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The behavioural-institutional dimensions of regional development: values, personality psychology and culture

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ABSTRACT

'Institutional' and 'behavioural' theories of regional development have traditionally evolved in isolation. This paper introduces an institutional values model that connects these theories, demonstrating how regional culture and personality patterns influence the institutional values held by individuals, ultimately impacting upon regional development. Empirical analysis reveals significant relationships between psychocultural profiles of regions and the institutional values they form, particularly regarding values related to voice and postmaterialism. Further analysis finds that these institutional values are linked to regional economic outcomes. These patterns appear to be driven by evolutionary mechanisms that reinforce regional psychocultural traits over time. The findings highlight the importance of systemic behavioural dynamics in understanding the origins of regional discontent and offers new insights into promoting regional development.

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1. Introduction

Recent years have seen a rise in studies that have examined how local and regional differences in psychological traits or community culture lead to different spatial patterns in political (Rentfrow et al. 2013), health and well-being (Jokela et al. 2015; Morrison and Weckroth 2018), and especially economic (Garretsen et al. 2020; Garretsen and Stoker 2023; Huggins, Thompson, and Obschonka 2018; Weckroth and Kemppainen 2016) outcomes such as rates and types of entrepreneurship and innovation (Audretsch et al. 2017; Garretsen et al. 2019; Lee 2017; Mewes et al. 2022; Obschonka, Fritsch, and Stuetzer 2021). Equally, there is a growing stream of research on the role of human behaviour within regional development processes, such as the greater prominence given to human agency (Benner 2020a; Bristow and Healy 2010; Huggins and Thompson 2019; 2021a). With some notable exceptions (e.g. Benner 2020b), there is less work that has

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sought to bring these two perspectives together, particularly in an empirical, to examine how the regional and local cultural and psychological context impacts upon individuals in a way that subsequently influences rates of economic development.

This is somewhat surprising given the need for new explanations of the increasing number of regions that are considered to have dropped into a 'development trap', whereby structural challenges make it extremely difficult for them to retrieve past dynamism and improve prosperity (Diemer et al. 2022; Rodríguez-Pose, Dijkstra, and Poelman 2024). The reasons underlying these structural problems are necessarily complex, but there are indications that they are related to human behavioural change along with technological shifts (Bathelt, Buchholz, and Storper 2024). For example, it has been argued that these development traps are associated with ingrained 'behavioural pathologies' with so-called 'left behind' regions (Houlden et al. 2024; MacKinnon, Béal, and Leibert 2024; Tierney et al. 2024) failing to improve rates of education uptake despite supply-side interventions (Iammarino, Rodriguez-Pose, and Storper 2019).

These pathologies potentially result in regionalized institutional values that are manifest in growing discontent, resentment and embitterment across such regions (Dijkstra, Poelman, and Rodríguez-Pose 2020; Hannemann, Henn, and Schäfer 2024; Koeppen et al. 2021; Lenzi and Perucca 2021; Rodríguez-Pose, Lee, and Lipp 2021). Given the knowledge gaps in understanding these regional development challenges, this paper seeks to conceptualize and measure the values held by individuals across sub-national regions of Great Britain as a means of considering the extent to which behavioural factors, in the form of psychological and cultural patterns, influence the formation of these values. Furthermore, it seeks to consider the extent to which these values are associated with the level of economic development across the places.

Research on regional institutions has indicated the importance of the values associated with informal institutions for regional development (Koeppen et al. 2021; Kozina, Clifton, and Bole 2025; Lenzi and Perucca 2021; Rodríguez-Pose 2013; Rodríguez-Pose, Lee, and Lipp 2021; Tabellini 2010; Welzel 2013). Research further indicates that three informal institutional values are of particular importance for regional development: voice (Hirschman 1970); postmaterialism (Inglehart 1971); and equality (Stiglitz 2015). These values allow an understanding of the distribution of power, expectations with regard to the format and trajectories of development, and the extent to which those citizens within a region should be expected to benefit from such development (Huggins and Thompson 2021a). The increasing acknowledgement of the evolutionary nature of regional economies indicates the need for the fuller inclusion of the role of human behavioural factors in shaping their development trajectories (Boschma and Frenken 2006; Glückler and Lenz 2016).

Although evidence is embryonic, the inter-connection of institutional values with the forms of human behaviour relating to the underlying community cultural and psychological traits of regions may be a means through which values are reproduced over time. With culture and personality traits being interdependent and likely to coevolve (Rentfrow, Gosling, and Potter 2008), whereby each region forms a psychocultural profile (Huggins and Thompson 2019). These psychocultural profiles may contribute, alongside formal institutions, to generating a regional behavioural-institutional environment that influences the informal institutional values held (Sagiv and Schwartz 2007). Through these informal institutional values – or more simply termed 'values' – different regional

development paths may become available (Huggins, Thompson, and Obschonka 2018; MacKinnon et al. 2019; Newey 2024; Rutten 2019). However, there is a lack of evidence ascertaining the role that group held behavioural influences play in the development of individually held values (Schwartz 2011), as well as the impact these values may have on regional development, particularly in terms of economic outcomes.

In light of the above, this paper aims to provide greater clarity of these connections and to empirically examine the evidence. The key research question addressed by this paper is as follows: how are the (1) informal institutional values, (2) culture and (3) personality psychology found within regional contexts related to each other, and how do these relationships impact the economic evolution of these regions? The paper first seeks to conceptualize these different elements, given their close association, in order to reduce any fuzziness and to establish the relationships between them. To test the relationships proposed we conduct multi-level regressions of informal institutional values for sub-national regions of Great Britain. These allow the values to be regressed on the psychocultural profiles for each region. To explore links to economic development at the regional level structural equation models (SEMs) are then utilized.

2. Regional institutions

It is argued that the growing inadequacy of traditional theories of regional development leads to the need to incorporate an institutional element to explain differences in rates and forms of development across regions (Rodríguez-Pose 2020). Institutions are often described as the rules of the game (North 1990), with Scott's (2013) typology of institutional forces consisting of regulatory, normative and culturally oriented pillars, each indicating the relative formality of these rules. More formal institutions in the regulatory pillar tend to be determined at the national level, but the interpretation and application of the rules may differ across regions (Scott, 2013; Miörner et al. 2018). Devolution in countries such as the UK, Spain and Germany also leads to the greater variety of institutions across regions (Börzel 1999; Hooghe, Marks, and Schakel 2010; Keating, Loughlin, and Deschouwer 2003). In this case, devolution refers to the decentralization of power from national governments to subnational territories, in particular regions, allowing greater local autonomy over policymaking (Rodríguez-Pose and Gill 2005).

Many studies on the impact of institutions on regional development have focused on the more formal elements at the regional level (Rodríguez-Pose 2020). However, Glaeser et al. (2004) argue that there can be quite large deviations between *de jure* (in law) and *de facto* (in practice) institutions. In the case of the current study, the focus is on informal institutions, which can be further sub-divided into the institutional environment and institutional arrangements (Martin 2008; Rodríguez-Pose 2013; 2020). The former relates to higher forms of institutions including regional identity and the consciousness driving 'structures of expectations' (Paasi 2009). The latter is associated with customs and procedures governing interactions (Rodríguez-Pose 2013).

