examined cross-cultural similarities or differences in lay conceptions of nostalgia. We sampled a range of cultures across five continents, recruiting participants from university student populations in order to maintain consistency in sample age and educational attainment (as advised by Van de Vijver & Leung, 1997). As our point of departure, we took the prototypical conception of nostalgia according to laypersons in the UK and USA (Hepper, Ritchie, et al., 2012) and adopted an *etic* approach (i.e., to test the extent to which this conception of nostalgia generalizes to other cultures; Segall, Lonner, & Berry, 1998). Such an approach is standard when aiming to examine multiple cultures at once (Hupka et al., 1985; Russell et al., 1989; Schmitt & Allik, 2005). The alternative *emic* approach (e.g., to explore the nature of nostalgia in depth within each culture), is advisable primarily when aiming to examine similarities or differences between two specific cultures (Fischer et al., 1999; Kim & Hupka, 2002). Accordingly, we asked participants in each sample to rate the prototypicality of the 35 nostalgia features identified by Hepper, Ritchie, et al. (2012).

If nostalgia is a pancultural emotion, people across cultures should endorse the same lay conceptions of the construct to a highly similar extent. Hence, we hypothesized that participants across cultures would (1) show a high level of agreement regarding the prototypicality of the 35 nostalgia features and (2) endorse previously identified (in UK/USA) “central” features of nostalgia as more prototypical than “peripheral” features. However, we also examined the nature of fine-grained differences between cultures. In particular, we tested whether countries formed statistically similar clusters in terms of (1) mean ratings of

nostalgia features and (2) correlations between ratings of nostalgia features. We followed up the latter by examining the factor structure of the 35 nostalgia features within clusters of countries.

As a secondary focus, we also began to investigate whether the existing set of features provides complete coverage of the nostalgia concept across cultures. That is, we invited participants to list additional features of nostalgia in an open-ended format. Although a truly emic approach is beyond the scope of the present study, our practice would provide an initial glimpse of whether important additional features are present only in some cultures.

Method

Participants and Procedure

A total of 1704 students (56% female, $M_{AGE} = 22.25$, $SD_{AGE} = 5.02$) were recruited from universities in 18 countries (Table 1) and participated voluntarily in class, by taking a booklet home, or via the internet. We presented all materials in the same format and order regardless of participation method. Most participants did not receive compensation, but students in some institutions received partial course credit or small monetary compensation.

Materials

Participants were given a list of the 35 prototypical features of nostalgia identified in the USA/UK (Hepper, Ritchie, et al., 2012). The features were displayed in a fixed random order, each followed by 2-3 exemplars to clarify its meaning (as in Hepper, Ritchie, et al., Study 2). Table 2 lists the features in order of centrality. Participants were asked to rate how closely each feature was related to their view of nostalgia (1 = *not at all related*, 8 = *extremely related*). In an effort to identify additional conceptions of nostalgia that may exist in some cultures, participants were also asked to “write down any words or phrases that describe NOSTALGIA that were not listed on the previous page.” Participants were given ample space to list as many additional features as they wished.

Table 1 displays the language and term used for “nostalgia” in each sample. Participants completed materials in 10 Indo-European languages, 1 Afro-Asiatic (i.e., Hebrew), 1 Turkic (i.e., Turkish), 1 Sino-Tibetan (i.e., Mandarin), and 1 Altaic (i.e., Japanese, although see Ruhlen, 1994). However, most samples (15/18) used “nostalgia” or an

adapted form as the referent, because this term is prevalent in these countries (at least for university students).¹ Table 1 also lists synonyms of nostalgia in each language and their English translations. These translations overlap substantially, suggesting a common underlying conception at a linguistic level. For countries in which participants primarily read a language other than English, materials were translated and back-translated by bilingual speakers or professional translators. The only exceptions were the Japanese sample, in which one bilingual speaker translated materials, and the Greek and Romanian samples, in which two bilingual speakers translated and reviewed materials. Participants' open-ended lists of additional nostalgia features were translated into English by one or two bilingual speakers.

Results

We proceeded with three sets of analyses. *First*, we examined the extent to which conceptions of nostalgia are similar across all countries. We did so by assessing rank-order correlations between countries' feature rankings and by assessing whether the ordinal pattern of central and peripheral features previously obtained in the UK and USA (Hepper, Ritchie, et al., 2012) applied across cultures. Here, we focused on the consistency of the *relative* (not absolute) centrality of the nostalgia features (e.g., do cultures agree on which features are more central than others?). This approach removed any confounds caused by cultural differences in response bias or scale interpretation (Van de Vijver & Leung, 1997).

Second, we explored any variation between countries: Are some cultures more similar than others, and in what ways? We did so by performing cluster analyses on (1) the mean ratings of the 35 features and (2) the 595 non-redundant correlations between the 35 features. In the former analysis, we clustered a data array of 18 rows (representing countries) and 35 columns (representing features). We focused on absolute (not relative) mean ratings. This approach allowed clusters of countries to reflect differences both in ranking profiles of the features and also absolute ratings of the features (e.g., if a particular group of countries rated all features very low). In the latter analysis, we clustered a data array of 18 rows (representing countries) and 595 columns (representing non-redundant feature pairs), which allowed us to identify clusters of countries with similar correlation matrices. We then used factor analysis to identify the prototypical dimensions of nostalgia within clusters.

Third, we coded the open-ended responses provided by participants in each country to establish whether any additional features of nostalgia were identified in some or all cultures.

Cross-Cultural Generalizability of Prototypical Conceptions of Nostalgia

Correlations between countries' ranking of features. We began by asking how much agreement there was between different countries concerning the rank-order of features of nostalgia. That is, do participants across the world agree on which features are the most (and least) prototypical? We ranked the 35 features in terms of prototypicality in each country (see Table 2 for descriptive statistics by feature). Then, we computed Spearman rank-order correlations between each country's ranks. A strong positive correlation between two countries would indicate that participants in the two countries hold similar views of nostalgia. A zero or negative correlation between two countries would indicate that participants in the two countries hold different or contrasting views of nostalgia.

All of the 153 correlations were positive and statistically significant. Almost all (96.08%) were greater than $\rho = .50$ (Cohen's [1988] criterion for a large effect), and 40.52% were greater than $\rho = .80$ (min $\rho = .30$ between Poland and Ethiopia; max $\rho = .96$ between Australia and USA). The overall median and mean correlation (calculated using Fisher's *r*-to-*z* transformation) were both $\rho = .78$. Table 3 displays each country's mean rank-order correlation with other countries, showing that all countries' means exceeded $\rho = .50$. It is noteworthy that the three lowest average rank-order correlations were observed for the three African countries. These countries thus formed an exception, but only insofar that they exhibited a moderate rather than high level of cross-cultural agreement. In all, the relative prototypicality of different features of nostalgia is remarkably similar across cultures.

Mean ratings of prototypical features. We next applied the ranking of features identified in previous UK/USA samples (Hepper, Ritchie, et al., 2012) to examine whether participants in different countries ranked features in the same way. That is, do participants across the world agree that previously identified "central" features are more prototypical of nostalgia than "peripheral" ones? In order to address this question at a more fine-grained level, but account for likely random variation in individual items (e.g., due to specific translation, sampling error, or missing data), we divided the 35 features into four ordinal

parcels from most to least prototypical: Central 1 (C1; 9 items), Central 2 (C2; 9 items), Peripheral 1 (P1; 9 items), and Peripheral 2 (P2; 8 items; see Table 2 for parcels). If the four parcels showed the same ordinal pattern of mean ratings across countries (i.e., $C1 > C2 > P1 > P2$), this would support cross-cultural equivalence of nostalgia conceptions.

The omnibus test for differences between parcels was significant in every country, $F_s > 33.06$, $ps < .0001$, with effect sizes ranging from 0.44 to 1.40 ($M = 0.88$, $SD = 0.28$) (Cohen, 1988, formula 8.2.1).² Indeed, all but one country demonstrated the exact $C1 > C2 > P1 > P2$ ordinal pattern of mean ratings (see Figure S1). We further examined whether adjacent parcels show distinct mean ratings. As presented in Table 3, tests for pairwise mean differences between adjacent parcels (i.e., $C1 > C2$; $C2 > P1$; $P1 > P2$) were significant in 50 out of 54 comparisons. The difference between central and peripheral feature ratings was especially pronounced: all 18 $C2 > P1$ comparisons were statistically significant with medium or large effect sizes ($M = 1.20$, $SD = 0.39$, range = 0.54-1.88) (Cohen, 1988, formula 2.2.1). The only exception to the ordinal pattern of any two parcels was Cameroon, in which C2 ratings were slightly higher than C1 (effect size = -0.31). Excluding Cameroon, effect sizes for the $C1 > C2$ comparison were medium on average ($M = 0.66$, $SD = 0.39$, range = 0.20-2.72). The $P1 > P2$ comparison was less distinctive, suggesting that peripheral features were relatively less differentiated than central features, but still showed medium effect sizes on average ($M = 0.56$, $SD = 0.38$, range = 0.03-1.37).

Overall, results indicate that, across cultures, participants' views of relatively central versus peripheral features of nostalgia are consistent with the rank-order previously identified in the UK and USA. That is, people universally endorse the same features as most prototypical of nostalgia.

