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The inhibitors and enablers of emerging adult COVID-19 mitigation compliance in a township context

Young adults are often scapegoated for not complying with COVID-19 mitigation strategies. While studies have investigated what predicts this population's compliance and non-compliance, they have largely excluded the insights of African young people living in South African townships. Given this, it is unclear what places young adult South African township dwellers at risk for not complying with physical distancing, face masking and handwashing, or what enables resilience to those risks. To remedy this uncertainty, the current article reports a secondary analysis of transcripts ($n=119$) that document telephonic interviews in June and October 2020 with 24 emerging adults (average age: 20 years) who participated in the Resilient Youth in Stressed Environments (RYSE) study. The secondary analysis, which was inductively thematic, pointed to compliance being threatened by forgetfulness; preventive measures conflicting with personal/collective style; and structural constraints. Resilience to these compliance risks lay in young people's capacity to regulate their behaviour and in the immediate social ecology's capacity to co-regulate young people's health behaviours. These findings discourage health interventions that are focused on the individual. More optimal public health initiatives will be responsive to the risks and resilience-enablers associated with young people and the social, institutional, and physical ecologies to which young people are connected.

Significance:

- Emerging adult compliance with COVID-19 mitigation strategies is threatened by risks across multiple systems (i.e. young people themselves; the social ecology; the physical ecology).

- Emerging adult resilience to compliance challenges is co-facilitated by young people and their social ecologies.

- Responding adaptively to COVID-19 contagion threats will require multisystem mobilisation that is collaborative and transformative in its redress of risk and co-championship of resilience-enablers.

Introduction

To manage the health impacts of Coronavirus Disease 2019 (COVID-19), the South African government instituted a national state of disaster on 15 March 2020.[1] At the time of writing, this state and its related disease mitigation strategies – including physical distancing, face masking and hand sanitising – were ongoing. Vaccination rollout and uptake did not alter directives enforcing these public health measures in South African public spaces, particularly indoor ones. Public adherence to these mitigation strategies was mixed, with emerging adults (young people aged 18–29[2]) – both in South Africa and elsewhere[3] – often portrayed as the least compliant.

Although some studies have considered the complexities of eliciting and sustaining the public's compliance with these strategies in South Africa[4-6], and elsewhere[7,8], they seldom foreground or detail the insights of emerging adults. When young people's insights are foregrounded[3,9,10], they typically exclude the voices of those living in structurally disadvantaged communities – such as South African townships – where compliance with disease mitigation strategies is arguably harder[4,11]. The current article redresses that oversight with a particular emphasis on what supported emerging adult resilience to compliance threats.

In South Africa, attention to emerging adult resilience to compliance threats is imperative, especially in structurally disadvantaged contexts. This population group is sizeable (18- to 34-year-olds constitute a third of South Africa's population) and vulnerable (the majority have first-hand, chronic experience of hardship; structural disadvantage jeopardises compliance with public health strategies).[4,11,12] Furthermore, this population group has been poorly responsive to vaccination roll-out in South Africa and so supporting their compliance with other COVID-19 mitigation strategies is critical.[13]

To better understand emerging adult resilience to compliance threats, this article is framed by social-ecological or multisystemic theories of resilience. While earlier theories of resilience emphasised personal strengths in accounts of what supported young people to adjust well to significant stressors[14], current theories explain young people's capacity for positive adjustment as a process that is co-facilitated by young people and their social and physical ecologies[14-17]. Said differently, resilience requires personal resources (e.g. good health or psychological agency) as well as social (e.g. a supportive family or enabling community), institutional (e.g. meaningful mental health services or quality schools), and environmental ones (e.g. safe spaces to relax or exercise) that work in concert to support positive adjustment to significant stress. Further, depending on a given situational or cultural context at a given point in time, certain resources might be differentially valuable (i.e. have greater or lesser impact on young people's positive outcomes).[18] Hence, it is important to understand resilience in context.[17] To illustrate, family members are prominent sources of social support in studies investigating young people's resilience to COVID-

related stressors[19-21], possibly because socio-economic challenges have necessitated that many emerging adults live with their parents[22], particularly during the pandemic[23].

As briefly detailed next, the pre-existing studies that have considered emerging adult resilience to the threats to COVID-19 mitigation compliance, typically underplay social and ecological supports.

