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ORIGINAL RESEARCH

Social Cohesion: A New Definition and a Proposal for Its Measurement in Africa

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Abstract
Social cohesion is crucial to increasing societies' resilience to shocks and to enabling sustainable futures. Amidst growing tensions and polarization in all world regions, social cohesion ranks high on the agendas of researchers, decision-makers and international organizations. Despite the strong interest in the topic, there are major constraints to understanding its patterns, causes and effects: the lack of a common conceptualization and measurement of social cohesion. This paper contributes to filling these research gaps in three ways. First, it provides a narrow and operationalizable definition of social cohesion, which is well rooted in the long-standing literature in the social sciences and travels across world regions. According to this definition, social cohesion encompasses three main attributes: inclusive identity, trust and cooperation for the common good. All these attributes operate in a horizontal and a vertical dimension. Second, it proposes a measurement of social cohesion in Africa, relaying on household data from the Afrobarometer surveys and expert data from the V-Dem database. Third, it applies our indicators and provides empirical evidence that social cohesion varies across countries and within countries over time, and shows that overall social cohesion cannot be reduced to just one of such indicators. Our empirical analyses do not only mark the presence of four different constellations of social cohesion in Africa but the overall approach we take provides a first step towards measuring social cohesion at the global level.

Keywords Social cohesion · Trust · Identity · Cooperation · Measurement · Africa

1 Introduction

Strong ties that hold societies together are not only relevant for tackling challenges but also an important basis for defining and agreeing on often contested common goods and values of a society. Social cohesion makes communities and states more resilient in the face of crises and facilitates change processes that benefit everyone (Aldrich, 2012; Townshend et al., 2015). However, societies around the world are currently drifting apart in reaction to global trends. For example, the effects of the Covid-19 pandemic have tested societies' resilience

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and exacerbated social inequalities, creating fertile ground for autocratization, polarization and violent conflict (Hellmeier et al., 2021). While social cohesion suffered in many societies from the consequences of the pandemic, high social cohesion helped to overcome critical situations during the pandemic in other societies (Bargain & Aminjonov, 2020; Borkowska & Laurence, 2021; Leininger et al., 2022).

Consequently, protecting and strengthening social cohesion has become an increasingly central goal for many countries as well as the international community. Numerous states and international organizations have placed social cohesion high on their agendas (e.g. Chatterjee et al., 2023; UNDP, 2020, 2024). Despite the high relevance of the topic, however, there is a major constraint to understanding its patterns, causes and effects: the lack of a common conceptualization, and even more of a common measurement of social cohesion (Bottoni & Addeo, 2024; Langer et al., 2017; Schiefer & Van der Noll, 2017). The definition of social cohesion, in fact, varies greatly across the different disciplines of the social sciences and the socio-cultural contexts. How social cohesion emerges and how individual societies frame it in their public discourses is context-dependent. Nevertheless, for empirical analyses and generalization, it is important to have a definition of social cohesion that navigates across countries and regions. Without such joint understanding and measurement, generalization, theory-building and evidence-based policy-making is impossible. In contrast to the broad range of existing definitions of social cohesion, "…few attempts were made to measure it" (Langer et al., 2017, p. 1), and most of them focused on one single country (e.g. Burns et al., 2018; McCandless, 2011). Only very few of these empirical examinations have taken a comparative regional perspective (Delhey et al., 2018; Dickes & Valentova, 2013; Dragolov et al., 2016), predominantly concentrating on high-income countries. Difficulties in measuring social cohesion and, relatedly, data constraints, severely hamper the empirical study of social cohesion, despite its long tradition of research.

This paper contributes to balancing the bias between a strong conceptual focus and weak generalizable empirical foundations in the study of social cohesion. It aims to filling the above research gaps in three ways: First, by developing a lean and operationalizable definition of social cohesion that travels across regions and countries. Conceptually, it proposes a definition of social cohesion that incorporates core elements of existing and widely used definitions of social cohesion across disciplines, namely inclusive identity, trust and cooperation for the common good while offering important refinements. This definition is both broad enough to cover the essentials that hold societies together, and lean enough to analyse the causes and consequences of social cohesion, for instance the relationship between social cohesion and inequalities or political institutions. Second, by proposing a replicable measurement of our concept, which identified constellations of social cohesion across time and countries. This methodological contribution focuses on the African context. Third, by focusing on African countries, it widens the scope and empirical foundation of research on social cohesion. So far, most of the attempts to measure social cohesion concentrated on high-income countries, with only one study looking at African countries. This is a particularly relevant blind spot because Sub-Saharan Africa and North Africa are heavily affected by violent conflict, and, together with Latin America, the regions with the highest levels of inequality (Chancel et al., 2022; Institute for Economics & Peace, 2020). At the same time, there are relatively good comparable data across countries in this continent, which allow for robust and sound measurement of social cohesion.[1]

[1] Our measurement relies on data from Afrobarometer surveys, which are integrated with V-Dem data for the measurement of one of the three attributes, namely cooperation for the common good. See Sect. 3 below.

In the remainder of this paper, we first develop the concept of social cohesion. Based on this concept we then introduce the indicator-building and methodology to measure social cohesion in the African context. In Sect. 4, we apply this measurement and conduct several empirical analyses on a sample of African countries. We conclude with an outlook on potential next steps in empirical research on social cohesion.

2 Conceptualizing Social Cohesion

Social cohesion refers to the ties or the "glue" that hold societies together.[2] Studying what holds societies together has a long-standing tradition in social sciences, in particular in sociology and social psychology (Durkheim, 1893; Forst, 2020; Putnam, 2000). In the 1990s, research on social cohesion gained new impetus in reaction to the effects of neo-liberalism (Hino et al., 2019) and attracted attention also in policy circles. Because of a growing interest in social cohesion, several attempts have been made to identify a common denominator for defining and analysing social cohesion. As a consequence, concepts of social cohesion show some convergence over time but also continued variation regarding some aspects and their conceptualization (Bottoni, 2018; Chan et al., 2006; Dickes & Valentova, 2013; Moustakas, 2023; Schiefer & Van der Noll, 2017). There is an emerging consensus on the following key aspects (Burchi et al., 2020; Chan et al., 2006; Fonseca et al., 2019; Schiefer & Van der Noll, 2017):

- Social cohesion refers mainly to the quality of *relationships* between actors that constitute a society including individual and diverse social groups;
- Social cohesion is characterized by *behaviours and attitudes* of individuals and social groups;
- Social cohesion incorporates two dimensions; a *horizontal* dimension focused on the relationships among individuals and groups within a society and a *vertical* dimension focused on the relationship between individuals or groups and public institutions.

Based on a thorough review of the literature, we conceptualize social cohesion as follows:

> *Social cohesion, understood as a binding force that holds society together, refers to the horizontal relations among members of society (individuals and groups), as well as the vertical relationship between these actors and public institutions. Social cohesion is characterized by a set of attitudes and behavioral manifestations that includes trust, an inclusive identity, and cooperation for the common good.*

With this definition, we aim to build upon existing definitions and an emerging consensus on core components, while refining it in important ways.[3] We think that our definition not only provides a lean and, therefore, easy to grasp concept, but that in its multidimensionality and

[2] Cohesion originates from Latin = cohaerere (stick or tie together).

[3] This definition of social cohesion in particular builds on, and adapts the well-known definition provided by Chan et al. (2006). However, we develop it in two important regards. Firstly, by focusing on an inclusive identity rather than only a sense of belonging. Secondly, by moving from the willingness to cooperate to actual cooperation and only cooperation for the common good (see next sections for details).