Inter-individual agreement in prototypical features. Finally, we examined the standard deviations (SDs) for each of the four ordinal parcels within each country. If the construct of nostalgia forms a common prototype structure, participants should show greater consensus on central features than peripheral features, and this should hold across countries (Fehr & Russell, 1984; Mervis & Rosch, 1981). Hence, we should observe lower inter-individual variability (i.e., smaller SDs) for central (C1 and C2) than for peripheral (P1 and

P2) parcels, and the lowest variability of all for the C1 parcel. That is, within each country, prototypicality ratings for C1 should be uniformly high. Given that significance tests for differences in *SDs* in multivariate data are not readily available in packaged software, we used the CALIS procedure (SAS/STAT), which can be tailored for general covariance structure modeling. Specifically, we used this procedure to fit a saturated covariance matrix and code the differences in *SDs* as parametric functions. By using asymptotic approximations, the CALIS procedure was able to provide test statistics for these parametric functions (that is, differences in *SDs*) based on their asymptotic z -distributions. Hence, we can compare statistically *SDs* for central to peripheral parcels and also compare C1 to all remaining parcels. Due to missing data, Cameroon, Ethiopia, and Ireland did not obtain positive definite covariance matrixes, so we could not test their *SDs* statistically.

Most countries manifested the expected trajectory of *SDs* (see Figure S2). Central parcels showed greater agreement than peripheral parcels in every country, with the difference significant in 12 of the 15 tested countries, $z_s = 0.79-9.16$, mean $z = 4.53$. The C1 parcel showed the smallest *SD* (i.e., greatest consensus) in all countries, and the difference between C1 and the other parcels was significant in 13 of the 15 tested countries, $z_s = 1.40-16.71$, mean $z = 6.24$. The countries that did not show the hypothesized pattern significantly in either comparison (central vs. peripheral; C1 vs. other parcels) were India ($ps > .11$) and Uganda ($ps > .16$). The central-peripheral comparison alone was not significant in Australia ($z = 0.79$, $p = .43$, due to a relatively low *SD* for the P2 parcel). In addition, although they could not be tested statistically, Cameroon, Ethiopia, and Ireland did not appear to show a strong trajectory (Figure S2). All other comparisons were significant. Thus, the central parcels manifest greatest consensus across countries, with exceptions being Africa, India, and Ireland. People across most cultures are consistent in endorsing central features of nostalgia.

Sources of Variation Between Countries

Although the results above are highly suggestive of cross-cultural consistency, some countries evinced the hypothesized patterns more strongly than others. We next used cluster analysis to examine the subtle ways that patterns differed across countries.

Patterns of mean feature ratings. We conducted cluster analysis (using SAS/STAT

PROC CLUSTER and Ward's method) on the unstandardized mean ratings of the 35 nostalgia features, in order to identify groups of countries that show homogeneous mean patterns. Supplementary cluster analysis focusing on the 4 parcels obtained very similar results. The cluster analysis identified four main clusters of countries (using a cut-point of 0.10; see Figure S3 for dendrogram). We interpreted these clusters by examining their mean profiles of feature ratings. Figure 1 presents these profiles, listing features in order of centrality as per Hepper, Ritchie, et al. (2012). All four clusters showed a similar ordinal pattern of feature ratings, with a decreasing linear trend from central to peripheral features.

Cluster 1 contained the UK and USA, where the prototype features were derived, as well as other Western countries (Australia, Greece, Israel, The Netherlands). This cluster showed the strongest linear trend from central to peripheral features, which dropped away even quicker at the end, replicating past studies (Hepper, Ritchie, et al., 2012).

Cluster 2 contained the Asian countries (China, India, Japan) as well as Ethiopia, Ireland, and Romania. Compared to Cluster 1, this cluster rated peripheral features more highly, and the first few central features slightly less highly, showing a weaker but still visible linear trend.

Cluster 3 contained other European countries (Germany, Poland, Turkey) as well as Chile. This cluster rated central features slightly less highly compared to Cluster 1, but they showed similar ratings of peripheral features, retaining a linear trend.

Cluster 4 contained Cameroon and Uganda. Although this cluster rated the first few central features highly, the remaining features did not show a clear trend. Thus, these countries appear to agree the least with the UK/USA-derived distinction between central and peripheral features of nostalgia.

To examine statistically the difference between clusters' trajectories, we conducted a 4 (Cluster) \times 35 (Feature Centrality) ANOVA on prototypicality ratings. This analysis produced a large linear trend for feature centrality, $F(1, 1318) = 2070.43, p < .001, \Delta\eta^2 = .61$, and a small quadratic trend, $F(1, 1318) = 7.00, p = .008, \Delta\eta^2 = .01$. The presence of different patterns was supported by a small but significant Cluster \times Feature Centrality interaction, $F(102, 44812) = 17.72, p < .001, \Delta\eta^2 = .04$. Contrasts indicated that Cluster significantly

moderated the linear trend, $F(3, 1318) = 76.24, p < .001, \Delta\eta^2 = .15$, as well as the quadratic trend, $F(3, 1318) = 33.00, p < .001, \Delta\eta^2 = .07$. No other polynomial contrasts were moderated by Cluster with a medium or large effect size (i.e., $\Delta\eta^2 > .06$; Cohen, 1988).

Follow-up ANOVAs revealed that the linear trend was significant in every cluster: Cluster 1, $F(1, 625) = 3112.64, p < .001, \Delta\eta^2 = .83$; Cluster 2, $F(1, 372) = 778.15, p < .001, \Delta\eta^2 = .68$; Cluster 3, $F(1, 248) = 858.22, p < .001, \Delta\eta^2 = .78$; Cluster 4, $F(1, 625) = 124.16, p < .001, \Delta\eta^2 = .63$. Thus, although the trend was strongest in Cluster 1, it was evident and large across all clusters of countries. The quadratic trend varied more by cluster. It was large in Clusters 1 and 4, small in Cluster 2, and non-significant in Cluster 3: Cluster 1, $F(1, 625) = 195.52, p < .001, \Delta\eta^2 = .24$, Cluster 2, $F(1, 372) = 7.31, p = .007, \Delta\eta^2 = .02$, Cluster 3, $F(1, 248) = 3.53, p = .06, \Delta\eta^2 = .01$, Cluster 4, $F(1, 625) = 12.75, p < .0007, \Delta\eta^2 = .15$.

Figure 1 further suggests that a few specific individual features may be rated particularly differently by participants in different country clusters. We conducted supplementary analyses to identify any reliable differences, which indicated that ratings of only two features differed markedly across clusters (i.e., with at least a medium effect size).³ First, Clusters 2 and 4 both rated *reminiscence* notably lower than the other clusters (i.e., their trajectories dipped more notably at this feature than other clusters). Second, Cluster 4 rated *personal meaning* notably lower than the other clusters.

Overall, these analyses indicate that Cluster 1 (which comprised Western countries) evidenced the strongest linear trajectory of feature ratings and the largest drop in ratings for the most peripheral features. Cluster 2 (which included Asian countries) also rated central features highly, but tended to rate peripheral features higher than other clusters (reducing the quadratic trend) and endorsed reminiscence to a relatively lesser degree. Cluster 3 (which included Chile and European countries) endorsed some central features to a lesser degree than Cluster 1 but rated peripheral features as low as Cluster 1. Cluster 4 (Cameroon and Uganda) rated the first few central features highly, but then ratings dropped quickly, especially for reminiscence and personal meaning, and levelled off for the remaining features. Thus, the four clusters of countries agreed on the relative centrality of the nostalgia features identified in the UK and USA but showed some subtle differences in trajectories.

Patterns of correlations between features and their factor structures. We conducted a cluster analysis of the countries using the 595 non-redundant correlations between nostalgia features, using Ward's method. This allowed us to identify homogenous sets of countries with similar correlation matrices.⁴ The cluster analysis clearly identified three clusters (using a cut-point of 0.10; see Figure S4 for dendrogram). Cluster 1 contained all countries except for the African countries. Cluster 2 contained Uganda and Ethiopia, and Cluster 3 contained only Cameroon.⁵

We next examined the factor structure of the nostalgia prototype in each cluster of countries. To eliminate the error variance attributable to mean differences in ratings (e.g., if ratings for all features were higher on average in one country compared to another), we analyzed deviation scores for each feature from that country's mean (Van de Vijver & Leung, 1997). We began with Cluster 1 ($N_{\text{countries}} = 15$; $N_{\text{complete participants}} = 1211$), and conducted Maximum Likelihood factor analysis on the 35 nostalgia features with oblique (quartimin) rotation. The scree plot showed three clear factors, explaining 95% of common variance. Table 4 presents the factor loadings.

Factor 1 contained 12 central nostalgia features, which focus on cognitive content (e.g., memory, childhood) and motivational hallmarks (e.g., longing, wanting to return). We labeled this factor *longing for the past*. Factor 2 contained 8 peripheral features that focus on *negative affect*. Factor 3 contained 8 central and peripheral features that focus on feelings and sources of *positive affect*. These two affective factors are conceptually similar to the *loss* and *tenderness* features identified in nostalgic narratives by Holak and Havlena (1998). Participants in Cluster 1 rated *longing for the past* most central, followed by *positive affect*, with *negative affect* rated lowest (confirmed by within-subjects ANOVA; Table 4). The three factors were positively correlated, $r_{12} = .18$, $r_{13} = .30$, $r_{23} = .21$, consistent with the mixed or bittersweet affective signature of nostalgia (Holak & Havlena, 1998; Stephan, Sedikides, & Wildschut, 2012; Wildschut et al., 2006).

Clusters 2 and 3 did not contain sufficient participants with complete data to conduct reliable factor analysis. In Cluster 2 (Uganda and Ethiopia; $N_{\text{complete participants}} = 90$), the first two factors resembled the *longing for the past* and *negative affect* factors identified in Cluster

1, but fewer features loaded significantly on each and the third factor was only slightly similar to the *positive affect* factor. In Cluster 3 (Cameroon; $N_{\text{complete participants}} = 19$), factor analysis was not possible. Thus, further research is needed to better understand the factor structure of nostalgia features in African cultures.

