Online censorship and young people's use of social media to get news

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Abstract

The increasing adoption of social media across Africa has raised hopes that they represent a new locus of youth political agency. However, as social media has become more ubiquitous, so has its control by African regimes. How do these controls affect young people's use of social media for information? This article approaches online controls based on how overt – that is, visible and directly experienced by citizens – they are. It shows that overt forms of controls, such as social media shutdowns, are associated with a higher informational use of social media. Surprisingly, the association is stronger for older citizens. The article makes two important contributions. First, it points to the need for research to develop a better understanding of citizens' perception of online controls. Second, its findings show that theories of youth citizenship should include the comparative group – older citizens.

Keywords

Youth, young people, social media, news, censorship, surveillance

Introduction

African states, like others, have deployed a series of strategies to attempt to control online activities through censorship and, to a lesser extent, through manipulation and surveillance. Meanwhile, social media are still seen as a locus of youth political agency, where young citizens can discuss and mobilise around political issues. However, little is known about how strategies of online control affect young Africans' use of social media to access news.

Online media, including social media, are important sources of independent information, compared to other mass media such as radio, television, or the press. African social media users are better informed and take part in informal political activities more, including protests, in particular in regimes where traditional media are not free (Bailard, 2012; Karakaya and Glazier, 2019). Instead of being heavily centralised and easily controllable by authorities, like other

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media, information on social media can be produced, accessed, and shared by anyone. Social media represent a space of agency for young people, offering new opportunities for young people to mobilise, protest, and thus influence politics (Iwilade, 2013). However, case studies focusing on how young African people use social media for politics have not investigated whether young social media users differ from other, older users.

Moreover, states have developed strategies to exercise control over digital media, and use them to maintain their stability (Gunitsky, 2015), even though controlling what goes on the internet remains very difficult and costly (Roberts, 2020: 409). A large body of scholarship has studied and categorised different ways to control digital media. It is however so far unclear how effective these strategies are at controlling young citizens' online activities (Keremoğlu and Weidmann, 2020; Roberts, 2020). Case studies focusing on China have shown that specific controls can prompt citizens to use the internet more and to access independent information sources online (Hobbs and Roberts, 2018; Pan and Roberts, 2020). While scholarship shows that African states deploy online control strategies such as shutdowns or surveillance (Freyburg and Garbe, 2018; Marchant and Stremlau, 2020), little is known of their effect on citizens' use of social media.

Even if internet use remains comparatively low across Africa, the continent is the last one to experience constant, meaningful user growth. Coupled with the continent's large youth population, this makes it paramount to understand how online controls affect citizens, and particularly the young, before they become habituated to online controls. Today's young citizens are indeed discovering political activities online as well as offline. If neither environment is conducive to open access to and discussion of news, then there is little hope for a democratic future.

In this article, I explore how regimes' controls of social media affect African citizens' use of social media for information, and whether young citizens are affected differently than older citizens. States' controls of social media are operationalised using four variables from the Digital Society Project. Cross-national survey data from the Afrobarometer are used to explore the relationship between African citizens' use of social media to access news and states' control strategies. Multilevel logistic regressions show that citizens of African countries that implement more overt forms of online control (such as social media shutdowns) use social media for news more, while citizens of countries that monitor social media more use social media less for news. This highlights the need to build a better understanding of how citizens perceive social media controls. Surprisingly, the analysis shows that the positive association between social media shutdowns and informational use of social media is stronger for older people, against expectations that young people are more likely to turn more to social media for news once the state has introduced overt measures of censorship. This study thus highlights that theories about youth citizenship need to include the comparative group – older citizens.

The next section presents what we know of the role social media play in African youth's news consumption. The two following sections review earlier scholarship on online controls and introduce the potential effects of such controls on citizens' online behaviour. I then formulate hypotheses, before presenting the data and methodology for a first test. The last two sections highlight results and discuss them.

Youth, news, and social media in Africa

How to define youth in Africa varies widely from country to country, and even over time (Philipps, 2018). The concept of youth in Africa covers a set of socioeconomic conditions, and young African people are 'young' when stuck between childhood and adulthood, remaining dependent upon their families due to difficulties in gaining employment and settling down (Resnick and Casale, 2014). However, increased connectivity via social media implies a hybrid experience, combining local

marginalisation with a more global experience (Iwilade, 2013). Looking into a more formal defini- tion of what constitutes 'youth', the African Union defines young citizens as those between 18 and 35. Although member states do not systematically implement those cut-off points, with some using other cut-off ages such as 25 or 29, the definition encompassing the ages between 18 and 35 does account for the broader concept of youth presented above (Resnick and Casale, 2014).

