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# A new perspective on entrepreneurial regions: linking cultural identity with latent and manifest entrepreneurship

David B. Audretsch · Martin Obschonka ·  
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**Abstract** What are the entrepreneurial places in the USA? Although seminal theorizing on the determinants of entrepreneurship gives culture a unique and important role, systematic empirical evidence linking the distinct cultural identity of regions to their local entrepreneurial spirit and vitality is still scarce. This study offers a first, systematic overview on the nexus between regional cultural identity and latent and manifest entrepreneurship across the USA. To directly assess regional cultural identity, we apply the *American Nations* and *Patchwork Community Types* approaches and explore in which way these distinct spatially based cultural regions are reflected by significant differences in entrepreneurial activity and

underlying biologically based propensities. We combine annual entrepreneurship rates at the county level with personality data collected in a large-scale, Internet-based study of 3,457,270 US residents. The findings suggest that entrepreneurship culture reflects the dynamic interplay between the region's cultural identity and its latent and manifest entrepreneurship.

**Keywords** Entrepreneurship · Culture · Personality · Regions · Identity

**JEL Classifications** L26 · R11 · R58 · M13

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## 1 Introduction

In recent years, a substantial scholarly literature has emerged, linking entrepreneurship to the economic performance of regions (Fritsch 1997). This work has precipitated a mandate for new regional policies to ignite entrepreneurial activity that fosters economic growth, employment, and competitiveness (Feldman et al. 2013; Lanahan and Feldman 2015). This new policy approach is based on the premise that entrepreneurial activity is malleable and responds positively to well-designed policy instruments designed to enhance entrepreneurship.

However, a very different view suggests that entrepreneurial activity may be embedded in a more deeply imprinted social, cultural, and institutional

context (Fritsch and Storey 2014; Stenholm et al. 2013; Korosteleva and Belitski 2015; and Autio et al. 2014). For example, Saxenien (1994) argued that the more dynamic entrepreneurial activity exhibited by Silicon Valley over the Boston region is attributable to an underlying social and culture context more conducive to network and linkages among people and firms. Acemoglu and Robinson (2012) suggest that such a social and cultural context reflects a deep imprinting that is relatively immutable. Their view is supported by Stuetzer et al. (2016), who provide empirical evidence from the UK suggesting that contemporary patterns of entrepreneurial activity reflect a cultural and social context imprinted by the structure of economic activity a century earlier.

However, one limitation of these early studies is their use of indirect measures of regions' cultural and social identities. For example, Stuetzer et al. (2016) can only infer regional differences in cultural and social identity based on the industrial structure of the regions from a century earlier. The purpose of this paper is to use new approaches that directly identify the distinct cultural identity of regions in the USA and to link them to entrepreneurship in the local populations. One of these regional paradigms identifies the existence of distinct nations within the USA, with a shared cultural history. The other identifies *Patchwork Communities* by means of current socioeconomic parameters of US regions, which together signal a shared cultural history of the region. To achieve a more in-depth picture on the link between cultural identity and regional entrepreneurship, we examine regional differences in both manifest and latent entrepreneurship (Stuetzer et al. 2016). We thus study manifest entrepreneurial activity, or entrepreneurship which can actually be observed, at the behavioral level of populations (i.e., startup rates of regions) and latent entrepreneurial spirit that is connected to the biological level of populations (Rentfrow et al. 2008; Shane et al. 2010) (i.e., an entrepreneurial personality profile, which is substantially based on the biological makeup of regional populations). Therefore, this study examines the biobehavioral clustering of entrepreneurship as a function of regional cultural identity. While the general claim that entrepreneurship (either latent, manifest, or both) is rooted in culture is not new, this study is novel in that it a) directly assesses regional cultural identity by means of the *American Nations* and *Patchwork Community Types* frameworks and b)

provides a first systematic overview over the covariation of regional cultural identities and (latent and manifest) entrepreneurship across the USA (involving all US counties). The findings deliver novel insights into the complex nexus between the various aspects of the local culture and latent and manifest entrepreneurship across the USA. The results contribute to a better understanding about the nature of those local cultural settings that might be particularly conducive (or hindering) for local entrepreneurial spirit and startup activity. In doing so, the findings raise important new research questions and also speak to existing explanation models (e.g., on the role religiosity, migration, and prevalent work conditions and experiences).

The following sections (Sects. 2, 3, 4) introduce the concept and measurement of *American Nations* and *Patchwork Communities* and explain why latent and manifest entrepreneurship might systematically vary across such culturally and socially based regional identities. The fifth section explains the main measures used in this study, which generate the empirical results presented in the sixth section. After the main findings are discussed in section seven, the final section of the paper provides a summary and conclusion. In particular, the findings support the idea that the propensity for entrepreneurial activity to spatially cluster varies systematically across the social and cultural context of the region.

## 2 Regional cultural identity paradigms: *American Nations* and *Patchwork Communities*

Virtually no serious study has ever proposed that the USA is spatially homogenous. However, most of the explanations for variations in economic activity have focused on geographic differences in economic factors, such as resource endowments along with the organization and structure of economic activity. The former is reflected in neoclassical thinking dating back to Ricardo and Marshall and more recently updated by Solow (1956), Lucas (1993), Romer (1986), and Krugman (1991), and the latter is reflected in work by Porter (1990), Feldman (2014), and Powell et al. (1996).

However, an alternative view has recently emerged that challenges the primacy of economic factors and their spatial and organizational configuration. This new view posits the primacy of culture in shaping



**Fig. 1** Map of the *American Nations*. Note Taken from <http://www.tufts.edu/alumni/magazine/fall2013/features/up-in-arms.html>  
Source: Woodard (2011)

variations in economic, political, and social phenomena across geographic space (Scott 1995, 2007; Mason and Brown 2012; Autio et al. 2014; Nathan and Lee 2013; Audretsch, Dohse and Niebuhr 2010; Audretsch and Maksim 2016). In particular, Woodard (2011) argues that rather than coalescing as an integrated geographic economic identity, the USA has remained a patchwork of idiosyncratic, often contradictory and spatially independent regions, where the cultural imprint from the original European settlers centuries earlier shapes current disparities in economic activity.

## 2.1 American Nations

In particular, building upon Garreau (1982) and Fischer (1989), Woodard (2011) identifies the existence of distinct “nations,” which are based on the settlement patterns of initial settlers from Europe centuries earlier. Figure 1 depicts the distinct *American Nations*. What Woodard (2011) terms as

*Yankeedom* is centered around Massachusetts Bay, where radical Calvinists first settled. This region is characterized as having “prized education, intellectual achievement, community (rather than individual) empowerment, and broad citizen participation in politics and governments, the latter seen as the public’s shield against the machinations of grasping aristocrats, corporations, and other tyrannies.”<sup>1</sup>

*New Netherland* depicts the region settled by the Dutch during the era when the Netherlands dominated economic and cultural thinking. The values imprinted by the early Dutch settlers are “a global commercial trading culture—multi-ethnic, multireligious, materialistic—with a profound tolerance for diversity and an unflinching commitment to the freedom of inquiry and conscience.”<sup>2</sup> The focal point for finance, trade, and

<sup>1</sup> “The 11 Rival Regional Cultures of North America,” *The Chronicle of Higher Education*, June 25, 2012.