Additional Features of Nostalgia

As a secondary focus, participants were invited to list additional words or phrases that describe nostalgia, which in their opinion were not covered by the 35 features provided. We inspected these words and phrases (“exemplars;” Hepper, Ritchie, et al., 2012) to examine whether participants judged the 35 existing features of nostalgia to cover the entire construct across cultures or whether participants in some countries identified additional features.

Participants provided a total of 901 exemplars. The majority of participants (79.01%) did not provide any, implying that they thought the list of features described nostalgia adequately (indeed, several noted this as their response). However, at least some exemplars were generated by participants in every country except for Cameroon, India, Turkey, and Uganda, with an average of 2.66 exemplars per participant who did so.

First, we coded whether the exemplars generated were already covered by the list of features provided. Of the 901 exemplars, 167 (18.54%) repeated exact words or phrases from the existing list of features (e.g., “memory;” “relationships”), and thus did not provide additional information.

Next, the remaining 734 exemplars were coded by two research assistants using the same coding scheme as in Hepper, Ritchie, et al. (2012, Study 1). Each exemplar was coded as (i) representing one of the existing 35 features, (ii) a specific object about which the participant was personally nostalgic (e.g., “evenings at the swimming pool”), or (iii) unclassifiable. Inter-rater reliability for the 36 classifiable codes was substantial, kappa = .680, 95% CI [.641, .719] (Rietveld & Van Hout, 1993). The coders resolved disagreements on whether exemplars were unclassifiable or not through discussion. After resolution, most exemplars were classified as one of the existing 35 features (80.11%) or a specific target (14.03%). Only 43 (5.86%) exemplars were judged unclassifiable and, hence, novel. These came from a range of countries: Australia ($n = 4$), Chile ($n = 1$), China ($n = 6$), Ethiopia ($n =$

1), Germany ($n = 2$), Greece ($n = 2$), Ireland ($n = 1$), Israel ($n = 4$), Poland ($n = 3$), Romania ($n = 1$), The Netherlands ($n = 1$), UK ($n = 3$), and USA ($n = 11$). No unclassifiable exemplar (or any synonym thereof) was mentioned by more than two participants, indicating that participants did not identify novel features of nostalgia with any degree of consistency.

Discussion

Although nostalgia has inspired global thought, art, and literature for centuries (Hofer, 1688/1934; Homer, trans. 1921; Legge, trans. 1971; Neruda, 1924/2003; Trilling, 2009; Woubshet, 2009), it has only recently received empirical attention from psychologists. Recent findings indicate that this attention is deserved: nostalgia is a common emotional experience (Hepper et al., 2014; Wildschut et al., 2006) that serves key psychological functions (Routledge et al., 2013; Sedikides et al., 2008). Although such evidence has emerged from a handful of countries, the universality of conceptions or experiences of nostalgia has not been addressed. The present investigation aimed to examine whether lay conceptions of nostalgia are shared across cultures. In particular, we sought to establish whether people across a range of cultures endorse the same prototypical features of nostalgia identified in recent research in the UK and USA (Hepper, Ritchie, et al., 2012). If so, this would provide the first evidence that conceptions of this complex emotion are pancultural.

Summary of Findings

As our point of departure, we used the 35 prototypical features of nostalgia determined by UK/USA laypersons (Hepper, Ritchie, et al., 2012). Students across 18 countries and 5 continents rated the prototypicality of these 35 features. In all, evidence identified key points of cross-cultural agreement regarding conceptions of nostalgia. Key sources of variation are highlighted further below.

First, we examined the level of consensus between countries in ranking the 35 nostalgia features. If conceptions of nostalgia are pancultural, participants across countries should agree on which features are more or less prototypical of nostalgia. The 18 countries' ranking profiles were positively and highly correlated with each other on average, indicating that participants across countries agreed substantially on the rankings.

Second, we grouped the 35 features into four parcels based on their prototypicality in

the UK and USA (Hepper, Ritchie, et al., 2012): two central and two peripheral. If conceptions of nostalgia are pancultural, participants across countries should rate the four feature parcels with the same ordinal pattern (i.e., $C1 > C2 > P1 > P2$). Every country except Cameroon showed this ordinal pattern of mean ratings, and most pairwise comparisons between adjacent feature parcels were statistically significant, indicating that participants across countries consider the same feature sets as most and least prototypical.

Third, prototype theory holds that people show greater consensus on central than peripheral features of a construct (Fehr & Russell, 1984; Mervis & Rosch, 1981). If the nostalgia prototype is pancultural, this greater consensus should be manifested across cultures. Accordingly, we tested the difference between standard deviations of the four feature parcels. In every country, the standard deviation of ratings was smaller for central than peripheral parcels (and especially small for the C1 parcel), with most countries distinguishing the parcels significantly.

Fourth, we examined cross-cultural differences by using cluster analysis to identify groups of countries based on their patterns of mean ratings of the 35 features. We identified four clusters. However, all four clusters evinced a significant and decreasing linear trend from ratings of most central to most peripheral features, albeit with variation in the strength and curve of the trend. Therefore, findings indicate high levels of cross-cultural agreement in the prototypicality profile of features of nostalgia.

Fifth, we explored cross-cultural consistency or divergence in the factor structure of the nostalgia prototype. We used cluster analysis to identify groups of countries who shared similar patterns of intercorrelations (i.e., factor structures) among the 35 features. In fact, all but three countries formed one cluster. This indicates high levels of cross-cultural agreement in the factor structure of the nostalgia prototype. We will discuss the content of the nostalgia prototype itself, and the exceptions to the universal patterns, below.

Sixth, we invited participants to list additional features of nostalgia that were not captured by the 35 provided. However, almost 95% of exemplars generated by participants replicated or fit reliably into one of the 35 features, or simply reflected idiosyncratic targets of the participants' own nostalgic memories. No new features of nostalgia were identified by

more than two individuals (out of 1704), suggesting that the present prototype features were judged sufficient to describe nostalgia in all countries sampled.

What Is Pancultural Nostalgia?

What, then, are the prototypical features of nostalgia across cultures? The C1 parcel was rated highest in all countries except Cameroon, where it was rated second highest. Thus, prototypical nostalgia is universally considered to involve *remembering* or *reminiscing* about *fond memories* from the *past* that may have *personal meaning* and/or involve *relationships with others*—and crucially, it is universally considered an *emotion*, especially one of *longing* (with *happiness* and *loss* also contained in the C2 parcel). The factor structure of the 35 features (which applied to almost all countries) also sheds some light on the organization of the nostalgia prototype. The primary factor, *longing for the past*, focused on cognitive, motivational, and contextual features of nostalgia, as well as the affective constructs of longing and loss. The second factor, *negative affect*, contained peripheral negative affective features. The fact that longing and loss loaded instead onto *longing for the past* may reflect their relative prototypicality, whereas *negative affect* is generally a less prototypical factor. The third factor, *positive affect*, contained central and peripheral affective features, including general features (e.g., emotion, relationships) and positive features (e.g., warmth, happiness).

The finding that two factors of the cross-cultural nostalgia prototype focus on positive and negative affect echoes other findings that the valence dimension of affect is universal (Russell et al., 1989; Scollon & Tov, 2012). In some cultures, affect also shows an interpersonal dimension (Kuppens et al., 2006). The present findings suggest that nostalgia has an inherently interpersonal facet that is included in the positive affect factor. It is also noteworthy that the two affective dimensions of nostalgia were positively correlated. This supports findings that nostalgic narratives contain both positive and negative affect (Holak & Havlena, 1998; Stephan et al., 2012; Wildschut et al., 2006) and that nostalgic participants often report elevated positive affect without lowered negative affect (Wildschut et al., 2006). Thus, at both a conceptual and experiential level, nostalgia supports the dialectical hypothesis that oppositely-valenced emotions are compatible, and evidence that positive and negative affect can co-occur (Larsen & McGraw, 2011; Scollon & Tov, 2012).

Exceptions to the Pancultural Patterns

The most consistent exception to the pattern of universality concerned the three African countries (Cameroon, Ethiopia, and Uganda), in that their moderate cross-cultural agreement stood out against a background of remarkably high agreement among all other countries. *First*, although their mean correlations with other countries in terms of feature rankings exceeded .50 (a large effect; Cohen, 1988), they were the only three countries whose mean correlations did not exceed .70. *Second*, the mean feature ratings showed moderately different patterns in African countries. For example, Cameroon was the only country not to rank the C1 parcel higher than the C2 parcel, although it did rank both higher than the P1 and P2 parcels. The cluster analysis of mean ratings isolated Cameroon and Uganda as showing the weakest linear trajectory of the 35 features, although it was still large and statistically significant. Despite rating the first few central features highly, these countries rated reminiscence and personal meaning lower than other countries and differentiated less between subsequent features in the trajectory. *Third*, the African countries did not show the expected pattern of standard deviations across the two central and two peripheral feature parcels, although neither did India or Ireland. *Finally*, the correlations between the 35 features differed: whereas all non-African countries formed one cluster, Uganda and Ethiopia formed a separate cluster, and Cameroon formed its own cluster. The small resulting cluster samples precluded reliable factor analysis of the African countries' correlation matrices.