Turning to the use of social media, scholarship has relied on case studies and focused only on young people. Indeed, young people are generally considered to be early adopters of social media (Lane et al., 2023) and to be those who use social media the most (Kahne et al., 2013). There is, however, a lack of research investigating social media use from a comparative perspective across countries in Africa on the one hand (Emmer and Kunst, 2018) and between younger and older citi- zens on the other.

Across Africa, internet access has increased, from a little over 2% using the internet in 2005 to 24.4% in 2018 (ITU, 2018: 14), and so has the use of social media (Pew Research, 2018: 3). While these figures remain low compared to other continents, social media are important tools for young African activists, and are used in campaigns and protests across the continent (Gukurume, 2017; Otiono, 2021). Young people who use social media and the internet are better informed than those who do not – in Tanzania (Bailard, 2012). Using social media helps with access to information and fosters political discussion – in Kenya and Zimbabwe (Bosch et al., 2020), particularly among urban youth – in Mozambique (Tsandzana, 2018). Research investigating young people's uses of social media across the African continent has thus shown they play an empowering role for young Africans, enabling them to access information, discuss politics and mobilise for protests.

However, African regimes do attempt to control social media, for example by disrupting access to the internet or to specific social media services during elections (Freyburg and Garbe, 2018) or protests (Falisse and Nkengurutse, 2019; Iwilade, 2013). The slowing down of services has also been used as a control mechanism (Marchant and Stremlau, 2020). The cost of social media and internet has also been used as a means to deter citizens, by raising taxes on mobile internet sub- scriptions or by implementing social media-specific taxes (Bergère, 2020). Internet and social media users are also under surveillance, with evidence that some African countries have bought software enabling them to monitor their citizens' online activities and have passed legislation for that purpose (Duncan, 2018; Galava, 2019).

How states can control social media

Controlling social media is, in part, about controlling the internet. Social media are indeed enabled by and dependent on internet access, regardless of how access to the internet itself is ensured. Scholarship investigating how governments control the internet and social media has identified a wide range of tools that states can and do use to control online activities. Such tools include restrictions deployed via technology, like shutting down internet access or filtering online content and making it impossible to reach specific websites or specific social media posts. Early on, research highlighted these as first- generation controls, and later as online restrictions (Deibert, 2015: 66–69; Sanovich et al., 2018). A second type of tool governments deploy relies on offline means, such as legislation limiting online activity, taxation of access to the internet or social media, or even arrests of online activists. Such tools have been categorised as 'second generation', offline restriction, or, based on how they affect users, creating fear or friction (Deibert, 2015: 66–69; Roberts, 2020: 403–404; Sanovich et al., 2018). States have also developed their online surveillance capacity, which scholars have viewed as a 'sec- ond generation' control (Deibert, 2015: 67). Finally, states can directly produce content, flooding citi- zens with disinformation, both deceiving them and making it more difficult to access content from the opposition (Roberts, 2020: 403–404; Sanovich et al., 2018).

Scholarship concerned with the African continent has so far used the lens of shutdowns to understand online controls. That concept sees its meaning fluctuate, from networks being disrupted to including other forms of controls like access to specific services being cut off, slowing down the speed of the internet, and implementing taxes on mobile internet or on the use of specific services (Marchant and Stremlau, 2020). Reliance on the concept of shutdowns to describe online controls on the African continent reflects the discourse of exclusion found in other research areas. This continent-specific approach to online controls covers the same techniques as research investigating online controls in other geographies. It limits the analysis to censorship and does not account for other aspects, such as manipulation and surveillance.

Authoritarian regimes do face the challenge that the control mechanisms described above can be circumvented, for example using specific software such as virtual private networks (VPN). 'Perfect control' is not attainable, and 'effective control', regardless of the specific tool, is what matters for governments (Boas, 2006: 373–374). Indeed, governments combine a range of these tools rather than relying exclusively on any one of them (Gunitsky, 2015), but little is known about how online censorship, manipulation, and surveillance affect citizens' online activities.

Backlash or chilling effect?

Case studies of specific forms of controls such as surveillance (Stoycheff et al., 2019) or the abrupt shutdown of services (Pan and Roberts, 2020) identify potential effects. The first identified effect, backlash, sees citizens increase the very online activities that the state attempts to control, while the second, chilling effects, sees citizens refrain from certain activities when facing censorship or surveillance efforts (Roberts, 2020: 406). Both effects assume that citizens are aware of the online controls.