Whether or not institutional arrangements can be changed will depend upon the creation of certain values (Alesina and Giuliano 2015). For example, it has been argued that the values ingrained in people from an early age through cultural arrangements, such as family and religious systems, will affect the political systems that develop (Todd 1990), trading arrangements and contract enforcement (Greif 1994) and financial institutions

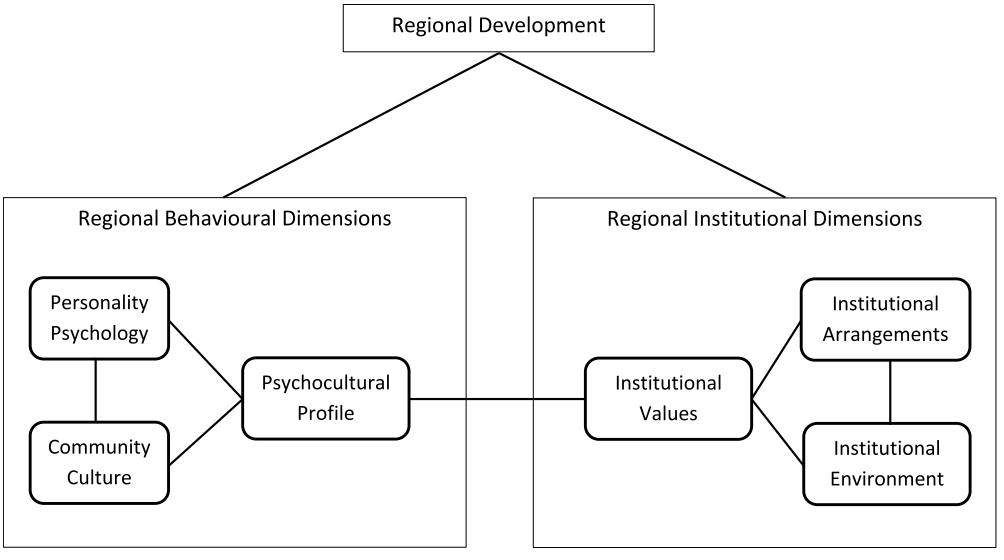


Figure 1. The behavioural-institutional dimensions of regional development.

(Guiso, Sapienza, and Zingales 2008). This means that as well as considering the institutional environment and institutional arrangements (Martin 2008), a third element consists of informal institutional values.

As indicated by Figure 1, these institutional values are likely to both influence and be influenced by behavioural factors including personality traits and community culture, as well as the prevailing institutional arrangements and environment (Alesina and Giuliano 2015). The persistence of personality traits (Rentfrow, Gosling, and Potter 2008), community culture (Licht, Goldschmidt, and Schwartz 2007) and the institutional environment (Rodríguez-Pose 2013), mean that institutional values and arrangements are likely to be driven by these other elements (Pryor 2007). For example, Guiso, Sapienza, and Zingales (2016) highlight how the historic institutions of free cities in Italy have had long lasting effects on culture, and it is through this inherited culture that current institutions are established.

It is further suggested that individual values are produced by the social experiences of individuals and an element that is genetically inherited (Schermer et al. 2008). As part of these experiences, the social and institutional environment in which individuals are raised and live will have an impact as individuals are shaped by these very environments (Schwartz 2011). The goals associated with particular values may be dropped if they become impossible to achieve due to institutional or cultural constraints (Schwartz and Bardi 1997). However, those that remain will play a critical role in shaping the evolution of institutional arrangements (Alesina and Giuliano 2015; Greif 1994; Guiso, Sapienza, and Zingales 2008; Todd 1990). In order to discuss these relationships in a regional context there is a requirement for more work that examines how institutions, particularly institutional values, are produced, reproduced and change over time and impact on regional inequalities (Rodríguez-Pose 2020).

3. Values and regional development: the role of voice, equality and postmaterialism

The interest in the role of values in explaining issues of regional discontent and development is growing. For instance, Koeppen et al. (2021) examine the geography of discontent across Europe and reveal how individual social values and cultural norms, when combined with regional socioeconomic inequalities, foster antisystem political responses. Others link regional economic decline and uneven access to occupational opportunities with rising political alienation – particularly in 'places that do not matter' (Lenzi and Perucca 2021). Rodríguez-Pose, Lee, and Lipp (2021) provide a complementary perspective in the US context, illustrating how long-term population and employment decline in socially cohesive but economically stagnant regions is associated with support for 'Trumpism'. These findings collectively show how changes in institutional values have potential consequences for regional economies and democracies alike.

While values can take many forms, such as universalism, benevolence, conformity and achievement (Schwartz 2012), our focus is on voice, equality and postmaterialism due to their specific relevance to regional development. These three interrelated values provide the institutional foundation supporting inclusive and participatory regional development processes (Inglehart 1971; Welzel 2013). Voice captures the importance of individuals being able to influence government decisions (Welzel 2013), while equality emphasizes the socioeconomic inclusion necessary for such influence. Postmaterialism (Inglehart 1971), based on Maslow's (1970) hierarchy of needs, links these values by highlighting how rising existential security promotes demands for both voice and equality. Based on these insights, this paper develops a conceptual framework centred around these three institutional values – voice, equality and postmaterialism – that promote inclusive and sustainable regional economic development. As explored below, these values shape the behavioural-institutional context in which people act, firms operate and policies are made within regions. Furthermore, their absence may limit development potential and actively destabilize regional economies and social cohesion (Lenzi and Perucca 2021).

From the perspective of the value of voice, it is instructive to draw from Hirschman's work (1970; 1978), which examines the ability of individuals and communities to express dissatisfaction and influence institutional responses, rather than exiting or withdrawing. In regional economies, voice can make itself manifest through participatory planning, democratic governance and public engagement in forming economic futures (Raagmaa 2002). Furthermore, the presence of voice-related values can potentially enhance economic adaptability, innovation and the retention of talent, especially in regions experiencing labour mobility (Rodrik 2000; Welzel 2013). Where individuals feel heard and empowered, there may be greater collective agency, trust in institutions and local commitment to change (Huggins and Thompson 2021a). Furthermore, in a world of increasing uncertainty, regions need mechanisms to harness local knowledge, promote experimentation and co-create economic strategies (Cooke and Rehfeld 2011). Voice, therefore, may facilitate this by embedding deliberative capacity and institutional flexibility into the development process.

While often framed as a moral or political ideal, equality – particularly in the form of equality of opportunity – is increasingly recognized as a driver of economic efficiency and innovation (Lee 2024). Regions that institutionalize more egalitarian values often

generate greater long-term investment and stronger institutions (Massey 2001). Development models that prioritize short-term rewards for capital at the expense of structural inclusivity are likely to be highly damaging (Chang 2011). Furthermore, institutional arrangements which constrain markets and promote social equity may better support coordinated and productive economies (Hall and Soskice 2001). Such values are likely to be associated with perceptions of the fairness of initial levels of inequality, with distributions arising from luck rather than effort being perceived as unfair (Alesina and Angeletos 2005). As a result, there will be more demand for redistributive institutions (Alesina, Cozzi, and Mantovan 2012). At the regional level, equality is likely to engender social cohesion, labour market integration and entrepreneurial diversity (Farole, Rodríguez-Pose, and Storper 2011; Iammarino, Rodriguez-Pose, and Storper 2019).

Thirdly, postmaterialism represents a value shift from materialist concerns to postmaterialist values such as self-expression and quality of life. As societies become more affluent and secure, values often shift toward autonomy, participation and ecological concerns (Maslow 1970). However, Trump (1991) challenges the determinism of this trajectory, arguing that value change is also shaped by institutional and behavioural contexts and not just material conditions. In the context of regional development, postmaterialist values are potentially promoting movements for wellbeing economies, green growth, cultural regeneration and alternative enterprise models (Jordaan 2023; Jordaan and Dima 2020). Regions that embrace postmaterialist values may attract talent seeking this purpose-driven work, and open up new institutional imaginations, allowing localities to pursue new development strategies (Chang 2013; Jordaan 2023).

Overall, values of voice, equality and postmaterialism are likely to be mutually reinforcing and interdependent, whereby voice may enhance equality by allowing marginalized groups to articulate needs and demand change. Furthermore, equality will potentially sustain voice by creating the conditions under which all can participate meaningfully, with postmaterialism broadening economic goals and emphasizing non-material forms of value. Evidence suggests that voice and equality together raise human agency and wellbeing (Welzel 2010). Similarly, Brieger et al. (2019) note how these values form part of a broader set of emancipative values associated with prosocial business activities. Furthermore, at a firm level Fitjar and Rodríguez-Pose (2011) find that the associated values of local business managers, such as trust and open-mindedness, drive innovation in the peripheral region of southwest Norway.