Compliance and emerging adult resilience to COVID-19 stressors

While compliance with COVID-19 mitigation strategies is important for physical health, there are concerns that compliance could come at a cost to youth well-being given young people's need to be socially active.[24] Reduced social interaction threatens fulfilment of the key developmental tasks of emerging adulthood (i.e. school completion and career engagement; economic and functional independence; a long-term romantic partnership).[2] Consequently, there are widespread assumptions that young people will show less resilience to COVID-related lifestyle demands and disruptions, including compliance with COVID-19 mitigation strategies.[3,24]

Contrary to the growing understanding that resilience is contingent on more than personal factors, studies of what enabled emerging adult compliance with COVID-19 mitigation measures typically report personal factors. For instance, a study with 263 Dutch youth (mean age: 21) associated compliance with personal mental health and active coping styles.[25] Similarly, a study with 2315 Polish emerging adults (mean age: 20) showed that adherence to face masking was motivated by awareness of personal health risk.[9] A study with a sample of Swiss youth ($n=737$; mean age: 22) reported that antisocial personality traits and low trust in authority figures/government were associated with lower compliance.[26] A large adult study ($n=8317$; mean age: 27) found that personal beliefs (i.e. believing in the efficacy of disease mitigation strategies; valuing personal health) predicted compliance across 70 countries.[8]

Despite the emphasis on the role of personal factors in emerging adult compliance with COVID-19 mitigation strategies, some studies do report social or ecological factors that facilitate compliance. For instance, Koning and colleagues found that compliance among the Dutch youth in their study was higher for those who reported a mentoring relationship with an adult in their community (e.g. a teacher, neighbour, or non-parent relative).[25] Similarly, a study with 720 emerging adults from Minnesota (USA) found an association between emerging adult compliance with COVID-19 distancing regulations, their living arrangements, and their cultural roots.[3] Those who lived with a parent and self-identified as Asian were more likely to comply; those who were more compliant, showed greater resilience to COVID-19 stressors (i.e. better mental health outcomes). Although the study did not account for these associations, it is possible that parents encouraged compliance or that young people complied in order not to jeopardise the health of the parent/s they were living with. Similarly, Asian cultures are traditionally associated with harmonious interdependence and respect for the well-being of others.[27]

Human behaviour theory has offered some insight into these diverse patterns to compliance/non-compliance of emerging adults during the pandemic. In their critical reviews, Demirtaş-Madran[28] and Taylor[29] reflect that – alongside the applicability of the Extended Parallel Process Model, Protection-Motivation Theory, Fear-Drive Theory, Terror Management Theory, and the Health Belief Model – personal factors still play a deciding role in the multiple systems interacting to drive compliance. Even in studies that indicate that people who are more fearful of COVID-19 are more likely to comply with mandated health behaviours (e.g. Anaki and Sergay[30]; Harper et al.[31]), the protective importance of other factors, such as cultural tightness or looseness, still predicts both fear of and compliance with protective behaviours.[32]

The current study

Social-ecological or multisystemic resilience theories discourage a one-size-fits-all understanding of resilience. Instead, systems thinking urges attention to the variability of human resilience relative to a specific risk, developmental stage, or situational/cultural context.[14-18] While personal

strengths and social connections have been reported in studies of South African emerging adults' experiences of COVID-19-related challenges and their resilience to those challenges[33,34], it is unclear what role – if any – these or other multisystemic resources play in South African emerging adults' compliance with physical distancing, face masking and hand sanitising in township contexts. Hence, the purpose of the current study was to explore the lived experiences of 24 emerging adults from eMbalenhle township in Mpumalanga Province to better understand what inhibited and what enabled their compliance with public health measures in this township context. This purpose translated into two questions: How do emerging adults living in a township context account for non-compliance with physical distancing, face masking and handwashing? How do these young people explain their resilience to compliance inhibitors?

Mbunge and colleagues have theorised that the stressors that recur across Africa (e.g. resource-constrained settlements, ineffective COVID-19 relief aid, political and social instability, extended households, reliance on public transport) are likely to compromise compliance with typical COVID-19 mitigation strategies.[6] These stressors are pronounced in South African townships, which are typically 'low income and densely populated' and do not allow people to 'withdraw from social interactions in a single home, work remotely, buy large quantities of supplies to avoid regular visits to the shops, or drive alone in a car to secure supplies'[4(p.261)]. Accordingly, we assumed that similar challenges would inhibit emerging adult compliance with COVID-19 mitigation strategies in the context of eMbalenhle (a densely populated, resource-constrained township). Our long-term involvement in resilience studies in eMbalenhle and other South African townships led us to believe that emerging adult resilience to these compliance threats would be a process that was co-facilitated by young people's social ecology.

