Group loyalty and feelings about one's country as predictors of compliance with emergency health protocol: The case of COVID-19 among Nigerians

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Abstract

The emergence of COVID-2019, coupled with its rapid rate of transmission, necessitated the placement of restrictions on human behaviours. The restrictions received varying degrees of resistance across the world. Previous studies pointed at the possibility that culture can explain the differences in resistance, and collectivism has been used substantially as a unitary construct to explain the differences. However, collectivism is a broad concept, encompassing loosely related values. Consequently, the actual role of each of the collectivism-related values in the compliance behaviour remains unknown. We isolated group loyalty and feelings about one's country and examined their influence on compliance with the COVID-19 protocol. Data were collected online and were analysed with hierarchical regression technique. The result revealed a positive relationship between group loyalty and compliance with the COVID-19 protocol. Females complied more than males. Although feelings about one's country had no direct significant influence on compliance, positive feelings and group loyalty had marginal significant interaction effect on compliance. Practitioners and policy makers can, therefore, leverage on the tenets of group loyalty in designing and implementing emergency health prevention measures, especially when the measures require significant personal sacrifices. Implications and limitations of the study as well as suggestions for further studies were discussed.

***Keywords*:** Group loyalty, Collectivism, Emotions, COVID-19, Health regulation

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Introduction

Towards the end of 2019, there was an outbreak of a deadly virus, belonging to the family of viruses often referred to as severe acute respiratory syndrome coronavirus (SARS-CoV). The virus was first detected and reported in Wuhan, a city in China, in December 2019. The virus is a highly contagious strand of the SARS-COV and is now commonly referred to as coronavirus disease 2019 (COVID-19, Du Toit, 2020). The virus spread rapidly across the world in such a manner that it was declared a global pandemic by the World Health Organization (WHO) on March 11, 2020 just within few months from when it was first detected (Cucinotta & Vanelli, 2020). Not only is the virus highly contagious, it is equally adjudged as one of the most deadly strands in the SARS-CoV family (Shereen et al., 2020). While the virus was spreading, its fatality rate was staggeringly troubling. In less than one year, counting from the time the virus was detected, the WHO (2020) reported over 50 million infections and over one million deaths worldwide. Consequently, the world was gripped in palpable fear (Anderson et al., 2020). The fear was heightened by the fact that most developed world, such as the United States, United Kingdom, Spain, and Italy, with arguably best health systems in the world, were not only witnessing high rate of transmission, but were equally recording high mortality rate emanating from the virus. Expectedly, the fear was deeper for some countries, such as countries in Africa, for some apparent reasons (Mbow et al., 2020). Africa ranks amongst the lowest in health system management and infrastructure development (Oleribe et al., 2019).

Lone and Ahmad (2020) outlined other reasons why there were very serious concerns about Africa in the wake of the virus. In addition to the weak health care system, the authors observed that the immune system of the majority of Africans has been largely compromised due to the prevalence of malnutrition, anaemia, malaria, HIV/AIDs, tuberculosis, and poor economic conditions. However, despite the prevalence of these predisposing factors, African nations and other comparable countries are among the countries with the lowest COVID-19 infection and fatality rates (Lone & Ahmad, 2020). Nonetheless, there are concerns regarding the reliability of data about the virus from these countries. For instance, it has been argued that the data from Africa about the virus may have been compromised by several factors, making it difficult to say with certainty that the continent indeed has one of the lowest infection and mortality rates (Lone & Ahmad, 2020). One major factor in this regard is the lack and poor collection and documentation of health data. It has been argued that most health data from Africa are estimates; hence, are less reliable (Ibeneme et al., 2020). It is, therefore, possible that poor reporting and documentation might have contributed to the recorded low infection and mortality incidence associated with the COVID-19 in the continent (Lone & Ahmad, 2020). Nevertheless, there are strong indication that the rate of infection and fatality is associated with the level of compliance with the protocol and restrictions prescribed by various governments to curtail the spread of the virus (Anderson et al., 2020; Barak et al., 2021; Bhadra et al., 2021).

As the world waited for the development of vaccines and chemotherapy that could be used to prevent and treat the virus, several behavioural changes and restrictions that required high levels of personal sacrifices were prescribed by most countries of the world to curtail the spread of the virus (Beeckman et al., 2020; Chu et al., 2020; Wright et al., 2021). Some of these prescriptions and restrictions struck at the heart of human interactions and relations, disrupting virtually every aspect of the human society (Dwivedi et al., 2020). In some instances, there were total lockdown of movements, requiring citizens to remain indoors. Even when such extreme measures were lifted, simple behaviours that greased human interactions and relations, such as shaking of hands and hugging, were prohibited. Public gatherings, such as concerts, ceremonies and religious activities were banned. When people

were allowed to gather, they were required to stay away from each other at a substantial distance, commonly referred to as social distancing (Anderson et al., 2020). Businesses, markets, and many economically related travels, such as tourism, were equally affected (Donthu & Gustafsson, 2020; Fairlie & Fossen, 2022). In some instances, airspaces and borders were closed for non essential travels (Murphy et al., 2020). These obviously led to significant loss of jobs and income, putting many families into serious hardship and suffering (Bielecki et al., 2020). Educational institutions were not left out. The conventional in-person schooling was restricted and novel methods of educating students, such as online delivery of lectures, were born (Hoofman & Secord, 2021; Rashid & Yadav, 2020; Zhao & Watterston, 2021). It was therefore not surprising that there were resistance to such policies in many countries of the world, including developed nations, such as united sates and United Kingdom (McCarthy et al., 2021). The entire social system was disrupted, and social interactions were temporarily halted.

It is obvious from the foregoing that the success of the curtailing measures required high level of sacrifices and cooperation from members of the society (Sargeant et al., 2023), especially when such sacrifices and cooperation were equally required from people who were less likely to suffer severe symptoms from the virus. It has been shown that the older and elderly people are more likely to suffer severely from the virus than younger people (Le Couteur et al., 2020; Mueller et al., 2020). For the young folks, therefore, the demanded sacrifice, cooperation, and obedience to the restrictions were not just required from them for their own sake but largely to prevent them from contracting and infecting others who are at high risk of suffering severe symptoms. This means that the effectiveness of the measures strongly depended on the willingness and cooperation of the generality of the people (Hills & Eraso, 2021). However, despite the nobleness of the intention behind these restrictions, there were apparent occurrences of resistance and disobedience to the prescribed protocol (McCarthy et al., 2021) especially in view of the high level of sacrifice that the prescriptions demanded coupled with the fact that most populations have never been hit with such sudden truncation in human activities. The resistance seem to have cut across the world. It was, however, interestingly stiffer in some of the most developed nations, such as the United Kingdom (UK), Ireland, United States of America, Italy, and Australia (see Carlucci et al., 2020; Hyland et al., 2021; Moore et al., 2020; Murphy et al., 2020). Interestingly, these developed nations, with higher levels resistance to the prescriptions also have the highest rates of infection and fatality, whereas underdeveloped countries, such as Nigeria, have lower levels of resistance, infection, and fatality rates (see Bwire et al., 2022; Impouma et al., 2021; Lone & Ahmad, 2020; Nachega et al., 2021; Sachs et al., 2022). This scenario became puzzling because high rates of resistance, infection, and fatality ordinarily should be the case in underdeveloped nations with weak health system and poor economic conditions and not among developed nations with strong health system.

In view of previous findings about culture and health behaviours (see Mackenbach, 2014; Napier et al., 2014), scholars suspected that the puzzle can be explained by the differences between the culture of most of the developed nations, such as the United States, and underdeveloped nations, such as Nigeria (see Kumar, 2021; Nanda & Ryan, 2022). Common in the literature is the view that most of the developed nations, especially the West, are dominated by the culture of individualism, whereas many African nations, including Nigeria, are predominantly collectivist (see Oyserman et al., 2002). Several conceptualizations of these cultures exist in the literature. However, the overarching tenets of both cultures, including the findings associated with them, were reviewed and summarized in Oyserman et al. (2002). According to Oyserman et al. (2002), individualism refers to a cultural worldview that emphasizes and promotes personal goals, personal uniqueness, and personal control. The social systems and structures in individualistic cultures are therefore

designed to protect and invigorate these values. Pursuit of personal happiness and well-being without encumbrances of others is highly valued among individualistic cultures. On the other hand, collectivist cultures emphasizes the supremacy of the group whereby the "group binds and mutually obligate individuals…group membership is central aspect of the identity…valued personal traits reflect the goals of the collective such as sacrifice for the common good and maintaining harmonious relationship with close others"(Oyserman et al., 2002, p. 5). Deducing from this description, researchers reasoned that collective values might have helped in galvanizing positive behaviours and attitudes towards the measures put in place to control the spread of the virus especially in view of the existential threat the virus poses for groups and not just for individuals. Hence, complying with the measures would mean prioritizing the group's need above individual's need. Interestingly, there is now substantial quantity of evidence showing that collectivism has positive influence on compliance with COVID-19 prevention protocol (see Card, 2022; Chen & Biswass, 2022; Chen et al., 2021; Liu, 2021; Maaravi et al., 2021).