As well as conceptualizing the values of voice, equality and postmaterialism, it is important to consider approaches to measuring them empirically at the regional level, where institutional contexts and cultural norms vary significantly. The most established frameworks are those developed by Welzel (2013) and Inglehart (1971), which have been validated by survey instruments such as the European Values Study (EVS). These values are inherently multidimensional but can be meaningfully operationalized through carefully selected indicators. Voice is usually captured via emancipative values related to freedom of speech, democratic participation and decision-making agency, drawing directly on Hirschman's (1970; 1978) notion of voice as civic expression. Equality is more commonly operationalized through gender egalitarianism, reflecting deep cultural commitments to fairness and inclusion (Alesina and Angeletos 2005; Alesina, Cozzi, and Mantovan 2012). Postmaterialism is most usually measured using Inglehart's index, which identifies shifts in public priorities from economic security to autonomy and

sustainability (Chang 2013; Inglehart and Welzel 2005; Maslow 1970). Taken together, these measures provide a robust basis for examining how regional variation in institutional values shapes economic development trajectories and governance outcomes, which is the approached adopted by empirical analysis in forthcoming sections of this paper.

4. Regional behavioural dimensions

A growing body of research indicates the significance of behavioural and psychological dimensions in forming regional economic dynamics, furthering the understanding of a range of behavioural factors in regional development processes. Lee (2017), for example, explores the relationship between personality traits and regional innovation in the United Kingdom, highlighting conscientiousness – characterized by organization, diligence and task completion – as a key driver of regional innovation. This aligns with Obschonka et al. (2020), who utilize a machine learning analysis of 1.5 billion tweets to estimate personality traits across counties in the US. Their findings reveal that entrepreneurial activity correlates strongly with the personality traits of conscientiousness, openness and extraversion.

Ebert et al. (2022) further expands the scope of these analyses by examining psychological variations at regional and national levels, illustrating that regions are far from psychologically homogeneous but instead comprise diverse personality profiles that influence economic and social outcomes. Rentfrow (2020) reviews this perspective through geographical psychology, illustrating how regional personality traits, such as openness and extraversion, cluster spatially and influence social and economic patterns.

The analytical approach adopted by geographical psychologists is based on statistically observable average tendencies in personality traits within a given spatial context. This approach is grounded in work such as Rentfrow, Gosling, and Potter (2008), who demonstrate that personality traits – though inherently individual – tend to cluster geographically in persistent patterns due to historical settlement, selective migration and sociocultural reinforcement. In this sense, a region's psychological profile does not imply homogeneity but rather reflects a central tendency around which diverse individual perspectives co-exist. These regional profiles arise through several interrelated mechanisms. First, socio-spatial traditions and social norms shape individual behaviours and attitudes over time, often beginning in childhood but also persisting into adulthood through institutions such as education and work (Hofstede and McCrae 2004). Second, selective migration plays a key role, as individuals with particular traits, such as openness or creativity, tend to self-select into regions that offer a psychological or cultural 'fit' (Rentfrow et al. 2013). Third, environmental and occupational factors, such as urban diversity, economic structure and job autonomy, reinforce prevailing norms and behaviours that in turn gradually establish regional personality patterns (Stuetzer et al. 2016). Indeed, recent work shows that historical industrialization, for example, has contributed to enduring regional psychological and cultural profiles through processes such as selective migration and intergenerational socialization (Obschonka et al. 2018; Huggins et al., 2021).

Aggregated measures of these regional profiles are analytically useful for comparative regional studies where the focus is on how predominant value orientations relate to

institutional and economic outcomes. Furthermore, it is important to acknowledge that regional psychological profiles are clearly not entirely static and can be influenced by dynamic processes such as economic structural change and migration. Indeed, research highlights how migratory patterns can reshape the psychological composition of regions over time (Huggins and Thompson 2021a; Rentfrow, Gosling, and Potter 2008). However, complementary research suggests that these profiles also exhibit a degree of long-term persistence. For example, Obschonka et al. (2018) find that historical employment in coal-based industries in England and Wales continues to predict contemporary regional variations in personality traits and well-being, even after controlling for a wide range of confounding factors. This supports the idea that while regional psychological profiles may evolve, they may also be shaped by deep-rooted historical and socio-economic legacies, reinforcing the importance of both continuity and change in understanding regional development trajectories.

As a whole, these studies provide growing evidence that regional personality traits are key factors in fostering innovation and entrepreneurship as drivers of regional development. More generally, they situate behavioural and institutional dynamics within the broader context of psychological geography. Such studies are usually based on large datasets drawing on the Big Five personality traits (John, Naumann, and Soto 2008) encompassing *Extraversion*, reflecting an energetic and sociable approach to the social and material world; *Agreeableness*, indicating a prosocial orientation marked by traits like altruism and trust; *Conscientiousness*, involving impulse control that supports goal-directed behaviour; *Neuroticism*, contrasting emotional stability with tendencies toward anxiety and sadness; and *Openness* to experience, describing the depth, originality and complexity of an individual's mental and experiential life.

In general, there is the potential for the personality of individuals to influence the values held. For example, those with more extraverted natures can be expected to place an importance on being able to voice views and opinions. Also, those with more open natures may place a greater importance on achievements beyond the material. Research, for example, suggests that individuals with high levels of openness tend to be more oriented toward intellectual curiosity, aesthetic sensitivity and the pursuit of novel experiences, rather than material goals or conventional achievements (Rentfrow, Gosling, and Potter 2008; 2013). Less clear, and part of the analysis in this paper, is the extent to which average levels of such personality traits in a region influence the values held. The pressure to conform and fit with the values of others may result in the greater adoption of some values than others, particularly across individuals with different personalities. This is clearly of considerable interest and importance but relatively unexplored (Bardi and Goodwin 2011).

Unlike, personality psychology, community culture is accepted as being held at the group level rather than individually (Beugelsdijk and Maseland 2011). It has been described as the collective programming of the mind (Hofstede, 2001). As such, it may be a primary source of the values held and the informal institutions established within a region (Bourgeois and Bowen 2001). In this sense, regional culture can be understood as comprising both persistent and dynamic components that co-evolve over time. A growing body of literature distinguishes between a slower-moving, inherited cultural layer – transmitted intergenerationally through socialization, language and imitation – and a more adaptive, interaction-based layer shaped by peer effects and contextual

influences (Barnouw 1979; Guiso, Sapienza, and Zingales 2006; Manski, 2000). The inherited component is likely to play a critical role during formative years, engendering enduring preferences, trust levels and economic behaviours (Guiso, Sapienza, and Zingales 2003, 2004). Meanwhile, more dynamic elements of culture emerge through ongoing social interaction and collective learning, with each of these components and elements evolving as a result of proximity to others, highlighting the spatialized and potentially regionalized nature of these dimensions (Huggins and Thompson 2025). Viewed through the lens of cultural evolution, culture can be considered to consist of socially transmitted information that changes via both selection-like and transformative processes (Mesoudi 2016). Regional cultural frames may, therefore, exhibit both continuity and change, formed by historical trajectories, institutional contexts and the interaction of regional and global influences (Cooke and Rehfeld 2011). As Syssner (2009) notes, culture is best understood as both evolving and place-bound, simultaneously influenced by local rootedness and subject to change through interaction and adaptation.

Scholars such as Tubadji and Pelzel (2015) further distinguish between living culture and cultural heritage. While the former relates to the norms held and enforced by the group, the latter is associated with Bourdieu's (1986) objective cultural capital. This is argued to be best represented as being embodied in assets inherited from the past but which can be drawn upon in the present (Bourdieu 1989). However, these inherited aspects of culture can also form a source of constraints on behaviour (Weber 1930). It is suggested that cultural heritage will influence the living culture, further creating a degree of persistence (Tubadji and Pelzel 2015). For example, this may occur where cultural heritage attracts particular groups such as Florida's (2002) creative class.

5. Relationships between the elements of the behavioural-institutional dimensions

Bringing together the above analysis, this section considers the relationships between: personality, culture, informal institutional values, the institutional arrangements and environment, and ultimately regional development. From the perspective of personality psychology and culture, studies frequently treat the influence of individual personality traits or dimensions of community culture as independent. Rentfrow et al. (2013) instead suggest that a more holistic conception should be taken, allowing for the effect of different combinations to be accounted for. Indeed, Rentfrow et al.'s (2008) study of regional personality trait generation and its persistence highlights culture's role on the grouping of particular personalities. Overall, a range of mechanisms may result in differences in personality developing within countries or even regions: traditions and social norms; physical environment (natural and built surroundings); and selective migration (Rentfrow, Jokela, and Lamb 2015). Huggins, Thompson, and Obschonka (2018) outline how culture is likely to play a role in determining these mechanisms, with social norms generating a pressure to conform and fit so that those exposed to more diverse and tolerant populations are more likely to display greater acceptance and openness.