<sup>2</sup> See foot note 1.

publishing found in Amsterdam five centuries ago is still reflected in the values of that American Nation today, according to Woodard (2011). By contrast, the nation depicted by Woodard (2011) as the *Midlands* reflects a region originally settled by Quakers from England, “who believed in humanity’s inherent goodness and welcomed people of many nations and creeds to their utopian colonies on the shores of Delaware Bay. Pluralistic and organized around the middle class, the *Midlands* spawned the culture of the heartland, where ethnic and ideological purity have never been a priority, government has been seen as an unwelcome intrusion, and political opinion has been moderate, even apathetic” (Woodard 2011).

A very different *American Nation* is characterized by *Tidewater*, which emanates from the landed gentry of England. In particular, “It was meant to reproduce the semif feudal manorial society of the countryside they’d left behind, where economic, political, and social affairs were run by and for landed aristocrats.”<sup>3</sup> *Tidewater* values are fundamentally conservative, where tradition and authority trump equality and broad-based inclusive political participation. *Greater Appalachia* has its roots dating back to the 1700s, when settlers from Northern Ireland, England, and Scottish lowlands fled poverty and war in the homeland. The cultural imprint of *Greater Appalachia* is characterized by “a warrior ethic and deep commitments to personal sovereignty and individual liberty.”<sup>4</sup> According to Woodard, *Greater Appalachia* was imprinted by a culture of “rough settlers from the war-ravaged borderlands of Northern Ireland, northern England, and the Scottish lowlands.”

The *Deep South* was created on the back of slavery. In particular, “this region has been a bastion of white supremacy, aristocratic privilege, and a version of classical Republicanism modeled on the slave states of the ancient world, where democracy was the privilege of the few and enslavement the natural lot the many.”<sup>5</sup> By contrast, *El Norte* depicts a region of independence, self-sufficiency, adaptability, flexibility, and a high valuation for work. The *Left Coast* is the result of two different groups of settlers—merchants, missionaries, and woodsmen from New England, and farmers, prospectors, and

fur traders from *Greater Appalachia*. The interaction of these historical imprints has generated a hybrid region reflecting the idealism, faith in good government, and social reform inherent in *Yankeedom*, and the commitment to individual self-expression and exploration inherent in *Greater Appalachia*.

The sole region where environment has had a stronger role than has ethnography is the *Far West*. Environmental concerns, such as the need for water and a high value of preserving the environment, have rooted the Far West with “anticorporate populism and antigovernment conservatism.”<sup>6</sup> The final two distinct regions are the *First Nation*, which is populated by indigenous Inuits (e.g., Alaska), and *New France*, which is dispersed in the French-speaking Quebec area but also parts of Alaska and Louisiana.

In addition, Woodard (2013) defines South Florida as part of the *Spanish Caribbean* and the capital of the USA, the District of Columbia, as *Federal Entity*.

## 2.2 Patchwork Communities

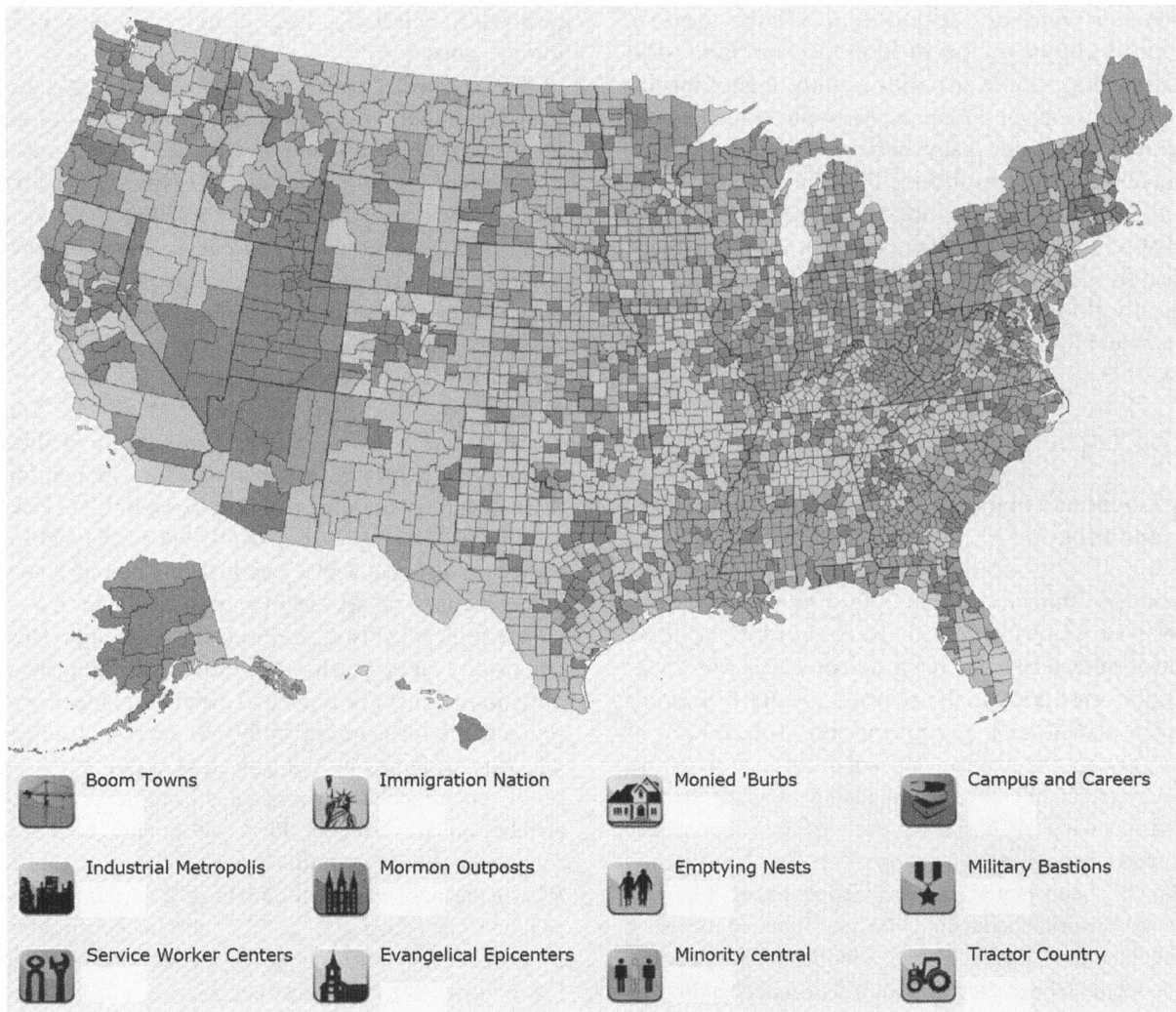
A related but decidedly distinct depiction of regional identity is posited by Chinni and Gimpel (2011). According to Chinni and Gimpel (2011), analyzing socioeconomic data (i.e., a large set of current population, demographic, economic, consumer expenditure, and religious adherence indicators) across the 3141 US counties results in the identification of twelve distinct categories, which they terms as *Our Patchwork Nation* (see Fig. 2). The Patchwork referred to by Chinni and Gimpel (2011) distinguishes communities that are not concentrated in a single region or part of the country, but are rather geographically disparate and share an underlying socioeconomic basis—*Boom Towns*, *Evangelical Epicenters*, *Military Bastions*, *Service Worker Centers*, *Campus and Careers*, *Immigration Nation*, *Minority Central*, *Tractor Community*, *Mormon Outposts*, *Emptying Nests*, *Industrial Metropolises*, and *Monied Burbs* (see also <http://www.patchworknation.org/regions-page>). Hence, other than the *American Nations* paradigm, this regional paradigm does not directly focus on the historical trajectories of regions but on similarity in current socioeconomic parameters that then reflect common cultural histories.