It is noteworthy that the samples from Cameroon, Ethiopia, and Uganda displayed similarities despite completing materials in different languages. It is tempting to speculate about cultural or geographical commonalities that may explain their moderate (instead of high) cross-cultural agreement (e.g., African participants may not endorse "personal meaning" because of a relatively collectivistic orientation and lesser focus on the self; Becker et al., 2012). However, the apparent lack of strong agreement within the set militates against this. For example, the rank-order correlation between Ethiopia and Uganda was the second lowest among all 153 correlations, and the three countries did not all cluster together in either cluster analysis. A more prosaic explanation may be that African participants were relatively unfamiliar with rating scales, which introduced measurement error. This would account for

the moderate agreement within the set of African countries, as well as between this set and other countries. There is a dearth of research on emotions in African samples (Edelstein & Shaver, 2007). Some past evidence has also highlighted African countries as less consistent with other cultures. For example, Ghanaian and Nigerian participants do not report the typical gender difference in crying proneness (Van Hemert, Van de Vijver, & Vingerhoets, 2011), and African participants attribute emotion-causing events differently (Scherer & Brosch, 2009). Moreover, some African languages do not distinguish emotions in the same way as the English language does (Russell, 1991b). Accordingly, it is difficult to separate the relative influence of methodological issues versus true conceptual differences in the present data. Nevertheless, we think it is important to remain mindful of the fact that the African samples' departure from the universal patterns was a matter of degree. That is, these samples correlated moderately—not weakly or negatively—with others' feature rankings, and they did rate central features higher than peripheral ones, just less markedly so. Further research is needed to chart African conceptions of nostalgia.

Although countries outside of Africa generally showed high cross-cultural consistency, other variations also bear mention. These raise intriguing, though speculative possibilities. For example, participants in Cluster 2 (which included Asian countries) rated peripheral features of nostalgia—many of which are negative in valence—higher than other clusters did. This is consistent with Eastern dialectical thinking in that negative emotions are compatible with positive ones and can be healthy (Scollon & Tov, 2012; Spencer-Rodgers et al., 2010). Indeed, evidence shows that nostalgia confers equivalent psychological benefits in Chinese samples (Zhou et al., 2008, 2012), indicating that greater recognition of negative aspects of nostalgia does not hinder its functionality. The word “reminiscence” may also not be quite as relevant to nostalgia in Eastern cultures. These subtle cultural differences raise questions and require replication.

One reason why more cross-cultural variation did not arise could be that the 35 features focus on the internal experience of nostalgia. Emotion prototypes can also contain antecedents, action tendencies, and aspects of regulation (Russell, 1991a). Mesquita and Frijda (1992) argue that this distinction is important, because most evidence for the

universality view of emotion derives from internal elements (e.g., Ekman, 1992), whereas most evidence for the social-construction view of emotion derives from contextual factors (e.g., Lutz, 1982). That is, emotions are universal but their causes and consequences are culturally shaped. Although the present prototype includes general antecedents of nostalgia (e.g., sensory triggers), participants here and in Hepper, Ritchie, et al.'s (2012) research also generated idiosyncratic objects of nostalgia. Future studies might solicit these systematically and compare across cultures. For example, relatively individualistic cultures might contain more individual objects of nostalgia, whereas collectivistic cultures might contain more communal ones (Hofstede, 1980; Markus & Kitayama, 1991). However, it seems that conceptions of the emotion itself are relatively consistent across these cultures (as with other emotions; Paez & Vergara, 1995).

Implications and Future Research Directions

The findings are consistent with the idea that nostalgia is functional. Self-conscious emotions have been posited as evolutionarily adaptive (Tracy & Robins, 2004) and universally communicable (Wierzbicka, 1992), although nostalgia has not been included in these theoretical arguments. Our research indicates that people across a wide range of cultures cohere in their conceptions of nostalgia. Moreover, nostalgia's psychological functions are consistent with Tracy and Robins' (2004) proposal that self-conscious emotions regulate socially-relevant behavior. Specifically, nostalgia promotes positive affect, self-worth, meaning in life, and optimism (Cheung et al., 2013; Routledge et al., 2011; Vess et al., 2012; Wildschut et al., 2006) as well as pro-social behavior (Hepper, Wildschut, & Sedikides, 2012; Stephan et al., in press; Zhou et al., 2012). In this respect, nostalgia enhances two vital resources: initiative (agency) and social relationships (communion). Further research could examine whether nostalgia functions primarily to regulate internal states (i.e., an *ego-focused* emotion) or social behavior (i.e., a *social control* emotion; Hupka, Lenton, & Hutchison, 1999; Markus & Kitayama, 1991). Moreover, research should examine the extent to which the emotional experience and functions of nostalgia generalize across cultures. Extant studies have shown similar effects of nostalgia across China, Ireland, The Netherlands, UK, and USA (Hart et al., 2011; Routledge et al., 2011; Van Tilburg et al., 2013; Wildschut et al.,

2006; Zhou et al., 2012), but more systematic research is needed.

As well as lexical data, the universality of an emotion can be indicated by physical markers (Ekman, 1992, 1994; Ekman & Friesen, 1971). The traditional hallmark of universal emotions is the existence of a distinctive facial expression or pose, although recent views have revised this criterion (Haidt & Keltner, 1999; Sabini & Silver, 2005). Might such an expression exist to communicate nostalgia? Given the complex blend of affective states involved in nostalgia, this is a challenging yet promising avenue for research. Similar challenges come into play when studying facial expressions of emotions commonly accepted as universal and adaptive, such as jealousy and love (Edelstein & Shaver, 2007; Hupka et al., 1999; Sabini & Silver, 2005). Like these emotions, nostalgic expressions may be more recognizable when dynamic (e.g., gazing into space followed by a sigh and a smile) or accompanied by contextual cues (e.g., an old photo).

Limitations

The present investigation provides only a preliminary examination of nostalgia across cultures. Interpretation of the results rests on the assumption that translated terms are equivalent in meaning (Russell, 1991b). Hence, the data are limited in the extent to which they are capable of demonstrating cross-cultural consensus. Note, however, that Kim-Prieto et al. (2004) systematically compared emotion self-reports when participants responded in English or their native language, and found that language did not moderate the way that emotions clustered (see also Kuppens et al., 2006). Also, this limitation would constrain, not inflate, correlations between samples, thus providing a relatively conservative test (and rendering the high average cross-cultural agreement observed in the present investigation all the more compelling). One alternative approach might describe a prototypically nostalgic script in simple, non-affective words (cf. Wierzbicka, 1992), and then ask participants to describe how they would feel.

We used an etic approach to examine whether people across cultures endorsed features of nostalgia identified in the UK and USA. In so doing, we followed in the footsteps of previous cross-cultural investigations (Hupka et al., 1985; Russell et al., 1989; Schmitt & Allik, 2005). However, complementary investigations using an emic approach would also be

valuable. Such research could, for example, solicit and code open-ended responses from participants in several cultures in a bottom-up fashion (cf. Fischer et al., 1999; Kim & Hupka, 2002). Our own open-ended responses were solicited after presentation of the existing features, which may have reduced participants' willingness to provide their own or biased the features they did list. There may even be cultural differences in the willingness to add to a provided list of features. A truly emic approach would thus have a greater chance of identifying new features and subtle cultural differences, and would be an especially valuable route to gaining understanding of African conceptions of nostalgia.

Our investigation was also limited by its focus on university students, who were mostly young adults and arguably could have been exposed to other cultures' views on nostalgia through their education. Hence, these samples may have been more likely to agree on their views of nostalgia than older or less well-educated samples. Future research should study nostalgia in more diverse samples, as well as in cultures that have less contact with developed society. Such studies would provide more rigorous tests of the "basic" nature of nostalgia and its possible evolutionary role.

Conclusions

Despite limitations inherent in a first cross-cultural investigation, our findings indicate for the first time that people across a range of cultures share strikingly similar conceptions of nostalgia and agree that it is a complex emotion, with intriguing subtle differences in perceptions of some features. Our research also highlights the need to explore nostalgia further in African countries. Returning to the characters who opened this article, we would conclude that the Japanese woman passing her childhood school, the American man recalling his lost youth, Odysseus focusing on his family during his mythical journey, and to some extent the Ethiopian musician, are likely to think about their nostalgic experiences in a similar way. Although nostalgia is an inherently personal experience, people across the world largely share in their understanding of this uniquely human emotion.

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Footnotes

¹It was necessary to translate features in 13 countries. Although this is a common challenge in cross-cultural research, translation creates the possibility of error variance due to subtle differences in meaning of particular features. Romney, Moore, and Rusch (1997) found that 66% of semantic structure of specific emotion terms was shared across American and Japanese cultures, with only 6% culture-specific. This provides some evidence that emotion words in one language generally equate to emotion words in other languages and allow for translated communication. In addition, the presence of this extraneous variance works against the hypothesis of universality, rendering our test more conservative.

²Degrees of freedom vary across countries (Table 3).

³This analysis comprised a 4 (Cluster) \times 35 (Feature Centrality) ANOVA that obtained repeated within-subjects contrasts instead of polynomial contrasts (i.e., examined the difference between each pair of adjacent features and whether this difference varied by cluster). Only two repeated contrasts were moderated by cluster with at least a medium effect size (i.e., $\Delta\eta^2 = .06$; Cohen, 1988). The first contrast was the dip between *memory* and *reminiscence*, $F(3, 1318) = 36.43, p < .001, \Delta\eta^2 = .08$. Follow-up ANOVAs showed that this dip was large in Clusters 2 and 4, but only small in Clusters 1 and 3; Cluster 1: $F(1, 625) = 7.04, p = .008, \Delta\eta^2 = .01$; Cluster 2: $F(1, 372) = 63.91, p < .001, \Delta\eta^2 = .15$; Cluster 3: $F(1, 248) = 14.75, p < .001, \Delta\eta^2 = .056$; Cluster 4: $F(1, 73) = 21.89, p < .001, \Delta\eta^2 = .23$. The second contrast was the dip from *feeling/emotion* to *personal meaning*, $F(3, 1318) = 28.95, p < .001, \Delta\eta^2 = .06$. This dip was large in Cluster 4 but small in all other clusters; Cluster 1: $F(1, 625) = 4.57, p = .03, \Delta\eta^2 = .01$; Cluster 2: $F(1, 372) = 13.21, p < .001, \Delta\eta^2 = .03$; Cluster 3: $F(1, 248) = 4.49, p = .04, \Delta\eta^2 = .02$; Cluster 4: $F(1, 73) = 33.50, p < .001, \Delta\eta^2 = .32$. All other repeated contrasts showed interactions with cluster that were non-significant or small effect sizes.