Methods

To answer our research questions, we conducted a secondary analysis of 119 transcripts that documented semi-structured interviews with 24 emerging adults participating in a sub-study of the Resilient Youth in Stressed Environments (RYSE) study. Two of the authors (L.T. and M.U.) co-lead the RYSE study and all authors were co-principal investigators in the RYSE sub-study in which the transcripts were generated. This sub-study was focused on understanding the risks of COVID-related lockdown to the well-being of emerging adults in a township context and resilience to those risks. The primary analysis of the sub-study's data had the same focus.[33] While compliance and non-compliance played into those risks and resilience, they were not the focus of the primary analysis. Secondary analyses are appropriate when they extend or supplement a pre-existing analysis.[35]

The primary sub-study: A synopsis of its methodology

The methodology of the primary sub-study, which followed a phenomenological design and subscribed to social constructivist principles, is comprehensively detailed elsewhere.[33] As in other secondary analyses[35], what follows is a summary of that methodology.

Contextualisation

eMbalenhle, a township located in the Govan Mbeki municipality in Mpumalanga Province, is challenged by ongoing air quality and health issues relating to the nearby petrochemical industry, fumes from fuels, dust and meteorological factors.[36] In this regard, COVID-19 represented an additional layer of public health risk. Further, like many other South African townships, eMbalenhle is densely populated (6050 persons/km²); challenged by structural disadvantage (including poor quality housing and crowded living conditions) and widespread poverty; and under-serviced.[37] As in other parts of South Africa[38], eMbalenhle residents are frequently involved in violent protests over poor service delivery and local government corruption[39].

The sub-study's temporal context is also important. It took place during the first wave of the COVID-19 pandemic in South Africa (specifically, June and October 2020). The first wave peaked in June and July 2020.[40]

Participants

RYSE was supported by a Community Advisory Panel (CAP) that was trained to recruit eligible participants ethically.[41] This Panel facilitated participant recruitment to the sub-study too. Young people were eligible for the sub-study if they were 18–29 years old; lived in eMbalenhle; and were willing to share their lived experiences of the COVID-related lockdown. A total of 24 emerging adults (14 young women; 10 young men) participated. Their average age was 20 and the majority spoke Zulu. Of the 24 participants, 9 were studying at a tertiary education institution; 7 were neither employed nor in education/training (NEET); 6 were completing high school; and 2 reported formal employment. At the time of the study, participants' household size ranged from 1 to 14 (most reported 5–7 household members).

Ethics

Participants consented in writing. They chose to be identified by their first name or a preferred name and gave permission to be identified by their chosen name in publications. Their consent included permission for secondary analyses of the data. The research ethics committees of the Faculties of Health Sciences and Education at the University of Pretoria provided ethical clearance [UP17/05/01] as did the Social Sciences Research Ethics Committee at the University of Leicester [26759]. Clearance included permission to compensate participants modestly for their time (i.e. participants received a ZAR300 supermarket voucher) and data/airtime expenses relating to participation (ZAR25/week).

Data generation methods and procedure

All 24 participants engaged in weekly telephonic interviews during June 2020 (total interviews: 96) and provided weekly digital diary entries (typically via WhatsApp™) using their personal cell phones. Most participants ($n=23$) were available for a single follow-up interview in October 2020 and an additional set of digital diary entries. The diary entries and interviews were directed by three primary questions: (1) What COVID-19-related challenges or stresses did you experience in the past 2 or 3 days? (2) How did you manage these challenges or stresses? (3) Who or what helped you to manage these challenges or stresses?

A research assistant, who was completing a master's degree in educational psychology at the time and is fluent in English and Zulu, conducted and transcribed the interviews. The translated parts of the interviews were independently verified. Interviews were typically about 30 minutes long. The research assistant also set up a study-dedicated telephone number (and associated WhatsApp™ account) on a password-protected cell phone and managed receipt of all diary entries.

Primary data analysis

The data were analysed using inductive thematic analysis. The analysis, which was framed by multisystemic resilience theory[15-17], focused on understanding what supported young people's resilience to COVID-19-related stressors. Rigour was advanced by multiple coders reaching consensus and by the Community Advisory Panel endorsing the findings.[33]

The secondary analysis

Because the content of the digital diaries and interviews overlapped and because the latter were more detailed[27], the secondary analysis included only the 119 interview transcripts. The secondary analysis utilised an inductive thematic approach[42]. Using ATLAS.ti.9 software to manage the secondary analysis, the first author identified data specific to physical distancing, face masking, and handwashing/sanitising. The search for data specific to these foci related to the first research question (i.e. How do emerging adults living in a township context account for non-compliance with physical distancing, face masking and handwashing?) directing the secondary analysis. As is typical in an inductive approach, the first author identified phrases/segments in the data that revealed constraints to compliance with these three protective measures and labelled them accordingly. In line with the second research question (i.e. How do young people explain their resilience to compliance inhibitors?),

she also identified phrases/segments in the data that revealed what/who supported young people's resilience to those constraints and labelled them accordingly. Following Braun and Clarke[42], she considered which labels cohered thematically, grouped them, and used their commonality to provide a summative, thematic label. To advance rigour, the co-authors critically considered the identified themes. No substantive changes were recommended.