In fact, some forms of online controls are overt, that is, both visible and directly experienced by citizens. These directly impact internet use, as when networks or services are shut down. Such overt forms of control can lead to backlash: blocking a popular service (Instagram) led users to learn how to circumvent such filtering, which then led to their adoption of other blocked services, such as Facebook (Hobbs and Roberts, 2018). Similarly, in Burundi, disrupting WhatsApp led to an increase in downloads of circumvention tools (Falisse and Nkengurutse, 2019: 181). Using circumvention tools in turn leads citizens to access new information sources (Pan and Roberts, 2020). It is important to note that in these cases, the control mechanism is publicly visible and directly experienced by citizens (Roberts, 2020: 408).

Other social media controls are extremely difficult to detect and attribute to specific actors, like online surveillance, the use of automatically generated posts (or paid-for posts, as in China), state-sponsored distributed denial of service attacks, or filtering news items on controversial topics (King et al., 2017; Sanovich et al., 2018). The latter example has enabled the Chinese regime to limit what citizens access and share without them being aware of it (Roberts, 2020). Such covert controls limit what type of news citizens see, but not their ability to get news. Citizens are largely unaware of them, provided they remain subtle. This would be the equivalent to what Huang (2015) calls 'soft propaganda' (p. 435). Such social media manipulation is unlikely to affect citizens' behaviour if it remains hidden. While the user who sees her post censored will be aware of it, it is difficult to evaluate if the citizenry more generally is aware of such government censorship (Roberts, 2020: 409).

The same tool can also be visible if propaganda posts are too obvious. This leads to a different effect: citizens' awareness of propaganda efforts can reinforce their perception that the regime is strong and stable. This signalling exercise is used by the Chinese regime to deter citizens, in particular young people, from challenging it (Huang, 2015: 432). Similar chilling effects are observed

when users are made aware they are under surveillance during experiments (Stoycheff et al., 2019), or when famous users are arrested (Pan and Siegel, 2020). However, such chilling effects have also been identified under conditions of high political contention (Roberts, 2020: 406).

In sum, case studies have shown that overt online controls can have a backlash effect, whereby citizens increase their online activities, while less visible forms of controls can have a chilling effect – if citizens are aware of their existence – in which case citizens limit their activities. These effects have, however, been identified using case studies that focus on a specific social media application, without accounting for potential differences between younger and older citizens.

Young people, visible online controls, and informational use of social media

Following the backlash theory presented above, if controls are publicly visible and directly experienced by citizens, they can lead to increased political use of internet and social media (Roberts, 2020: 408). Such overt controls could include shutting down social media during elections (Freyburg and Garbe, 2018). Regimes implementing them can be seen as signalling their weakness: i.e. they are not capable of effectively and subtly controlling online content and see such content as threatening. This leads to *H1) overt social media controls are positively associated with using social media for news.* Two mechanisms can be at play here. Citizens adopt the use of circumvention tools such as VPNs, as was the case in China, following the shutdown of Instagram there (Hobbs and Roberts, 2018), or in Burundi, following the disruption of WhatsApp (Falisse and Nkengurutse, 2019: 181). Shutdowns can be temporary, as in Burundi. In such cases, a second mechanism can be at play: once social media become available again, citizens turn to them to get the news more than before or start using them for news. As less visible forms of social media controls are difficult to observe and identify (King et al., 2017), citizens are less likely to be aware of the extent to which social media are under surveillance or filtered, and so I do not expect that they would use social media for news differently when such controls are implemented.

Social media appear as an important facilitator of young people's political activities in studies concerned with young Africans' online practices (Gukurume, 2017; Otiono, 2021), including for accessing news (Bosch et al., 2020). Thus, one wonders if online controls affect young people differently. Scholarship interested in state repression highlights how young people are more rebellious than older citizens, playing an important role in protest movements, and leading states to repress more (Nordås and Davenport, 2013: 929). Linking findings from this strand of literature to that on citizens' reactions to online controls, it seems that when implementing overt controls, regimes signal that they see online content as subversive. This could thus increase young citizens' interest. Young people are also expected to be more technologically savvy and more rebellious than older people, thus more able to adapt and use circumvention tools. This leads to the hypothesis that *H2) the positive relationship between overt controls and the use of social media for news is stronger for younger people*.

Data and method

These two hypotheses are investigated through multilevel logistic regressions based on data on African citizens' informational use of social media from the Afrobarometer (2019) and data on social media shutdowns from the Digital Society Project (Mechkova et al., 2020). This design does not make it possible to investigate the mechanisms at play between state censorship and informational use of social media, since the data used here do not include a time dimension.