⁴ Given that we did not have a priori theory about how the countries would share correlation structures, we judged cluster analysis to be more appropriate than confirmatory statistical techniques such as testing equality of correlation matrices or testing invariant confirmatory factor models. Such confirmatory techniques have two main shortcomings.

First, the hypothesis tests are so sensitive that essentially all useful models (even with minimal discrepancy from the “truth”) would always be rejected. *Second*, once the hypothesized model is rejected, the search for “better” models might induce more statistical errors. For example, we could have conducted a statistical test of equal correlation matrices (Larntz & Perlman, 1988) among the 18 countries. The test statistic would be $T = 73.31$, $p < .001$, meaning that the hypothesis of equal correlation matrices is rejected. At that stage, it would be unclear how to proceed to understand better the correlation structures of the countries, without taking statistical risks to compare every possible set of countries. Therefore, with respect to finding homogenous groups of countries to build suitable factor-analytic models, we prefer to rely on cluster analysis. By indexing the relative similarity and dissimilarity of correlation matrixes for different countries, cluster analysis can identify homogenous sets of countries in an objective and simple way.

⁵Although a more stringent cut-point might suggest the presence of sub-clusters within Cluster 1, supplementary analyses indicated that these were extremely similar in correlation structure with no interpretable differences between them.

Table 1
Participant Characteristics and Language Used in Each Country

| Country | N | % female | Age | | Language | Word for Nostalgia | Meaning / Synonyms |
|-------------|-----|----------|-------|------|----------|--------------------|---|
| | | | Mean | SD | | | |
| Australia | 66 | 66.1 | 21.18 | 6.50 | English | Nostalgia | — |
| Cameroon | 102 | 55.9 | 24.63 | 5.16 | French | Nostalgie | — |
| Chile | 82 | 35.4 | 20.17 | 1.33 | Spanish | Nostalgia | — |
| China | 98 | 53.1 | 20.01 | 1.00 | Mandarin | Huai jiu | Missing the past; longing for the past |
| Ethiopia | 62 | 44.6 | 21.13 | 1.22 | English | Tizita | Memory of loss and longing (also a style of music) ^a |
| Germany | 84 | 58.5 | 25.98 | 7.17 | German | Nostalgie | — |
| Greece | 172 | 83.8 | 22.97 | 4.87 | Greek | Nostalgia | — |
| India | 68 | 47.1 | 22.57 | 2.29 | Hindi | Nostalgia | <i>Atita Vyamoha</i> (uncritical acceptance of past as positive); <i>Mohasakti</i> (attachment to past) |
| Ireland | 85 | 32.1 | 22.60 | 2.14 | Gaelic | Nostalgia | <i>Cumha</i> (sad longing or pining); <i>Uaigneas</i> (type of loneliness) ^b |
| Israel | 90 | 63.4 | 21.55 | 3.26 | Hebrew | Nostalgia | <i>Gaaguim</i> (missing the past, ruminating about the past) |
| Japan | 96 | 24.0 | 21.28 | 4.48 | Japanese | Natsukashii | Bring back memories. Origins: words meaning “become attached to,” “familiar,” “beloved, sweet” |
| Netherlands | 120 | 50.0 | 22.49 | 1.58 | Dutch | Nostalgie | <i>Jeugd sentiment</i> (wistful affection for one’s youth); <i>Weemoed</i> (longing, wistfulness) |
| Poland | 70 | 68.6 | 21.53 | 2.55 | Polish | Nostalgia | <i>Tęsknota</i> (missing, longing) |
| Romania | 80 | 80.0 | 21.01 | 1.96 | Romanian | Nostalgie | <i>Dor</i> (longing, wistfulness) |
| Turkey | 79 | 39.7 | 22.60 | 2.14 | Turkish | Nostalji | — |
| Uganda | 88 | 50.6 | 25.26 | 4.71 | English | Nostalgia | — |
| UK | 97 | 72.2 | 20.22 | 2.84 | English | Nostalgia | — |
| USA | 165 | 66.7 | 21.29 | 7.78 | English | Nostalgia | — |

Note. ^a Woubshet (2009). ^b O Donail (2001); Ó Laoire (2000).

Table 2

Descriptive Statistics for Ratings of Each Nostalgia Feature Across Countries (Based on the Aggregate of Mean Ratings in Each Country)

| Feature | Rating in each country (1-8) | | | | Rank in each country (1-35) | | |
|-------------------------------|------------------------------|------|------|------|-----------------------------|-----|-----|
| | Mean | SD | Min | Max | Mean | Min | Max |
| <i>Central 1 (C1)</i> | | | | | | | |
| 1. Memory / memories | 6.71 | 0.69 | 4.60 | 7.61 | 2.78 | 1 | 18 |
| 2. The past | 6.75 | 0.50 | 5.94 | 7.52 | 3.00 | 1 | 9 |
| 3. Fond memories | 6.28 | 0.63 | 4.70 | 7.19 | 6.33 | 1 | 16 |
| 4. Remembering | 6.47 | 0.33 | 5.90 | 7.16 | 5.22 | 2 | 10 |
| 5. Reminiscence | 5.97 | 0.95 | 4.35 | 7.28 | 10.72 | 3 | 29 |
| 6. Feeling / emotion | 5.95 | 0.57 | 4.92 | 6.90 | 11.06 | 2 | 22 |
| 7. Personal meaning | 5.92 | 0.96 | 3.46 | 7.07 | 11.06 | 5 | 33 |
| 8. Longing / yearning | 6.24 | 0.64 | 4.87 | 7.01 | 7.17 | 1 | 16 |
| 9. Social relationships | 5.38 | 0.88 | 3.60 | 6.44 | 15.78 | 3 | 26 |
| <i>Central 2 (C2)</i> | | | | | | | |
| 10. Memorabilia/keepsakes | 5.90 | 0.77 | 4.26 | 6.96 | 11.17 | 1 | 28 |
| 11. Rose-tinted memory | 5.96 | 0.54 | 4.97 | 6.85 | 9.89 | 3 | 18 |
| 12. Happiness | 5.37 | 0.81 | 3.60 | 6.42 | 15.72 | 4 | 27 |
| 13. Childhood / youth | 5.78 | 0.78 | 3.32 | 6.66 | 12.61 | 5 | 31 |
| 14. Sensory triggers | 5.09 | 0.87 | 3.28 | 6.51 | 19.17 | 7 | 32 |
| 15. Thinking | 5.57 | 0.46 | 4.67 | 6.64 | 13.67 | 7 | 19 |
| 16. Reliving / dwelling | 6.07 | 0.48 | 5.07 | 6.78 | 9.22 | 2 | 18 |
| 17. Missing / loss | 5.91 | 0.79 | 4.34 | 7.00 | 10.50 | 1 | 19 |
| 18. Wanting to return to past | 5.73 | 0.43 | 5.07 | 6.55 | 12.61 | 6 | 20 |
| <i>Peripheral 1 (P1)</i> | | | | | | | |
| 19. Comfort / warmth | 4.39 | 0.77 | 2.86 | 5.89 | 25.22 | 17 | 34 |
| 20. Wishing / desire | 4.60 | 0.63 | 3.57 | 5.57 | 22.50 | 12 | 33 |
| 21. Dreams / daydreaming | 4.66 | 0.69 | 3.57 | 6.01 | 22.67 | 13 | 34 |
| 22. Mixed feelings | 4.94 | 0.53 | 3.86 | 6.10 | 19.50 | 3 | 25 |
| 23. Change | 4.41 | 0.63 | 3.06 | 5.53 | 24.56 | 18 | 33 |
| 24. Calm / relaxed | 4.18 | 0.61 | 3.15 | 5.52 | 25.89 | 11 | 33 |
| 25. Regret | 4.19 | 0.75 | 2.68 | 5.84 | 25.67 | 15 | 35 |
| 26. Homesickness | 4.96 | 0.80 | 3.39 | 6.60 | 18.78 | 6 | 32 |
| 27. Prestige / success | 3.75 | 0.79 | 2.14 | 5.25 | 28.78 | 14 | 35 |
| <i>Peripheral 2 (P2)</i> | | | | | | | |
| 28. Aging / old people | 4.59 | 0.63 | 3.45 | 6.02 | 22.78 | 8 | 31 |
| 29. Loneliness | 4.11 | 0.67 | 2.81 | 5.15 | 26.11 | 17 | 33 |
| 30. Sadness / depressed | 3.93 | 0.58 | 2.83 | 4.76 | 27.67 | 19 | 33 |
| 31. Negative past | 3.95 | 0.69 | 2.56 | 5.02 | 27.11 | 14 | 34 |
| 32. Distortion / illusions | 3.68 | 0.58 | 2.68 | 4.84 | 29.72 | 18 | 35 |
| 33. Solitude | 3.61 | 0.46 | 2.78 | 4.33 | 30.44 | 24 | 34 |
| 34. Pain / anxiety | 3.53 | 0.56 | 2.67 | 4.61 | 31.11 | 21 | 34 |
| 35. Lethargy / laziness | 2.95 | 0.55 | 2.12 | 3.93 | 33.83 | 26 | 35 |

Note. Features are listed in order of centrality in past research (Hepper, Ritchie, et al., 2012). Statistics represent distribution of ratings and rankings at the country level, after aggregating across participants (e.g., Min = the minimum rating/rank that a feature obtained in any one country).