Rigour

In addition to the co-authors critically examining the identified themes, we advanced the credibility of the findings by including multiple excerpts from the transcripts. In so doing we also respected the centrality of participant voice, as it were, to the quality of research findings.[43] Further, as advised in the *American Psychological Association* standards for qualitative reporting[44], and with the participants' consent, we have described the context and participants in some detail to support reader decisions about the transferability of the findings to young people in similarly resource-constrained contexts. We have also been transparent about the assumptions that we held at the outset of the study.[42]

Findings

As summarised in Figure 1, non-compliance with physical distancing, face masking and handwashing was fuelled by forgetfulness; perceptions of dissonance (i.e. experiencing that health measures conflicted with typical ways-of-being and -doing); and structural constraints. Resilience to these compliance risks was partly facilitated by young people's capacity to regulate their behaviour. Importantly, this resilience was co-facilitated by young people's immediate social ecology co-regulating compliance. Each is detailed next.
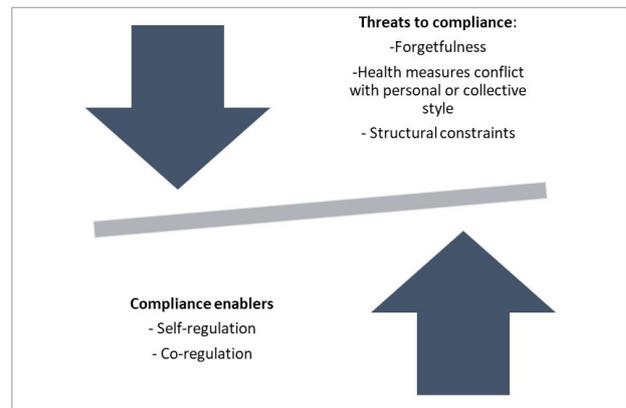

Figure 1:   Summary of findings.

Risks to compliance

Not surprisingly, compliance was often jeopardised by young people forgetting their masks at home, forgetting to maintain physical distancing, or forgetting to sanitise their hands before entering a public space. For instance, Sibusiso said, 'I had forgotten my mask and I wasn't allowed inside the mall because the guard said to me, I'm a threat without a mask' (June_Week[W]4). Likewise, Mikateko recounted, 'I forgot my mask… I was ready to go back home and fetch it' (June_W2). In reference to physical distancing, Tinyiko (October) said that when she and her friends were together, 'we just forget'. Happiness1 commented, 'If there were no markers about distance and also the sanitizers and washing hands thoroughly, we would totally forget'. In addition, and as detailed below, compliance was threatened by the structural constraints that typify townships and/or when people perceived COVID-19 mitigation strategies to be alien to their personal or collective ways-of-doing.

Health measures conflict with personal or collective style

There was frequent reference to COVID-19 regulations conflicting with typical ways of being and doing. Some young people ascribed this challenge to personal preferences; some ascribed it to their gender.

Many linked non-compliance to people in their community being inclined to disregard rules and/or disbelieve official information.

I am a hugger … so, it's kind of hard for me to adapt to people when I see them and I have to remember that, no, we do not hug each other anymore (Happiness2 June_W1)

They don't even wear masks …they hug each other, they throw parties … they really don't believe that this thing exists, they don't (Keletso, June_W1)

They're not wearing any masks; they are just living; they don't do social distancing; they keep touching each other, and others are still hugging each other…I can say that they need someone who would explain to them about this thing, because now they're not taking it seriously … it affects me because it might happen that one of them gets it and then it might end up being around here, very close to us, and then everyone else is infected fast (Nkosinathi, June_W1)

I have friends, we eat together, we go together… you know girls: we talk and laugh and touch each other and we are not supposed to. It is wrong. We are not supposed to hug each other, but we do (Tinyiko, October)

It's this distance. You don't get used to it. You don't get used to the fact that a person is going to stand certain metres away from you. You're not used to that, that you're unable to talk… that is what makes it hard. You feel like this person is too far away from you (Mamello, October)