<sup>3</sup> See foot note 1.

<sup>4</sup> See foot note 1.

<sup>5</sup> See foot note 1.

<sup>6</sup> See foot note 1.



**Fig. 2** Map of *Patchwork Nation Community Types*. Source: Chinni and Gimpel (2011), Note taken from <http://www.patchworknation.org/regions-page>

Chinni and Gimpel describe their community types in the following way: *Boom Towns* are fast-growing communities with rapidly diversifying populations. *Evangelical Epicenters* are communities with a high proportion of evangelical Christians, found mostly in small towns and suburbs. The population is slightly older than the US average with loyal Republican voters. *Military Bastions* are areas with high employment in the military or related to the presence of the military and large veteran populations. *Service Worker Centers* are midsize and small towns with economies fueled by hotels, stores, and restaurants and lower-than-average median household income by county. *Campus and Careers* are cities and towns with young,

educated populations, more secular and democratic than other American communities. *Immigration Nation* is communities with large Latino populations and lower-than-average incomes, typically clustered in the south and southwest. *Minority Central* represents counties scattered mostly across the southeastern states with high shares of African-American residents but a below average percentage of Hispanics and Asians. These regions are often referred to as “Old South,” where African-Americans and whites live near each other, work with each other, go to school with each other, but seldom interact socially. *Tractor Community* is mostly rural and remote smaller towns with older populations and large agricultural sectors.

*Mormon Outposts* are home to a large share of members of the Church of Jesus Christ of Latter-Day Saints and populations with slightly higher median household incomes. *Emptying Nests* are home to many retirees and aging baby boomer populations; these populations are less diverse than the nation at large. *Industrial Metropolises* are densely populated, highly diverse urban centers where incomes are often higher than the national average and voters lean democratic. Finally, *Monied Burbs* are wealthier, highly educated communities with a median household income of \$15,000 above the national county average.

### 3 Latent and manifest entrepreneurship: biology and behavior

Manifest entrepreneurship refers to entrepreneurial behavior which can actually be observed. By contrast, latent entrepreneurship refers to individuals who do not exhibit entrepreneurial behavior, but have a strong potential of developing entrepreneurial behavior. By its very nature, entrepreneurship is about agency and actual behavior (manifest entrepreneurship), such as starting and growing a business, but research comparing entrepreneurs and nonentrepreneurs has consistently shown a substantial genetic underpinning for such entrepreneurial behavior (Van der Loos et al. 2013; Nicolaou et al. 2008). Hence, a biobehavioral perspective seems to be particularly fruitful to understanding the potential regional clustering of entrepreneurship. Inspired by earlier research (e.g., McCrae 2004; Shane et al. 2010), we derive a proxy for the biological basis of entrepreneurship by means of basic personality traits, which are substantially heritable and show a link to entrepreneurship: The Big Five personality traits (Extraversion, Conscientiousness, Openness to new experience, Agreeableness, and Neuroticism). The Big Five approach to personality is the predominant, best-researched, and most cross-culturally valid personality model (John et al. 2008). Research has shown that an entrepreneurial Big Five profile within the individual (high in Extraversion, Conscientiousness, and Openness to new experience; low in Agreeableness and Neuroticism) is particularly predictive of entrepreneurial behavior, motivation, and human and social capital (Obschonka et al. 2013; Schmitt-Rodermund 2004). Hence, such a focus on the regions' entrepreneurial

personality reflects the latent entrepreneurial spirit in these regions.

The regional clustering of such basic personality traits might build the biologically related basis of the local entrepreneurial culture. McCrae (2004) argues that biologically based characteristics like the Big Five traits can cluster spatially and thus affect the local culture such as attitudes, cognitions, values, norms, and behaviors (see also Rentfrow et al. 2008). Indeed, prior research has shown that the regional distributions of the entrepreneurial Big Five profile and entrepreneurial activity covary across the 50 US states and Washington, D.C. (Obschonka et al. 2013). This research had focused on large, politically defined regions, the US states, which allows for a straightforward method of dividing people into regions, but lacks a substantive theory or framework that conceptualizes regions as different with regard to their cultural identity and biobehavioral aspects of entrepreneurship.

The regional clustering of such biologically related personality factors such as the entrepreneurial personality profile might be related to the cultural identity of regions (the focus of our study) via several channels, which is explained in Rentfrow et al.'s (2008) theory on the emergence and persistence of regional macro-psychological variation. First, systematic historical migration patterns could have established a certain local gene pool that then maintains a certain macro-psychological regional pattern across generations. Second, in the long run, local formal and informal institutions, and their local persistence, are likely to shape the region's macro-psychological makeup (e.g., the personality features of the local populations) because such personality factors are also driven by environmental effects—not just genetic effects. Third, as argued by Obschonka et al. (2013), regional macro-psychological features that are economically beneficial for a region show particularly high stability over time, probably due to the positive reinforcement in the local formal and informal institutions. This might apply to the entrepreneurial personality profile due to beneficial economic outcomes for those regions.

### 4 Cultural identity of regions and biobehavioral pillars of entrepreneurship

A growing literature suggests that economic phenomena in general and entrepreneurship, in particular, may



be influenced by the underlying culture. Audretsch et al. (2013) find a direct relationship between different aspects of culture in India, such as the particular social caste, and the propensity to become an entrepreneur. Max Weber (1904), in *The Protestant Ethic and the Spirit of Capitalism*, posited that culture and religious beliefs influenced the extent of material standard of living. More recent studies have updated the links between culture, religious beliefs, and economic prosperity (Iannaccone 1998; Smith 2008; Barro and McCleary 2003; McCleary and Barro 2006; Guiso et al. 2006). As Phelps concludes, “values and attitudes are as much a part of the economy as institutions and policies are. Some impede, others enable.”