In relation to values, those wishing to express their opinions or influence decisions may seek out regions that allow close proximity to key decision makers. Based on this suggested coevolution, it has been argued that the combination of personality and

community culture found in a region is important for regional development via the values and agency created (Huggins, Thompson, and Obschonka 2018; Huggins and Thompson 2019; 2021a). With the use of principal component analysis, Huggins, Thompson, and Obschonka (2018) find the presence of three regional psychocultural profiles across Great Britain. The first is *Inclusive Amenability*, which has high levels of agreeableness, conscientiousness, social cohesion, femininity and caring activities and adherence to social rules, but low levels of openness. In terms of the values considered here it might be expected to negatively relate to voice and promote 'sticking to rules' (Zare and Flinchbaugh 2019), while being expected to support equality through its concern for others (Huppert et al. 2019).

The second component, *Individual Commitment*, also displays low openness, high social cohesion, but unlike *Inclusive Amenability* it has a positive loading from engagement with education and employment and conscientiousness, but no similar connection to collective activities. This psychocultural profile, therefore, places an emphasis on individualism, which research suggests forms at an early age (Huppert et al. 2019). A greater focus by citizens on their own needs and goals, and willingness to take things into their own hands, may lead to those regions with greater *Individual Commitment* presenting more self-expression through voice (Chelminski and Coulter 2007). Furthermore, postmaterialism values may also be expected to be supported as these include autonomy and freedom (Inglehart and Welzel 2005).

Diverse Extraversion is the third component and differs considerably from the other two profiles. It is positively associated with extraversion, openness and displays low social cohesion. The personality traits of conscientiousness and neuroticism are lower, as is the cultural dimension of adherence to social rules. Postmaterialism may be promoted due to the willingness to be exposed to new ideas and people (Florida, Mellander, and Stolarick 2008). While higher levels of extraversion would imply greater voice (Avery 2003).

The relationships suggested above are summarized in Figure 2. The model acknowledges some of the feedbacks that may exist (identified with dashed lines). Studies reveal that culture and institutions interact bi-directionally, creating multiple equilibria where they can either substitute or complement each other, as seen in examples like family ties shaping labour market regulation (Alesina et al. 2015; Alesina and Giuliano 2015) and the interplay between minimum wage policies and employer-worker relations (Aghion, Algan, and Cahuc 2011; Muringani 2022). Similarly, the co-evolution of culture, personality and the physical environment is influenced by economic and social conditions such as child-rearing practices, creating feedback loops where development impacts institutions and the broader behavioural-institutional environment (Chang 2011; Huggins and Thompson 2016, 2019; Romanelli and Khessina 2005; Stuetzer et al. 2016).

In general, longer term and often multi-generational influences, such as historical industrialization and the development of large-scale industries near coal deposits, have left a lasting impact on regional psychology and entrepreneurial activity, with lower entrepreneurial tendencies and economic development persisting nearly a century later (Chinitz 1961; Glaeser, Pekkala Kerr, and Kerr 2015; Obschonka et al. 2018; Stuetzer et al. 2016). This effect is partly attributed to large-scale industries reducing entrepreneurially inclined personality traits and incentives for education (Douglas and Walker 2017; Stuetzer et al. 2016), while historically high unemployment areas foster cultural intolerance and left-wing political preferences (McNeil, Lee, and Luca 2022).

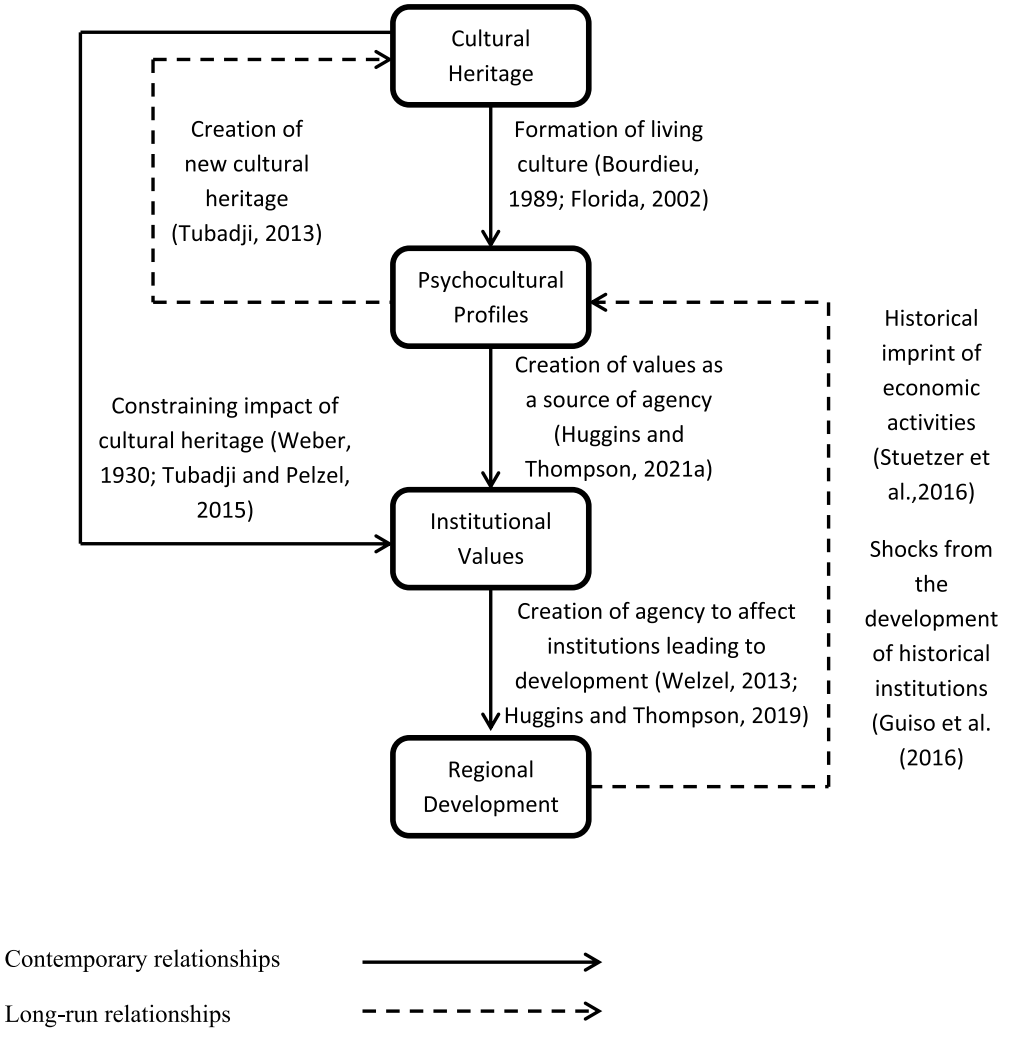


Figure 2. Institutional values model of regional development.

In the shorter-term, parental sorting may explain much of the wage benefits associated with, for example, city size through educational choices (Bosquet and Overman 2019), aligning with Obschonka et al.'s (2018) argument that job-related socialization influences personality traits passed between generations. Finally, Obschonka, Fritsch, and Stuetzer (2021) demonstrate that the removal of communist political institutions often reveals pre-existing personality and cultural distinctions, emphasizing the persistence of psycho-cultural traits inherited from earlier periods (Aghion, Algan, and Cahuc 2011; Alesina et al. 2015). Overall, it is the more contemporaneous relationships, as depicted by the solid lines in Figure 2, that the following analysis will seek to capture.

6. Data and methods

This section outlines the data and analysis used to explore the relationships between the regional behavioural-institutional environment and the values formed at the individual

level using data from Great Britain. It then considers how the impact on regional development can be captured.