Table 1 Most common academic concepts of social cohesion

Authors	Definition	Main elements
Bernard (1999)	Understands social order as a dialectical balance of three interrelated yet contradictory values: freedom, equality, and solidarity. (p.49). Social cohesion consists of formal as well as substantial relations that can be differentiated into three spheres (p.56)	- Political (legitimacy & participation) - Socio-cultural (acceptance & affiliation) - Economic (equality and inclusion
Chan et al. (2006)	"Social cohesion is a state of affairs concerning both the vertical and the horizontal interactions among members of society as characterized by a set of attitudes and norms that includes trust, a sense of belonging and the willingness to participate and help, as well as their behavioural manifestations." (p. 290)	- Trust - Belonging - Helping - Participation
Dragolov et al. (2016)	"quality of social cooperation and togetherness of a collective, defined in geopolitical terms, that is expressed in the attitudes and behaviours of its members. A cohesive society is characterised by resilient social relations, a positive emotional connectedness between its members and the community, and a pronounced focus on the common good" (p. 6)	- Social relationships (Strength of social networks, trust in others, acceptance of diversity) - Connectedness (Identification, trust in institutions, perceptions of fairness) - Common good (solidarity and helpfulness, willingness to abide by social rules, participation)
Schiefer and Van der Noll (2017)	"a descriptive attribute of a collective, indicating the quality of collective togetherness." (p. 592)	- Social relations - Attachment/belonging - Common good orientation
Fonseca et al. (2019)	"the ongoing process of developing well-being, sense of belonging, and voluntary social participation of the members of society while developing communities that tolerate and promote a multiplicity of values and cultures, and while granting at the same time equal rights and opportunities in society" (p. 246)	- Well-being - Belonging - Social participation - Tolerance - Equal opportunities

refined conceptualization of the components it nevertheless does justice to the complexity of the phenomenon at hand. The lean character allows us to investigate important causal relationships, on how for example inequality or value orientations influence social cohesion (see also for example Chan, Schiefer & van der Noll as proponents of a minimalist definition).[4] Moreover, leanness makes it easier for a concept to 'travel' across world regions.

The main disagreement in the literature concerns the actual constitutive elements or attributes of social cohesion – with both the number of proposed attributes as well as the definitions of such attributes varying significantly.[5] Table 1 summarizes the most common academic definitions of social cohesion as well as their main constitutive elements. Our conceptualization of social cohesion encompasses three key attributes: cooperation, trust and identity (Fig. 1).These attributes – or closely related ones – are common to most defini-

[4] We explicitly exclude some elements that others sometimes use, most prominently 'well-being' and 'inequality' (Berger-Schmitt, 2002; Langer et al., 2017). Well-being, for example, is usually considered a characteristic of the individual and not of a society. Moreover, including well-being would impede studying the empirical relationship between this phenomenon and social cohesion (Bottoni & Addeo, 2024). Inequality is likely to play a key role in determining social cohesion in a society. Indeed, there are studies that aim to understand whether and how inequality affects social cohesion (Burchi et al., 2022).

[5] Included attributes for example may entail: shared values and experiences, civic participation, helping as well as trusting others, social networks, tolerance and acceptance of diversity, well-being, equality, and social mobility. For a comprehensive overview of the literature, see Schiefer & Van der Noll (2017).

Fig. 1 Constitutive elements of social cohesion. Source: Leininger et al., 2022

tions of social cohesion in the Western academic literature (Schiefer & Van der Noll, 2017). In addition, non-Western conceptions of social cohesion also share these attributes. A comparative analysis of African concepts showed that in particular common good orientation and identity are key in African understandings of social cohesion (Wortmann-Kolundžija, 2023; Wortmann-Kolundžija and Leininger, (Wortmann-Kolund forthcoming)).[6]

We assume that the three attributes of social cohesion build upon and reinforce each other (Fukuyama, 2001; Knack & Keefer, 1997; Narayan, 1999). We argue that the stronger mutual trust, the better the sense of togetherness, i.e. an inclusive identity within a society. At the same time, identity should play a major role for people to *feel* part of a social community, whereas cooperation provides positive social interactions from which social cohesion emerges. Yet, we acknowledge that each attribute can work against social cohesion if it is not inclusive and shared across diverging social groups. Therefore, we provide crucial qualifications, namely focusing on an *inclusive* identity, cooperation *for the common good*, and trust that goes beyond the in-group, as elaborated further below. Our concept refers both to attitudes as well as behaviour. Regarding the latter, we differ from other influential

[6] Although these conceptions are rather socio-political and were used by political elites to foster nation- and community building, they are relevant entry points for empirical analyses of social cohesion in African countries.

definitions (e.g. Chan et al., 2006) by including actual cooperation, not the mere willingness to cooperate.

2.1 Inclusive Identity

The third core element of social cohesion is an inclusive identity. In contrast to Chan et al.'s definition (2006), we assume that social cohesion requires an *inclusive* identity, which allows different social identities to coexist and not only a sense of belonging or joint identity. Social identities are based on a shared understanding among individuals about particular social groups (Turner et al., 1994). Individuals can hold a number of social identities at the same time and ascribe both meaning and emotional significance to them. Tajfel's (1974) widely applied definition describes social identities as "[…] that part of an individual's self-concept which derives from his knowledge of his membership in a social group (or groups) together with the emotional significance attached to that membership". Consequently, social identities are relevant for the cohesiveness of groups and societies as the complexity of parallel and overlapping identities creates forms of inclusion and exclusion. Identity is not fixed, but is open to contestation and re-negotiation (Citrin & Sears, 2009).

Social identities are in a hierarchical relationship to each other. For example, a national identity is a superordinate identity to social identities of sub-national groups, but is itself a sub-ordinate identity to broader identities such as gender (Roccas & Brewer, 2002). Overlapping, non-uniform and complex sets of social identities play an important role for social cohesion. The meaning that individuals ascribe to a social identity defines group membership rules, group goals, and relations to other groups. Situations that emphasize group identities often manifest themselves in ingroup bias (Huddy, 2013). Social identity thus exists in a constant tension in which superordinate identities, such as the national identity, decrease the intensity of subordinate group identities and vice versa. Hence, they need to coexist in a balance in order to achieve social cohesion and avoid intergroup tensions.

By the *inclusiveness* of social identity we refer to the important distinctions made by Roccas and Brewer (2002, pp. 89–90) between different representations of in-group structures. They identify four different patterns of social identity-based in-group structures that vary in their degree of social inclusiveness. For a social identity to be inclusive then means to allow the overlapping existence of multiple social identities according to situation-specific context (termed 'compartmentalization' by Roccas & Brewer, 2002, p. 90) or the existence of multiple overlapping social identities which are themselves part of a greater superordinate group identity ('merger' pattern). In contrast, patterns of 'intersection' or 'dominance' decrease inclusion by narrowing the in-group (i.e. decreasing social cohesion). In an 'intersection' pattern, one specific group monopolistically claims state identity for itself. In a 'dominance' pattern, state identity attempts to overwrite all other existing social identities (Roccas & Brewer, 2002). Social cohesion is greatest when superordinate social identities create inclusive compatibility between various subordinate identities without dominating them. Since our conceptualization's highest aggregation level is the state-level, inclusive identities should refer at minimum to identification with the respective state as a superordinate identity. However, note that higher superordinate identities, e.g. a pan-African identity, are theoretically also relevant. Too, the 'merger' pattern of an inclusive identity prohibits the oppression of sub-ordinate social identities, e.g. regional or ethnic identities.

2.2 Trust

Trust is the second core element of social cohesion in our definition.[7] We focus on two types of trust for which consensus exists that they are an indication of a cohesive society: generalized trust and institutional trust (Chan et al., 2006; Fukuyama, 1995; Langer et al., 2017; Schiefer & Van der Noll, 2017; Zerfu et al., 2009). Generalized trust regards the horizontal dimension and refers to the "ability to trust people outside one's familiar or kinship circles" (Mattes & Moreno, 2018, p. 1). It is also referred to as “bridging” trust as it can be seen as the ‘bond that people share across a society and across economic and ethnic groups, religions, and races’ (Rothstein & Uslaner, 2005, p. 45).

We decided to exclude particularized trust[8] in our conceptualization. It regards "trust in specific groups, usually one's immediate family, neighbors, or identity group" (Mattes & Moreno, 2018, p. 1). Empirical evidence suggests that this specific type of trust does not have clear benefits or may even run counter to social cohesion and lead to polarization (Delhey et al., 2011; Gundelach, 2014; Zerfu et al., 2009). One explanation is that particularized trust depicts bonding within groups, which does not necessarily result in social cohesion at the aggregate level. High group cohesiveness may weaken outgroup trust and inter-group cohesion (also called “bridging social capital”) (Easterly et al., 2006; Putnam, 2000).