So, you understand that this is the township, you see. So, there are people here who don't care about that [rules]. They are always at the corner – even now they are relaxed and chilling at the corner, smoking weed … those hardcore township guys, just like me, they see those that are following the rules as though it's people who think highly of themselves … so if you're going to wear a face mask going to the tuck shop… people [will] define you as someone who thinks highly of themselves, like someone who thinks they are better than the rest…(Lungelo, June_W1,2; October)

Structural constraints

Like most townships, eMbalenhle is densely populated and poorly serviced. These constraints translated into crowded public spaces and queues often being unavoidable, as well as hygiene threats and service delivery protests. Spaces that were typically packed were taxi ranks, mini-bus taxis, and local shops; mostly, these spaces were not conducive to physical distancing and often included people who eschewed face masking. The latter were also associated with service delivery protests.

Some were wearing masks, but they were hanging over their chins; others were too close to each other, touching each other, so many things … I was there to collect the food parcel… it was too overcrowded … (Willington, June_W2)

There are a lot of people in the taxi that don't follow the rules of wearing their masks, they don't want to sanitize inside the taxi, even though the taxis have a sanitizer available… So, with that, a lot of people will be affected because if one infected person goes into the taxi, that means everyone in the taxi will also have it (Sipho, June_W3)

We are many in the stores … so, there's a lot of us in the queue. And also, on the shelves, we are touching groceries. And then people are not complying, they're not wearing their masks, there's no social distance check. And then somebody coughed on the side and we are all in the same queue and he's touching something that I'm also going to touch. So, it's very stressful (Happiness1, October)

Let me just start with the water issue. At some point people were about to protest here … according to the regulations, I have to wash my hands every time. So, not having water, we can't wash our hands (Tshegofatso, June_W2)

There was a strike in our area. I did not join the strike, but this thing stressed me because people don't care. They were not wearing masks (Naledi2, June_W2)

There were many people there and they were protesting… I think only 10% were wearing masks and the rest were not … A lot of them were not doing any social distancing, and some did not care about the fact that there's COVID, all they cared about was the food parcel whereabouts … a lot of people that were there are our neighbours, like some of them live on our street… so, my stress was … they were breaking all the regulations that were put in place… I'm happy that my parents didn't attend, but I was scared that the neighbours are the ones that went. And what I've noticed about our neighbours is …they still do the whole thing of coming and knocking on our door to ask for something they need. And when people come, they don't wear a mask (Minky, June_W2)

Most participants reported that compliance in crowded spaces, including taxis, waned during less stringent lockdown periods (i.e. Lockdown levels 1 and 2):

Social distancing – it is [lockdown] Level 1 now, my sister – just forget about it … events have been opened, everything is opened. You cannot reprimand a drunk person to observe the 1.5 metres (Thabo, October)

In most shops, people are forgetting the 1.5-metre marker. They stand close to each other. No one cares about COVID anymore because they say COVID is no longer there (Thabang, October)

When we were in Level 5, it was a lot better because we practised social distance in the taxis …but now taxis are fully packed, so a 14-seater taxi will carry 14 passengers, and people are no longer wearing their masks … sometimes you are the only one that is wearing a mask … I will not tell the driver, 'Can I have the seat next to me be kept empty?'. That driver will tell me, 'If you are going to pay for that seat, then it's fine', which means that he's now charging you double (Minky, October)

Self- and co-regulation support compliance resilience

Although there were significant challenges to complying with COVID-19 mitigation strategies, young people spoke often of their personal efforts to regulate their behaviour and comply with physical distancing, face masking, and hand sanitising. Essentially, they described this self-regulation as important but effortful (e.g. 'me being very disciplined' [Thabang, June_W2]; 'making sure I comply' [Naledi1, June_W1]; 'hard to manage … it's like you're in jail' [Happiness1, June_W2]; 'I control

myself' [Happiness2, October]). However, when others co-regulated compliance, such effort was easier.

References to formal co-regulation (e.g. by the police) were scant. There was some participant acknowledgement that they were less likely to forget about physical distancing or hand sanitising because these were formally regulated (e.g. 'if you get into the mall they sanitise you, when you get into a shop they sanitise you, when you go to the toilet they sanitise you, wherever you go you are sanitised' [Thabang_October]; 'there are signs that have been placed that you have to stand here and here and here' [Lungelo_W1]).