Figure 1. Informational use of social media by country.
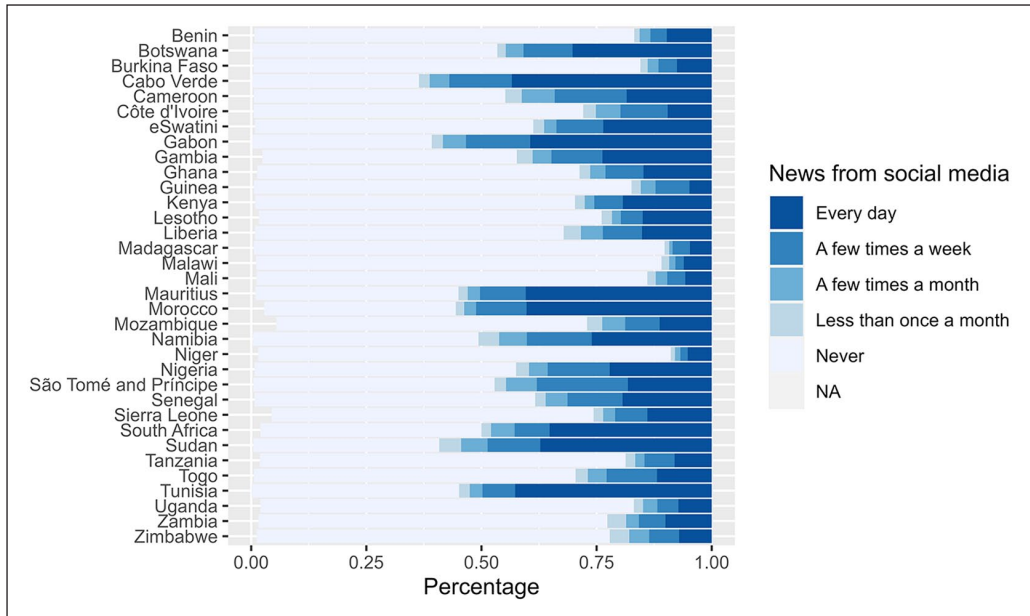
Source: Afrobarometer, round 7. Question wording: 'How often do you get news from the following sources? Social media such as Facebook or Twitter.'

I use the seventh round of the Afrobarometer (2019), which surveyed a representative sample of citizens from 34 countries across Africa between September 2016 and August 2018. The main dependent variable is based on question Q12E, 'How often do you get news from the following sources? Social media such as Facebook or Twitter.' Respondents answered on a five-point Likert scale, from 'Never' (coded 1) to 'Every day' (coded 5), where the midpoint is 'A few times a month' (coded 3). Figure 1 offers an overview of responses by country. Most respondents never use social media for news, which is unsurprising if one considers the relatively low levels of internet access observed across the continent (ITU, 2018). This ordinal measure is dichotomised, where respondents who report getting news from social media at least a few times a month (q12e > 2) are considered to be getting news from social media. This reflects the diverse ways more marginalised populations connect to social media, such as sharing devices or getting signal only occasionally (Mabweazara, 2021; Schoon et al., 2020). Age is included as a main variable of interest, since I expect visible online controls to moderate that relationship, making it stronger (Mean age = 37, median age = 34, minimum age = 18, maximum age = 106). Its quadratic term is included to control for the shape of the curve.

Overt control of social media is operationalised at the country level, using data from the Digital Society Project (DSP). It follows the methodology of the Varieties of Democracy project, based on expert coding (Mechkova et al., 2020). Its variable for 'social media shutdown in practice' represents a visible, directly experienced form of online controls, applied to social media.[1] It is based on experts' answer to the question 'How often does the government shut down access to social media platforms?' The possible answers range from 'extremely often' (coded 0) to 'never, or almost never' (coded 4). The indicator is then built based on the aggregated values attributed by at least four experts and follows a z distribution, from -5 (most controlled – for example, most shutdowns)

Table 1. Social media controls.

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
Social media shutdown	34	-0.399	1.017	-1.6820	-1.168	0.306	2.553
Social media filtering	34	-0.35	0.904	-1.867	-0.948	0.198	2.211
Social media monitoring	34	-0.067	1.045	-2.142	-0.674	0.508	1.799
Propaganda	34	-0.095	0.887	-1.967	-0.815	0.637	1.798

Source: Digital Society Project. Variables have been reversed from original, so that positive values reflect more control, while negative values reflect less control.

to +5 (least controlled). Thus, the main independent variable does not represent a single shutdown event, but rather a measure of whether social media were shut down by the government during the year.

As states usually combine different forms of social media controls (Morozov, 2011), measures for filtering of social media, surveillance of social media, and the use of social media by the state for domestic propaganda are included as control variables. These are the DSP's variables: 'social media censorship', defined as 'deleting or filtering specific posts for political reasons',[2] 'social media monitoring', and 'government dissemination of false information domestic'. The latter is defined as the use of social media by the government or its agents to 'disseminate misleading or viewpoints or false information to influence its own population' and represents states' use of social media for propaganda. Propaganda is only included as a control variable, since theory highlights how propaganda can be 'hard' (intended to be overt) or 'soft' (and covert) (Huang, 2015) and since the DSP data does not differentiate between the two.