Institutional trust regards the vertical dimension, which is important because social cohesion requires a superordinate entity that holds society together. Institutional trust describes trust towards the "formal, legal organizations of government and state, as distinct from the current incumbents nested within those organizations" (Mattes & Moreno, 2018, p. 2). In contrast to political trust, which may be interpreted more narrowly as trust in political representatives and confidence in political institutions (e.g. Zmerli & Newton, 2008), we explicitly focus on institutional trust—a deeper, underlying trust in public institutions that is not wavered by momentary alignment with or confidence in current incumbents (Dinesen & Sønderskov, 2015; Rothstein & Stolle, 2008).

2.3 Cooperation for the Common Good

The third core element of social cohesion is cooperation across groups (horizontal) and between individuals/groups and the state (vertical). To be indicative of social cohesion, we argue that it is particularly important that this cooperation is geared towards the common good,[9] meaning that it is "directed at interests that transcend those of the individuals involved" (Weber in van Oorschot & Komter, 1998). A strong indication of manifest cooperation for the common good is cooperation where actors pay a cost so that the community

[7] We follow Gundelach (2014) and define trust “as the expectation that others will contribute to the well-being of a person or a group, or at least will refrain from harmful actions" (based on Offe, 1999 and Freitag and Traunmüller, 2009).

[8] Used, for example, by Langer et al. (2017) and Dragolov et al. (2013).

[9] The common good (*Gemeinwohl* in German) refers to the conception of the material and immaterial living conditions of a collective (Fraenkel, 1964). It goes beyond notions of the public good. Balancing individual and collective interests is a precondition for defining the common good of a collective. Hence, the concept of the common good contains a normative element (what is the society we want to live in?) and a procedural one (how are individual interests aggregated to a collective interest?).

receives a benefit, i.e. voluntarily subordinate personal needs for the benefit of the society (Nowak, 2006; Schiefer & Van der Noll, 2017), or cooperation that takes place "despite incentives for non-cooperation" (King et al., 2010, p. 337). Voluntary cooperation for the public good is a clear sign of social cohesion, while cooperation incentivized through monetary reward or punishment is not (Rand et al., 2014).

Including cooperation for the common good is important because positive social interactions in society are key to social cohesion, as previous literature emphasizes (Berger-Schmitt, 2000; Colletta et al., 2001; Friedkin, 2004). Other definitions of social cohesion that explicitly refer to cooperation often focus on the *willingness or commitment* to cooperate (Chan et al., 2006; Colletta & Cullen, 2000; Colletta et al., 2001; Schiefer & Van der Noll, 2017). We argue that cooperative attitudes such as the willingness to work towards a common good are important but that a cohesive society requires at least a minimal level of actual cooperation. In this, we concur with Chan et al. (2006), who argue that "social cohesion is not only about people's feelings or psychological conditions; it is also about certain behavior" (p. 290). Overall, we expect social cohesion to be higher if people widely contribute to the fulfilment of the common good.

Here we briefly compare our conceptualization (and measurement) of social cohesion with that in other prominent contributions, especially by Dragolov et al. (2016) and Langer et al (2017). In common with that of Dragolov et al. (2016), our concept includes trust, national identification and positive interactions in society, as well as a focus on the common good. There are, however, important differences: in particular, Dragolov et al. (2016) endorsed an extended (not lean) view of social cohesion, encompassing nine dimensions, some of which again comprise several aspects, such as 'solidarity and helpfulness'. Our concept, in contrast, aims to reduce the complexity to a necessary minimum in order to make it easy to grasp, empirically operationalizable and valid across regions. Moreover, while both concepts refer to both horizontal and vertical relations, only in our proposal the attributes consistently have a vertical and horizontal dimension.[10]

Finally, while also Dragolov et al. (2016) exclude inequality as it is a potential driver of social cohesion they include the perception of fairness, asking if people believe that goods in society are fairly distributed. This should at least be closely related to inequality and therefore still contains the risk of capturing a driver rather than a characteristic of social cohesion.

Similarly, the inclusion of (perceived) inequality as one of three core components of social cohesion is one important difference between our concept and the concept proposed by Langer et al (2017). Moreover, their concept does not capture our core attribute 'cooperation for the common good' or any other behavioural aspect such as participation or other pro-social activities. Both concepts include 'trust' and 'identity'; however, for trust Langer et al (2017) also focus on in-group trust, while we argue strong in-group ties may not necessarily indicate strong social cohesion in the overall society.

[10] Another problematic aspect of the conceptual framework developed by Dragolov et al. (2016) lies in the unclear distinction between the attributes. Social relations and connectedness are two separate elements, even though social relations may also be considered a form of connectedness. This distinction only becomes clearer when focusing on the specific sub-indicators, although here it remains unclear why trust in institutions is considered part of 'Connectedness' when trust in people is considered part of social relations.

3 Building Indicators to Measure the Three Attributes

In this section, we present, defend and discuss the indicators and sources we propose for measuring each of the attributes of the conceptualisation of social cohesion discussed in the previous section. We are aware of larger literature on each of the attributes but focus only on the specific literature on measuring inclusive identity, trust and cooperation that is situated within the context of measuring social cohesion (e.g. Delhey et al., 2018; Dragolov et al., 2016; Langer et al., 2017). Our geographical focus is on Africa, given the scarce research on social cohesion in this continent and the high inequalities and the frequency of conflicts: for this reason, we mostly compare our measurement to the one used by the only study on African countries (Langer et al., 2017).

Operationalising such a multifaceted concept as social cohesion is a major challenge, particularly when the aim is to use the measures for cross-country comparison (Davidov et al., 2014). In our search for the best data that could allow to conduct different empirical analyses on social cohesion in Africa, we struck a compromise between a measurement that could adhere as much as possible to our conceptual framework and the largest possible coverage of African countries (and years). For this reason, we rely predominantly on survey data from Afrobarometer: only for the measurement of cooperation for the common good, we integrate these data with expert data from V-Dem. Here below, we illustrate the choices made to measure the three different attributes of social cohesion in the context of African countries. A summary of all indicators used for each attribute is included in Table 5 in the Appendix.

3.1 Measuring Inclusive Identity

Many existing measures of social cohesion focus on the emotional significance of national identity, sometimes referred to as "sense of belonging" (e.g. Dickes et al., 2010; Dragolov et al., 2013; Langer et al., 2017). For example, the Social Cohesion Radar, which concentrates on EU and OECD countries, includes the degree to which people identify with their country as one of the three indicators of the domain "connectedness" (Dragolov et al., 2013). In line with Langer et al. (2017) we used an Afrobarometer survey question, which provides similar information: respondents were asked the extent to which they feel that they belong to the nation-state in comparison to the (ethnic) group. Given that ideally an individual should feel primarily part of a shared national project, a positive answer from the point of view of social cohesion would be: "I feel only national identity", or "I feel more national identity than group identity".[11] Unlike Langer et al. (2017) for their main Social Cohesion Index, we decided not to measure inclusive identity through the simple proportion of "positive" answers out of the total as it may well be that a large value would be entirely triggered by one or two dominant ethnic groups, with people belonging to the other (minority) groups providing a "negative" answer. This situation, in fact, would not indicate a high social cohesion in the country. It is, therefore, necessary to account for the distribution of the answers to the question (comparison state vs group identity) across ethnic groups.

[11] We are aware that focusing only on the ethnic group may be a limitation as the ethnic identity—which also includes language and tribe—is not necessarily the most valued identity. However, Afrobarometer data do not contain information on other types of groups. Moreover, data from Round 2 of Afrobarometer indicate that for the majority of the countries the ethnic group is the most important group.

We implemented a two-stage procedure. First, we calculated the proportion of positive answers for each ethnic group separately.[12] Second, we aggregated the group values into one single index through a simple (unweighted) arithmetic mean.[13] Therefore, on theoretical grounds we decided not to weigh groups according to their size: every group has the same relevance. This way, we penalize countries with large disparities in the group values. As this choice might be disputed on the basis of distorting representativeness, to show robustness, we test whether this measure remains stable when using an alternative one obtained by weighing groups by their size: the very high correlation (0.98) between the two measures confirms the robustness of our results.