For the most part, co-regulation was informally facilitated by young people's immediate social ecologies (e.g. households, families, peer networks, neighbours, education institutions). These social ecologies committed to COVID-19 mitigation strategies and held young people accountable to do the same; mothers were frequently mentioned as the person holding young people accountable. Young people experienced co-regulating social ecologies as caring and enabling:

> My mum, she knows that this thing is out there… she helps me and reminds me not to forget to sanitise, don't forget to do this, you know … the fact that she constantly reminds me …that's driving me … giving me the urge to continue [to comply] all the time (Sibusiso, June_W1)

> Since I'm back in school, we have been told many times to always wear a mask. Yeah, so I don't forget that much (Siyabonga, June_W1)

> My mom …this week she was like, 'remember, have your sanitiser in your bag, always wear your mask, and don't ever forget in everything that you touch, you must sanitise. Distance yourself so that there are no close contacts that will make you to be close with someone' (Khumotso, June_W2)

> We are able to advise each other; even when I leave and maybe I forgot my face mask, they remind me, 'Hey, take your face mask!' (Siphiwe, June_W2)

> Everyone is doing it. You know, something is better when everyone is doing it rather than when you are doing it alone. You can't think you can defeat corona alone (Tinyiko, June_W2)

> It shows that you are not the only person who's fighting this thing. At least then you know that it's you and your whole community. Obviously if I was protecting myself as much as I can, if Corona will fill our community, then it means in the end I will also get infected. So, if my community is also keeping safe, it means that they're keeping me safe as well. It means they care about me as much as I care about them by showing them that I should follow things the way I am supposed to (Tshegofatso, June_W3)

> The people I live with also do these things. They remind each other as well. Even at school, it is a must that you do it. So, that is what makes it easy to get used to doing these things, because the people I live with also do it. It would've been hard if they were not doing it because then who would remind me to do it? (Keletso, June_W3)

> Here at home they know that if one person leaves, as soon as they come back, they have to sanitise. They are always reminding us, like, 'Wear your masks! Sipho, don't forget your mask!' (Sipho, October)

Interestingly, lived experience of COVID-19 infection increased participants' efforts to comply with COVID-19 mitigation strategies and social ecologies' inclination to enact and co-regulate these strategies:

> At first, I did not believe it's real … but as time went, I saw that this thing is there and it's real. I kept watching the news, reading in the media, there's a lot of things happening, people are dying… even in social media, we come across videoclips whereby a person is positive; he or she is urging people, like, 'Guys, this thing is there, it's killing, it's real. Let us adhere to the rules to stop the virus' (Ayanda, June_W1)

> Now that I have witnessed someone, I can actually see …like it's serious and it's near me. So, I'm adjusting by practising extra social distancing (Thabang, June_W2)

> So, now that they [neighbours] have experienced the COVID-19, seeing people coming to disinfect the place, it put people on the spot. People were shocked; people did not think that this will happen in our neighbourhood – my neighbourhood is not busy like other neighbourhoods… so seeing them now doing the social distancing … we have to do this … (Mamello, June_W2)

Young people were not passive recipients of co-regulation. Many reported encouraging or prompting their family, peers, and community members to comply with COVID-19 mitigation strategies. Their initiative was reinforced when those with more authority (e.g. taxi drivers; security guards) and without authority (e.g. fellow passengers, fellow shoppers) repeated the compliance messaging:

> They (household members) are protecting themselves because I've also told them that this thing is like Ebola, it can spread in the air, so now they have to be very alert and protect themselves (Nkosinathi, June_W1)

> My mother is a bit old now, you know, so I do speak to her. If she has forgotten, I remind her that she must remember to sanitise…stay safe, remember that this thing has no friend and has no age (Tebogo, June_W1)

> We firstly complained in the taxi, to the driver, and then people had to be turned down, like they had to get off since they didn't want to comply…it was helpful because if you don't want to comply by the rules, it is better that we leave you behind… instead of you making us all sick (Happiness1, June_W2)

As the extracts demonstrate, the data suggest that co-regulated compliance might be dialogic, and hence multi-directional across the resilience systems at play. Put differently, in almost all participants' accounts, co-regulated compliance required verbal communication, and by extrapolation, a sense of agency that either enabled individual action or co-action (e.g. others stepping in and verbally supporting the action):

> I was in a taxi and this other lady was busy talking and sneezing at the same time, and she didn't put her mask on. So, I was getting annoyed because she's sneezing and her mask is not on. So, I asked her, 'Can you please put on your mask'. Then she shouted at me. She said, 'Do you think I have corona? Do I look like someone who has corona?'' So, she started drama in the taxi. So, this other guy said to her, 'No, don't shout at her, she was asking you to put it on…' And then she just put it on. (Mikateko, June_W4)

Discussion

The purpose of this article was to report on what inhibited and what enabled emerging adult compliance to physical distancing, face masking and hand sanitising in a township context. To that end, we conducted a secondary thematic analysis of 119 interview transcripts generated during a RYSE sub-study that sought to understand emerging adult resilience to COVID-19-related stressors. The transcripts documented semi-structured, weekly interviews during June 2020 with 24 emerging adults from a single township (i.e. eMbalenhle) and again in the first week of October 2020. Two questions directed the secondary analysis: How do emerging adults living in a township context account for non-compliance with physical distancing, face masking and handwashing? and How do these young people explain their resilience to compliance inhibitors? In what follows, these questions are considered in succession and the findings related to relevant resilience and COVID-19 literature.