However, although these studies portray a positive influence of collectivism on attitudes and behaviours towards COVID-19, a potent unanswered question underscores the studies so far. This unanswered question lies with the concept of collectivism itself. Collectivism is a very broad concept, encompassing so many other loosely related factors. As observed by Oyserman et al. (2002), "collectivism is a diverse construct, joining together culturally disparate foci on different kinds and levels of referent groups. In this way, collectivism may refer to a broader range of values, attitudes, and behaviours than individualism" (p. 5). The authors went further to enumerate the various facets of collectivism and some of their implications for different kinds of behaviour, naming group sacrifice and prioritization of group goals over one's own goals as just one of the various facets of collectivism (see Oyserman et al., 2002). When this perspective is considered together with the current state of research in which the focus has been on collectivism as a unitary construct, although with some few exceptions (e.g., Card, 2022), it becomes clear that we are largely unaware of the particular aspect(s) of collectivist values that is (or not) related to COVID-19. It becomes, therefore, pertinent to understand which aspect of collectivist practice that is relevant in the management of the virus and similar diseases. In fact, some elements of collectivism appear to have the potentials to constitute stumbling block in the prevention and management the virus. For instance, Oyserman et al. (2002) drew attention to the fact that collectivism is capable of heightening out-group bias - the tendency to display unfriendly attitude towards none group members.

With out-group bias, it is possible for one to undervalue and neglect the health risk that out-group member are faced with, which can lead to discrimination in implementing measures aimed at mitigating the effects of the virus (see Dhanani & Franz, 2020; Huang & Tsai, 2022; Tei & Fujino, 2022). In addition to the likelihood of engendering behaviours that could hurt others, out-group bias can equally lead to behaviours that have the potentials to hurt oneself. For instance, out-group bias has been shown to discourage people from accepting help from out-group members (Zagefka et al., 2022). Additionally, there are indications that all aspects of collectivism do not have relevant impact on COVID-19 related behaviours. Utilizing a more nuanced theory of collectivism and individualism in which both dimensions were divided into horizontal and vertical dimensions, creating two dimensions each for individualism and collectivism (vertical individualism, vertical collectivism, horizontal individualism, and horizontal collectivism), Card (2022) found that "neither horizontal collectivism nor vertical individualism were associated with any individual prevention behaviour" (Card, 2022, pp. 429). There is, therefore, the need to deconstruct and unpack the observed relationship between collectivism and compliance/adherence with COVID-19 prevention/treatment protocol in order to actually identify those aspects of

collectivism that are indeed relevant in the management of the virus, other similar outbreaks, and emergency health policies in general. This is in line with the call by Zhou et al. (2023), who, after comparing the effects of groups and their associated social norms on attitudes and behaviours associated with COVID-19, argued for more deconstructed studies in which group norms are isolated and their specific impact on COVID-19related behaviours examined.

In pursuit of this, we have isolated group loyalty. Although loyalty to the group has always been included as one of the major values in collectivist cultures (see Oyserman et al., 2002; Triandis 1998), loyalty has equally been employed as a veracious independent disposition to explain behaviours across other fields including organizational, consumer, sociological, political, and philosophical domains (e.g. Brewer & Brown, 1998; Druckman, 1994; James & Cropanzano, 1994; Kleinig, 2022; Thompson et al., 2014; Vugt & Hart, 2004). Thus, in the current study, our explications will draw from the description of group loyalty as a collectivist value, loyalty as an independent universal value, and related empirical findings. The present study is therefore aimed at contributing to the understanding of what aids compliance with emergency health protocol by joining other emerging studies to identify those specific culturally related values that impinge significantly on people's attitude and behaviour towards emergency health policies, focusing on COVID-19. In addition, in view of the nexus between loyalty and affect, we also explored the possibility that people's feelings about one's country is equally associated with compliance with COVID-19 prevention protocol and moderates the relationship between group loyalty and compliance behaviour.

The theory of group loyalty and compliance with COVID-19 protocol

According to Vugt and Hart (2004), group loyalty "is a complex, multifaceted construct, consisting of emotive, cognitive, as well as behavioural elements" (pp. 586). Social psychologists have long examined the impact of this phenomenon on the different aspects of human behaviour, using different nomenclatures, such as social categorization. However, these different nomenclatures are underscored by one common theoretical thread (Hildreth et al., 2016; Zdaniuk & Levine, 2001). This common thread is contained in the meaning of loyalty itself. According to Kleining (2022), loyalty is "a practical disposition to persist in an intrinsically valued (though not necessarily valuable) associational attachment, where that involves a potentially costly commitment to secure or at least not to jeopardize the interests or well-being of the object of loyalty. For the most part, an association that we come to value for its own sake is also one with which we come to identity (*as mine or ours*)" (online page. 2). Zdaniuk and Levine (2001) agrees with the above definition and argue that the most common trait of group loyalty, whether being discussed in/as group identity or social categorization, is the intrinsic motivation to identify with one's group and this identification in turn leads to the inclination to consider the needs of one's group above one's own personal needs and desires. Thus, group loyalty largely, "entails personal loss (or sacrifice) rather than personal gain" (Zdaniuk & Levine, 2001, p. 502). Individuals loyal to their group are therefore often more willing to support group actions even when they are perceptibly not in tandem with their own personal desires (Clague, 1992). Thus, there are strong theoretical arguments that group loyalty underscores most social actions, such as resistance, protest, political, religious, and a lot of other socio-psychological behaviour with elements of group interest (Barbalet, 1996; Druckman, 1994; Jasper, 1998; Kleining, 2022; Sun & Lin, 2010).

However, there are some who argue that individuals prioritize their group needs above theirs because of the benefit they gain from identifying with their group. Druckman (1994) observed that individuals become loyal to their group because such loyalty allows them to enjoy a sense of self-identity, self-esteem, and helps them to actualize other personal needs. The author went further to argue that individuals are motivated to identify with their group because groups are often organized to help people meet economic, socio-cultural,

political, and security needs, including psychological needs, such as the need for fulfilling relationship and belongingness. Although this line of thought may appear plausible, the fact that individuals sometimes offer to die or take very risky actions on behalf of the group suggest that group loyalty is beyond selfish interest (Vugt & Hart, 2004). Hildreth et al. (2016), arguing from the moral perspective model, agree that loyalty involves "partiality towards an object (e.g., group) that gives rise to expectations of behaviour on behalf of that object such as sacrifice, trustworthiness, and pro-sociality" (pp. 17). It is this intrinsic selfless allegiance to the group that can only explain why people could choose to die for their group as exemplified in the life of soldiers, who often chose to die for their nation even when they have opportunities to consider self and abandon missions.

Unfortunately, as we earlier observed, there is dearth of research on the direct link between group loyalty and compliance with health policies, such as the emergency regulations marshalled out by different nations to curb COVID-19. However, to explore the possibility that group loyalty has the potential to influence compliance with such regulations, we draw from the theoretical elements of group loyalty, as already highlighted, and evidence from empirical studies focusing on related constructs. Let's start with the elements of group loyalty. As we earlier observed, one of the central elements of group loyalty is the prioritization of group needs over personal needs. In order words, a loyal group member is more likely to consider the impact of his or her behaviour on the health of other members of the group even when the individual is less likely to suffer an injury as a result of the behaviour. For instance, as observed earlier, it was established at a point that younger people are less likely to suffer severe symptoms from contracting COVID-19 (LIoyd-Sherlock et al., 2020; Mueller et al., 2020). The tenets of group loyalty, as highlighted above, would require the loyal younger group members to comply with the COVID-19 restrictions not necessarily for their own sake but because of the older adults or the society in general (or their groups). Speaking along this direction, Krishnamurthy (2013) opined that group loyalty leads citizens "to exert extra effort and to make sacrifices when necessary to advance the group's collective interests and to help individual members of the collective to meet their own interests, and this is particularly the case regarding the most vulnerable. Citizens will also have a tendency to do what is necessary to encourage, validate, take care of and provide for their fellow citizens, even if it is of some cost to themselves" (pp. 132). Thus, tenets of group loyalty clearly allude to the suspicion that it would enhance compliance with emergency health regulations, especially when responses to such regulations hold existential implications for the group.