6.1. Data sources

The measures of personality traits used in the analysis are the Big Five personality traits as captured by the Big Five Inventory, consisting of 44 statements of prototypical behaviour (John and Srivastava 1999). The Big Five personality traits are the preferred measures as they were originally designed to nest those traits identified in earlier studies to produce a clear and easy to interpret set of measures (John and Srivastava 1999). Wide use and extensive testing of the Big Five has led to this being the dominant schema for measuring personality (Credé et al. 2012), particularly in terms of geographical distribution (Obschonka, Fritsch, and Stuetzer 2021). As the focus is on the relationship with the institutional values, rather than particular economic activities, such as entrepreneurship, the Big Five are preferred to alternatives such as the Measure of Entrepreneurial Tendencies and Abilities (META), which have been designed to link these tendencies to economic activities (Ahmetoglu, Leutner, and Chamorro-Premuic 2011).

In order to measure personality traits the analysis draws upon the British Broadcasting Corporation's (BBC) Lab UK website as part of the BBC's and University of Cambridge's Big Personality Test project. A total of 588,014 individuals in the UK completed the online survey in 2011 (this data has been previously used by Rentfrow, Jokela, and Lamb (2015) to map the distribution of personality in Great Britain). The second set of variables utilized are the dimensions of community culture developed by Huggins and Thompson (2016). The community culture measures utilized here are based on secondary data drawn from 2010 and 2011 to match with the Big Personality Test data. The five dimensions of community culture are: *engagement with employment and education* reflecting Hofstede's (2001) long term orientation and Weber's (1930) work ethic; *social cohesion* linked to Durkheim's (1893) notion of 'mechanical' and 'organic' solidarity; *feminine and caring activities* associated with Hofstede's (2001) masculine-feminine distinction; *adherence to social rules* aligning with concepts such as power distance (Hofstede, 2001), but also the coordinating role this plays (Rodríguez-Pose and Storper 2006); and *preference for collective action,* which is related to arguments concerning individualism versus collectivism (Hofstede, 2001).

As culture and personality are shown to be strongly inter-twined and likely to co-evolve at the regional level, we adopt the psychocultural profiles of Huggins, Thompson, and Obschonka (2018) as our preferred combined measure of different combinations of personality traits and community culture. Following Huggins, Thompson, and Obschonka (2018), these psychocultural profiles were identified using Principal Component Analysis (PCA) to isolate those combinations of community cultural and personality traits that naturally form rather than being theoretically determined, as no prior work has specifically examined the relationships between them.

While the measures outlined above are group level measures, the values formed will still differ between individuals. Therefore, individual values measures are drawn from the European Values Survey (EVS). The data used are from the fourth wave collected between 2008 and 2010, so that the period matches with the culture and personality data. The location of respondents in the EVS data is captured at the NUTS3 level (105

areas available).[1] The regional personality and community culture measures are also considered at this level. While we acknowledge that regional identity and cultural norms are not strictly bound by administrative borders, the NUTS3 classification offers a meaningful approximation of local socio-economic contexts. As one of the smallest official territorial units in the EU statistical hierarchy, NUTS3 regions typically align with labour market areas, urban influence zones, and historically embedded administrative units (Kilroy and Ganau 2020). This granularity allows for the capture of intra-national variation in values, identities and development outcomes, which is essential when exploring how institutional values such as voice, equality and postmaterialism vary across space. Moreover, the use of NUTS3 facilitates comparability across countries while enabling the identification of regional disparities and dynamics often obscured at higher levels of aggregation (López-Villuendas and del Campo 2023). Descriptive statistics and correlations are presented in the appendix Tables A1 and A2 respectively.

6.2. Institutional values

In order to capture *voice* the EVS items utilized by Welzel (2013) reflect the importance that individuals place on the ability to express views and influence government decisions. These cover the protection of freedom of speech, giving people more say in important government decisions, the importance of having a job where there is a say in important decisions. The focus of the second institutional value is *equality* across genders. We use Welzel's (2013) measures that capture values reflecting expectations that men and women will contribute equally in terms of income and childcare and neither gender be given priority in the workforce. For postmaterialism we use Inglehart's (1971) scale of acquisitives and post materialists. The categorizations are based on whether or not having a say in political decisions and freedom of speech (post materialism) are prioritized over maintaining order and ensuring the stability of prices (acquisitive).

6.3. Regression analysis of institutional values

The data used in this analysis are drawn from different levels of aggregation. The values held are those expressed by individuals (i), while the psychocultural measures are created from group level measures (j). This necessitates the use of multilevel regression analysis to firstly examine the links between the psychocultural profiles and the individual values formed. The main specification used in this first part of the analysis is a multi-level random intercept regression estimated using the quasi-likelihood iterative generalized least squares approach within the MLwiN package as indicated in equation (1) (Goldstein 2003). This is to reflect the multi-level nature of the variables of interest and allow for the clustering of values within different areas. This takes a linear form for the voice and equality institutional values, but as noted below an ordered logit form for postmaterialism.

$$\begin{aligned} Value_{ij} = {} & \beta_{0j} + \beta_1 IncAmen_j + \beta_2 IndCom_j + \beta_3 DivExtra_j + \beta_4 QoG_j + \beta_5 Gender_{ij} \\ & + \beta_6 Age_{ij} + \beta_7 Age_{ij}^2 + \beta_8 Children_{ij} + \beta_9 Education_{ij} \\ & + \beta_{10} Employment_{ij} + u_{0j} \end{aligned} \tag{1}$$

The regressions consider whether or not the values held by individual *i* in NUT3 region *j* ($Value_{ij}$) are associated with the prevailing community culture and personality trait distributions as captured by the psychocultural profiles for *inclusive amenability* ($IncAmen_j$), *individual commitment* ($IndCom_j$) and *diverse extraversion* ($DivExtra_j$) present at the regional level. Further controls, discussed in more detail below, are included to account for differences in individual level influences. Reflecting the three levels the postmaterialism measure can take, the regressions are run with an ordered logit version of the above specification. The regressions also include a measure of formal institutions (Charron, Dijkstra, and Lapuente 2014), as well as controls for a range of demographic and economic indicators.

The random intercept ensures that the standard errors are robust to the effect of clustering of responses within regions. We also run a number of robustness checks. This includes accounting for the macroeconomic conditions of the wider economic (NUTS2) areas to allow for wider commuting patterns. We consider this in terms of the conditions present at the time of the last data collection for the cultural dimensions (2011) through Gross Value Added (GVA) per capita and unemployment as represented by the proportion of the population claiming unemployment benefits. An alternative of changes leading up to 2011 is also considered. This takes the form of the growth of GVA and the change in unemployment rate in the preceding five years (2006–2011).

Another alternative to the NUTS2 controls would be to account for cultural and economic spillovers between regions by incorporating a spatial lag in the regressions or a spatial error correction term. This approach, which extends beyond the clustering of characteristics within regions, has been widely studied in relation to knowledge flows and economic outcomes (Qian 2018) but is rarely applied to cultural spatial spillovers. The varying geographical sizes of NUTS3 regions suggest that spillovers may extend beyond immediate neighbours (Qiliang and Xianzhuang 2024), while geographical barriers such as waterways may also restrict them (Capello, Caragliu, and Fratesi 2018).

Furthermore, cultural and formal institutional differences can act as significant barriers, meaning that spillovers may not simply follow geographical proximity (Capello 2009; Mao and Mao 2021; Qian 2018). Some studies on the influence of cultural factors, such as social capital on economic outcomes, suggest that spatial autocorrelation may not indicate knowledge spillovers but rather the clustering of high-input regions (Tappeiner, Hauser, and Walde 2008). Given these complexities, thoroughly examining and quantifying such spillovers would constitute a substantial study in itself. As a result, the simpler NUTS2 controls were preferred.