Social values are linked to and reflected by regulatory, normative, and cognitive dimensions (Scott 1995, 2007). In particular, Bruton et al. (2010) have identified these three dimensions as comprising the institutional context influencing entrepreneurship. As Bruton et al. (2010, p. 423) suggest, the cultural context shaping entrepreneurship “is increasingly important in entrepreneurship research in terms of how societies accept entrepreneurs, inculcate values, and even create a cultural milieu whereby entrepreneurship is accepted and encouraged.” Similarly Busenitz et al. (2000, p. 995) argue that “culture, values, beliefs, and norms affect the entrepreneurial orientation of its residents.”

The two albeit decidedly different approaches to identifying and classifying systematic cultural differences across geographic space in the USA—the *American Nations* and *Patchwork Nation*—suggest that the variations in cultural identity and imprint across geographic space would also result in corresponding systematic differences in latent and manifest entrepreneurship across geographic space. Our study therefore addresses this assumed nexus between cultural identity and latent and manifest entrepreneurship, thereby taking an explorative perspective. We believe that such an explorative approach is necessary due to the complexity and richness of the data we analyze, the novelty of our conceptual approach (combining geographic information on cultural identity, entrepreneurial personality, and startup activity), and the scarcity of existing research in this field. Moreover, large Internet datasets consisting of millions of respondents, such as the personality dataset we analyze here, allow us, probably for the first time ever,

to examine the nexus between latent (and manifest) entrepreneurship and cultural identity *across all* regions and counties of the USA. Such an explorative design that is able to deliver a complete overview over all regions in a given country figures prominently in comparable psychological research mapping the regional psychological differences *within* countries such as the USA or the UK by means of these large, new Internet datasets (e.g., Rentfrow 2014; Rentfrow et al. 2008, 2013.)

The next sections provide a systematic test of the hypothesis that the biobehavioral pillars of entrepreneurship are together influenced by the cultural imprint or identity of a region. By testing for the existence of any systematic differences across the relevant geographically distinct cultures, we provide preliminary insight as to how latent and manifest entrepreneurship might be shaped by the cultural identity of a region.

## 5 Measurement issues

Both cultural identity paradigms—*American Nations* and *Patchwork Communities*—started at the county level and assigned each US county to one of the nations and community types (as shown in Figs. 1, 2). We therefore follow this county-level focus and analyze our research question by quantifying the clustering of US counties in terms of their entrepreneurial activity and biologically based personality profile. The detailed assignment of each county to the *American Nations* and *Patchwork Communities* can be found elsewhere (<http://www.patchworknation.org/regions-page>; <http://www.tufts.edu/alumni/magazine/fall2013/features/up-in-arms.html>).

Our empirical analysis is based on 3137 US counties. We had to exclude six counties because they are relatively small and no personality data were obtained from residents living there (Kalawao County, Hawaii; Wheeler County, Nebraska; Kennedy County, Texas; Loving County, Texas; Bedford City, Virginia; Emporia City, Virginia).

### 5.1 Manifest entrepreneurship: entrepreneurial activity

To measure entrepreneurship rates at the county level, we focused on regional startup rates, which is the most



common way of quantifying the intensity of entrepreneurial activity at the regional level (Fritsch and Mueller 2007). Startup rates were obtained by using Statistics of US Businesses (SUSB), provided by the US Census. SUSB covers all US business establishments that have employees. Every business establishment with at least one employee is assigned with a unique identification number and thus can be followed over time. If an establishment hires an employee for the first time, it is assigned with an identification number and counted as a startup. The annual startup rates reflect the number of startups per 1000 employees. We considered annual startup rates from 1999 to 2011. The county-level 1999–2011 average of these startup rates was 4.66 (SD = 1.66).

## 5.2 Latent entrepreneurship: entrepreneurial personality profile

Following earlier research (Obschonka et al. 2013, 2015, 2016; Stuetzer et al. 2016), regional variation in biology based entrepreneurial personality was assessed by quantifying an entrepreneurial Big Five profile, which was collected at the individual level. These individual-level personality data were then aggregated to the county level to achieve county-level entrepreneurial personality scores for the 3137 counties. The individual-level dataset we use stemmed from the Gosling–Potter Internet project, which is an ongoing online project that has been collecting personality data since 1999 in the USA (for more information on the procedure, sample, and established reliability and validity of the data, see Rentfrow et al. 2008, 2013). The data from this large-scale Internet project were used in a variety of important studies on personality and human behavior, thereby demonstrating the validity and quality of the dataset (for a list of published studies, see <http://www.thebigfiveproject.com/published-papers/>). Here, we use the latest, larger version of this US dataset with an  $N$  of 3,457,270 respondents (mean number of respondents per US county = 1102; median number of respondents per US county = 209). This large dataset, arguably the largest personality dataset in the USA to date, makes it possible to compare regional personality variation at the county level (prior studies using earlier, smaller versions of this dataset looked at the 50 US states or large metropolitan areas; Rentfrow et al. 2008; Obschonka et al. 2015). Hence this unique, large

dataset provides the first opportunity to test the present research question on the clustering of entrepreneurial culture at a relatively fine-grained spatial level, such as the county level.

The Big Five data were collected by means of the online version of the Big Five Inventory (BFI; John et al. 1991), which is one of the most well-established and well-validated personality inventories in personality psychology. It consists of 44 statements designed to assess the prototypical traits defining each of the Five Factor Model dimensions (five-point Likert-type rating scale items, *disagree strongly* to *agree strongly*).

Following earlier research on regional entrepreneurial personality (Obschonka et al. 2013, 2015; in press; Stuetzer et al. 2016), the entrepreneurial personality profile assessed at the individual level is based on Cronbach and Gleser's (1953)  $D^2$  approach of quantifying the similarity between two profiles. We measured the individual match between a person's empirical Big Five profile and the fixed reference profile with the extreme scores in each of the Big Five dimensions, defining the outer limits of the single Big Five traits within an entrepreneurial personality structure (i.e., highest possible values in E, C, O; lowest possible values in A, N). In the first step, each of the person's squared differences between the reference values and their personal values on each of the five scales were computed. For instance, if a person scored 3 in neuroticism, the squared difference was 9 (because the reference value was 0). Second, the five squared differences were summed up for each person. Third, the algebraic sign of this sum was reversed (e.g., a value of 20 became  $-20$ ). The resulting value served as the final variable of the entrepreneurial personality profile, which means that a higher value in this final score signals a stronger entrepreneurial personality structure. These individual scores on the profile were then aggregated to the regional level (average score) to achieve the regional value for the local *entrepreneurial personality*. This index of the entrepreneurial personality of regions had a mean of  $-21.19$  (SD = 1.05) across the 3137 US counties.