The four measures of social media controls are included for the year when the Afrobarometer survey was administered. They have been reversed for the analysis so that higher, positive values represent more control, while lower, negative values represent less control. A summary of these variables is presented in Table 1. The full wording of the variables from the Digital Society Project is included in the Appendix. While the Digital Society Project also offers measures of internet shutdown and internet filtering, these are not used here, as filtering the internet arguably encompasses shutting down social media, as does shutting down the internet.

At the country level, I control for the state of press freedom, since internet and social media are particularly important news sources in contexts where offline information is restricted (Karakaya and Glazier, 2019). The Varieties of Democracy's index of 'freedom of expression and alternative source of information' is used for that purpose (M=0.75, SD=0.17) (Coppedge et al., 2021). As shutdowns are linked to elections (Freyburg and Garbe, 2018), I code countries experiencing at least one national election during the year when the Afrobarometer was administered 1, others as 0, based on data on elections from Vdem (M=0.23, SD=0.42). Following others investigating the uses of online media (Nisbet et al., 2012), I also include the proportion of a country's population with access to the internet provided by the International Telecommunication Union (ITU) (M=30.80, SD=18.06) for the year of the survey (World Bank, 2021). Each country reports this measure to the ITU, based on household surveys (ITU, 2020: 82).

At the individual level, I include control variables for gender, whether respondents are urban or rural, their level of living conditions (M=2.74, SD=1.25, range=1–4), and their level of education (M=2.47, SD=0.97, range=1–4). I also include indicators for the use of other news sources: the radio (M=3.59, SD=1.58, range=1–5), television (M=2.98, SD=1.79, range=1–5), and newspapers (M=1.83, SD=1.32, range=1–5). Additionally, I control for how often respondents discuss politics, as a measure of political interest (M=1.786, SD=0.713, range=1–3). For a complete

description of all variables, see Tables A and B in the Appendix. Finally, as I am investigating the relationship between a form of repression and a form of political use of social media, I also control for whether respondents believe the Afrobarometer's enumerator is sent by the government (coded 1) or is independent (coded 0). This helps to control for the fact that respondents in more authoritarian countries might disguise their preferences when answering survey questions, especially ones about their political activities (Tannenberg, 2022).

To test the relationship between social media shutdowns and young citizens' informational use of social media, I rely on a series of multilevel logistic regressions, since the dependent variable (using social media for news) is at the individual level, while the independent variable (shutdown of social media) is measured at the country level. Indeed, multilevel models account for the fact that individuals are clustered within a country and enable interacting country-level variables with individual-level variables. Models are fitted using the *glmer* function of the R package lme4 (Bates et al., 2015).

Results

First, an empty model is run, showing that about 17% of the variance in citizens' informational use of social media can be attributed to differences between countries and about 83% to individual factors (ICC = 0.167). Then, four models are run, to test each hypothesis with different ways of specifying age. None of the models present multicollinearity issues, with mean VIF ranging from 1.2 (models using age groups) to 1.4 (models using age as a numerical variable). Results are presented in Table 2, while odd ratios are included in Figure B of the Appendix.

Model 1 testing the first hypothesis is fitted by adding the main independent and control variables. All numerical variables at the individual and at the country level are centred around the grand mean and standardised to facilitate interpretation, while the individual-level variables are used as controls (Hox et al., 2018: 48). Focusing on social media shutdown, the coefficient is positive, and significant (coefficient: 0.24, $p < 0.05$), showing that increased levels of shutdown by the government are linked to the increased use of social media to get news. This finding supports Hypothesis 1). Social media monitoring is negatively and significantly associated with using social media for news (coefficient: −0.33, $p < 0.01$), indicating that citizens of countries that implement more surveillance use social media for information less. While social media monitoring was included here to control for the fact that regimes combine different forms of online controls, this result is still surprising. The two other forms of controls, filtering and propaganda, are not significant.

To evaluate whether social media shutdowns moderate the relationship between age and informational use of social media, increasing the strength of the negative relationship identified in model 1, a second model is run, interacting age and its quadratic term with social media shutdown. All numerical variables are grand-mean centred and standardised. Following best practice, a random slope is included for the individual-level variables in the interactions: age and age^2 (Heisig and Schaeffer, 2019: 263). The interaction term between social media shutdown and age is positive and significant (coefficient: 0.11, $p < 0.05$). This seems to indicate that older citizens in countries experiencing social media shutdown use social media for news more, contrary to Hypothesis 2).