6.4. Structural equation model analysis of regional development

The regression analysis discussed above helps to determine whether or not a relationship is found to exist between the regional level psychocultural profiles and individually held institutional values, but it does not allow any consideration of the impact on regional development. To examine all the relationships highlighted in Figure 2 an approach that allows for multiple sets of relationships to be examined together is required. As such, we adopt a Structural Equation Model (SEM) approach at the NUTS3 regional level. In this analysis 'values' are assumed to be determined by the presence of the combination of three psychocultural profiles, but are a latent variable with no indicators. The

relationship between this latent variable 'values' and measures of economic development – Gross Value Added (GVA) and Gross Disposable Household Income (GDHI) – can then be examined. For economic development we account for the level of GVA and GDHI in 2010 and their growth from 2010 to 2019.

The SEM also allows a deeper investigation of the extent to which there are causal relationships between the psychocultural profiles, institutional values and regional economic development. As noted by other studies, culture and personality are likely to both affect and be affected by economic activity in the longer run. To overcome such problems, studies have sought historical measures associated with culture or economic activities such as the literacy rate and political institutions (Tabellini 2010) or distance from coal fields (Stuetzer et al. 2016) to provide an exogenous factor.

In this study we draw upon Tubadji's (2013) concept of cultural heritage, which reflects those artefacts inherited from previous periods and that embody the previous period's culture. In Tubadji and Pelzel's (2015) study of Germany they utilize the existence of city walls and historic parks and gardens to reflect the existence of such cultural heritage. Here we follow Huggins and Thompson (2021b) in using those buildings and artefacts included on the National Heritage List for England that are identified for preservation. However, rather than just including all listed buildings we focus on those associated with three different categories of activity to allow for differing influences on psychocultural profiles and values. The three areas of activity considered are those associated with: religious activities (regardless of denomination); industrial and trading activities; and hospitality and entertainment activities. To include the cultural heritage measures it is necessary to focus on the English NUTS3 areas alone.

As reflected in the model of institutional values-driven regional development presented in Figure 2, it is assumed that cultural heritage will operate through psychocultural profiles, which can also be considered as the living culture, as termed by Tubadji (2013). We also recognize the argument that cultural heritage may constrain development by putting limits on the activities that can be pursued, and may therefore have a direct effect on values as well.

As noted in the preceding section, this analysis concentrates on the more contemporaneous relationships given the persistence and slow speed of adjustment of personality and culture (Rentfrow, Gosling, and Potter 2008). However, feedbacks, as captured in Figure 2, from previous periods would suggest that development and living culture will affect the cultural heritage gradually being formed for future periods. These covariances between error terms in the SEM can be accounted for, such as between preferences for collective action and commercial and industrial buildings.

7. Results of the regression analysis

Table 1 presents the linear random intercept multi-level regression analysis for equality and voice and the random intercept multi-level ordered-logit regressions for postmaterialism when using the full sample covering Great Britain. The likelihood ratio tests suggest that the psychocultural variables improve the estimation for the voice and postmaterialism estimations ($\chi^2 = 11.183$ [3] (0.011); $\chi^2 = 14.059$ [3] (0.003) respectively), but not for the equality estimation ($\chi^2 = 1.272$ [3] (0.736)). However, the interclass correlation (ICC) values suggest that only a small proportion of variation is at the regional, rather than

Table 1. Multi-level Random Intercept Regressions for Institutional Values on Behavioural Psychocultural Profiles (Great Britain).

Value NUTS2 Controls	Voice None	Voice Levels	Voice Growth 2006-11	Equality None	Equality Levels	Equality Growth 2006-11	Postmat None	Postmat Levels	Postmat Growth 2006-11
Inclusive Amenability	-0.0338***	-0.0398***	-0.0303***	-0.0019	-0.0170	-0.0026	-0.2612***	-0.4535***	-0.2464***
	(0.012)	(0.015)	(0.013)	(0.008)	(0.010)	(0.009)	(0.092)	(0.154)	(0.093)
Individual Commitment	0.0285***	0.0191	0.0189	0.0068	0.0047	0.0067	0.1557**	0.1603	0.0972
	(0.011)	(0.013)	(0.013)	(0.007)	(0.009)	(0.009)	(0.079)	(0.130)	(0.100)
Diverse Extraversion	0.0010	-0.0069	-0.0105	-0.0055	0.0004	-0.0004	0.0043	-0.0641	-0.0424
	(0.014)	(0.018)	(0.016)	(0.010)	(0.012)	(0.011)	(0.105)	(0.181)	(0.121)
Male	0.0464***	0.0468***	0.0460***	0.0111	0.0123	0.0120	0.5034***	0.6817***	0.5056***
	(0.017)	(0.017)	(0.017)	(0.013)	(0.013)	(0.013)	(0.132)	(0.177)	(0.132)
Age	-0.1128**	-0.1122**	-0.1096*	-0.1933***	-0.1988***	-0.1977***	-1.6729***	-2.3618***	-1.6727***
	(0.057)	(0.057)	(0.057)	(0.044)	(0.043)	(0.044)	(0.442)	(0.603)	(0.442)
Age^2	-0.5986**	-0.6148**	-0.6025**	-0.1615	-0.1770	-0.1684	-0.5412	-1.8228	-0.575
	(0.254)	(0.254)	(0.253)	(0.196)	(0.196)	(0.196)	(2.057)	(2.682)	(2.058)
Children	0.0008	0.0007	0.0009	0.0059	0.0060	0.0057	-0.0246	-0.0485	-0.0248
	(0.007)	(0.007)	(0.007)	(0.005)	(0.005)	(0.005)	(0.056)	(0.074)	(0.056)
Lower Education	0.0087	0.0079	0.0069	-0.0167	-0.0157	-0.0155	0.9119***	1.1352***	0.9042***
	(0.023)	(0.023)	(0.023)	(0.018)	(0.018)	(0.018)	(0.145)	(0.188)	(0.145)
Upper Education	0.1188***	0.1182***	0.1177***	0.0105	0.0116	0.0112	0.9859***	1.2297***	0.9848***
	(0.025)	(0.025)	(0.025)	(0.020)	(0.019)	(0.020)	(0.165)	(0.222)	(0.165)
Part Time Employed	−0.0276	−0.0263	−0.0271	0.0130	0.0122	0.0139	0.5721***	0.7442***	0.5827***
	(0.029)	(0.029)	(0.029)	(0.023)	(0.022)	(0.022)	(0.226)	(0.301)	(0.227)
Self-Employed	0.0117	0.0109	0.0107	−0.0119	−0.0141	−0.0134	0.5057	0.7429	0.4927
	(0.038)	(0.038)	(0.038)	(0.029)	(0.029)	(0.029)	(0.309)	(0.469)	(0.309)
Out of Work Not Seeking Employment	0.0295	0.0312	0.0294	−0.0018	−0.0002	−0.0007	0.6373***	0.8604***	0.6449***
	(0.024)	(0.024)	(0.024)	(0.019)	(0.019)	(0.019)	(0.183)	(0.249)	(0.183)
Unemployed	0.0140	0.0156	0.0142	0.0182	0.0209	0.0192	0.4055	0.5341	0.4127
	(0.036)	(0.036)	(0.036)	(0.028)	(0.028)	(0.028)	(0.299)	(0.413)	(0.300)
Institutions	0.0245	0.0211	0.0328	0.0267	0.0226	0.0251	−0.0101	−0.102	0.0506
	(0.043)	(0.043)	(0.043)	(0.029)	(0.029)	(0.030)	(0.314)	(0.417)	(0.320)
GVA		0.0480	0.0036		−2.7177**	−0.0048**		20.6137	0.0004
		(1.872)	(0.003)		(1.286)	(0.002)		(27.451)	(0.023)
Unemployment		−0.0231	−0.0364		−0.0164	−0.0250		−0.0913	−0.3306
		(0.017)	(0.048)		(0.012)	(0.032)		(0.171)	(0.351)
Constant	0.4121***	0.4117***	0.4132***	0.6455***	0.6440***	0.6440***			
	(0.027)	(0.027)	(0.027)	(0.021)	(0.021)	(0.021)			
NUTS3 Areas	105	105	105	105	105	105	105	105	105
N	921	921	921	921	921	921	921	921	921

Notes: standard errors in parentheses; ***, **, * represent coefficients significant at the 1%, 5% and 10% levels respectively; regressions of voice and equality are linear in form, those for post-materialism take an ordered logit form.

individual, level (voice ICC = 0.026; postmaterialism ICC = 0.022). In the absence of macroeconomic controls, values associated with voice and postmaterialism are higher for those living in regions with psychocultural profiles that are higher in individual commitment. Both of these institutional values are lower where the behavioural-institutional environment has a stronger influence from inclusive amenability. This will include many of the areas in the North East of England with an industrial past, much of Scotland, and parts of Wales, again frequently being those parts with an industrial past.