From empirical perspectives, there are also indications that group loyalty is positively associated with compliance with COVID-19 restrictions. Although we have argued that the undifferentiated use of collectivism as a composite framework to understand compliance with emergency health regulations is defective because such approach does not pin down the actual collectivist value (or values) that is (are) relevant in such compliance, it is equally possible that the positive association between collectivism and compliance stems from the indicators of group loyalty included or inferred in the items that are often used to measure the construct of collectivism. Elements of group loyalty are often copiously used to describe collectivism. It is often stated that individuals in collective or interdependent cultures think of the group welfare, interest, and sustenance far above self desires and interests (Card, 2022; Mehta et al., 2023; Oyserman & Lee, 2008; Triandis, 1993). The description of collectivism takes almost the semblance of the different perspectives on group loyalty. It is often described as system whereby membership of a group leads people to desire group harmony and to prioritize group's needs over personal preferences. It is the subordination of personal goals to those of the group (Triandis, 1994). Similarly, in their review of 20 years research on the cultural syndromes, Oyserman et al. (2002) opined that collectivists "mutually obligate individuals…and…personal traits reflect the goals of collectivism, such as sacrifice for the

common good and maintaining harmonious relationships with close others" (p. 5). Anchoring on this definition, several studies across the globe show that collectivism is related to desirable behaviours associated with COVID-19 (see Card, 2022; Chen & Biswass, 2022; Chen et al., 2021; Chen et al., 2021; Liu, 2021; Maaravi et al., 2021). Thus, it appears cogent to argue that it is the literal focus on loyalty that yields the observed positive influence of collectivism on compliance with COVID-19 regulations. However, as we have contended, loyalty has to be isolated and its influence on compliance examined in order to provide support for such hunch.

Some other related constructs that share some similar theoretical elements with group loyalty have equally been shown to explain significant variances in compliance behaviour. One of such constructs is self-transcendence, which is described as the intrinsic desire to act selflessly (Peterson & Seligman, 2004). People who show higher levels of self-transcendence have been shown to comply more with COVID-19 restrictions and policies (Neville et al., 2020; Wolf et al., 2020). Another construct that is closely related to group loyalty and has been shown to significantly influence attitudes and behaviours toward COVID-19 policies is group identification, which is defined as member identification with an interacting group and an intrinsic sense of duty to the group, which does not emanate from the benefits derivable from the group (Henry et al., 1999). Interestingly, studies show that group identification is positively related to compliance with the COVID-19 protocol (e.g Wang et al., 2023; Graziani et al., 2022; Ungson et al., 2023). Other related constructs that have been found to aid compliance with COVID-19 include prosocial behaviours and cultural tightness (Van Bavel et al., 2022; Kleitman et al., 2021). There is even evidence that undermining loyalty exacerbates people's resistance to COVID-19 prevention protocol (Finch et al., 2022). Gleaning from these lines of evidence and the theoretical tenets of group loyalty, it is reasonable, to suspect that group loyalty will be positively related to compliance with the COVID-19 prevention protocol.

Feelings about one's nation and compliance with health policies

Exploration of the role of emotion in human behaviours, attitudes, and dispositions has revolved largely around micro entities, such as individuals and organizations (Jasper, 1998). Jasper (1998) copiously argued that both social and cultural behaviours are underscored by emotions collectively shared or carried as individual dispositions. Arguing in line with appraisal theory of emotion, Jasper (1998) averred that actions of larger institutions, such as governments and their institutions, elicit emotions and, more importantly, the intensity or valance of the elicited emotions play very important role in how the people react to the decisions of the institutions or how they might act on behalf of the group. For instance, positive feelings arising from loyalty can lead to positive reactions towards the group goals while negative feelings can lead to "anger at government decisions" (Jasper, 1998, pp. 407). Empirical evidence supports the idea that there is association between people's feeling and their responses to their country policies, including health policies. For instance, Krekel et al. (2022) analyzed data from three independent large-scale survey, covering over 119 000 adult respondents across 35 countries, and found a positive association between life satisfaction and compliance with COVID-19 preventive measures. Other similar findings exist (e.g Duradoni et al., 2021; Gutiérrez-cobo et al., 2021). However, the current study differs a bit from these studies. The foregoing cited studies used measures (e.g., life satisfaction scale) that can only be considered as proxies of affect; they do not represent direct measures of affect and cannot be equivocally defined as affect measures, although they tap some aspects of emotion. On the other hand, our focus here is on core affect and we anchor on the appraisal and valence (dimentional) theories of emotion.

The appraisal theory of emotion argues that the onset and variations in emotion are significantly associated with people's evaluation of actions, events, and phenomena in their environment (Ellsworth, 2013). According to the theory, in as much as separate forms of emotion can be identified, the pattern and dimension of onset of the different forms of emotion are less automatic and static. It is assumed that emotion evolves in relation to one's evaluation and appraisal of the environment. The evolving emotions influence individuals' response to the object of appraisal (Ellsworth, 2013). On the strength of this, we assume that government or group actions are capable of eliciting or influencing significant variations in citizens' emotion, which is capable of influencing citizens' attitude and behaviour towards government actions. In addition, in line with the valence and dimensional approach to emotion, we also assume that the outcome of the appraisal process can either be positive or negative. The valence approach defines emotion by the type of valence it evokes. The dominant model under this approach distinguishes between two major types of emotion, namely positive and negative emotion (Crawford & Henry, 2004). Although there are objections to this model (see Lerner & Keltner, 2000), the validity and reliability of the two-factor valence approach have received confirmation across diverse research disciplines, domains, and cultures (Watson & Clark, 1994). In fact, this approach has informed several research paradigms and outcomes and underpinned the development of one of the most popular measures of affect, the *Positive and Negative Affect Schedule* (PANAS, Watson et al., 1988). Anchoring on this two-factor valence approach, we believe that citizens of a country can hold different levels of positive and negative emotion towards their country.

A related concept that has gained attention in the literature is collective emotion. This concept is used to describe shared emotional pattern within a group. The shared emotion can take the form of positive or negative valence and it is largely described as an automatic sharing of same emotional tempo or feelings across members of a group (Bar-Tal et al., 2007; Páez et al., 2015). However, the approach we take here differs a bit from how collective emotion has been applied. Whereas collective emotion is often used in comparison of more than one group, assuming that members of a particular group are essentially equal on a particular affect and collectively differ from another group, we anchor on the appraisal theory's view that individuals differ in how they appraise the environment and how such evaluations are likely to influence the onset or variations in their emotions (see Ellsworth, 2013; Roseman, 1996). In order words, we adopt an individual differences approach, assuming that individuals differ in the levels of either positive or negative emotion they hold towards their country. This becomes even more plausible given that our participants are largely from a seemingly culturally homogenous group. In other words, our focus is on how one's feeling towards one's country relates to one's compliance with the country's prescribed COVID-19 protocol. Although we did not find studies on the role of positive and negative feelings about one's country on compliance with COVID-19 regulations or emergency health protocol, there are empirical evidences linking affect to attitudes and behaviours toward COVID-19 policies.

Peitz et. al. (2021), for instance, found that both anger and hope were significant predictors of how most adult UK citizens considered the importance of the COVID-19 restrictions. The authors found that anger did not only inhibit compliance but equally boosted the effect of the COVID-19 conspiracy beliefs on compliance behaviour. On the other hand, they found that hopeful people considered the restrictions important and were more willing to comply. Harper et al. (2021), in their own study, equally found significant influence of fear on compliance. Čavojová et al. (2022) also found positive association between COVID-19 related prosocial behaviours and feelings of threat. In their own study, Travaglino and Moon (2021) found that shame was inimical to compliance with COVID-19 policies and equally hindered intentions to report infection to authorities. On the other hand, they found that

people with strong feelings of guilt were more likely to report COVID-19 infection to authorities. Several other studies have reported significant influence of feelings on people's reaction to COVID-19 restrictions (e.g., Díaz & Cova, 2021).