Table 3

Feature Ratings by Country: Rank-Order Correlation with Other Countries, and Tests Comparing Mean Ratings of Central and Peripheral Feature Parcels

| Country | Correlation with other countries | Pairwise differences between feature parcels (<i>F</i> -tests) | | | | |
|-------------|----------------------------------|---|----------------------|-----------|-----------|-----------|
| | Mean ρ | <i>dfs</i> | C vs. P ^a | C1 vs. C2 | C2 vs. P1 | P1 vs. P2 |
| Australia | .85 | 1, 65 | 202.81 | 53.28*** | 100.89*** | 28.11*** |
| Cameroon | .66 | 1, 99 | 63.77 | 9.41** | 72.77*** | 5.63* |
| Chile | .80 | 1, 81 | 189.00 | 7.51** | 167.03*** | 9.40** |
| China | .79 | 1, 97 | 258.07 | 12.28*** | 153.08*** | 26.94*** |
| Ethiopia | .59 | 1, 60 | 63.83 | 2.34 | 24.70*** | 13.95*** |
| Germany | .81 | 1, 83 | 561.81 | 41.54*** | 237.67*** | 44.35*** |
| Greece | .78 | 1, 171 | 695.83 | 121.63*** | 201.65*** | 159.01*** |
| India | .79 | 1, 67 | 71.83 | 24.11*** | 33.65*** | 14.41*** |
| Ireland | .76 | 1, 84 | 101.38 | 47.66*** | 41.66*** | 6.58* |
| Israel | .85 | 1, 89 | 520.27 | 74.13*** | 210.27*** | 65.95*** |
| Japan | .77 | 1, 95 | 294.74 | 25.83*** | 133.78*** | 19.12*** |
| Netherlands | .83 | 1, 118 | 745.15 | 226.53*** | 271.10*** | 175.60*** |
| Poland | .71 | 1, 69 | 219.26 | 49.82*** | 246.25*** | 0.05 |
| Romania | .71 | 1, 79 | 236.60 | 59.47*** | 114.21*** | 1.17 |
| Turkey | .81 | 1, 78 | 182.13 | 13.20*** | 97.59*** | 11.33** |
| Uganda | .55 | 1, 87 | 121.60 | 74.91*** | 25.72*** | 1.35 |
| UK | .84 | 1, 96 | 719.77 | 128.62*** | 259.46*** | 182.58*** |
| USA | .87 | 1, 164 | 549.49 | 64.73*** | 332.20*** | 116.22*** |

^a All omnibus and C vs. P *F*-tests are significant at the .0001 level.

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

Note. C = Central; P = Peripheral. Correlations indicate similarity between countries' rankings of nostalgia features (e.g., a high correlation between two countries indicates that participants in those countries view nostalgia similarly) and are based on *r*-to-*z* transformed averages.

Table 4

Factor Loadings of Prototypical Features of Nostalgia in Cluster 1 Countries (N = 1211)

| Feature | F1 (Longing for the past) | F2 (Negative affect) | F3 (Positive affect) |
|---------------------------|------------------------------|--------------------------|--------------------------|
| <i>Central 1 (C1)</i> | | | |
| Memory / memories | .61 | -.16 | .19 |
| The past | .65 | -.11 | -.04 |
| Fond memories | .52 | -.24 | .34 |
| Remembering | .61 | -.03 | .05 |
| Reminiscence | .59 | .01 | .01 |
| Feeling / emotion | .34 | -.00 | .40 |
| Personal meaning | .37 | -.14 | .43 |
| Longing / yearning | .59 | .06 | -.02 |
| Social relationships | .17 | -.00 | .49 |
| <i>Central 2 (C2)</i> | | | |
| Memorabilia / keepsakes | .48 | -.04 | .05 |
| Rose-tinted memory | .54 | .03 | .10 |
| Happiness | .16 | -.21 | .66 |
| Childhood / youth | .41 | -.00 | .13 |
| Sensory triggers | .23 | .07 | .31 |
| Thinking | .21 | .10 | .35 |
| Reliving / dwelling | .54 | .13 | -.03 |
| Missing / loss | .43 | .23 | -.05 |
| Wanting to return to past | .54 | .28 | -.20 |
| <i>Peripheral 1 (P1)</i> | | | |
| Comfort / warmth | -.03 | -.06 | .70 |
| Wishing / desire | .03 | .14 | .54 |
| Dreams / daydreaming | .12 | .11 | .38 |
| Mixed feelings | .09 | .23 | .37 |
| Change | .03 | .27 | .28 |
| Calm / relaxed | -.13 | .03 | .70 |
| Regret | .16 | .50 | -.02 |
| Homesickness | .35 | .30 | -.02 |
| Prestige / success | -.13 | .10 | .29 |
| <i>Peripheral 2 (P2)</i> | | | |
| Aging / old people | .22 | .23 | .04 |
| Loneliness | .05 | .57 | .16 |
| Sadness / depressed | .03 | .77 | -.06 |
| Negative past | .09 | .63 | -.15 |
| Distortion / illusions | -.00 | .49 | .13 |
| Solitude | -.02 | .64 | .06 |
| Pain / anxiety | -.10 | .71 | .02 |
| Lethargy / laziness | -.22 | .48 | .24 |
| <i>Mean rating (SD)</i> | 6.34 (1.06) _a | 3.67 (1.41) _c | 5.20 (1.27) _b |

Note. Features are listed in order of centrality ratings in past research (Hepper, Ritchie, et al., 2012). Factor loadings in bold type are significantly above 0.30 ($p < .05$). Means that do not share a subscript differ significantly in ANOVA within-subjects contrasts ($p < .001$).

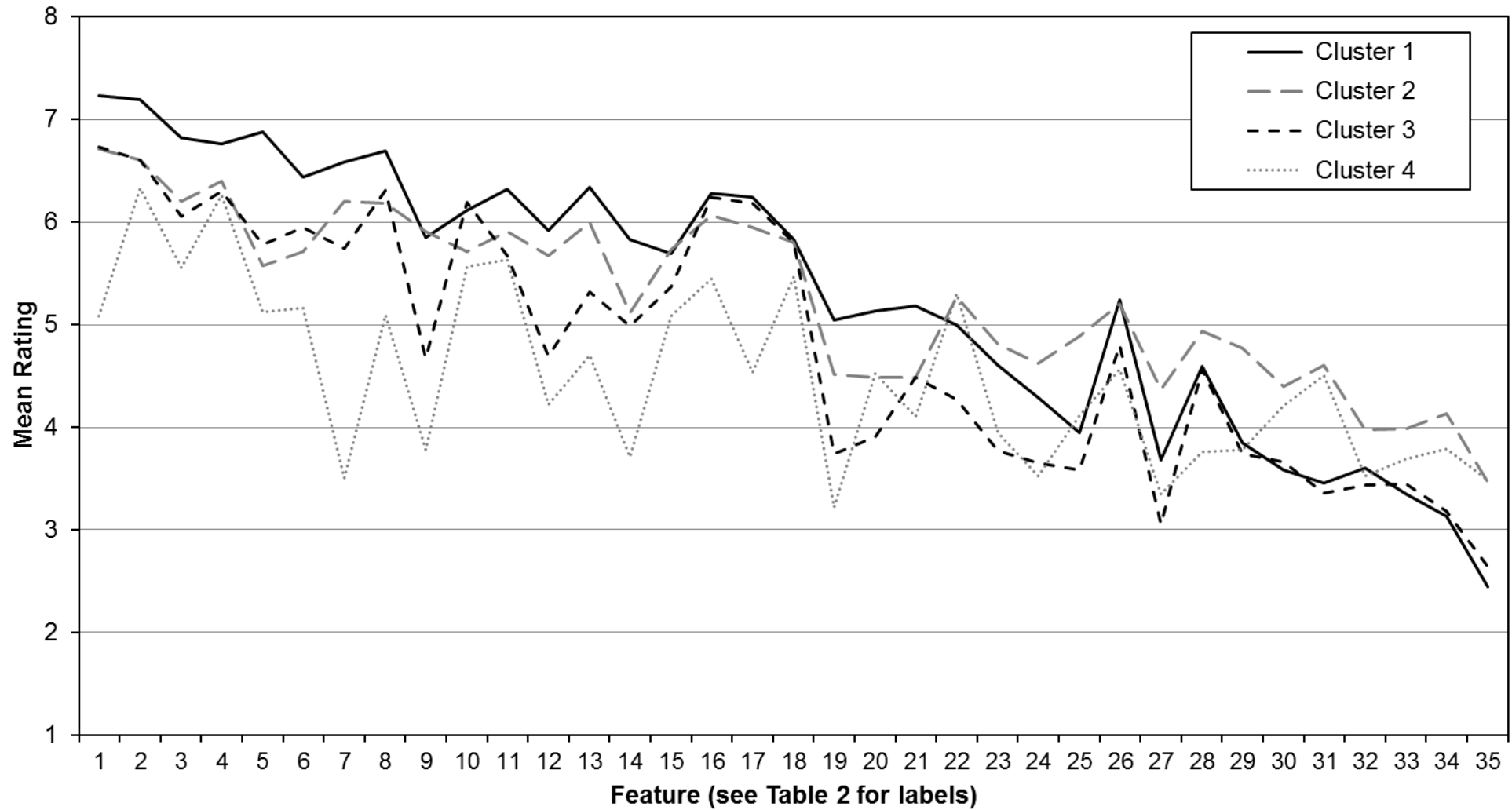


Figure 1. Mean feature ratings for each cluster of countries. *Note.* Cluster 1: Australia, Greece, Israel, Netherlands, UK, and USA; Cluster 2: China, Ethiopia, India, Ireland, Japan, and Romania; Cluster 3: Chile, Germany, Poland, and Turkey; Cluster 4: Cameroon and Uganda. Features are listed in order of centrality in past UK/USA research (Hepper, Ritchie, et al., 2012). The feature numbers 1-35 correspond to the numbers in Table 2.