Formal institutions and diverse extraversion are not found to have a significant influence after controlling for the other elements of the behavioural-institutional environment and individual characteristics. It appears that well-functioning formal institutions have less impact than expected. Rather it is the community culture and the personality traits of the population that have the strongest association. When controls are added for the macroeconomic conditions, the negative relationship with inclusive amenability remains, but the significance of individual commitment is lost.

The negative relationship with inclusive amenability is interesting as voice is less evident for those living in more peripheral regions, which may be perceived to be losing out (Rodríguez-Pose 2018). Instead, the importance of being able to engage and influence the political process is higher in regions whereby the underlying pyschoculture appears to function more effectively in this respect. Examples include areas surrounding Edinburgh and London where inclusive amenability is lower, and in the case of those near London individual commitment is higher. In terms of postmaterialism, the results imply that a psychocultural environment whereby there is a reliance placed on collective action is more likely to be associated with a focus on material measures of success. Interestingly, there is no relationship between elements of the behavioural-institutional environment and values associated with equality.

The personal controls indicate that those individuals placing more emphasis on voice and postmaterialism are likely to be younger, male and better educated. However, those with lower levels of education also show a less materialistic set of institutional values. For institutional values relating to equality, age is the primary influence. For the young this might represent feelings of being excluded from the benefits received by older generations (Tulviste, Kall, and Rämmer 2017).

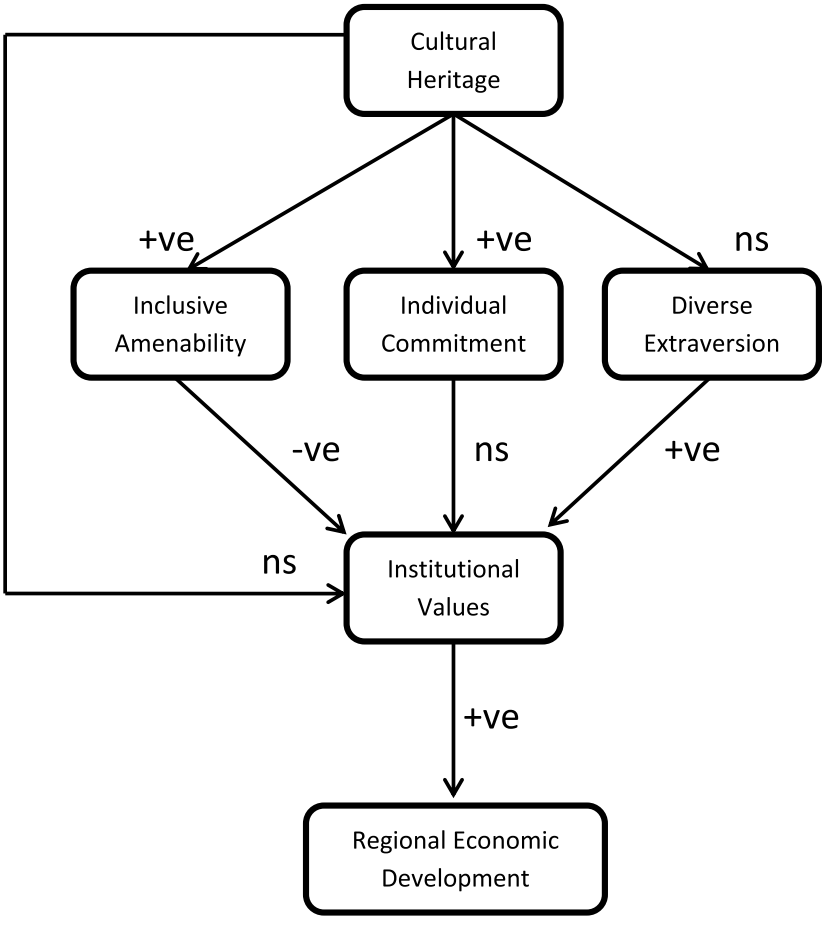
In summary, the regressions make clear that there are significant relationships between the pyschocultural profile of regions and the underlying values held in these regions. Regions with traits less inclined to behaviour based on agreeableness, social cohesion, femininity and caring activities and adherence to social rules (i.e. inclusive amenability) are more likely to place greater importance on values relating to voice and postmaterialism. Similarly, those regions with psychocultural traits that are relatively high in traits concerning individual commitment are somewhat more likely to value voice and postmaterialism than other regions. These results, therefore, suggest that regional culture and the distribution of personality traits across regions influences important institutional values relating to regional political economies.

8. Values and economic development

While the results presented in the previous section indicate that the psychocultural profiles present in a region can influence the institutional values held by individuals,

they do not provide a measure of the relationship with regional economic outcomes. This section concentrates on those results relating to the SEM, which examines whether or not there is any evidence that these linkages are associated with economic success at the NUTS3 regional level, indicating a link to regional development.

The fit to the data can be considered to be a relatively good one. The CFI takes a value of 0.949, and the RMSEA 0.085. As noted above, given the requirement to utilize measures based on secondary data to capture the dimensions of community culture and average values for the personality traits it is understandable that a near perfect fit cannot be attained. Figure 2 and Table 2 summarize the relationships found. As suggested by Figure 2, we find evidence to connect the psychocultural profiles in combination through the values formed to economic measures of development. Given the psychocultural profiles identified in



+ve: significant positive relationship found

-ve: significant negative relationship found

ns: non-significant relationship found

Figure 3. SEM relationships found for NUTS3 areas.

Table 2. Regression weights from SEM of NUTS3 area relationships.

			Estimate	Standard Error	*P*
Economic Development	<---	Institutional Values	1.474	0.448	(0.001)
Institutional Values	<---	Individual Commitment	1.000		
Institutional Values	<---	Diverse Extraversion	30.840	11.811	(0.009)
Institutional Values	<---	Inclusive Amenability	−31.443	12.752	(0.014)
Institutional Values	<---	Cultural Heritage	−0.064	0.083	(0.440)
Diverse Extraversion	<---	Cultural Heritage	0.000	0.002	(0.963)
Individual Commitment	<---	Cultural Heritage	0.191	0.034	(0.000)
Inclusive Amenability	<---	Cultural Heritage	0.006	0.001	(0.000)
Extraversion – Personality Trait	<---	Diverse Extraversion	1.000		
Neuroticism – Personality Trait	<---	Diverse Extraversion	−0.351	0.106	(0.000)
Openness – Personality Trait	<---	Diverse Extraversion	1.562	0.261	(0.000)
Social Cohesion – Cultural Dimension	<---	Diverse Extraversion	−9.919	2.405	(0.000)
Agreeableness – Personality Trait	<---	Inclusive Amenability	1.000		
Adherence to Social Rules – Cultural Dimension	<---	Inclusive Amenability	22.255	3.799	(0.000)
Feminine and Caring Activities – Cultural Dimension	<---	Inclusive Amenability	40.949	5.434	(0.000)
Social Cohesion – Cultural Dimension	<---	Inclusive Amenability	32.333	4.842	(0.000)
Openness – Personality Trait	<---	Inclusive Amenability	−0.137	0.27	(0.611)
Conscientiousness – Personality Trait	<---	Inclusive Amenability	1.023	0.183	(0.000)
Engagement with Education and Employment – Cultural Dimension	<---	Individual Commitment	1.000		
Conscientiousness – Personality Trait	<---	Individual Commitment	0.056	0.009	(0.000)
Collective Action – Cultural Dimension	<---	Individual Commitment	−0.982	0.197	(0.000)
Adherence to Social Rules – Cultural Dimension	<---	Individual Commitment	0.759	0.149	(0.000)
Hospitality and Entertainment Buildings	<---	Cultural Heritage	1.000		
Industrial and Commercial Buildings	<---	Cultural Heritage	0.876	0.08	(0.000)
Religious Buildings	<---	Cultural Heritage	5.008	0.419	(0.000)
Gross Disposable Household Income	<---	Economic Development	1.000		
Gross Disposable Household Income Growth	<---	Economic Development	1.034	0.196	(0.000)
Gross Domestic Product	<---	Economic Development	0.990	0.066	(0.000)
Gross Domestic Product Growth	<---	Economic Development	1.389	0.486	(0.000)

previous studies and their relationship to economic outcomes (Huggins, Thompson, and Obschonka 2018), it is understandable that inclusive amenability is negatively associated with values that are likely to support economic development, whereas diverse extraversion, in particular, is positively related to these values.