Some further data adjustments were made in the calculation of the inclusive identity measure. In particular, there was an implicit risk of penalizing countries with: a) more ethnic groups; b) very small ethnic groups (e.g. Nigeria). Indeed, in these countries we would more easily obtain very low group values (even zeros), which would push down the final indicator substantially. By construction, we would assume that societies with more social groups (tribes, languages, ethnic groups etc.) are less cohesive, which is the drawback of much of the debate on social cohesion.

To account for these issues, we adopted an approach that permits at the same time to reduce the number of ethnic groups – so as to alleviate the heterogeneity in the number of groups across countries – and to combine groups that are deemed too small. A further point to take into consideration was that the aggregation of many groups, which are too small to be meaningful, into one larger group would inflate both size and heterogeneity of this larger group. We set the ideal threshold for the minimum group share of overall population at 5% for all the countries: this means that groups that represent a lower population share should be automatically merged. Then, we identified the threshold for the population share of the "merged" group at 25%: this means that this group should represent no more than ¼ of the overall population. In the cases (countries/surveys) where the combination of groups with a population share below 5% leads to a "merged" group with a population share above 25%, the 5% threshold was gradually reduced by 0.1%—up to reaching a minimum threshold of 1%—until the merged group remains in the required boundaries.[14] The underlying assumptions are that a population share of a group below 1% is too low for the group to be considered a meaningful one – for example to exercise effective collective action—regardless of the context (same minimum threshold across all countries): in a similar fashion, a population share of a group equal or above 5% is large enough for the group to be considered a meaningful one regardless of the context. Instead, a group's population share of, say, 1.5% may be enough for the group to qualify as stand-alone group in countries where there are many very small groups. Finally, as we are aware that these specific thresholds are partially

[12] We restricted the sample to those who reported to be part of an ethnic group and specified which one.

[13] As an aggregation function, we initially considered the option of using the geometric mean, which penalizes countries where there are large disparities in the results across groups (low substitutability). However, given that some groups have a low sample size in the Afrobarometer surveys and therefore can easily have a proportion of positive answers equal to zero, we disregarded this option as it could excessively penalize countries with many (small) groups. In the next paragraphs, we discuss this and related issues in more detail.

[14] This whole procedure led to a reduction in the average number of ethnic groups across 32 countries from 17.2 to 7.3 for round 8 data (2019–2021).

arbitrary, we conducted a robustness check and found that the results are highly robust to the use of alternative thresholds.[15]

To summarize, the described procedure aggregates the responses by individual households on the emotional significance of national identity to a country-level measure for inclusive identity while accounting for the distribution of answers across (ethnic) groups and the heterogeneity in the number of groups across countries.

3.2 Measuring Trust

The Afrobarometer comprises questions focusing on trust in the horizontal dimension (generalized trust) and in the vertical dimension (institutional trust). The specific question for generalized trust is a slightly modified formulation of the well-known original question used by Rosenberg (1956): "Generally speaking, would you say that most people can be trusted or that you must be very careful in dealing with people?". While the operationalization of (horizontal) trust in people differs across studies on social cohesion – for example, with regard to the choice and number of indicators –, this question is commonly used (Chan et al., 2006; Dragolov et al., 2013).[16] Delhey et al. (2011) found that in the vast majority of countries respondents interpret "most people" as outgroups such that this question adequately captures our research interest. However, there is one critical point: the generalized trust variable in the Afrobarometer is binary. Some empirical research in the last years has employed an enlarged scale – capturing the degree of trust –, and shown that this is a sounder measurement of trust (Lundmark et al., 2016). Even though some information is lost, the binary measure of generalized trust is still considered a valid one and is still largely used according to Bauer and Freitag (2018).

To operationalize trust in the vertical dimension we use the same measures for institutional trust as most studies on social cohesion (i.e. trust in the parliament, the police, and in the courts of law), but – in contrast to some of these studies (Chan et al., 2006; Dragolov et al., 2013; Langer et al., 2017) – we do not include trust in political representatives. We restrict our focus on state institutions since – as previously stated – we intend to measure trust in "formal, legal organizations of government and state, as distinct from the current incumbents nested within those organization" (Mattes & Moreno, 2018, p. 357). In doing so, we follow the line of argument of Zmerli and Newton (2008) building on a well-established literature concerned with the differentiation between trust in political representatives and confidence in political institutions (Giddens, 1990; Hardin, 2000; Luhmann, 1979; Seligman, 1997). One important reason for doing so is that trust in institutions is supposed to measure a more stable, deeper, underlying trust in public institutions that may stem from past performances of political institutions and that is not wavered by momentary alignment with or confidence

[15] We generated alternative identity measures changing the 5% threshold into 3% or 10%, and the 25% threshold into 10% or 20%. The correlation between the original identity measure and these alternative ones is always between 0.991 and 0.999, indicating that the choice of the specific thresholds has only a marginal impact.

[16] Langer et al. (2017) use a more detailed set of questions on the degree of trust in (i) relatives, (ii) other people the respondent knows and (iii) fellow countrymen. We decided not to use them for two main reasons: 1) as argued in Sect. 2, a high trust in family members and more in general people in the kinship circles is not a clear sign of high social cohesion; 2) these Afrobarometer questions were discontinued in Rounds 6–8 of Afrobarometer surveys.

in current political leaders, parties or governments (Zmerli & Newton, 2008). Thus, we use indicators of trust in the parliament, the police and courts of law to measure vertical trust.

As the question on each of these institutions has a 4-point Likert scale,[17] we can more soundly measure trust by also capturing the degree of trust. First, the trust in each institution was calculated by taking the arithmetic mean across all households in a given country and a given year. In a second step, also through (unweighted) arithmetic mean, we aggregated trust in the three institutions to have an overall measure of institutional trust.

Finally, while it is important to analyse separately the horizontal and the vertical dimensions of trust, it is useful as well to aggregate them into an overall measure of trust, for example, to compare the different attributes of social cohesion across countries. To do so, the vertical trust score (institutional trust) is normalized to the same scale (0 to 1) as horizontal trust (generalized trust). Then, we employ the geometric mean to aggregate across the two dimensions. This way, we penalize countries that have larger imbalances in the values of the two dimensions of trust.[18]

3.3 Measuring Cooperation for the Common Good

There is an extensive literature on the measurement of cooperation – sometimes identified with other terminologies such as solidarity, participation in public sphere or civic or voluntary engagement. In the social cohesion literature, cooperation is commonly measured through indicators of political participation, voluntarism and engagement in organizations and the civil society (e.g. Berger-Schmitt, 2000; Chan et al., 2006; Dragolov et al., 2013; Schiefer & Van der Noll, 2017). Even though our operationalization generally aligns with this, it is important to consider that our attribute contains, in addition to 'cooperation', the element of the 'common good'. Thus, a simple measure of participation in a collective activity that is not likely to contribute to general well-being in the society does not serve our purpose. The first indicator used to measure horizontal cooperation is generated from a question included in the Afrobarometer surveys on whether respondents joined others to raise an issue. In line with social movement theory (Diani, 1992), a positive answer indicates that there can be cooperation between (and also within) different social groups/communities which pursue a similar common good.[19] While the original question has a 5-item scale, we reduced it to a 4-item scale, by recoding the answer "no, would if I had the chance" as 0 like the answer "no, would never do this" as we are interested in measuring actual cooperation and not willingness to cooperate. Therefore, the new scale ranges from 0 ("no") to 3 ("yes, often"). However, to ensure that the raised issue fosters the common good, we made several revisions that give extra weight to cooperation at the meso level in close neighborhoods and capture the fact that the interests pursued are not narrowly particularistic. We give more weight to the answers of households that come from spatial units[20] with

[17] Possible answers are: "not at all" (coded 0), "just a little" (1), "somewhat" (2), "a lot" (3).

[18] This feature is called "non-perfect substitutability" across indicators: This means that low values in one indicator cannot be fully/linearly compensated by high values in another indicator, as instead happens with the arithmetic mean. The same logic is used, for example, for the calculation of the Human Development Index (UNDP, 2010).

[19] Ingroup cooperation is equally important, but societal cohesiveness significantly hinges on overcoming cleavages between social groups such that we especially look at cooperation between different social groups.