## 6 Results

Using the mean county-level startup rates that were averaged across the annual startup rates from 1999 to

2011 for each county, we tested MANOVA's to check whether the two regional paradigms significantly differentiate between more and less entrepreneurial counties in terms of behavior and personality. These results are summarized in Table 1. Both regional paradigms indeed significantly differentiated the counties in terms of both entrepreneurial activity and personality. The multivariate  $F$  statistics was 29.55 ( $p < .001$ ) in the *American Nations* MANOVA and 25.72 ( $p < .001$ ) in the *Patchwork Communities* MANOVA. The effect sizes were estimated by means of the partial  $\eta^2$  and ranged between .06 and .19, which indicates substantial and meaningful effects (Cohen 1988).

The rankings of the county groups within each regional paradigm are also provided in Table 1. Among the *American Nations*, *Spanish Caribbean*, *Federal Entity*, and *The Left Coast* ranked highest in entrepreneurial activity; and *Federal Entity*, *Spanish Caribbean*, and *First Nation* ranked highest in entrepreneurial personality. Furthermore, *Greater Appalachia*, *The Midlands*, and *First Nation* ranked lowest in entrepreneurial activity, and *Deep South*, *Greater Appalachia*, and *New France* ranked lowest in entrepreneurial personality. Among the *Patchworks Communities*, *Mormon Outposts*, *Monied Burbs*, and *Industrial Metropolis* ranked highest in entrepreneurial activity; and *Industrial Metropolis*, *Boom Towns*, and *Monied Burbs* ranked highest in entrepreneurial personality. Furthermore, *Evangelical Epicenters*, *Emptying Nests*, and *Minority Central* ranked lowest in entrepreneurial activity, and *Minority Central*, *Service Worker Centers*, and *Evangelical Epicenters* ranked lowest in entrepreneurial personality.

To test the two regional paradigms, *American Nations* and *Patchwork Communities*, against a "random" regional model, we tested a random assignment of each county to 12 equally large groups of counties. This MANOVA delivered nonsignificant results demonstrating that such a random assignment does not differentiate US counties in terms of their local biobehavioral entrepreneurial spirit.

Figures 3 and 4 illustrate the conjoint clustering of the behavioral and biology based facets of the local entrepreneurial spirit within the two regional paradigms that have proven their usefulness in differential more or less entrepreneurial regions across the USA. The red curves represent the regional variation in entrepreneurial personality, and the other curves

illustrate the regional variation in the regional startup rates assessed annually between 1999 and 2011. First of all, these figures clearly illustrate the high temporal stability of regional startup rates, often described as persistence phenomenon in regional economics (Fritsch and Wyrwich 2014).

Second, the figures also illustrate the substantial overlap between the regional variation of entrepreneurial behavior and personality within the two regional paradigms. The curves for entrepreneurial behavior and personality often show a similar curve shape. This apparent conjoint clustering of activity and personality is empirically underscored by the substantial region-level correlation between activity and personality within each regional paradigm level ( $r = .58$ ,  $p < .05$ , across *American Nations*;  $r = .66$ ,  $p < .05$ , across *Patchwork Communities*). This conjoint regional clustering is consistent with the Hypothesis that the regional persistence of startup rates over time is constituted and driven by biologically based features of regions, such as regional personality (Stuetzer et al. in press). This would also be consistent with the assumption in socioecological psychology that regional personality shows considerable stability over long periods of time (Plaut et al. 2002; Rentfrow et al. 2008; Talhelm et al. 2014).

Third, there are, however, also interesting differences in the activity and personality curves within each regional paradigm. Among the *American Nations*, counties belonging to the *First Nation* in Alaska showed relatively low entrepreneurial activity in most of the years, but score quite high in entrepreneurial personality. Hence, there seems to be a difference between manifest and latent entrepreneurship in this region. One potential explanation could be that these counties offer less supportive infrastructures, support, and appreciation for entrepreneurial activity, although the regional personality makeup indicates a remarkable entrepreneurial spirit. Another special case seems to be *Spanish Caribbean*, the South Florida counties. While entrepreneurship rates are very high, among the highest in the nation, entrepreneurial personality is relatively strong but not extremely high like the startup rates in this region. However, if one neglects *Federal Entity* (Washington, D.C.) and *Greater Polynesia* (the counties on Hawaii), *Spanish Caribbean* would clearly rank highest in both entrepreneurial activity and personality, which again underscores that behavior and corresponding