In view of the foregoing, one would expect positive feelings to enhance compliance and negative feelings to hinder compliance. However, whereas the afore-cited studies employed discrete emotional approach, our focus is on emotional valence and, as we earlier observed, there is dearth of studies employing this approach. Thus, in the absence of direct empirical evidence, Lindebaum and Jordan (2012) argument becomes something to take into consideration. The authors argued that the popular perspective in which positive and negative emotions are often portrayed as potentially good and bad, respectively, for desirable behaviours is defective. They argue that there are instances in which indicators of negative affect have been shown to yield desirable outcomes. A good example is the study of Travaglino and Moon (2021) in which guilt was found to enhance positive attitudes towards COVID-19 policies. Consequently, we refrain from hypothesizing on how positive and negative feelings about one's country will influence compliance with COVID-19 protocol. Rather, we take an exploratory approach, explore the relationships, and observe how results will emerge.

Group loyalty, affect, and compliance with COVID-19

It has been argued that the glue around most social behaviours and attitudes is emotion. Barbalet (1996) argues that loyalty carries in itself this glue. In his explication of confidence, trust, and loyalty as social emotions, the author contends that loyalty is an emotion in itself, arguing that it is the feeling of loyalty that maintains relationships, creates confidence in organizations, and makes people hold on to their group values and goals even when it seems that all might not be going well with the group (Barbalet, 1996). Similarly, Jasper (1998) averred that "emotions pervade all social life" (p. 398) and that the "strength of an identity comes from its emotional side" (p. 415). Vugt and Hart (2004) concur with this idea, contending that the strength with which people approach group affairs can be influenced by the "the experience of strong, positive emotions (happiness, joy, empathy) associated with group membership" (p. 586). Similarly, Krishnamurthy (2013), while explicating the concept of political solidarity, argued that the strength of group identification or solidarity depends on how individuals feel about the group. According to the author, the strength with which individuals express their membership of a group largely depends on individuals' feelings of "pride in relation to the (group) successes of the collective and shame in relation to its failure" (p. 131). It is the emotions that accelerates or amplifies group-related behaviours (Van Stekelenburg & Klandermans, 2013). Japser (1998) went further to recognize that this emotion can be either positive or negative, and empirical evidence supports the idea that the variations in either of the emotional states are relevant in defining group behaviour (Eniayejuni, 2023). It is therefore not surprising that Druckman (1994) was very equivocal in asserting that the consideration of emotion is critical in trying to understand how people react to group needs, a perspective that is shared by other scholars (see Bar-Tal, 2007; Páez, et al., 2015).

One area where emotion has been substantially explored in conjunction with loyalty is in the areas of consumer, brand, and service loyalty. In their articulation of loyalty following service recovery, DeWitt et al. (2008) constructed a model of loyalty in which loyalty is defined by either positive or negative emotions emanating from perceived justice in service delivery. They argued, tested, and found that emotion mediates recovery of customers' loyalty. Interestingly, aside of studies in the customer loyalty domain, we found some few studies that examined the joint effect of emotion and concepts related to group loyalty on COVID-19related behaviours. Travaglino and Moon (2020) examined the indirect effect of

collectivism and individualism on compliance with COVID-19protocol and reporting of infection through the emotions of shame and guilt. They found significant mediation effects of the emotions on the influence of the cultures on COVID-19related behaviours. They found that shame enhanced the positive effect of horizontal collectivism on compliance, willingness to report infection, and hiding from friends and acquaintances in order to avoid infecting them. Shame exerted similar role on the effect of vertical collectivism on the same outcome variables. On the other hand, guilt had opposite mediation influence on the effect of collectivism on the outcome variables. In another study, Huang et al. (2020) examined the interactive effect of fear and collectivism on the public's intentions towards the COVID-19infection. The result of the study showed that the emotion of fear interacted with collectivism to define individuals' prevention intention towards COVID-19.

The foregoing suggests that there is a nexus between group loyalty and emotion. It further suggests that the nexus has an implication for people's decision around COVID-19policies. However, the actual pattern of such relationship is not clear. We are not aware of how positive or negative mental states interface with group loyalty to define compliance with COVID-19protocol. Insight can be drawn from Jasper's (1998) explication of the relationship between emotion and attitude towards one's group. According Jasper (1998), a protection of the neighbourhood is likely to occur among people with strong positive feelings towards their neighbourhood, institutions, and government policies. If applied to the current study, the proposition would suggest that positive feelings towards one's country would potentiate the expected group loyalty's positive influence on compliance with COVID-19protocol. The opposite would, therefore, imply that negative feelings towards the country would undermine the positive influence of group loyalty on compliance. According to Jasper's (1998), such negative reaction could be a form of protest aimed at registering dissatisfaction with the policy in focus or with the general state of the neighbourhood. This line of thought has some implications in the Nigerian context.

The socio-political conditions in Nigeria today can lead one to suspect a stronger negative feeling towards government and her institutions. In addition to very poor social services and welfare, the country is facing severe economic hardship, increasing rate of insecurity, and a very high rate of recurring corruption cases involving mainly the elite and political leaders. In fact, there are strong indications that poor governance, which is not unconnected with corruption, is the major cause of lack of development in the country (Agbiboa, 2014; Augustine & Enyi, 2020), a condition that has equally been blamed for the underdevelopment in the health sector of the country (Angell et al., 2023; Onwujekwe et al., 2020). It is generally believed that this situation has created a high level of mistrust, anger, and negative feelings toward the government and her institutions, a condition that recently manifested in a nationwide protest in the country popularly known as "EndSARS" protest in which the youths called for the disbandment of a department of the nation's police, *Special Anti-Robbery Squad* (SARS), because of perceived intimidation, harassment, and violation of human rights by the unit. Although the protest literally focused on police brutality, there is the belief that the general rot in the nations' overall governance system underscored the protest (Aniche & Iwuoha, 2022; Eniayejuni, 2023; Ogbuju et al., 2022). This condition has the potentials to dissuade citizens from complying with the country's COVID-19restrictions and policies. Nevertheless, Jasper (1998) opined that group loyalty can actually override uncertainty feelings among the citizens. This might even be truer in the case of existential threat to a group, which COVID-19clearly presents. That is, given the health implications of COVID-19to both the individual and one's immediate group, feelings about a macrocosm, such as the country, maybe suppressed and compliance based on the consideration of self and one's immediate group. Considering this possibility together with the lack of studies in this area among the current study population, as we earlier observed, we again take an exploratory

approach and observe how group loyalty is likely to interact with either positive or negative feelings about one's country to define compliance with COVID-19protocol.

Summary of the objectives of the study

In view of the position of experts in cultural psychology (e.g., Oyserman et al., 2002; Triandis, 1995;) that collectivism "is a diverse construct, joining together culturally disparate foci on different kinds…a broader range of values, attitudes, and behaviours" (Oyserman et al., 2002, p. 5), we contend that the use of collectivism as an indissoluble construct in the study of the influence of culture on COVID-19 related behaviours is defective. Such approach leaves us without a fine-grained understanding of the particular value(s) in collectivism that has (or doesn't have) impact on behaviours and attitudes toward COVID-19. Consequently, we isolate the construct of group loyalty, arguing that it is equipped with indicators that are capable of engendering compliance with COVID-19 restrictions. We anchor on this intuition based on the fact that most of the restrictions require higher levels of sacrifice, a condition that is at the core of the construct of loyalty. Furthermore, we equally seek to understand how people's feelings about their country relate to compliance with government prescribed COVID-19 protocol. Specifically, we anchor on the valence model of emotion, and in line with Jasper's (1998) expositions, to argue that people hold different levels of positive and negative emotions toward their country, and that these feelings have the capacity to influence their responses to policies and decisions emanating from their country's institutions. In addition, because of the observed relationship between loyalty and emotion (see Barbalet, 1996; Dewitt et al., 2008; Jasper 1998), we equally sought to find whether group loyalty interacts with emotion to influence compliance with COVID-19 prevention protocol.