To further explore the interaction between social media shutdowns and youth, two more models are fitted, using age groups instead of age. In model 3, age is operationalised as a dummy variable, following the African Union definition of youth as all respondents between 18 and 35 – so adults are all respondents over 35. In model 4, three age groups are specified: 18 to 25, 26 to 35, and above 35 to reflect more commonly used definitions of youth. In both model 3 and model 4, random slopes are specified for age group. In model 3, the interaction term between shutdowns and the age group above 35 is positive and significant, highlighting that the relationship between

Table 2. Multilevel logistic regressions.

Predictors	Model 1	Model 2	Model 3	Model 4
	β (SE)	β (SE)	β (SE)	β (SE)
(Intercept)	-0.97 (0.08) ***	-0.97 (0.09) ***	-0.30 (0.09) **	-0.07 (0.09)
Shutdown	0.24 (0.11) *	0.28 (0.12) *	0.18 (0.11)	0.17 (0.11)
Filtering	0.10 (0.11)	0.12 (0.12)	0.10 (0.11)	0.06 (0.11)
Monitoring	-0.33 (0.10) **	-0.35 (0.10) **	-0.34 (0.10) **	-0.33 (0.10) **
Propaganda	-0.03 (0.10)	-0.01 (0.10)	-0.03 (0.10)	-0.04 (0.10)
Age	-0.95 (0.02) ***	-0.93 (0.05) ***		
Age^2	-0.04 (0.02) *	-0.01 (0.02)		
Age [over 35]			-1.40 (0.08) ***	
Age [26 to 35]				-0.46 (0.05) ***
Age [over 36]				-1.64 (0.10) ***
Education	0.92 (0.02) ***	0.91 (0.02) ***	0.94 (0.02) ***	0.93 (0.02) ***
Living conditions	0.16 (0.01) ***	0.16 (0.01) ***	0.16 (0.01) ***	0.15 (0.01) ***
Rural	-0.55 (0.03) ***	-0.55 (0.03) ***	-0.53 (0.03) ***	-0.53 (0.03) ***
Gender [Female]	-0.39 (0.03) ***	-0.37 (0.03) ***	-0.33 (0.03) ***	-0.33 (0.03) ***
Radio	0.01 (0.02)	0.01 (0.02)	-0.01 (0.02)	-0.00 (0.02)
TV	0.60 (0.02) ***	0.60 (0.02) ***	0.59 (0.02) ***	0.59 (0.02) ***
Newspaper	0.49 (0.02) ***	0.50 (0.02) ***	0.47 (0.02) ***	0.48 (0.02) ***
Discuss politics	0.18 (0.01) ***	0.18 (0.01) ***	0.17 (0.01) ***	0.18 (0.01) ***
Survey sponsor [gvt]	-0.19 (0.03) ***	-0.19 (0.03) ***	-0.17 (0.03) ***	-0.17 (0.03) ***
% Internet users	0.36 (0.08) ***	0.44 (0.08) ***	0.37 (0.08) ***	0.38 (0.08) ***
Elections	0.27 (0.12) *	0.28 (0.12) *	0.26 (0.12) *	0.26 (0.12) *
Free Exp. Alt. Info	0.07 (0.10)	0.09 (0.10)	0.08 (0.10)	0.04 (0.10)
Shutdown x age		0.11 (0.05) *		
Shutdown x age2		-0.01 (0.02)		
Shutdown x age group [over 35]			0.20 (0.07) *	
Shutdown x age group [26 to 35]				0.03 (0.05)
Shutdown x age group [over 36]				0.22 (0.10) *
Random effects				
Country (variance)	0.17	0.23	0.18	0.18
Age (variance)		0.08		
Age2 (variance)		0.00		
Age [over 35] (var.)			0.15	
Age [26 to 35] (var.)				0.06
Age [over 36] (var.)				0.29
ICC	0.05	0.08	0.05	0.05
N country	34	34	34	34
Observations	44282	44282	44282	44282
AIC	32901.726	32699.896	33684.591	33492.392

All variables apart from the binary variables are grand-mean centred and standardised. All models fitted using the package lme4 (Bates et al., 2015). *P*-values obtained using the m-l-1 rule (Elff et al., 2021).
*$p < 0.05$. **$p < 0.01$. ***$p < 0.001$.