**Table 1** Regional ranks, means, and MANOVA results for entrepreneurial activity and personality

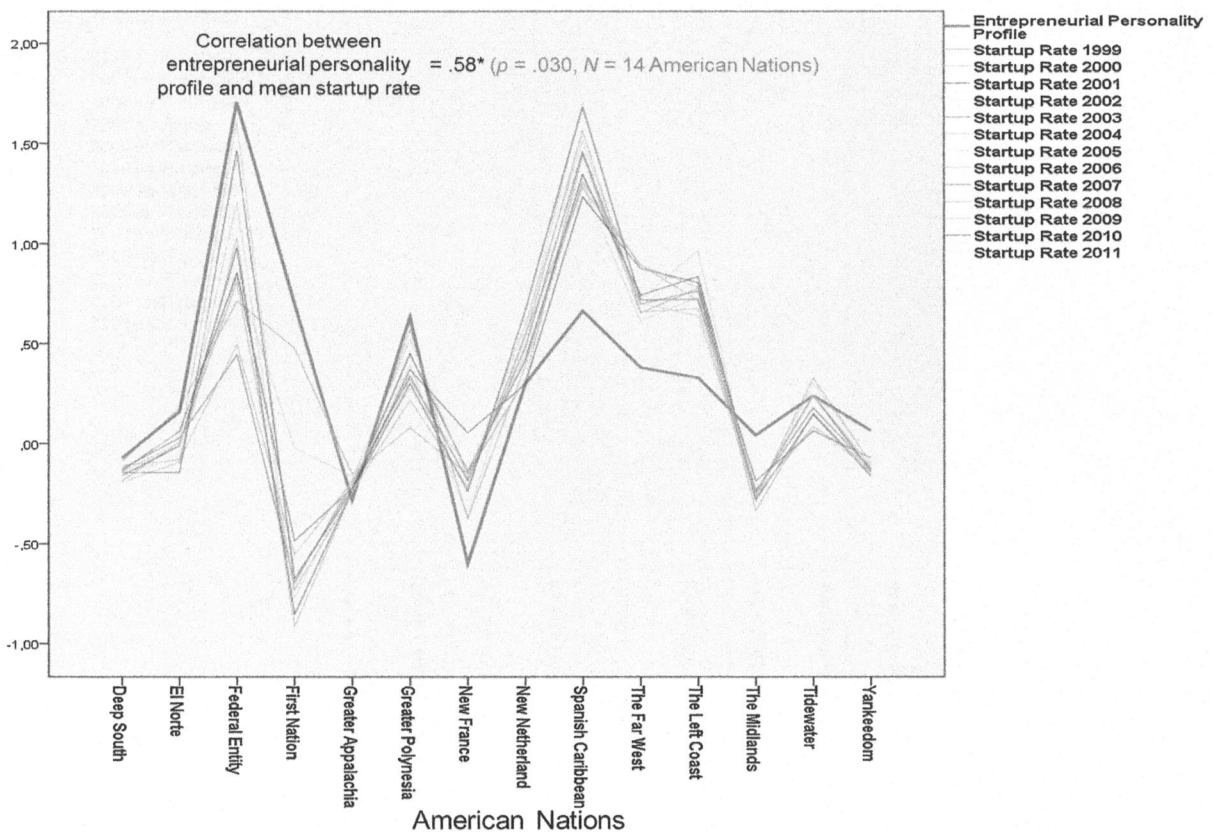
Regional paradigm	Region (Nr. of counties)	Average startup rate 1999–2011		Entrepreneurial personality profile	
		(Ranking) mean	SD	(Ranking) mean	SD
American Nations	Deep South ( $N = 499$ )	(11) 4.38	1.22	(12) –21.27	0.90
	El Norte ( $N = 87$ )	(8) 4.66	1.37	(9) –21.03	1.03
	Federal Entity ( $N = 1$ )	(2) 6.68	–	(1) –19.40	–
	First Nation ( $N = 8$ )	(14) 3.73	1.34	(2) –20.46	1.18
	Greater Appalachia ( $N = 936$ )	(12) 4.26	1.32	(13) –21.49	1.06
	Greater Polynesia ( $N = 4$ )	(6) 5.35	0.82	(4) –20.53	0.26
	New France ( $N = 26$ )	(9) 4.57	1.22	(14) –21.62	0.67
	New Netherland ( $N = 23$ )	(5) 5.63	0.91	(7) –20.88	0.23
	Spanish Caribbean ( $N = 12$ )	(1) 7.54	2.45	(3) –20.50	0.61
	The Far West ( $N = 449$ )	(4) 6.16	2.39	(5) –20.80	1.50
	The Left Coast ( $N = 56$ )	(3) 6.19	1.62	(6) –20.84	0.51
	The Midlands ( $N = 465$ )	(13) 4.16	0.88	(11) –21.15	0.91
	Tidewater ( $N = 130$ )	(7) 5.03	2.36	(8) –20.94	0.88
	Yankeedom ( $N = 441$ )	(10) 4.44	1.12	(10) –21.13	1.05
	$F$ (multivariate)	29.55***			
	$Df$	13			
	Partial $\eta^2$	.19	.06		
Patchwork Nation Community Types	Boom Towns ( $N = 383$ )	(5) 5.39	2.03	(2) –20.78	0.52
	Campus and Careers ( $N = 71$ )	(8) 4.39	1.58	(5) –20.92	0.46
	Emptying Nests ( $N = 250$ )	(11) 4.19	1.10	(7) –21.12	0.68
	Evangelical Epicenters ( $N = 468$ )	(10) 4.23	1.12	(12) –21.55	1.18
	Immigration Nation ( $N = 202$ )	(6) 4.48	1.15	(9) –21.13	0.99
	Industrial Metropolis ( $N = 41$ )	(3) 5.40	1.70	(1) –20.59	0.40
	Military Bastions ( $N = 55$ )	(7) 4.44	1.17	(6) –20.93	0.89
	Minority Central ( $N = 364$ )	(12) 4.08	1.21	(10) –21.43	1.01
	Monied Burbs ( $N = 286$ )	(2) 5.43	2.29	(3) –20.78	0.80
	Mormon Outposts ( $N = 44$ )	(1) 6.06	2.10	(4) –20.91	1.04
	Service Worker Centers ( $N = 662$ )	(9) 4.34	1.48	(11) –21.43	0.84
	Tractor County ( $N = 311$ )	(4) 5.40	1.69	(8) –21.13	1.78
	$F$ (multivariate)	25.72***			
	$Df$	11			
	Partial $\eta^2$	.12	.08		

Regional ranks are presented in brackets. \*\*\*  $p < .001$

personality features go hand in hand at the regional level, probably reflecting manifest and latent aspects of the region's entrepreneurial spirit and culture.

Among the *Patchwork Communities*, *Mormon Outposts* showed substantial temporal variation in entrepreneurial activity, with very high startup rates in the years 2006–2008. Entrepreneurial personality

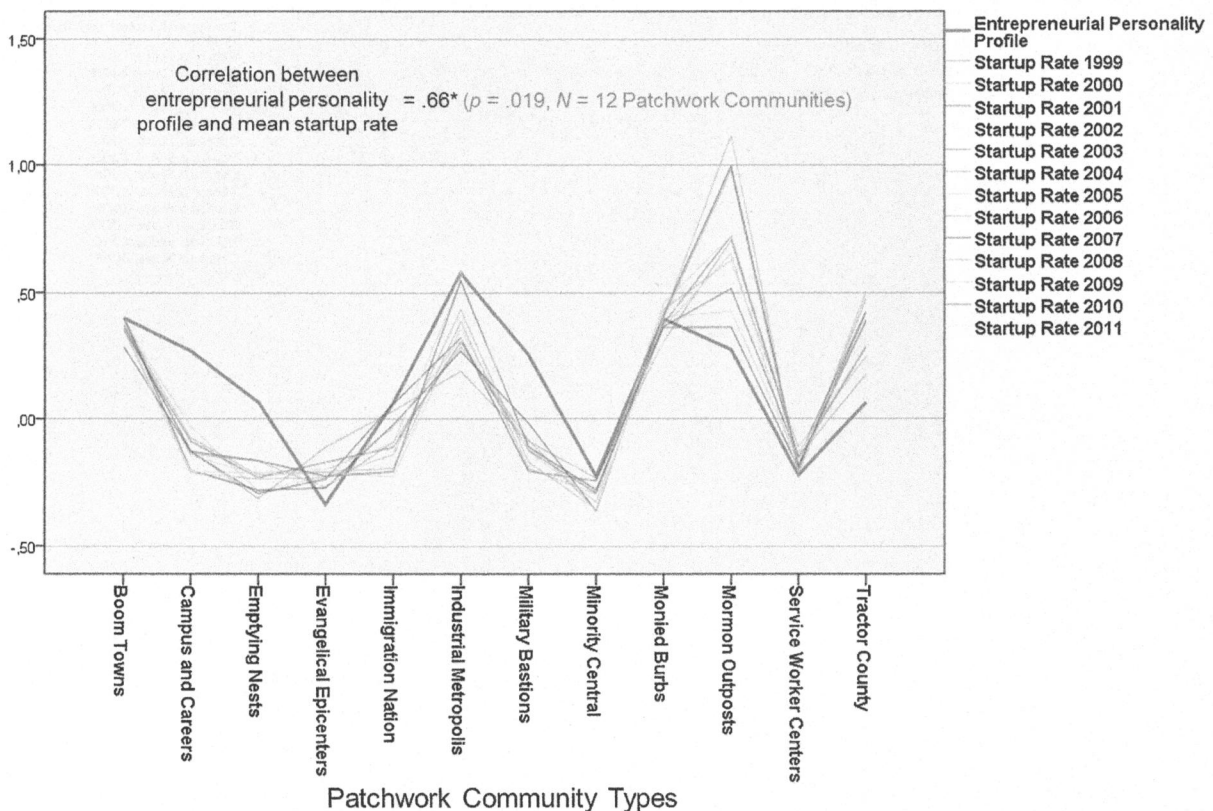
levels are also quite high here. *Military Bastions* (areas with high employment in the military or related to the presence of the military and large veteran populations) have quite low entrepreneurial activity but a relatively strong entrepreneurial personality. Again, this might be a story of lacking entrepreneurial opportunities and local infrastructures conducive for