In summary, therefore, we explored the direct influences of group loyalty, positive affect, negative affect, and their interactive effects on compliance with COVID-19 prevention protocol. We hypothesise that group loyalty is positively associated with compliance with COVID-19 protocol. On the other hand, because of dearth of empirical evidence, we took an exploratory approach concerning the role of one's feeling towards one's country in compliance with the COVID-19 protocol and the possible joint effect of feelings and group loyalty on compliance with the COVID-19 protocol. We believe that findings of the present study will not only advance our knowledge about the influence of culture on willingness to comply with emergency health regulations, such as those that were prescribed in the wake of COVID-19, but will also help researchers and policy makers have fine-grained insight into the particular cultural dispositions involved, a condition that will essentially aid theorizing, formulation, and implementation of emergency health regulations that require stringent behavioural sacrifices.

Method

Participants

Data were obtained from three hundred and sixty-five (365) respondents. They were aged between 16 years and 55 years ($Mean_{age}$ = 24.44, SD = 7.96). Other demographic characteristics of the respondents are shown in Table 1.

Table 1: Demographic statistics of respondents

Source	*n*	%	Total
	Gender		
Females	223	61.1	
Males	142	38.9	365
	Religious Affiliation		
Islam	2	0.5	
Orthodox Christianity	224	61.4	
Pentecostal Christianity	127	34.8	
African Traditional Religions	10	2.7	
Others	2	0.5	365
	Marital Status		
Single	293	80.3	
Married and living with Partner	70	19.2	
Widow	1	0.3	
Widower	1	0.3	365
	Residence		
Rural	41	11.2	
Semi-Urban	107	29.3	
Urban	217	59.5	365
	Employment Status		
Employed	76	20.8	
Students	265	72.6	
Unemployed	24	6.6	36

Materials

Compliance with COVID-19 prevention protocol (CC-19 PP) Scale:

We derived seven (7) items from the Nigerian government prescribed COVID-19 protocol and restrictions (e.g., How frequent did you stay indoors during the lockdown). The items are shown in Appendix 1. Respondents rated how often they complied with the protocol on a scale of 1 (*Not at all*) to 7 (*always*). Data from the scale yielded a high level of Cronbach's alpha reliability coefficient (.91), indicating high level of internal consistency. We equally examined the factor dimensionality of the scale since the scale was designed to assess compliance with COVID-19 protocol as a unitary factor. Thus, we expected a one-factor structure. Maximum likelihood method was used for Factor extraction and direct-oblim method was employed for Factor rotation. Factor extraction was based on the Kaiser-Guttman criterion, which recommends the retention of factors with eigen values equal to or above 1 and has been shown to perform well in none complex models (see Auerswald & Moshagen, 2019). The result of factor analysis showed that only one factor exceeded the eigen value threshold of 1 (4.50) and accounted for more than half of the variance (64.35%) in the scale. Rotation was not executed since only one factor was extracted. The items factor-loading coefficients and descriptive statistics are shown in Appendix 1. In view of this factor analysis result and the recorded high reliability coefficient (.91), the scale was considered reliable and valid.

Group Loyalty:

We assessed group loyalty with five items, which were selected from Sivadas et al. (2007) measure of collectivism. Items were chosen on the extent that they reflect the definition and description of group loyalty as earlier described. In fact, Sivadas et al. (2007) description of the entire scale rhymes with the description of group loyalty. According to the authors, the collectivism scale is meant to assess the extent members of a group allow "in-group goals take precedence over those of the individual" (p. 2). However, we modified some of the items, where necessary, to ensure the items clearly measured group loyalty. For instance, the item "I will do what would please my family, even if I detested that activity" was modified to read "I will do what would please my family, group, or community, even if I detested the activity". Respondents rated their agreement with each item on scale of 1(*strongly disagree*) to 7 (*strongly agree*). Because of some of these modifications we tested the reliability and factor validity of the five items. Reliability was examined with the Cronbach's alpha method and appreciable level of coefficient was recorded (.81). In testing the Factor structure, we employed the same method we used in testing the factor structure of the CC-19 PP scale. The result of the factor analysis revealed that only one factor yielded eingen values more than 1 (2.85) and accounted for 57.03% of the variance in the scale. Rotation was not executed since only one factor was extracted. The result of factor analysis is shown in the Appendix 1. In view of the appreciable levels of both the reliability and factor analysis results, the scale was considered reliable and valid.

*Feelings about the country***:**

We assessed individuals' feelings about their country with a 5-item negative and positive affect scale. Participants were asked to rate how they feel the emotion implied in each item when thinking about their country on a scale of 1(*not at all)* to 7 (*always*). The items include (1) *I often feel happy,* (2) *I often feel angry,* (3) *I often feel satisfied,* (4) *I often feel frustrated,* and (5) *I often feel hopeful*. The items were preceded with the phrase "When you think about your country…". Items 1, 3, and 5 assessed positive feelings about one's country, whereas items 2 and 4 assessed negative feelings about one's country. The reliability of each of the dimensions was assessed with the Cronbach's alpha method. Good reliability coefficients were obtained: .84 and .77 for the positive and negative dimensions, respectively.

Procedure

Approval for the study was obtained from the University Ethics Committee, and all the rules guiding research involving human participants in the University were strictly adhered to. In accordance with the guidelines, participation was voluntary. Data for the study was obtained through an online cross-sectional survey. This approach was taken because the data collection took place at the peak of the COVID-19 spread. At this time, several restrictions made it practically impossible for in-person administration of the questionnaire. Schools were shut; movements and gathering of people were equally prohibited. The questionnaire was designed with the Google Form and the link was circulated across several online platforms, including students and staff group social media platforms, such as *WhatsApp* and *Facebook* group pages. Participants were equally encouraged to share the link in any other online platform in which they belonged. The first page of the questionnaire contained the consent form and participants were required to read and agree or disagree with it by clicking on the appropriate button. Only the responses from those who agreed to participate were used in the final analysis. Furthermore, responses from those below 16 years of age were excluded from the analyses. This decision was adopted in order to comply with the Nigerian legal age of consent, which starts from 16 years of age. Six respondents were affected by this decision. After the exclusions, 365 respondents were retained. Respondents

who wished to be reimbursed with the data spent while filling the questionnaires were credited with 300mb of data.

Statistical Analysis

Hierarchical regression analysis was employed to test the direct effects of group loyally and feelings on compliance with the COVID-19 prevention protocol. PROCESS (Hayes, 2012) was used to explore possible interaction effects. The PROCESS software analyzes interaction and mediation equations, using regression model. It produces several related outputs, but with different underlying computational assumptions, to enable users make cogent decision on the substantiality of tested path relationships. For instance, in addition to the normal significant probability level, the software equally produces bias corrected confidence interval (CI) around every coefficient. We employed both indices to determine the substantiality of each of the examined paths. In accordance with recommendations (see Hayes, 2012, Kraemer & Blasey, 2004), interaction terms were formed from centred scores, especially for those variables on interval scale.

Results

Descriptive and correlation statistics of the study variables are shown in Table 2.

Table 2: Descriptive ad correlation statistics of the study variable

Source	Mean (SD)	1	2	3	4	5	6	7	8	9	10
1. Age	24.44(.7.96)	-									
2. Gender	-	.26*	-								
3. Religious group	-	-.02	.06	-							
4. Type of residence	-	.13*	-.00	-.05	-						
5. Employment status	-	-.53*	-.09*	-.06	-.09*	-					
6. Marital status	-	.72*	.05	-.01	.06	-.46*	-				
7. Group loyalty	25.37(5.97)	.08	.01	-.01	.05	-.00	.02	-			
8. Positive feelings about the country	12.18(5.32)	.10*	.04	-.09	.09*	.04	.07	.11*	-		
9. Negative feelings about the country	8.32(3.59)	-.18*	.01	.05*	-.11*	.08	-.15	.02	-.58*	-	
10. Compliance with COVID-19 policies	35.54(9.94)	-.11*	-.17*	.03	.00	.09*	-.02	.31*	.06	.05	-

As can be seen in Table 2, CC-19PP had negative significant correlation with age and gender. It was, however, positively associated with group loyalty and employment status. Group loyalty equally had positive association with positive feelings about one's country. Both positive and negative feelings about one's country were significantly associated with age. Type of residence equally had significant positive and negative associations with positive and negative feelings about one's country, respectively. In view of these inter-correlations, we examined not only the direct and joint effects of group loyalty and feelings on CC-19PP, but we equally explored other possible joint effects on CC-19PP. For pedagogical reasons, the results are presented below in line with the main objectives of the study, starting with the relationship between group loyalty and CC-19PP.