Figure 2. Marginal effects of interaction term on using social media for news for different age specifications.
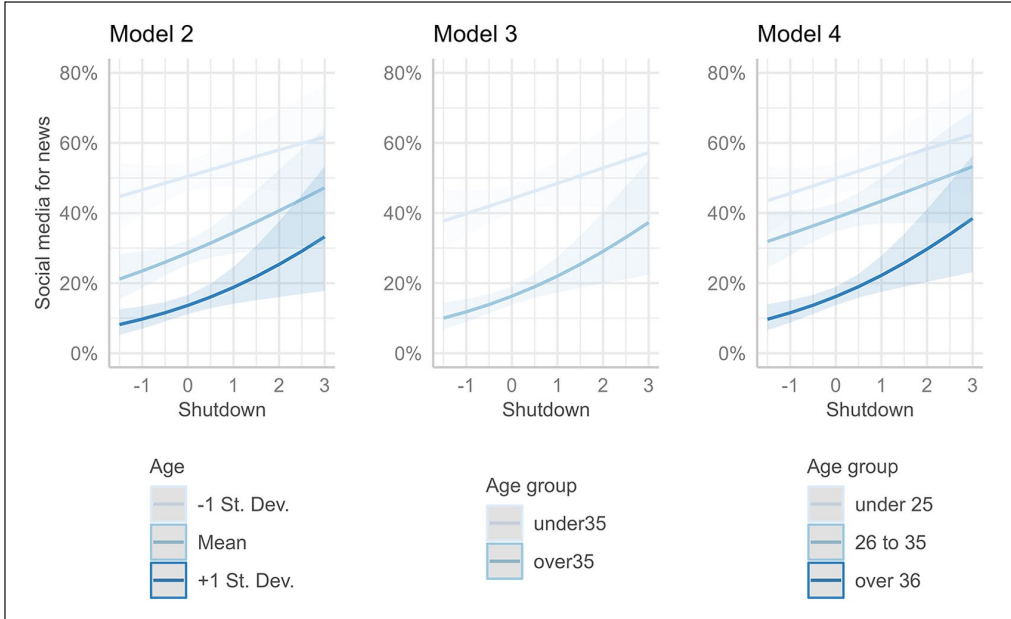
Marginal effects are calculated and plotted using the R package 'ggeffects' (Lüdecke et al., 2021), based on model 3. In the model and above plots, all variables are grand-mean centred and standardised.

shutdown and informational use of social media is stronger for adults. Model 4 supports this, as the only age group for which the interaction with shutdown is positive is the group over 35. While the interaction is also positive for the group 26 to 35, it is not significant.

To facilitate interpretation, the marginal effects of the interaction term in each model are plotted in Figure 2 (Brambor et al., 2006). Each curve represents the effect of shutdowns on informational use of social media for the mean age, and for one standard deviation below and above the mean age (model 2) or by age group (model 3 and model 4). For model 2 (left panel), the slope of the curve for the standard deviation above the mean age is significantly steeper than the slope of the curve of the mean age, while the slope of the curve for the standard deviation below the mean age is less steep than that of the mean age. When age groups are considered (model 3 and model 4), the slopes of the curves for groups of citizens that are over 35 are significantly steeper than those of the curves of the two youth groups (18 to 35 for model 3, middle panel, and 18 to 25 and 26 to 35 for model 4, right panel).

As robustness checks, models including GDP per capita as a control variable (models 5 and 6) and including random effects for age and education (model 7 and 8) are run (Table C, Appendix). In the models without the interaction term (model 5 and model 7), shutdowns are significant at the 0.1 level, while results remain robust when the interaction term is included.

Finally, models including internet shutdown are run (models 9 and 10, Table D, Appendix). Here, the coefficient for internet shutdown is not significant, while results are otherwise robust. Note however the high mean variance inflation factor (mean ViF = 1.7). In models 11 and 12 in the same table, internet shutdown is included *instead* of social media shutdown. Neither internet shutdown nor its interaction with age are significant. Rather than jeopardise the main results, this

confirms that although internet shutdown implies social media are inaccessible, social media shut-downs can also occur outside of internet shutdowns. This is also reflected by the fact that the social media shutdown variable varies much more between countries than the internet shutdown variable.

Discussion and conclusion

The investigation of the relationship between age, social media shutdowns, and the use of social media for news in Africa suggests that (a) those citizens whose governments implement social media shutdowns use social media for news more, and that (b) social media shutdowns seem to strengthen the relationship between age and informational use of social media, indicating that older citizens turn to social media for news even more than younger citizens in countries where the government shuts down social media. However, the methodology employed does not allow a conclusion about the existence of a causal relationship. More research is needed to better understand this relationship, including in-depth case studies identifying the mechanisms at play among younger and older citizens.