**Fig. 3** Distribution of entrepreneurial activity (startup rate) and personality (entrepreneurial personality profile) across *American Nations*

business startups, which meet a latent entrepreneurial spirit in the local population that then does not translate into actual entrepreneurial behavior. However, it could also have to do with the age structure in these counties (which have many younger soldiers and older veterans) because research indicates that entrepreneurial motivation is highest in middle adulthood, and lower in young and late adulthood (Minola et al. 2015). Moreover, *Emptying Nests* show very low entrepreneurial activity across the years but score in the middle range of entrepreneurial personality. These counties might lack the optimism, self-confidence, and business support that a lively entrepreneurial scene requires. The latent entrepreneurial spirit, indicated by the local personality structure, however, still seem to signal a certain unused potential for entrepreneurial activity. *Campus and Careers* counties also show very low entrepreneurship activity, despite the relatively high levels in entrepreneurial personality. It might be that these regions concentrate the entrepreneurial

masterminds of the future (e.g., university students and researchers) but that this group then starts new business in other countries, for example in *Boom Towns* or *Industrial Metropolis* counties that attract young talent. In other words, these *Campus and Careers* counties might be the seedbed of new entrepreneurial generations, with a strong entrepreneurial spirit and personality, but they are not the site of the actual entrepreneurial activity in terms of business startups in these regions. This result might be surprising, given that there is a strong focus (e.g., in policy) on the creation of academic spinoff companies near university campuses (e.g., to foster innovation and the direct commercialization of new research knowledge). However, our study investigated the general entrepreneurial activity in a given region, irrespectively of whether a startup is based on scientific knowledge or not. It might be the case that an active academic spinoff vitality in such *Campus and Careers* regions might not necessarily stimulate



**Fig. 4** Distribution of entrepreneurial activity (startup rate) and personality (entrepreneurial personality profile) across *Patchwork Nation Community Types*. Note z-standardized values are

given. Regional correlation ( $r$ ) between entrepreneurial activity and personality is given.  $*p < .05$

general entrepreneurial activity in such regions (e.g., startups that are not based on new scientific knowledge).

Finally, *Tractor County* regions often showed high entrepreneurship activity in many years, but medium scores in entrepreneurial personality. This pattern might have to do with the absence of local market potential for large firms in these agricultural, rural regions, so that many (new) small businesses, per capita, must serve these local markets.

## 7 Discussion

In their recent overview article, Fritsch and Storey (2014) concluded that the questions of (a) “What are the main constituents of a regional entrepreneurship culture?”, (b) “How does an entrepreneurship culture emerge?”, and (c) “Why is there stability in regional

entrepreneurship culture?” are among the most important, yet still unsolved, research questions in contemporary entrepreneurship research. While our study of course cannot completely solve these questions, it provides a new perspective regarding these questions as it follows a novel, integrative approach combining systematic, countrywide information on cultural identity, psychological factors, and economic activity. In fact, the results deliver a first complete overview over the link between regional cultural identity, directly assessed by means of the *American Nations* and the *Patchwork Community Type* approaches, and latent and manifest entrepreneurship, directly assessed in psychological data from almost 3.5 million US residents and in archival data on the regional variation of startup rates across 13 consecutive years.

Regarding constituents of a regional entrepreneurship culture, our study suggests that not only the

biobehavioral pillars (entrepreneurial personality and activity) but also the region's distinct cultural identity are crucial elements of the region's actual entrepreneurship culture. The within-region dynamics between these three key elements of a local entrepreneurship culture also play an important role, as explained in the following. Regarding the questions of how an entrepreneurship culture emerges and persists, our study hints at the crucial role of selective historical migration and historical industry/agriculture structure, and the transgenerational transmission of entrepreneurial personality, values, norms, and habits (e.g., via persisting formal and informal institutions in a region). In contrast, we cannot find any indication that religious values are an important shaper, or element, of a local entrepreneurship culture. In the following, we will discuss these general findings in more detail.

First, in terms of *American Nations*, the larger regions with the greatest amount of entrepreneurship are the *Spanish Caribbean*, *Far West*, and *Left Coast*. These regions share a similar migration history, which might, at least in part, explain the higher scores in latent and manifest entrepreneurship. Specifically, not only were these regions settled more recently, they may have been populated by more entrepreneurial settlers and adventurers looking for an alternative to the more staid, already developed regions (Plaut et al. 2002). In contrast, the *American Nations* regions exhibiting less entrepreneurship, such as *First Nation*, *Greater Appalachia*, *New France*, *El Norte*, *Deep South*, and *Midlands*, were settled earlier by very immigrants from very different nationalities. This migration-focused explanation of these regional differences in latent and manifest entrepreneurship would be consistent with theorizing on the emergence, persistence, and manifestation of regional personality differences (Rentfrow et al. 2008), which stresses the roles of selective migration into a region and intergenerational transmission of psychological factors within a region (see also McCrae 2004). These mechanisms are closely intertwined with the cultural and historical identity of a region.

In addition, *Deep South* and *Midlands* nations might show this lower entrepreneurial spirit (latent and manifest entrepreneurship) due to a shared history of prevalent nonentrepreneurial work conditions. Florida (2008) stressed that the "historic imprint of economic and industrial structure" (p. 201) within the

region plays an important role for the clustering of personality types. Large parts of the *Midlands* belong to the Rust Belt, which were once the economic center of the USA with large-scale manufacturing and heavy industry. Prior studies indicate that a local entrepreneurial spirit is diminished if a region was dominated by employment in large-scale industries, employment that is usually characterized by nonentrepreneurial skills and task structures (Chinitz 1961; Glaeser et al. 2015; Stuetzer et al. 2016). Likewise, the low entrepreneurial spirit in the *Deep South* might have to do with the historical concentration of nonentrepreneurial task structures in the large cotton production centers in this region.