SUPPLEMENTARY: Table S1. Rank-order correlations (Spearman's ρ) between 18 countries' ratings of the prototypicality of nostalgia features.

| | Australia | Cameroon | Chile | China | Ethiopia | Germany | Greece | India | Ireland | Israel | Japan | Netherlands | Poland | Romania | Turkey | Uganda | UK | USA |
|-------------|-----------|----------|-------|-------|----------|---------|--------|-------|---------|--------|-------|-------------|--------|---------|--------|--------|-----|-----|
| Australia | — | | | | | | | | | | | | | | | | | |
| Cameroon | .67 | | | | | | | | | | | | | | | | | |
| Chile | .84 | .67 | | | | | | | | | | | | | | | | |
| China | .85 | .66 | .86 | | | | | | | | | | | | | | | |
| Ethiopia | .67 | .50 | .58 | .58 | | | | | | | | | | | | | | |
| Germany | .89 | .70 | .81 | .82 | .47 | | | | | | | | | | | | | |
| Greece | .85 | .57 | .89 | .82 | .53 | .81 | | | | | | | | | | | | |
| India | .87 | .67 | .80 | .79 | .82 | .74 | .77 | | | | | | | | | | | |
| Ireland | .80 | .56 | .80 | .79 | .64 | .78 | .78 | .80 | | | | | | | | | | |
| Israel | .94 | .69 | .86 | .87 | .61 | .92 | .90 | .83 | .83 | | | | | | | | | |
| Japan | .84 | .67 | .74 | .84 | .58 | .79 | .74 | .81 | .73 | .83 | | | | | | | | |
| Netherlands | .94 | .69 | .81 | .82 | .64 | .91 | .79 | .83 | .80 | .93 | .79 | | | | | | | |
| Poland | .72 | .62 | .76 | .74 | .30 | .79 | .78 | .62 | .71 | .80 | .70 | .68 | | | | | | |
| Romania | .74 | .57 | .83 | .75 | .51 | .70 | .77 | .73 | .78 | .75 | .60 | .72 | .78 | | | | | |
| Turkey | .83 | .72 | .80 | .85 | .74 | .83 | .76 | .85 | .84 | .87 | .85 | .85 | .70 | .68 | | | | |
| Uganda | .56 | .69 | .55 | .48 | .31 | .59 | .45 | .55 | .54 | .52 | .53 | .53 | .66 | .58 | .58 | | | |
| UK | .96 | .67 | .82 | .82 | .70 | .87 | .87 | .90 | .78 | .93 | .84 | .91 | .72 | .69 | .85 | .53 | | |
| USA | .96 | .77 | .87 | .87 | .65 | .91 | .87 | .86 | .78 | .95 | .88 | .95 | .76 | .75 | .88 | .59 | .95 | |
| <i>N</i> | 66 | 102 | 82 | 98 | 62 | 84 | 172 | 85 | 90 | 96 | 120 | 68 | 70 | 80 | 79 | 88 | 97 | 165 |

Note. Correlations indicate similarity between countries' rankings of nostalgia features (e.g., a high correlation between two countries indicates that participants in those countries view nostalgia similarly). Correlations larger than .35 are statistically significant at $p < .05$; those larger than .54 are significant at $p < .001$.

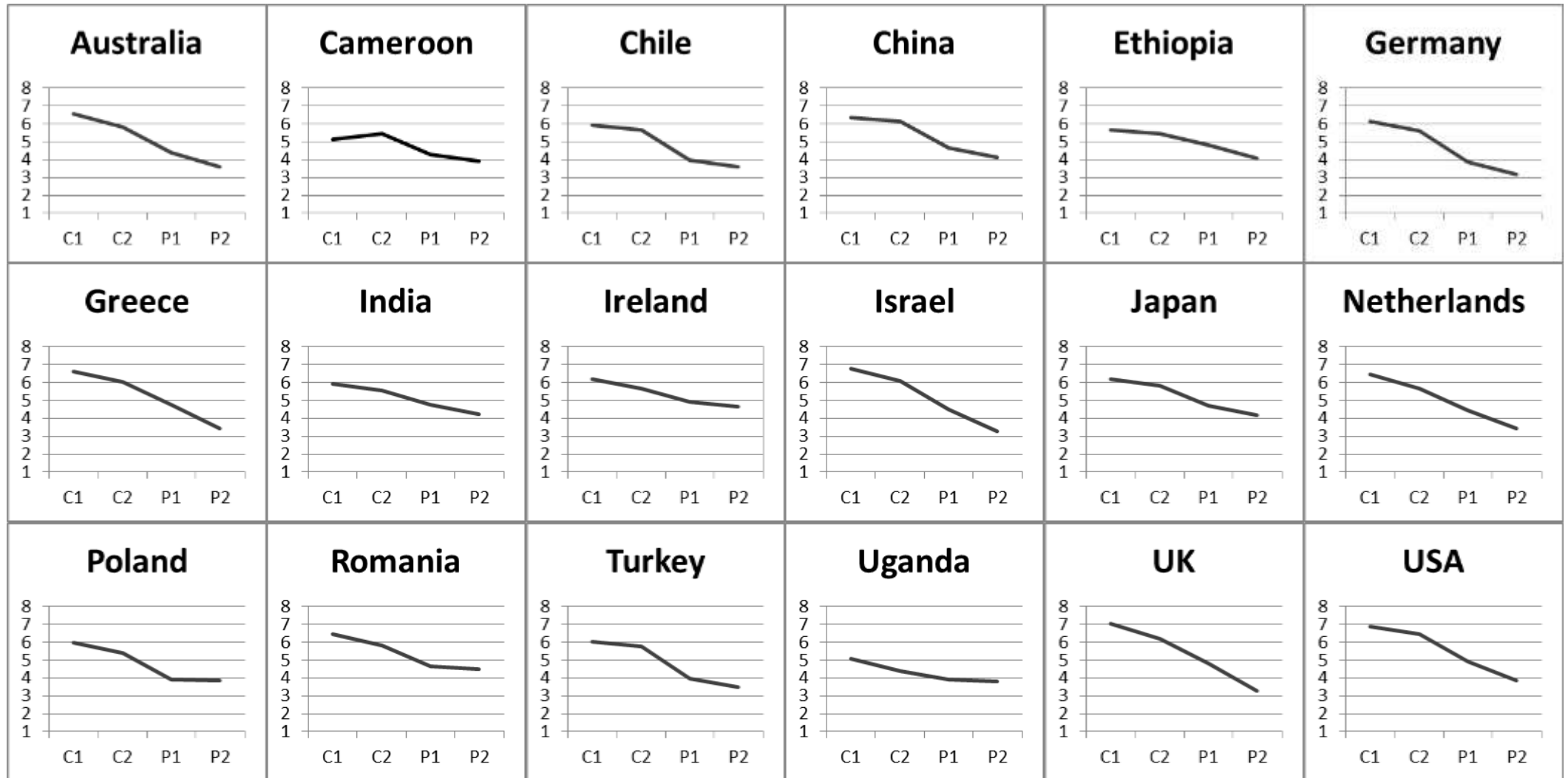


Figure S1. Patterns of Mean Ratings of Each Feature Category in Each Country.