The influence of group loyalty on CC-19PP

The result of the hierarchical regression analysis is shown in Table 3. As can be seen, step 1, containing the demographic variables, yielded an overall significant result. A breakdown of the result showed that gender significantly predicted compliance. Because females were coded 1 and males were coded 2, the negative coefficient, -3.15 indicates that females were more likely to comply with the COVID-19 protocol than the males. No other demographic variable explained significant variance in CC-19PP. The addition of group loyalty, which constituted Model 2, explained additional significant variance in compliance: ΔR^2 = .10, F(1, 357) = 42.20, p = .00. A breakdown of the result revealed significant positive association between group loyalty and CC-19PP: b = .52 (se = .08), t = 6.40, p = .00. As earlier indicated, we explored the possibility that group loyalty interacted with the demographic variables to influence CC-19PP. Consequently, we formed an interaction term between group loyalty and each of the demographic variables. The result of the analyses showed that none of the interaction terms had significant effect on CC-19PP.

Table 3: Hierarchical regression analysis of the effects of demographic variables, group loyalty, and feelings on compliance with COVID-19 policies

	Model 1 b(se)	t	Model 2 b(se)	t	Model 3 b(se)	t
1. Age	-.15(.11)	-.1.38	-.21(.10)	-.2.09*	-.20(.10)	-.2.00*
2. Gender	-.2.88(1.12)	-2.56*	-2.70(1.06)	2.53*	-.281(1.07)	-2.84*
3. Religious group	-.34(.89)	-.38	-.31(.84)	-.37	-.26(.84)	-.30
4. Type of residence	.24(.76)	.32	.08(.72)	.11	.09(.72)	.56
5. Employment status	1.06(1.220	.87	.77(1.15)	.66	.65(1.16)	.56
6. Marital status	1.96(1.65)	1.19	2.51(1.57)	1.61	2.49(1.57)	1.59
7. Group loyalty			.53(.08)	.6.40*	.51(.08)	6.13*
8. Positive feelings about the country					.15(.12)	1.26
9. Negative feelings about the country					.20(.17)	1.86
	R = .20 (se = 9.8), F(6, 358) = 2.53, p = .02		R= .38(se = 9.3), F(7, 357) = 8,45, p = 00 ΔR^2 = .10, F(1, 357) = 42.20, p = .00		R = 38(se = 9.3), F(9, 55) = 6.77, p = .00 ΔR^2 = .00, F(2, 355) = .93, p = .39	

Note: * = p < .05

The influence of feelings about one's country on CC-19PP

As can be seen in Table 3, none of the feeling dimensions had significant direct relationship with CC-19PP. We also explored the possibility that the feelings interacted with the demographic variables to influence variations in CC-19PP. Specifically, we examined the possibility that feelings about one's country, either positive or negative, interacted with the demographic variables of age and residential status to influence variations in CC-19PP. Hence, we formed the interaction terms involving the feeling dimensions and these demographic variables (positive feelings x age; negative fallings x age; positive feelings x residential status; and negative feelings x residential status). We implemented the same regression equation as shown in Table 3. The interaction terms involving age were added in step 4 and those involving residential status were added in step 5. Model 4 produced an overall significant result: R = .38 (se = .12), F (11, 353) = 5.52, p = .00. However, the breakdown of the result showed that the addition of the interaction terms involving the feeling dimensions and age did not explain any additional significant variance in CC-19PP beyond the variance already explained in step 3: ΔR^2 = .00, F(2, 353) = .08, p = .92. Similarly, step 5 produced an overall significant result: R = .39 (se = 9.34), F(13, 351) = 4.77, p = .00, but the addition of the interaction terms involving type of residence did not explain any additional significant variance in CC-19PP: ΔR^2 = .00, F(2, 351) = .64, p = .53. However, gender and group loyalty remained strongly significant predictors of compliance with COVID-19 protocol across all the models.

Joint effect of group loyalty and feelings about one's country on CC-19 PP

Because of the significant correlation between group loyalty and positive feelings about one's country, as earlier observed, we explored possible joint effect of these variables on CC-19PP. We therefore formed an interaction term involving group loyalty and positive feelings about one's country (group loyalty x positive feelings). We implemented the regression analysis as shown in Table 3, with the addition of this interaction term as step 4. The result revealed an overall significant result: R = .39, F(10, 354) = .6.32, p = .00. A breakdown of the result showed that the interaction term explained marginal significant variance in CC-19PP: [R^2 = .01, F (1, 354) = 2. 08, p = .15.]. We explored further the interaction effect by examining the influence of group loyalty on compliance at three different levels (the mean, 1 standard deviation (SD) below the mean, and 1SD above the mean) of positive feelings about one's country. The result showed that the positive effect of group loyalty on CC-19PP was stronger at lower levels of positive feelings (1SD below the mean): coeff = 16.37 (se = 2.80), t = 5.85, p = .00, 95%[10.87, 21.88]. The effect remained strong at the mean level of positive feelings: coeff = 13.16 (2.21), t = 5.96, p = .00, 95% [8.81, 17.50]. However, the effect declined at higher level of positive feelings: coeff = 9.94 (se = 3.26), t = 3.05, p = .00, 95% [3.53, 16.35).

Discussions

In the medical sciences, serious emphasis is always placed on chemotherapy and other physiological procedures. However, time after time, the unforeseen emergence and outbreak of deadly pathogens show that human behaviour is equally critical in the prevention, management, and treatment of these pathogens. The recent outbreak of COVID-19 heightened this perspective. Behavioural changes became the first line of charge in the control and management of the virus, but the prescription of such changes attracted resistance across the world. To explain the variations in compliance to these prescriptions across the world, the differences in culture drew the attention of scholars. Prominent in this regard is the culture of collectivism. Several studies examined the role of collectivism, as a unitary factor, in compliance with the emergency regulations marshalled out across the world to curtail the

spread of virus. However, in line with Oyserman et al. (2002), we argued that collectivism is a broad construct housing loosely related values that are not likely to exert same pattern of influence on behaviours and, therefore, there is the need to disentangle these values and examine their independent influences on COVID-19. Such approach will help us gain fine-grained understanding of the relationship between culture and COVID-19, a condition that is necessary for precise and well informed articulation of intervention strategies. Consequently, we identified group loyalty as one of the components of collectivism and examined its influence on compliance with COVID-19 prevention protocol among Nigerians. We also investigated the role people's feeling about their country in compliance with COVID-19 prevention protocol. This is premised on the documented theoretical and empirical relationship between culturally induced behaviours and emotion in one hand and between emotion and COVID-19 on the other hand.

As speculated, group loyalty significantly predicted compliance with COVID-19 prevention protocol. Specifically, compliance with COVID-19 prevention protocol increased alongside increases in level of group loyalty. This result is consistent with previous findings on the role of group related behaviours in compliance with health policies (see Druckman, 1994; Gonçalves et al., 2020; Krishnamurthy, 2013). As we explored in the literature review section, the hallmark of group loyalty is sacrifice. It entails individual's willingness to prioritize group needs far above individual goals and desires. When advanced further, it means that individuals who are loyal to their groups are more likely to forego some pleasures and endure some difficulties in order to enhance the welfare or specified common goal of the group. With reference to the present findings, and given the discomfort associated with the several COVID-19 protocol, this finding implies that individuals who hold high level of group loyalty are more likely to sacrifice personal pleasure and endure the difficulties associated with the COVID-19 protocol probably in order to avoid the spread of the virus among their communities.

However, unlike group loyalty, feelings about one's country did not yield any direct influence on compliance behaviour. This result appears not to be in tandem with earlier cited studies, showing significant influences of different positive and negative emotions on compliance with COVID-19 protocol (e.g., Díaz & Cova, 2021). However, we did observe earlier that most of these previous studies employed the discrete emotion approach whereas we employed the valence approach. To test whether this difference was responsible for the inconsistency, we conducted a post-hoc analysis whereby we examined the relationship between each of the emotions we measured and compliance behaviour. The result did not reveal any significant relationship between any of the emotions, whether positive or negative, with compliance behaviour. At close observation, it appears the inconsistency may have risen from the differences between the measurement scope of the affect scale used in the current study and those employed in previous studies. Whereas we measured people's general feelings about their country, with believe that such disposition would be related to how people react to every policy of their country, most of the previous studies appear to have specifically focused on people's feelings towards the COVID-19 policies.