[20] A spatial unit is defined as an area within a 7.5 km radius from the household of interest.

more ethnic heterogeneity as this increases the likelihood that the raised issue is in line with the common good of the society as a whole and not only in the interest of one social group. To do so, we first generate a measure of ethnolinguistic fractionalization – as often done in economic literature (e.g. Alesina et al., 2003) – calculated as one minus the Herfindahl index (based on population shares of ethnic groups in the total population of the spatial unit). The fractionalization variable reflects the probability that two randomly selected individuals from a spatial unit belong to different groups. In a second step, the coded answer to the question on raising an issue is multiplied by the fractionalization variable. In order not to overly penalize countries with fewer ethnic groups, we make a further adjustment (also at the household level) using an analogous fractionalization measure for the whole country (and not just for the spatial unit on the sub-country level).[21] This adjustment ensures that more weight is given to the "raise an issue" indicator in very homogenous countries, while more weight shifts to the diversity-weighted "raise an issue" indicator as countries become ethnically more heterogeneous. Finally, to generate the revised indicator of raising an issue, we use the simple arithmetic mean across households for the homogeneity-corrected diversity-weighted "raise an issue" variable. It has been confirmed that results are robust to using the original "raise an issue" variable.[22]

The second indicator for the horizontal dimension captures the extent to which people are involved in CSOs, to some degree capturing the social cohesion at the meso level (Bottoni, 2018). The data are taken from expert evaluation provided for the V-Dem database.[23] The experts were asked to rate how participatory CSO environment is in each country (and year) from zero to three, where zero depicts situations in which the state de facto exercises a monopoly on organizations and three indicates societies where there are many diverse CSOs and citizens are at least occasionally active in them (Bernhard et al., 2015; Pemstein et al., 2019). To build an index for horizontal cooperation, we first normalize the indicators to the common scale (0 to 1) used in the three attributes and their horizontal and vertical dimensions. We aggregated the measures on "raising issues" and CSO environment through (unweighted) arithmetic mean.

For vertical cooperation, we rely on information on cooperation with local institutions since it is difficult to find adequate information on individuals' cooperation with state (national-level) institutions for several African countries. In particular, the Afrobarometer survey asks interviewees about the frequency of attending community meetings. This question captures information on individuals' participation in community life and, thus, willingness to contribute to the common good, which is defined in these meetings. The more a person is willing to contribute to the common good and the community, the more likely is a

[21] The following formula was employed: homogeneity_corrected diversity_weighted raise_issue = [(1—fract_country) * *raise_issue]* + *[fract_country* * raise_issue *fract_spatialunit]. The empirical analysis on the African countries shows that without the further correction for homogeneity at the country level, there was a slight bias against countries with fewer ethnic groups; this bias is no longer present after this correction.

[22] In a robustness check, we used the original "raise an issue" variable. The correlation between the "raise an issue" score and the homogeneity-corrected diversity-weighted "raise an issue" score is high (r = 0.80). Correlations become even higher when the "raise an issue" variable is aggregated with other variables to arrive at the horizontal cooperation scores (r = 0.91) and the overall cooperation scores (r = 0.98). Hence, the cooperation score and the subsequent clustering are robust to the different (weighting) choices with regard to the "raise an issue" variable.

[23] Initially, we also included a variable for membership in voluntary, non-religious associations or organizations, but we had to drop it, as Afrobarometer no longer collects this information since Round 8.

higher degree of cohesiveness in the respective society. Even though community meetings differ a lot across Africa, many are headed by traditional leaders or state representatives. Thus, participation in community meetings implies an interaction with the national level.[24] The indicator of participation in community meetings is calculated as the mean of the recoded answers,[25] and is transformed to the common scale between zero and one.

The second indicator is generated from a series of questions available from the Afrobarometer survey that capture the level of interaction with different public officials. On a 4-item scale from 0 ("never") to 3 ("often"), respondents separately rated the frequency of contacting the following four types of officials: local government councilors, Members of Parliament, officials of a government agency/ministry, or traditional leaders/rulers. Since few households ever contacted any official, our indicator takes on the maximum value among those four. Aggregation to the country-year level happened through (unweighted) arithmetic mean across households. Subsequently, the indicator was rescaled to values between zero and one.

To measure the extent to which the state is interested in cooperating with the civil society, for example, by allowing CSO activities and seeking consultation from CSOs, V-Dem data is employed. A pool of experts is asked to provide a general evaluation of the level of state repression on a scale from 0 (active repression) to 4 (no substantive repression or harassment of CSOs) (Bernhard et al., 2015; Pemstein et al., 2019). Similarly, they evaluate the extent to which CSOs are consulted by policymakers on policies relevant to their members on a scale from 0 (no regular consultation) to 2 (regular consultation). As these two indicators reflect the same aspect – government interest in interacting with civil society – they are brought to the same scale from zero to one and then aggregated through a simple (unweighted) arithmetic mean.

Finally, the index of vertical cooperation is obtained by taking the (unweighted) arithmetic mean of participation in community meetings, the intensity of contacts with public officials, and of the mean value of the two V-Dem indicators reflecting government interaction with CSOs. In line with the procedure already used for the trust attribute, we build an overall index of cooperation for the common good by aggregating the indices for the two dimensions (horizontal cooperation and vertical cooperation) through the geometric mean not to allow perfect substitutability between the two indices.

4 An Empirical Investigation of Social Cohesion in Africa

In this section, we present the results for measuring our concept of social cohesion based on the indicators described above and implement an exploratory cluster analyses to illustrate a potential use of the data and identify constellations of social cohesion in Africa. Table 2

[24] The fact that the question indicates a vertical state-citizen relationship is further confirmed by how the beginning of the question is formulated: "Here is a list of actions that people sometimes take as citizens."

[25] Like for the "raise an issue" question discussed earlier, this question originally included 5 possible answers. However, we reduced it to 4 as the answer "no, but would do if had the chance" was recoded as 0 ("no") because we aim at measuring real cooperation and not willingness to cooperate. The maximum value of 3 (before recoding: 4) is given for the answer "yes, often".

Table 2 Number of countries covered, by attribute and time-period

ATTRIBUTE	2005–2006	2008–2009	2011–2013	2014–2015	2017–2018	2019–2021
Inclusive identity	17	20	28	32	32	32
Trust horizontal	17	0	34	0	0	33
Trust vertical	18	20	34	36	34	33
Cooperation horizontal	17	20	28	32	32	32
Cooperation vertical	18	20	34	36	34	33

reports country coverage for each social cohesion attribute (and sub-attribute) in the different time periods.[26] Our indicators cover up to 36 African countries.[27]

4.1 Analyses by Individual Attribute

In this sub-section, we examine the distribution of the attributes and sub-attributes across African countries, by means of Kernel density plots.[28] In order to have the most recent picture of social cohesion, we use data for the period 2019–2021. Furthermore, we present the results of two factor analyses on the level of our (sub-)components and on the indicator level to test for dimensionality reduction.

Figure 2 shows a relatively high variation of social cohesion attributes across African countries, especially for inclusive identity. At the same time, most of the country values are close to the mean. Interestingly, while within the cooperation attribute the distributions and the values of the sub-attributes are very similar, in the case of trust, the vertical measure has significantly higher average values and (absolute) variability than the horizontal one. Given our choice to aggregate vertical and horizontal trusts through the geometric mean, it follows that overall trust is predominantly driven by the low values of horizontal trust.

As social cohesion is the result of the interaction of the different attributes, it is essential to examine the correlation between them. Table 3 shows the Pearson's correlation coefficients for all attributes and sub-attributes. Focusing on the overall measures of the three attributes, the correlation between trust and identity is the highest (0.38), followed by that between identity and cooperation (0.22). The lowest correlation exists between trust and cooperation, which is only 0.04. Zooming into the sub-attributes, horizontal and vertical cooperation correlate highly at 0.56, while the correlation between horizontal and vertical trust is lower (0.14). Overall, these results suggest that the three attributes tend to move together, but since these correlations are not very high, they also suggest that none of the attributes individually covers the whole phenomenon of social cohesion.

While we are convinced that the field profits from theoretically well-derived concepts, we nonetheless check our concept and its operationalization for dimensionality reduction against the data. To do so, we employ factor analyses. Factor analyses assume the existence of a latent phenomenon (i.e. factor) that cannot be measured directly. However, the latent

[26] Recall that we are not able to distinguish between horizontal and vertical dimension for inclusive identity.