This study represents a first attempt at understanding the relationship between states' online control strategies and citizens' online behaviour in a broad sense, beyond evaluating the effect of a specific control mechanism in a specific country. It offers a first indication that overt controls, here operationalised by social media shutdowns, might lead to a form of backlash. In countries where governments shut down social media, citizens are more likely to turn to social media for information. The case of the January 2021 elections in Uganda exemplifies this: access to social media, and later to the internet, was blocked ahead of election day. Access to the internet was restored a few days later, partial access to social media was restored on 10 February 2021, but Facebook still remains blocked – and Ugandans rely heavily on VPNs to use Facebook (Athumani, 2021). While there is no space to further analyse the case here, it is in line with earlier research focusing on specific cases in Africa (Falisse and Nkengurutse, 2019) and with more experimental research conducted in other parts of the world (Hobbs and Roberts, 2018; Pan and Siegel, 2020). Overall, this supports interpreting the present findings as pointing to a plausible causal relationship.

Contrary to expectations based on studies highlighting that social media foster the agency of young citizens in particular (Bailard, 2012; Otiono, 2021), social media shutdowns are linked to higher informational use of social media for older people to a significantly greater extent than for younger people. Higher levels of social media shutdowns are also linked to higher informational use of social media for young people, albeit not significantly. This is consistent with the fact that 'digital natives can be strangers to digital technologies' (Adjin-Tettey, 2020), and that across the African continent access to social media remains too costly for many (Chiweshe, 2017: 143). Circumventing social media controls requires costly tools, such as VPNs. It might also be the case that since the adoption rate of social media is higher among younger citizens, social media shut-downs are related to larger increases in users among older cohorts, as these had not previously adopted social media. Even though I control for the percentage of internet users in the models to mitigate this, the measure is itself an estimate reported by each country, since not all internet users use social media, or not necessarily to access news.

Another limitation is that the measure for social media shutdowns used is based on expert-coded data describing whether the government shuts down social media, and not on specific events, while there is no baseline data for the informational use of social media before governments implemented shutdowns. So, an alternative explanation is that governments that see a broader section of their population getting the news from social media attempt to control them more. This explanation would be supported if the variables controlling for other forms of social media controls, such as

filtering, monitoring, and propaganda, were positive and significant. Only one of these, monitoring, is significant, but the coefficient is negative, indicating that citizens whose government uses monitoring techniques use social media for information less. So, instead, the latter could be read as a sign of the 'chilling effect' of surveillance observed in earlier experimental research (Stoycheff et al., 2019). In that experimental research, participants are specifically made aware that they might be subject to surveillance. Thus, even though social media monitoring is neither immediately visible to users, nor directly experienced, the present significant results indicate that citizens of countries that implement social media monitoring are likely aware that it exists.

These findings, combined with earlier scholarship showing that the concept of awareness is central to identifying the potential resilience of citizens (Roberts, 2020) or the chilling effects produced by surveillance (Stoycheff et al., 2019), raise questions: how do citizens perceive different forms of social media controls? Are they aware of the strategies adopted by their governments? Survey data on how aware citizens are of existing social media controls would help answer this question, especially in combination with expert-coded data. This would strengthen our understanding of how citizens perceive different social media controls, and of their differential effect on citizens' behaviour.

In this study, I am interested in the informational use of social media in the context of the overall news landscape. The question I use to investigate the use of social media for news might reflect a different role played by social media in the news landscape. Indeed, respondents might report on their use of social media to get the news, but they might also be recalling being incidentally exposed to the news on social media. However, the fact that the question of getting news from social media follows other more typical news sources likely limits this risk. While I control for the use of other sources of information, I cannot observe whether social media replace other news sources in citizens' news diets. I also control for freedom of expression and alternative sources of information, ensuring that social media controls are considered within the broader media censorship and freedom context.

Finally, social media play a broad role in the information environment and in political life, being used to share news, to express one's opinion, to discuss politics, or to mobilise politically. Online controls might affect how citizens conduct these various activities very differently. The present study only operationalises online controls as four distinct forms of control, while the proposed theory is much richer. The range of tools available to regimes is much wider, and the ways citizen perceive those tools remain to be explored. This would enable a better understanding of the role social media play in political life, beyond considering social media through the lens of youth activists facing repressive regimes or as an alternative source of information in constrained media contexts.

Acknowledgements

Funding

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Supplemental material

Supplemental material for this article is available online.

Notes

1. Note that the Digital Society Project also offers measures of states' capacity to implement these controls. As I am interested in the relationship between online controls and citizens' behaviour, I only use measures of practices.
2. The measure of social media filtering ranges from 'the government simply blocking social media platforms' to 'the government does not censor political social media content'. Even though the theoretical highest level of social media filtering is very similar to social media shutdown, I do not consider this an issue as the maximum value of the variable in the dataset is well below the theoretical maximum of 5 (see Table 1). The variable is renamed as 'social media filtering' for the remainder of the paper.

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