Another possibility is that people may be less likely to allow their general feelings about their country determine their decisions on personally related health matters. That is, because of the high risk involved in health matters, especially when it involves highly contagious diseases with fatal consequences, such as COVID-19, people may be less likely to allow feelings not associated with the disease to define their reactions to issues concerning the disease. This is in line with the argument that people are likely to discountenance some personal feelings in order to protect or purse group goals, especially when such goals are associated with the group existence (Jasper, 1998; Van Stekelenburg & Klandermans, 2013).

Another possibility, which is related to the scope of the affect measure we employed, is the likelihood that an affect measure that focuses on one's immediate group and cultural group might prove more effective than one that focuses on a distant object because feelings towards closer others are likely to be stronger than feelings towards non-closer or nearly abstract entities.

Nevertheless, as equally suspected, we found evidence of interactive effect of group loyalty and feeling's about one's country on compliance with COVID-19 protocol. Specifically, group loyalty and positive feelings about one's country jointly exerted significant marginal influence on willingness to comply with COVID-19 protocol. The positive influence of group loyalty waned as positive feelings about the country increased. This poses a sort of surprise. Ordinarily, one would expect that people who are happy with their country are likely to abide by the rules of the country, a condition that has been shown in several studies (see Duradoni et al., 2021; Gutiérrez-cobo et al., 2021). However, there seem to be a kind of difference between the focus of the current study and the previous studies, which might be able to explain this inconsistency. Whereas the present study focused on pure affect, most of the previous studies, as we earlier remarked, employed what might be considered as proxies to affect, such as well-being constructs like life satisfaction. It is therefore possible that the positive association between those constructs and compliance emanated from the people's desire to protect and maintain their own well-being and not necessarily because of how they actually feel about things around them.

On the other hand, a probable explanation of the current finding may be drawn from the findings that show that happier people can actually become selfish and discountenance prosocial behaviours when their feelings are threatened. Studies show that people are less likely to engage in helping and generous behaviours if such actions are likely to undermine their positive feelings (Isen, 2000; Isen & Simmonds, 1978). In view of the fact that COVID-19 restrictions involved high level of discomfort and required appreciable level of patriotism, very happy people might have found it difficult to comply with the restrictions. The restrictions, especially at the peak of the spread of the virus, were highly discomforting. It is cogent, therefore, to assume that people with high level of positive feelings were highly unconformable and became unwilling to comply with the restrictions. This line of idea is further supported by the indication that people with high positive feelings are often more likely to take available route in order to minimize pain and maximize pleasure (Von Neumann & Morgenstern, 1947). In this case, it could therefore be argued that those with high level of positive feelings were more willing to breach the restrictions in order to minimize the discomfort and pain associated with the restrictions.

The foregoing is also in tandem with Heise (1979, 1985) affect control theory as espoused by Jasper (1998). Jasper (1998) argued that people are likely to fight to keep their neighbourhood if they feel positively about it. In Jasper's (1998) words, "those who feel positively about their neighbourhood, for instance, may respond with greater outrage to proposals to change it" (pp. 402-403). It is obvious, as earlier highlighted, that the COVID-19 prevention protocol disrupted almost every aspect of human life, including religious life, schooling, business and marketing, social activities, such as recreational and sporting events. Jasper's (1998) view, obviously, would predict that those who hold strong positive feelings about their communities, probably because of the joy they derive from the activities and events within their community, will resist the COVID-19 restrictions. Another possible line of explanation can be found in the idea that positive feelings potentiate undervaluing of risk situations. According to Schwarz (1990), positive feelings are often likely to make individuals perceive the environment as safe, which in turn interferes with their ability to thoroughly scrutinize information. When applied to the present findings, one can assume that those with higher levels of positive feeling were less likely to appreciate the danger

associated with the COVID-19; hence, were equally less likely to comply with the restrictions. However, there are those who disagree with this line of thought, arguing tenaciously that positive emotion is associated with efficiency (Isen, 2001). Unfortunately, the present study leaves us with only speculations on the reasons for the present finding. Thus, it is better for us to consider this present finding and the explanations we have adduced as vistas for future studies on the role of emotion and related cultural phenomenon in compliance with health policies, especially when it has to do with policies that create serious discomfort and require sacrifices from the people.

Another finding of the current study worth mentioning is the finding that females were more likely to comply with the COVID-19 prevention protocol than their male counterparts. This finding is consistent with previous studies on compliance with COVID-19 curtailing measures (e.g Galasso et al., 2020; Paramita et al., 2021) and also with findings concerning health behaviours and attitudes generally (sees Fleming & Agnew-Brune, 2015). Several ideas have been tested and put forward to explain this scenario. The idea that females posses more famine qualities, such as empathy, love, compassion and collaborative tendencies, which are obviously qualities that are helpful in managing health matters, than males who are often likely to express masculine qualities, such as aggressiveness, domination, and competitiveness that are less likely to aid desirable health behaviours, have been put forward as possible reasons for the gender gap (Paramita et al., 2021). This idea is supported by the findings that feminine qualities and roles, whether possessed by males or females, are positively associated with compliance with COVID-19 curtailing measures (Paramita et al., 2021). In what seems to be a cap on this idea, Galasso et al. (2020) found that the gender gap was not moderated either by socio-demographic, employment, psychological and behavioural factors across countries. However, whereas this idea that feminine qualities enhance desirable health behaviours and attitudes has considerable empirical support, there is a potential danger here. The danger is the tendency to assume that women are biologically equipped to comply with health policies.

An important factor that should be considered in explaining this gender gap is culturally/socially assigned division of labour across cultures. Although related, the culturally assigned division of labour we refer to here is different from the universal gender role ideology as explained in Paramita et al. (2021). Rather, we are referring to prevailing and practiced traditionally, culturally, and socially assigned gender (sex) roles in a society in which default in performance or fulfilment is likely to attract sanctions. This role demarcation is often pronounced in families. Although Paramita et al. (2021) argued that such traditional role expectations are breaking down across the world, it is arguably very strong across African nations (see Alesina et al., 2021; Etim & Iwu, 2019; Kudo, 2021). For instance, across many Africa cultures, men are culturally and socially expected to be the bread winners of their families. Apparently, the restrictions affected the fulfilment of this role. As earlier highlighted, markets, businesses and movements were generally restricted, a situation that seriously impinged on the incomes and earnings of families. Therefore, it is possible that men, reeling under the pressure to fulfil the culturally and socially imposed responsibilities toward their families, were more likely to breach the restrictions than the females. Some findings lend support to this line of thought. Bargain and Aminjonov (2021) found that the spread of COVID-19 was related to work mobility. The spread was more among those who struggled to go to work. Such struggle may not be unconnected with the pressure to provide for those under one's care. Many other studies show that economic needs and need for survival are critical factors in defining levels of compliance with the COVID-19 restrictions (see Bollyky et al., 2022; Wright et al., 2020). Thus, a veritable quest for future studies is to unravel the boundary conditions, especially those imposed conditions and not

psychologically learned conditions, which are responsible for the gender gap in compliance with the COVID-19 protocol and other similar health policies.

Implications of the study findings

The current study has joined others to show the importance of socio-culturally related behavioural dispositions in the effective implementation of health policies, especially under emergency conditions. It has shown that group loyalty is a veritable tool that could be leveraged upon to enhance compliance with health policies, such as in the implementation of health advocacy and communication. In communicating the need for adherence and compliance with disruptive emergency health protocol, for instance, individuals' loyalty to their group may be made salient. In this case, people would be primed to think more of the implication of their behaviour to their group. Priming the need to preserve one's group may likely prove more effective than, for instance, reminding people of the punishments associated with non-compliance. Another way that group loyalty can be recruited to enhance compliance is by anchoring the advocacy for compliance, where possible, on group institutions that group members revere, such as traditional institutions. In Nigeria and in many other African nations, loyalty to these group traditional institutions remains very strong. Again, the finding that females are more likely than males to comply with the COVID-19 protocol provides both policy makers and researchers the avenue, as we earlier pointed out, to look further into the phenomenon to avoid erroneous conclusion. For instance, if further inquiries establish that males are actually often less likely to comply because of the culturally and socially imposed pressure to fulfil their role as providers to their families especially in poor economically developed nations like Nigeria, intervention strategies will then focus much on how to help men attain such responsibility in order not to breach the protocol.