[27] Information on horizontal trust was not collected in few rounds of Afrobarometer surveys. As the responses to the most-people question exhibit some variation across countries but little within variation (e.g. Rothstein and Uslaner, 2005), we overcome this problem of missing data points by exploiting the stickiness of generalized trust on the country level through linear interpolation.

[28] In the Appendix (Figs. 7–9), we report the figures with the detailed country-level picture for all attributes and sub-attributes.

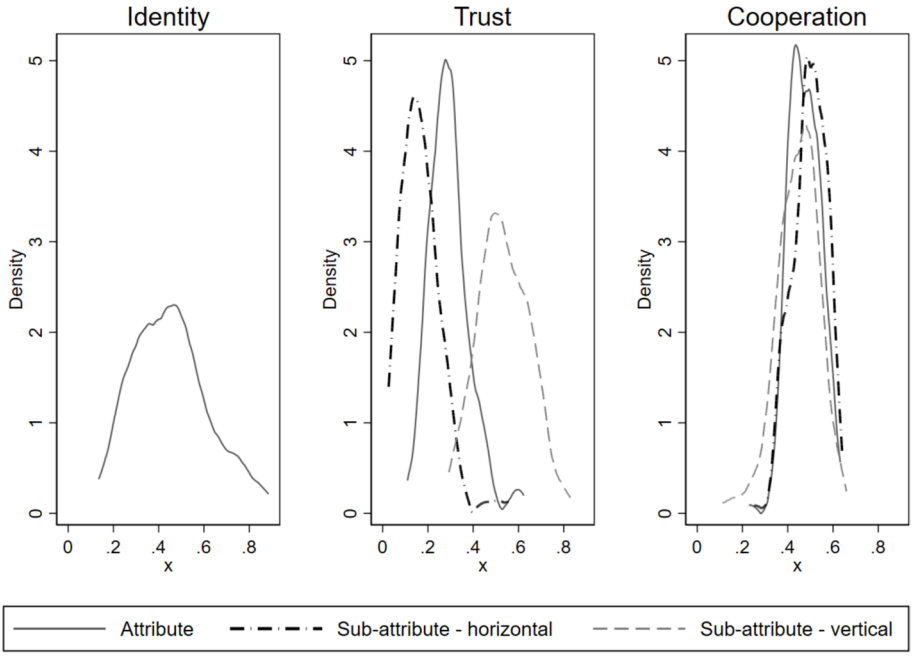

Fig. 2 Kernel density of the distribution of attributes and sub-attributes. *Source*: Own calculation using the latest Afrobarometer and V-Dem data (period: 2019–2021)

Table 3 Correlation between attributes of social cohesion (period: 2019–2021)

	Identity score	Trust score	Cooperation score	Horizontal trust	Vertical trust	Horizontal cooperation	Vertical cooperation
Identity score	1						
Trust score	0.38	1					
Cooperation score	0.22	0.04	1				
Horizontal trust	0.38	0.93	0.07	1			
Vertical trust	0.17	0.47	−0.08	0.14	1		
Horizontal cooperation	0.32	0.04	0.86	0.10	−0.12	1	
Vertical cooperation	0.09	0.05	0.90	0.05	−0.01	0.56	1

phenomenon *causes* responses on measurable indicators. Hence, the latent phenomenon can be measured by probing into the responses on these indicators. In our case we deal with more than one latent phenomenon, however. Our first latent phenomenon is social cohesion, followed then by its attributes, i.e. inclusive identity, trust, and cooperation for the common good. Hence, in order to test our operationalization and its multidimensionality we employ two factor analyses on different levels: first on the respondent-level using indicators (Table 6 in the Appendix), and second on the country-level using the social cohesion-attributes (Table 7 in the Appendix). We compare a unidimensional solution restricted to only one factor with a multi-factor solution in both factor analyses. Additionally, we compute the Kaiser–Meyer–Olkin (KMO) measure for sampling adequacy to test for the suitability of the data for low-dimensionality aggregation.

We describe the results here briefly, yet, refer the interested reader for more details to the results tables in the Appendix. We begin with the factor analyses on respondent-level indicators. The unidimensional solution only shows substantial factor loadings for the three indicators for vertical trust, and even these are only moderately strong. Other indicators load poorly or very poorly on the one factor of the unidimensional solution. The multi-factor solution in contrast results in two factors in which the indicators for vertical trust all load somewhat stronger on factor 1. The "generalized trust" indicator for horizontal trust, too, loads on factor 1, yet very weakly, and in addition shows cross-loading with a third factor. Of the other indicators, the two respondent-level indicators for horizontal cooperation, and one for vertical cooperation load moderately strong on factor 2. The remaining cooperation indicator loads only weakly on factor 2. The indicator that we use for the inclusive identity-attribute ("national vs. ethnic identity") only loads very weakly on factor 3 – like the "generalized trust" indicator. However, based on its extremely low eigenvalue, factor 3 has to be discarded. Nonetheless, the results are generally in line with our concept and operationalization as the factor analyses distinguishes relatively clearly between trust (as factor 1) and cooperation (as factor 2). More importantly, all indicators show sufficiently high KMO values, suggesting that the data at respondent-level is suitable for dimensionality reduction.

In order to probe into whether this also holds for our concept at attribute-level, we performed an additional factor analyses using the data on the attributes of social cohesion, i.e. *after* aggregating the indicators into attributes on country-level. If our proposed conceptual approach to social cohesion—as a multidimensional concept that cannot be reduced to a single, one-dimensional measure—is empirically supported, this second analyses should not perform well.. This is the case as Table 7 in the Appendix shows. The unidimensional solution seems to work sufficiently well (reporting moderately strong factor loadings for all attributes), yet, the multi-factor solution fails to identify more than one factor, and still shows substantial cross-loadings for all factors. Most importantly, the KMO values for all attributes, and for the overall factor model are below 0.5 and, hence, "unacceptable" (Kaiser, 1974, p. 35) for dimensionality reduction.

To conclude, the two factor analyses suggest that while common latent phenomena (i.e. attributes of social cohesion) 'lie behind' the respondent-level indicators, these attributes cannot be further reduced in dimensionality. Hence, these analyses support the empirical validity of our conceptual and measurement proposal to social cohesion as a multidimensional phenomenon.

In Sect. 2, we pointed out the differences between our concept of social cohesion and the one proposed by Langer et al. (2017), in particular stressing that in our view inequality should not be considered an element of social cohesion. As Langer et al.'s (2017) is the only cross-national study on African countries, it is anyway worth comparing our results with theirs. Table 4 presents the rank correlation (based on the Spearman's coefficient) on a common

Table 4 Rank correlation between our indicators of social cohesion and those proposed by Langer et al (2017) (period: 2011–2013)

		Our measurement		
		Identity	Trust	Cooperation
Langer et al. (2017)	Identity	0.954		
	Trust		0.477	
	Inequality			0.284

Notes: analysis based on a sample of 19 African countries

sample of 19 African countries for the period 2011–2013. The results show that while, as expected, the two measures of identity are highly correlated since they are based on the same Afrobarometer question, the correlation between the trust measures is not high (0.48). The difference lies especially in the horizontal trust as the authors average the answers for trust in relatives, other known people and others: instead, we were interested only in the latter as strong ties with relatives and friends/neighbours are not clearly (positively or negatively) connected with social cohesion at the country level (see Sect. 2.2). Above all, including a measure of cooperation for the common good – based also on behavioural manifestations and not only perceptions—instead of inequality changes substantially the ranking of the countries. To sum up, we can conclude that our measurement of social cohesion leads to a different evaluation of country performance and, therefore, to different implications for policy-making.