In terms of the *Patchwork Community Types*, more entrepreneurship is exhibited in *Boom Towns*, *Industrial Metropolis*, *Monied Burbs*, and *Mormon Outposts*. In other words, these regions tend to be economic epicenters that provide the infrastructure, support, and stimulation for vital entrepreneurial activity. These community types combine high manifest and latent entrepreneurship at the behavioral and biologically based level. This signals a strong entrepreneurial spirit in these regions, which is likely to persist in the future due to path dependencies in both regional entrepreneurial activity and personality, and their conjoint interplay over time (Fritsch and Wyrwich 2014). Hence, our results on the biobehavioral clustering of entrepreneurship in these community types should deliver a positive picture for these regions in terms of entrepreneurial prosperity and thus also with regard to economic performance effects such as innovation and job creation. Again, selective migration might play a key role in the development of the strong entrepreneurial cultures in these community types: For example, more entrepreneurial individuals might prefer moving toward *Boom Towns* that offer the opportunities and atmosphere for entrepreneurial thinking and behavior. In addition, socialization effects of local institutions that are conducive for entrepreneurial thinking and acting might also have contributed to their high entrepreneurial culture (Rentfrow et al. 2008).

By contrast, the results indicate that *Evangelical Epicenters*, *Minority Central*, and *Service Worker Centers* exhibit a similar paucity of latent and manifest entrepreneurship. This result is particularly interesting with respect to the *Evangelical Epicenters*, which leads us back to Max Weber's (1904) famous

assumption according to which a prevalent protestant work ethic constitutes a key driver of an entrepreneurial culture. Obviously, our results cannot support this classic idea. In our modern times, it is rather highly likely that entrepreneurship is driven by many other aspects, beside religious beliefs and corresponding behavioral norms (Audretsch et al. 2013). These *Evangelical Epicenters* might exhibit a strong “spirituality” and religiosity, but at the same time also some kind of “unproductive” stagnation with regard to innovation, openness, and opportunities. As stressed by Chinni and Gimpel (2011): “In a country where faith and religion have given way to ‘spirituality’, the Evangelical Epicenters represent something of a throwback” (<http://www.patchworknation.org/Evangelical-Epicenters>).

Our results have a number of research and policy implications. With regard to future research, our results, together with similar studies, might motivate more research on the interplay between history, culture, and entrepreneurship of regions. Since this study was mainly explorative in its nature by utilizing a unique large personality sample allowing to map latent entrepreneurial spirit across US countries, we need to better understand the complex mechanisms through which the region’s cultural identity affects, and interacts with, regional latent and manifest entrepreneurship. It seems likely that this dynamic interplay constitutes “the heart” of an entrepreneurship culture.

With regard to policy implications, our results indicate that policies aiming to stimulate a local entrepreneurship spirit in a given region need to be tempered with a recognition and awareness of the cultural identity underlying the region as well as the within-region dynamics between cultural identity and latent and manifest entrepreneurship. The efficacy and impact of entrepreneurship policies may be more conditioned by the cultural context and history of the region than has been previously considered, at least in many contemporary policy debates. Regions might respond very differently to entrepreneurship policies, for example as a function of their latent entrepreneurial spirit (e.g., the local personality makeup) and the underlying cultural identity of a region. Such policies might need to consider path dependencies in both manifest and latent entrepreneurial spirit, which in turn might have to do with the cultural identities of the regions, as indicated in our study. Our results also contribute the ongoing debate on entrepreneurial

ecosystems (Stam 2015). Our results suggest that one crucial part of a local entrepreneurial ecosystem is not only regional entrepreneurial personality but also the region’s cultural identity.

Our study is not without limitations. This mainly concerns the personality data we used. Although these datasets are probably the largest and best-established personality dataset on American regions (Rentfrow et al. 2013)—we used the newest, biggest version with almost three-and-a-half million US residents—it might not be completely representative for each US county. However, our empirical analyses do not study single counties, but combine many counties into either an *American Nation* or *Patchwork Community Type*. Nevertheless, we cannot rule out the possibility that our results on the regional variation of entrepreneurial personality are somewhat biased due to limitations in the regional representativeness of this Internet sample. Our results (e.g., the substantial overlap between regional variation in entrepreneurial activity and personality) are, however, very consistent with prior studies and theorizing on entrepreneurial personality at the individual and regional level (Obschonka et al. 2013, 2015, 2016; Stuetzer et al. 2016; Schmitt-Rodermund 2004), which speaks for their validity. Future studies could enrich our results by studying other aspects of latent entrepreneurship (e.g., entrepreneurial motivation and attitudes). Furthermore, our analyses cannot deliver causal results (e.g., mechanisms behind the culture–entrepreneurship link). However, we believe that our systematic overview is an important step toward a better understanding of the link between cultural identity and entrepreneurship. Finally, while the spatial taxonomies we applied, are certainly promising concepts to better understand regional differences in local cultural identity, they might also have their limitations. For example, the *American Nations* approach does rarely consider recent developments in these regions. In addition, it is rather Eurocentric so that the role of other perspective (e.g., Afro-American history or East Asian cultures) could be underestimated with regard to regions’ actual cultural identities.

## 8 Conclusion

One of the most crucial insights of the new economic geography is that economic activity tends to cluster spatially. While this is no less true for



entrepreneurship than for other economic phenomena, considerably less is known about which and why culturally distinct regions of the USA exhibit a high propensity for entrepreneurship to cluster, while other culturally distinct regions are characterized by only a paucity of entrepreneurship. This study quantifies the variance of the biobehavioral pillars of entrepreneurship across geographic space in the USA when differentiating culturally distinct regions. The results deliver implications that trace these regional differences to a specific social and cultural imprinting, indicated either by the common historical fate of regions (*American Nations*) or by the commonalities in the current socioeconomic makeup of counties (*Patchwork Communities*).

In particular, the propensity for entrepreneurial activity and personality to spatially cluster in the context of the USA is indeed linked to the two different regional paradigms identifying disparities in regional cultural identity. That entrepreneurship tends to systematically vary across these disparate regional identities suggesting that the social, cultural, and institutional components may be the missing links in understanding the variance of entrepreneurial activity across geographic space. Just as a considerable opportunity exists for subsequent research to more explicitly identify the exact ways in which the regional context for entrepreneurship is shaped by social and cultural factors (Fritsch and Storey 2014), policy to spur entrepreneurial activity may need to more explicitly consider how the underlying local personality makeup as well as the social and cultural conditions frame the policy context.

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