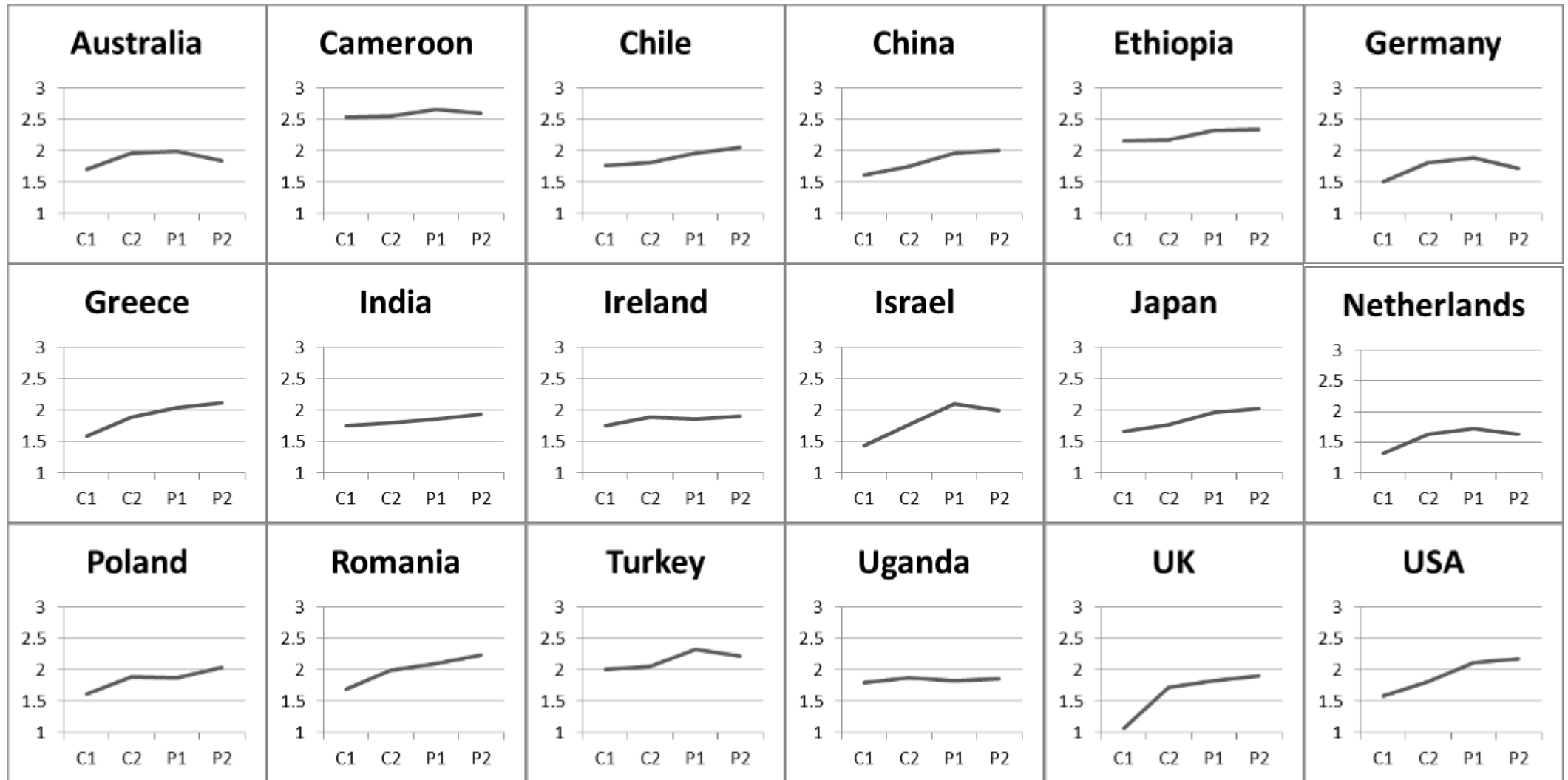


Figure S2. Patterns of Average Standard Deviations of Each Feature Category in Each Country.

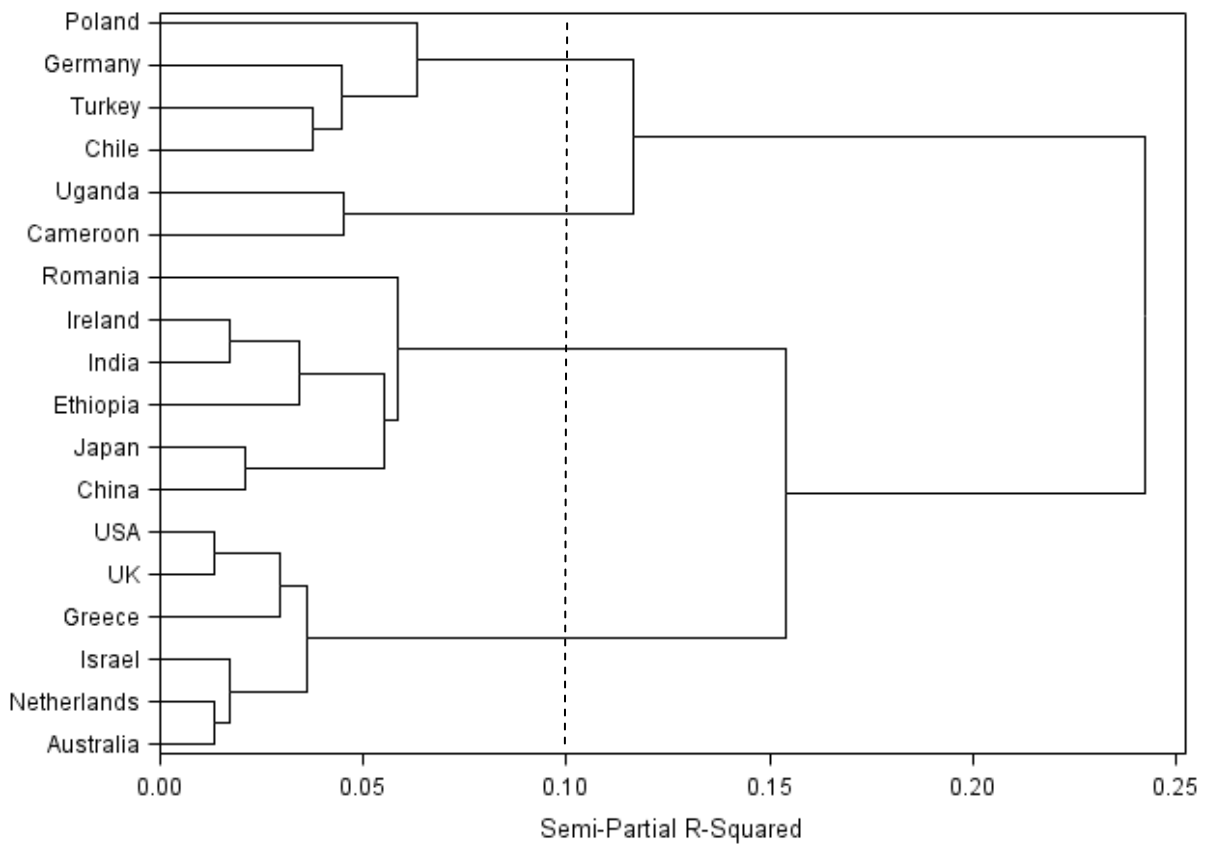


Figure S3. Dendrogram showing cluster analysis of countries based on mean ratings of the 35 nostalgia features. *Note:* A cut-point of 0.10 was used to identify the four clusters.

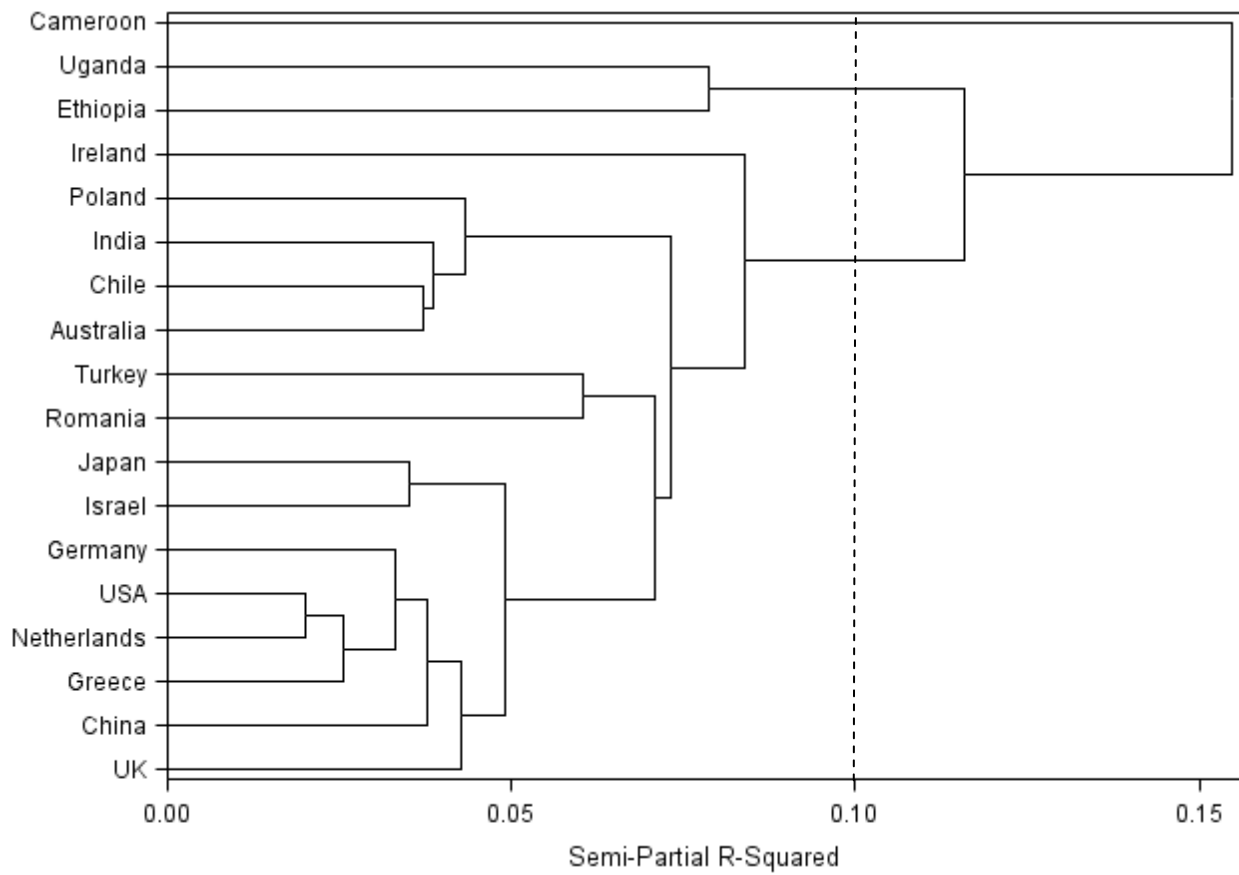


Figure S4. Dendrogram showing cluster analysis of countries based on correlations between the 35 nostalgia features. A cut-point of 0.10 was used to identify the three clusters.