4.2 Analyses by Individual Attributes Over Time

How do the three social cohesion attributes evolve temporally? We plot the mean attribute scores and their standard deviations from 2005–2006 to 2019–2021 (Fig. 3). Notably, data for two or more periods are missing for 16 countries. Consequently, we have restricted the analyses to 20 countries where comprehensive data for all time periods are available (see Fig. 10 in the Appendix). This analyses enables us to determine if there have been significant changes in social cohesion over time. Across all attributes, we observe no substantial shifts; notably, the attributes of trust and cooperation remain relatively constant. In contrast, the identity attribute exhibits a modest increase in its score between 2005–2006 and 2011–2013 followed by a subsequent decline. Overall, the stability of the attribute scores suggests that more time may

Fig. 3 Attribute scores across years. *Source*: Own calculation using data from Afrobarometer (surveys rounds 3 to 8) and V-Dem. The figure displays the trends for all 36 countries

be required for changes in the social fabric of society to become apparent. Examining the variability of the three attributes reveals that the cooperation score showed minimal variation over time, whereas the trust and identity scores exhibited significantly greater fluctuations.

4.3 Social Cohesion Patterns in African Countries

In this section, we present the results of a model-based cluster analyses. This showcases how the three separate attributes of inclusive identity, trust, and cooperation can help in identifying qualitatively different patterns of social cohesion. By not aggregating the three attribute scores into one overall score, our conceptualization and operationalization allow for a more differentiated insight on common patterns of how social cohesion is constituted in different countries at different times.

Various methods to identify latent data patterns exist. Here, we employ cluster analyses based on finite mixture modelling (Fraley & Raftery, 2002). Cluster analyses identifies how individual observations may empirically arrange into cohesive, separate groups of observations, i.e. clusters. Model-based clustering that utilizes finite mixture modelling assumes that each of the underlying clusters is a multivariate normal distribution and that the mixture of these distributions gives rise to the overall distribution of the individual observations.[29] The resulting classification that sorts individual observations into clusters is probabilistic only. This means, that each observation sorts into the cluster for which it has the highest probability to belong to while it belongs to the other clusters with its complementary probabilities. This in turn has the advantage that the uncertainty for each observation's correct classification can be gauged.

We carried out the model-based clustering analyses with a total of 153 country-year observations. The results indicate that the three attributes of inclusive identity, trust and cooperation give rise to different patterns of social cohesion that group into four clusters (Fig. 4).[30] The clusters differ by how low, modest and high scores of the three attributes of social cohesion combine. According to these combinations of the attribute scoring, we labelled the resulting clusters *Uniformly Modest to Low Levels cluster*, *Uniformly Modest to High Levels cluster*, *Dominant High Cooperation Level cluster* and *Dominant High Trust Level cluster*. Note that the resultant clusters do not suggest any order or hierarchy of overall social cohesion among them, but that each cluster represents one profile of social cohesion for which a combination of the three attribute scores tends to be typical. What distinguishes the first two clusters (*Uniformly Modest to Low Levels cluster* and *Uniformly Modest to High Levels cluster*) from the latter two clusters is that they show a high dispersion of the individual attribute scores across the measurement scale. However, the *Uniformly Modest to Low Levels cluster* contains observations for which all attributes either score at the middle of the measurement scale or lower. In contrast, the *Uniformly Modest to High Levels*-cluster contains observations for which all the attribute scores tend to disperse across the mid and upper range of the measurement scale.

[29] Like any method, model-based clustering comes with a number of *caveats*. However, since we here only want to present a demonstration of how our operationalization and measurement can be employed, we do not discuss these as well as our model at length at this point. Rather, we address each of these as well as the robustness of our results in the Appendix (Figs. 11–13).

[30] Figure 14 in the Appendix plots the probability with which an observation actually belongs to a different cluster for each country-year observation.

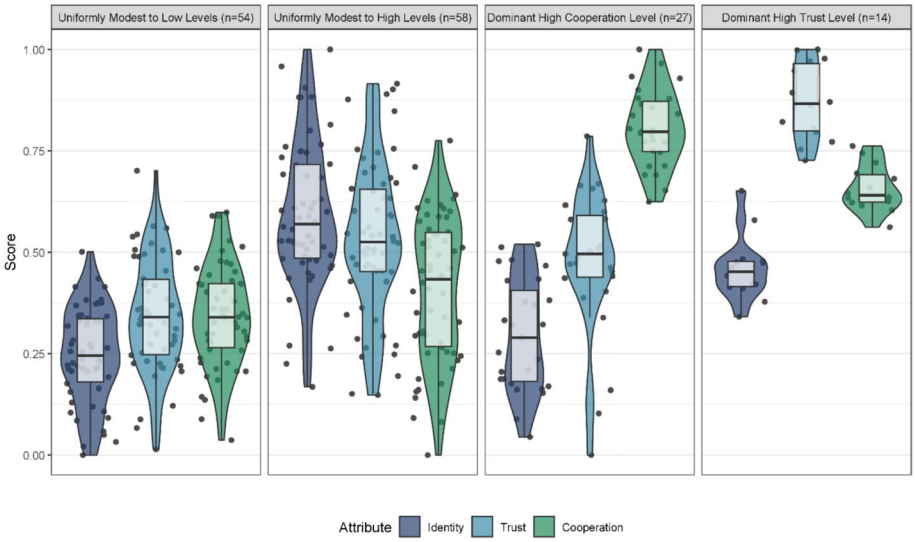

Fig. 4 Distribution of standardized attribute scores by cluster. Appendix *Source:* Authors' calculations, based on Afrobarometer and V-Dem data. *Notes*: n indicates the number of country-year observations; for more information on excluded outliers, see the Appendix

In contrast to the first two clusters, the latter two clusters, *the Dominant High Cooperation Level cluster* and *The Dominant High Trust Level cluster*, consist of observations in which the score of one attribute is distinctively high while the remaining two attribute scores are not necessarily very low. Both the cooperation and the trust attribute give rise to these distinct patterns, which sets the observations in these two clusters apart from most of the other observations in our data. Regarding the number of observations contained, these two clusters are also much smaller making up less than half, respectively less than a quarter the number of country-years captured by the *Uniformly Modest to Low Levels cluster* and *Uniformly Modest to High Levels cluster*.

Two overall trends emerge when probing how the clusters evolve over time from 2005 to 2021 (Fig. 5). First, from 2005 to 2015, the *Uniformly Modest to High Levels* -cluster is the most prevalent cluster. Since then the number of cases included to the *Uniformly Modest to Low Levels* -cluster has steadily increased, clearly becoming the prevalent cluster in 2019–2021. Note that it is not possible to tell whether this suggests a decline for scores across all three social cohesion-attributes and thus for social cohesion in general, since the number of covered countries increased over time and since *declines* in one (or two) attributes might occur simultaneously with *increases* in the remaining attributes. As long as the latter increases are not too large, a particular observation will still fall into the *Uniformly Modest to Low Levels* -cluster.

Second, the *Dominant High Cooperation Level cluster* increases in size over the years. While it was roughly on par with the *Dominant High Trust Level cluster* between 2005 and 2009, the cluster contained only one observation in 2011 to 2013, but has grown and kept its size since then. Conversely, the *Dominant High Trust Level cluster* has shrunk further from an initial low level and is represented only by one observation for the years 2019 to 2021.

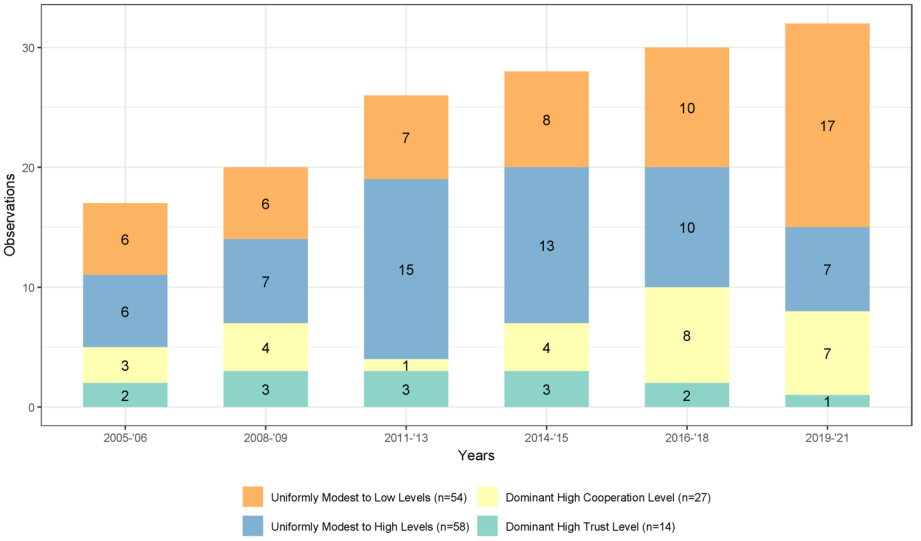

Fig. 5 Size of clusters over time

These overall trends also show in Fig. 6, which maps the cluster classification of countries from 2005 to 2021. Adding on to this, Fig. 6 depicts how countries are switching between clusters over time. The increasing number of *Uniformly Modest to Low Levels* resonates with global trends of social disintegration. However, these changes must be linked to the fact that even smaller attribute score changes, particularly in the respective dominant attribute of the