Inhibitors of emerging adult compliance to physical distancing, face masking and hand sanitising

The participants' accounts of the challenges to their compliance with COVID mitigation strategies compel attention to the compound nature of risk and its rootedness in individual, social, and ecological factors.[15,16] This finding fits with those of others[4-6]. As presaged by these pre-existing studies, the contextual constraints that recur across Africa challenged the capacity of emerging adults in the RYSE sub-study to comply with government-directed mitigation strategies. In particular, reliance on public transport; exposure to queues and crowded local shops; disruptions to basic services and related service-delivery protests; and inequitable distribution of COVID relief aid and related protests obligated physical proximity and/or contact with locals who had been in close contact with crowds. Water supply disruptions put pay to handwashing. Essentially, young people's physical ecology jeopardised compliance and heightened their vulnerability to contracting COVID. While government directives aimed at COVID-19 mitigation were well intentioned, how they played out in the risk-saturated context of eMbalenhle flags the inadequacy of disease mitigation measures in the absence of structural redress and reliable service delivery.

Compliance was also challenged when mitigation strategies conflicted with preferred or typical ways-of-being and -doing at the level of the individual and the community (e.g. personal preference for close social contact; a culture of disbelief in official information and disregard for rules). While these factors probably relate to the developmental stage of emerging adulthood (e.g. risk-taking is typical of the transition to adulthood[2]) and/or many young South African adults' disillusionments with government and convention[45], they also echo previous findings that not all young people are compliant and that distrust and anti-social tendencies fuel non-compliance[3,26]. Still, recognising that personal and shared ways-of-being and -doing play into compliance reinforces the importance of bespoke public-health messaging. Put differently, they are a reminder of the importance of adapting public health messaging for specific groups of young people (e.g. youth who are less risk-aversive; youth with high distrust in government). They also call for bottom-up initiatives to animate health promotion in ways that resonate with local realities[46], both historical and current.

Emerging adult resilience to compliance inhibitors

Like the multifaceted nature of what inhibited compliance, emerging adult resilience to those inhibitors was complex and rooted in young people's personal capacity to regulate their behaviours *and* their social ecology's co-regulation of those behaviours. While COVID-related studies have acknowledged the role of the social ecology (especially the family[19-21]) to emerging adult resilience, there has been less attention to the social ecology's role in supporting compliance with COVID mitigation strategies.[3,25] The importance of the self and others sharing in the regulation of health promoting behaviours reinforces the understanding that resilience is not a mono-systemic capacity[14-17], and that processes which have traditionally been conceptualised as individual-driven (e.g. behaviour regulation) may be more communal/co-driven than assumed. In a community, like eMbalenhle, where young people may experience peer group censure for rule-respecting behaviours, the value of supportive co-regulation to compliance also illustrates the contextual responsivity of resilience-enabling resources.[17]

Co-regulation by others – in the case of our study, often caregivers and other adults – might seem counterintuitive to the developmental stage of emerging adulthood and its emphasis on functional independence.[2] Still, this fits with Koning and colleagues' finding that Dutch emerging adults were more likely to be compliant when they had access to a natural mentor.[25] Similarly, Berge and colleagues found that residence with a parent prompted emerging adults to observe physical distance regulations.[3] Social ecological theories of resilience have shown that resources can have a differential protective impact when they are contextually meaningful[18]; in the face of COVID-19, co-regulating others were probably situationally congruent resources[17].

The quantitative studies by Koning et al.[25] and Berge et al.[3] could not explain how adults supported emerging adult compliance with COVID-19 mitigation. Like other resilience studies that have noted the enabling value of role models and opportunities for dialogue[14,47], the qualitative design of our study yields detail suggesting that others inspired compliance by modelling it themselves and/or dialoguing about compliance. Some discursive prompts were timeous (e.g. as young people were about to leave home); others were recurring and therefore hard to dismiss. A take-away for future public health campaigns aimed at encouraging emerging adult compliance with disease mitigation strategies is that such campaigns should include people in young people's immediate social ecology, including adult relatives and non-relatives, and animate dialogue.