Links are found from cultural heritage to the some of the psychocultural profiles present, which is consistent with Tubadji and Pelzel (2015). However, as Tubadji (2013) suggests, this relationship is not necessarily positive for economic development. It is notable that cultural heritage operates through regional psychocultural profiles rather than having any direct effect on the values themselves, indicating it is the constraining impact on 'living culture' that is most important (Tubadji 2013).

Overall, the model suggests that regional development is at least partly a function of institutional values, which themselves are a function of the underlying psychoculture of a region. Therefore, it can be argued that the behavioural-institutional environment within a region is likely to play a role in determining regional economic outcomes. Clearly, however, these results are to an extent exploratory but begin to provide some emerging evidence of a degree of a causal relationship between psychocultural factors, institutional values and regional economic development outcomes (Table 2).

In addition to the specified model, which incorporated insights from modification indices to account for longer-term relationships and historical feedbacks identified in Figure 2, we also estimated SEM specifications without allowing for these relationships. The key relationships between constructs remained largely consistent, but goodness-of-fit measures indicated that important and theoretically justifiable relationships were not accounted for empirically. Given the insignificant direct relationship between cultural heritage and institutional values, its removal had minimal impact on the overall model fit and key relationships.

Alternative economic indicators, such as self-employment, were explored as measures of regional economic development. However, self-employment proved to be a poor indicator, likely reflecting the prevalence of necessity-driven, low-growth micro-enterprises in certain regions, particularly rural areas (Faggio and Silva 2014). Additionally, institutional values were examined both as a purely latent variable and using average regional measures as indicators. A further alternative considered replacing psychocultural profiles with latent variables for community culture and personality. However, given the theoretical premise that community culture and personality co-evolve to shape institutional values, this specification resulted in a poor model fit.

9. Discussion and conclusion

Institutions are increasingly considered to be a key explanatory factor of differences in economic development across regions (Rodríguez-Pose 2020; Tabellini 2010). Furthermore, research has started to unpack the nature of regionally defined institutions not just in terms of formal and informal institutions, but also the nature of regional institutional arrangements, environments and values (Rodríguez-Pose 2013). Alongside this, a parallel stream of research has emerged in recent years that has cut into regional development debates from the perspective of human behaviour, drawing on, for example, concepts related to personality psychology and community culture (Garretsen and Stoker 2023; Huggins and Thompson 2021a).

This paper seeks to begin to build some connections across the emerging behavioural and institutional theoretical perspectives, further developing industry-specific work such as that of Benner (2020b). This paper has focused on the nature of differences in institutional values relating to equality, voice and postmaterialism. It has examined the association of these institutional values with regional behavioural dimensions in the form of the psychocultural profile of regions, based on the underlying personality psychology and community culture found in regions. It has also explored the extent to which these values are associated with regional economic development.

The findings of the study extend existing behavioural and institutional theories of regional development by showing that regional behavioural psychocultural profiles

shape institutional values. These values in turn influence regional development and the likelihood of the opening of development traps and furthering inter-regional inequalities (Diemer et al. 2022; Iammarino, Rodriguez-Pose, and Storper 2019). The observed relationship across regions with higher individual commitment and values associated with voice and postmaterialism aligns with the view that traits such as conscientiousness – a key trait of individual commitment – can drive regional innovation, entrepreneurship and development more generally (Lee 2017; Mewes et al. 2022; Obschonka et al. 2020; Obschonka, Fritsch, and Stuetzer 2021).

The study further highlights the negative association between the behavioural profile of inclusive amenability and the values examined in this paper, which contributes to a behavioural understanding of the values associated with the geography of discontent (Dijkstra, Poelman, and Rodríguez-Pose 2020; Rodríguez-Pose 2018; Rodríguez-Pose, Dijkstra, and Poelman 2024). In particular, regions with higher inclusive amenability – often peripheral or industrially declined areas – tend to lack the institutional values necessary to promote economic development and positive political engagement. This finding again helps explain the origins of regional discontent and the systemic challenges stemming from this (Koeppen et al. 2021; Lenzi and Perucca 2021).

Furthermore, the connection between psychocultural profiles and institutional values expands the theoretical scope of geographical psychology, emphasizing the institutional routes through which personality traits influence regional economic outcomes (Ebert et al. 2022; Garretsen and Stoker 2023; Rentfrow 2020). Similarly, the suppression or promotion of institutional values, particularly voice and postmaterialism, provides a behavioural explanation of the institutional changes occurring across the political geography of regions (Rodríguez-Pose, Lee, and Lipp 2021).

Overall, the findings provide emerging evidence of a causal relationship between psychocultural factors, institutional values and regional development, illustrating the dynamic interrelated role of behavioural and institutional environments in formulating regional trajectories. Traditional approaches to regional economic development usually focus on structural factors such as skills, infrastructure and research and development, alongside institutional arrangements shaping firm behaviour and capital allocation. However, this study indicates the complementary role of behavioural and psychological regional profiles in influencing the success of interventions and overall economic outcomes. As regional personality traits and cultural norms will impact on development pathways, more holistic approaches to policy formulation are required.

Incorporating behavioural insights into regional economic development strategies would help enhance the effectiveness of traditional policies while also facilitating the crafting of policies more directly attuned to addressing the psychocultural profiles of regions and specific localities with them. Regions with high inclusive amenability, for example, may benefit from policies fostering voice and agency, while places characterized by individual commitment may require initiatives promoting collaboration and social cohesion. Additionally, social and foundational economy-related policies could be better aligned with the distinct cultural and personality traits of lagging regions.

Behavioural public policy, as seen in fields such as health and wellbeing, demonstrates the potential of interventions to reshape decision-making environments or 'choice architecture' (Thaler and Sunstein 2008). However, policymakers must also remain mindful of the persistence of behavioural traits, ensuring that resources are effectively deployed and

expectations of transformational change are realistic. In summary, by integrating behavioural thinking into regional economic strategies, public policy can better tailor policies to local contexts, promoting long-term regional development. This approach would represent a vital move towards more inclusive, behaviourally-informed and context-sensitive economic development frameworks.

Finally, in terms of the limitations of this paper, a clear factor is the lack of longitudinal data. Such data would improve the capability to address causality within the model proposed. Without this temporal element, feedbacks can to some extent be accounted for, but not fully modelled. Approaches accounting for simultaneous relationships such as the SEMs employed in this paper, provide a useful technique for addressing causality but care needs to be taken with respect to the appropriate level of measurement for each variable and accounting for all potential moderating and mediating factors. As new data is collected, it will be easier to track changes in all elements of the regional behavioural-institutional environment over time.

Additionally, future work that introduces the nature of personality traits at the regional level should not just utilize average personality trait measures, but also the mix of personalities present since extreme roles may impact on institutional value development (Felps, Mitchell, and Byington 2006; Prewett et al. 2018). Also, while this study has examined the impact of values on development in economic terms, future work could examine broader measures of regional development since certain psychocultural profiles and values may run in a counter direction when considering development as measured by social and well-being outcomes.

Note

1. Six areas are excluded due to missing data for the formal institutional variable, these being: Lochaber, Skye and Lochalsh, Arran and Cumbrae, and Argyll and Bute; Sheltand Islands, Inverness and Nairn and Moray, Badenoch and Strathspey; Caithness and Sutherland, and Ross and Cromarty; Eilean Siar; and Orkney Islands.

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