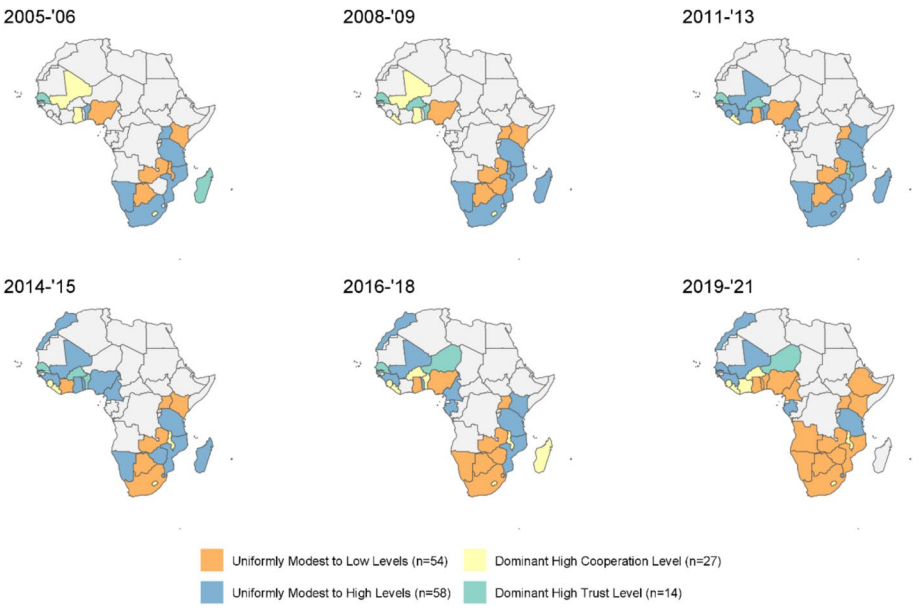

Fig. 6 Maps of social cohesion clusters, 2005–2021. *Source*: Authors' elaboration. *Notes*: the sample size differs across the different year spells

Dominant High Cooperation Level cluster and *Dominant High Trust Level cluster*-clusters, can cause countries getting classified into the two broader *Uniformly Modest to Low Levels* and *Uniformly Modest to High Levels* -clusters. Thus, the great growth of the *Uniformly Modest to Low Levels* -cluster is reflected in the period 2019–21 – also stemming from countries that were previously assigned to other clusters. At the same time, countries tend not to switch their cluster classification more than once during our period of analyses, which speaks for the general 'stickiness' of the investigated concept. If they do, they tend to slip into one of the broader clusters with a higher dispersion of attribute scores. However, apart from that exploring different trajectories from one cluster into another for individual countries is out of scope here. Nonetheless, an interesting avenue for further analyses is to employ sequencing methods to detect common trajectories and patterns of sequences.

Probing into the possible causes for the evolution of different social cohesion patterns is outside of this contribution's focus. Our cluster analyses nevertheless highlights both the necessity as well as the added value of further analyses exploring and analysing the causes for factors influencing shifts in social cohesion patterns. Potential reasons for changes in social cohesion over time abound and may range from economic, political and societal causes to exogenous drivers. For instance, it seems plausible that the Covid-19 pandemic, economic distress in the wake of the Ukraine war and a flaring up of regional security crises (e.g. the wars in Ethiopia and Sudan as well as political instability in West Africa, Central Africa and in the Horn region) as well as droughts and livelihood crises brought about by climate change may have contributed to declines in any of the three social cohesion attributes. Our conceptualization and cluster analyses open prospects to explore these hypotheses more in-depth in future studies.

5 Conclusion

In general, this paper has sought to facilitate the empirical observation and analyses of social cohesion across nations—a field of study still in its infancy, despite growing research and public interest amid the rise of polarization around the world. It had three main objectives. First, it developed a lean yet comprehensive definition of social cohesion that can be applied cross-nationally. Second, it presented how such a concept can be measured in the African context relying on regularly collected secondary data; and third, it illustrated the potential use of the resulting social cohesion indicators.

Conceptually, the paper makes the point that social cohesion encompasses both the relations among individuals/groups as well as their relationship with the state. In so doing, the concept acknowledges that holding a society together does not only require good relations between people and social groups but also institutions that shape norms and provide rules for living together in peace. The concept consists of three main attributes: trust, inclusive identity and cooperation for the common good. All the three attributes are essential for social cohesion: it is not possible to equal social cohesion with only one element of the concept, as social cohesion is more than just any and the sum of the attributes.

Methodologically, this paper developed replicable indicators to measure social cohesion in Africa. We employed household data from the Afrobarometer and expert data from the V-Dem Institute. This way, we can observe how social cohesion developed on the national level in different countries and over time.

Empirically, the analyses support the validity of the theoretical construct showing that the indicators have substantial variability across countries and within countries over time, and show that overall social cohesion cannot be reduced to just one of such indicators – as is often done using trust. They also point to a reduction over time in the social cohesion attributes, which resonates with the global trends of growing social tensions in societies. Finally, the cluster analyses illustrates the significance and value added of the proposed approach for comparative research by identifying the presence of four different constellations of social cohesion in the African continent.

In conclusion, this paper provides an important theoretical and empirical contribution to the scientific literature, which can advance our understanding of social cohesion, a topic that ranges high on political agendas and in public debates. This work opens up promising paths for further investigating the causes and consequences of social cohesion, amongst others in the context of increasing polarization and external shocks on societies. It helps to identify the right policy tools to enhance social cohesion. At the same time, there is room for improvement in the measurement of social cohesion. Certainly, further advancing with regard to measurement issue, which permeates this debate, is crucial. More, better quality and better aggregated data is necessary to reduce as much as possible measurement error and enhance measurement equivalence across contexts (e.g. Bottoni, 2018). Our contribution has lied here particularly in advancing the theoretical model and definition of social cohesion but we acknowledge that further deepening and reflecting about the robustness of the instruments used to collect information on social cohesion across contexts as well as how we aggregate these data are equally relevant aspects on this agenda.

Against this backdrop, the following issues represent critical gaps in the literature: First, we need to better capture the motivation for cooperation with other individuals and engagement in social activities. It is fundamental to have a clearer distinction between cooperation for own interests and cooperation that is genuinely directed towards the "common good". Second, our research definitely calls for the necessity to conceptually distinguish and empirically collect specific information referring to the horizontal and the vertical dimension of social cohesion. Particularly with respect for identity, but also in reference to the other two attributes, we need more systematic information about feelings and attitudes towards different social groups, not just ethnic groups. In this line, it is important to more directly address empirically social cohesion at the "meso" level (see Bottoni, 2018) including also assessments of social cohesion at different levels of governance and empirical analyses of the interrelation of social cohesion at different levels. A particularly salient question is if social cohesion at lower levels supports or undermines stronger social cohesion at higher levels. This seems crucial as more and more voices call for the necessity of social cohesion at the global level to face the overarching challenges we as humanity face (Reinhardt & Whitehouse, 2024). Finally, connected to the former point it is crucial to further invest in the possibility to have a measure of social cohesion that navigates across world regions, going beyond Africa (see Dickes & Valentova, 2013). This is essential to enhance comparability of measures across contexts and enable aggregation of knowledge on drivers and impact of social cohesion. While such a global approach seems very complex at the moment, data sources like World Values Survey, Gallup and the recent Survey Data Harmonization (SDR) 2.0 database[31] may provide the raw data to increasingly get closer to that goal.

[31] Source: SDR 2.0 Cotton File – Survey Data Recycling (ohio-state.edu).

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Declarations

Conflict of interests The authors have no conflicts of interest to declare.

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