While our study's limited number of participants was too small to draw definitive conclusions, it is possible that the emerging adult participants (who self-identified as African and reported an appreciation of ubuntu values[33]) were receptive of co-regulation because of its fit with traditional African valuing of interdependence and young people's socialisation to respect their elders.[48] Certainly, their appreciation of others' compliance, and interpretation of collective compliance as an expression of care, fit with the interconnected ways-of-being that have been associated with African youth resilience.[49] Resilience science is mindful that effective enablement of the resilience of specific groups of young people lies in resources that are culturally congruent.[14-18] Importantly, the possibility that an appreciation for interdependent ways-of-being and -doing supported compliance in our study, encourages further consideration of how public health messaging and COVID mitigation strategies could benefit from collectivist values.[7,32,50] In contexts, like eMbalenhle, where there is some appreciation for non-conformity and risk-taking, public health campaigns will necessarily have to encourage locals to enact an ethic of care (e.g. remind young people and others to protect their health, and model health-promoting behaviours).

As in previous studies that have documented an association between contagion fears with emerging adult compliance with physical distancing and face masking[8,9], the findings nudge attention to the role of fear in compliance and how compliance declines as COVID cases decrease and restrictions are relaxed. While leveraging contagion fears could potentially coerce compliance with disease mitigation strategies, the ethics of doing so should be questioned, particularly when a physical ecology sets people up for non-compliance. It is in this context that our findings (and those in the wider behaviour theory literature[31]) relating to the importance of the personal ecosystem become central; as a society we need to establish public health messages and measures that carefully calibrate the effectiveness of compliance originating in fear, with compliance originating in personal context and resilience across systems. Without this calibration, we risk poor outcomes for specific – often already marginalised – groups.

Limitations

As reported previously[33], the purposive recruitment of the participants in the primary sub-study by the RYSE Community Advisory Panel limited the transferability of the sub-study's findings. It is possible that recruitment via public platforms (e.g. social media) could have

encouraged more diverse insights. Further, although eMbalenhle has much in common with other structurally disadvantaged communities in South Africa, we acknowledge that risk and resilience are highly sensitive to situational determinants.[17,18] Similarly, the cultural context is likely to shape which resources are differentially protective.[17,18] Although we theorised how situational and cultural context inhibited and/or enabled the COVID-19 mitigation compliance of the emerging adults in our study, sampling limitations (i.e. 24 young people from a single, structurally disadvantaged township) preclude definitive conclusions. A follow-up study with randomly recruited emerging adults from similar and dissimilar communities (e.g. structurally advantaged) could redress these sampling limitations. Finally, it is possible that the timing of our study (at the peak of the first wave and then toward the end of the first wave when incidence was resurging) played into personal and collective inclination to comply with COVID-19 mitigation strategies and related accounts of compliance inhibitors and enablers.

Conclusion

Notwithstanding the limitations that we have reported, our study is rare in its attention to the multisystemic complexity of what inhibited and enabled emerging adult compliance to physical distancing, face masking, and hand sanitising in a township context. Our findings suggest that to understand youth response to public health measures, we will need to understand better the context in which they make decisions. Even with the desire to demonstrate self-regulation and compliance, they are particularly susceptible to changing conditions around them as they, more than other age groups, are forced to be out in the world. Future public health initiatives will need to acknowledge these challenges and better facilitate ways for emerging adults to maintain social cohesion but still comply with public health measures. For example, better access to online social networks, or help with maintaining employment and educational paths may cushion the impact of a pandemic on young adults. We believe young people themselves may have the answers to these challenges if given the opportunity to influence the discourse regarding effective public health initiatives.

Indeed, this rich work showed that multiple systems – the individual emerging adult; their social ecology; their service ecology; their physical ecology – co-jeopardise emerging adult compliance with physical distancing, face masking, and handwashing. Similarly, emerging adult resilience to these compound compliance risks is informed by more than young people themselves. Instead, young people's capacity for compliance is co-facilitated by their personal capacity to adjust their behaviour and the capacity of their immediate social ecology to animate and sustain behaviour adjustments that are likely to limit COVID-19 contagion threats.

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Competing interests

We have no competing interests to declare.

Authors' contributions

L.T., D.L. and M.U. co-conceived and co-supervised the study. L.T. led field data collection. L.T. led the analyses with input from D.L. and M.U. L.T. drafted the original manuscript with input from D.L. and M.U. All authors contributed to the revision of the manuscript.

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