Limitations of the study and suggestions for future studies

The first limitation of the current study revolves around the demographic characteristics of the participants. Most of the respondents were from the Igbo-speaking tribe of the Eastern Nigeria. This raises the doubt on the applicability of present findings in other tribes in Nigeria and Africa in general. However, the fact that most of Nigerian and African tribes practice communalism, where group loyalty is literally demanded from members, suggests that the result can be generalized across these culturally similar groups. This notwithstanding, a diverse sample is likely to enrich our knowledge in this area. In addition, we are also of the hunch that our measure of affect might have measured a broader affect base and, therefore, failed to adequately capture people's feeling with specific reference to COVID-19. Future studies may therefore aim at employing positive and negative affect measures designed to directly tap people's feeling about their countries COVID-19 protocol.

Conclusion

The importance of socio-culturally related behaviours and dispositions in managing outbreak of diseases, especially contagious ones, is currently not under contention. However, there is need to indentify, isolate, and test those behaviours and dispositions, especially among understudied populations, such as African populations. Such approach would yield fine-grained results that provide unambiguous knowledge for practitioners and policy makers. In Africa, people place high priority on their groups' welfare and sustenance, and the current study has shown that this behaviour is strongly associated with compliance with emergency health protocol, focusing on COVID-19 prevention protocol. Thus, as scholars continue to indentify more behavioural dispositions that are capable of influencing compliance with health policies, especially under emergency circumstances, policy makers and practitioners

within the health sector in Nigeria and Africa should, at the moment, consider group loyalty as an important factor in defining level of compliance with health protocol, especially when such protocol involve high level of personal discomfort and selfless sacrifices.

Declaration of interest

The authors declare no competing interests.

Data availability

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

References

Anderson, R. M., Hollingsworth, T. D., Baggaley, R. F., Maddren, R., & Vegvari, C. (2020). COVID-19 spread in the UK: the end of the beginning?. *The Lancet*, *396*(10251), 587-590. doi: 10.1016/S0140-6736(20)31689-5

Agbiboa, D. (2014). Under-development in practice: Nigeria and the enduring problem of corruption. *Development in Practice*, *24*(3), 390-404. https://doi.org/10.1080/09614524.2014.899559

Alesina, A., Brioschi, B., & La Ferrara, E. (2021). Violence against women: a cross-cultural analysis for Africa. *Economica*, *88*(349), 70-104. https://doi.org/10.1111/ecca.12343

Angell, B., Onwujekwe, O., Roy, P., Nwokolo, C., McKee, M., Mandeville, K., ... & Balabanova, D. (2023). Designing feasible anti-corruption strategies in the Nigerian health system: A latent class analysis of a discrete choice experiment. *World Development*, *166*, 106208. https://doi.org/10.1016/j.worlddev.2023.106208

Aniche, E. T., & Iwuoha, V. C. (2022). Beyond Police Brutality: Interrogating the Political, Economic and Social Undercurrents of the #EndSARS Protest in Nigeria. *Journal of Asian and African Studies*, *58*(8), 1639-1655. https://doi.org/10.1177/00219096221097673

Augustine, A. A., & Enyi, E. P. (2020). Control of corruption, trust in government, and voluntary tax compliance in South-West, Nigeria. *Management Studies*, *8*(1), 84-97. doi: 10.17265/2328-2185/2020.01.011

Van Bavel, J. J., Cichocka, A., Capraro, V., Sjåstad, H., Nezlek, J. B., Pavlović, T., ... & Jørgensen, F. J. (2022). National identity predicts public health support during a global pandemic. *Nature Communications*, *13*(1), 517. https://doi.org/10.1038/s41467-021-27668-9

Barak, N., Sommer, U., & Mualam, N. (2021). Urban attributes and the spread of COVID-19: The effects of density, compliance and socio-political factors in Israel. *Science of the Total Environment*, *793*, 148626. doi: 10.1016/j.scitotenv.2021.148626

Barbalet, J. M. (1996). Social emotions: confidence, trust and loyalty. *International Journal of Sociology and Social Policy*, *16*(9/10), 75-96. https://doi.org/10.1108/eb013270

Bargain, O., & Aminjonov, U. (2021). Poverty and COVID-19 in Africa and Latin America. *World Development*, *142*, 105422. https://doi.org/10.1016/j.worlddev.2021.105422

Bar-Tal, D., Halperin, E., & De Rivera, J. (2007). Collective emotions in conflict situations: Societal implications. *Journal of Social Issues*, *63*(2), 441-460. https://doi.org/10.1111/j.1540-4560.2007.00518.x

Beeckman, M., De Paepe, A., Van Alboom, M., Maes, S., Wauters, A., Baert, F., ... & Poppe,

L. (2020). Adherence to the physical distancing measures during the COVID-19 pandemic: A HAPA-based perspective. *Applied Psychology: Health and Well-Being*, *12*(4), 1224-1243. https://doi.org/10.1111/aphw.12242

Bhadra, A., Mukherjee, A., & Sarkar, K. (2021). Impact of population density on COVID-19 infected and mortality rate in India. *Modeling Earth Systems and Environment*, *7*, 623-629. https://doi.org/10.1007/s40808-020-00984-7

Bielecki, M., Patel, D., Hinkelbein, J., Komorowski, M., Kester, J., Ebrahim, S., ... & Schlagenhauf, P. (2020). Reprint of: Air travel and COVID-19 prevention in the pandemic and peri-pandemic period: A narrative review. *Travel Medicine and Infectious Disease*, *38*, 101939. https://doi.org/10.1016/j.tmaid.2020.101939

Bollyky, T. J., Castro, E., Aravkin, A. Y., Bhangdia, K., Dalos, J., Hulland, E. N., ... & Dieleman, J. L. (2023). Assessing COVID-19 pandemic policies and behaviours and their economic and educational trade-offs across US states from Jan 1, 2020, to July 31, 2022: An observational analysis. *The Lancet*, *401*(10385), 1341-1360. https://doi.org/10.1016/S0140-6736(23)00461-0

Brewer, M. B., & Brown, R. J. (1998). Intergroup relations. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), Handbook of social psychology (4th ed., Vol. 2, pp. 554–594). New York: McGrawHill.

Bwire, G., Ario, A. R., Eyu, P., Ocom, F., Wamala, J. F., Kusi, K. A., ... & Talisuna, A. O. (2022). The COVID-19pandemic in the African continent. *BMC Medicine*, *20*(1), 1-23. https://doi.org/10.1186/s12916-022-02367-4

Card, K. G. (2022). Collectivism, individualism and COVID-19 prevention: A cross sectional study of personality, culture and behavior among Canadians. *Health Psychology and Behavioral Medicine*, *10*(1), 415-438. https://doi.org/10.1080/21642850.2022.2069571

Carlucci, L., D'ambrosio, I., & Balsamo, M. (2020). Demographic and attitudinal factors of adherence to quarantine guidelines during COVID-19: the Italian model. *Frontiers in Psychology*, *11*, 559288. https://doi.org/10.3389/fpsyg.2020.559288

Čavojová, V., Adamus, M., & Ballová Mikušková, E. (2022). You before me: How vertical collectivism and feelings of threat predicted more socially desirable behaviour during COVID-19 pandemic. *Current Psychology*. https://doi.org/10.1007/s12144-022-03003-3

Chen, Y., & Biswas, M. I. (2023). Impact of national culture on the severity of the COVID-19 pandemic. *Current Psychology*, *42*(18), 15813-15826. https://doi.org/10.1007/s12144-022-02906-5

Chen, C., Frey, C. B., & Presidente, G. (2021). Culture and contagion: Individualism and compliance with COVID-19 policy. *Journal of Economic Behavior & Organization*, *190*, 191-200. https://doi.org/10.1016/j.jebo.2021.07.026

Chen, D., Peng, D., Rieger, M. O., & Wang, M. (2021). Institutional and cultural determinants of speed of government responses during COVID-19 pandemic. *Humanities and Social Sciences Communications*, *8*(1).171. https://doi.org/10.1057/s41599-021-00844-4

Chu, D. K., Akl, E. A., Duda, S., Solo, K., Yaacoub, S., Schünemann, H. J., ... & Reinap, M. (2020). Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: a systematic review and meta-analysis. *The Lancet*, *395*(10242), 1973-1987. DOI:https://doi.org/10.1016/S0140-6736(20)31142-9

Crawford, J. R., & Henry, J. D. (2004). The Positive and Negative Affect Schedule (PANAS): Construct validity, measurement properties and normative data in a large non-clinical sample. *British Journal of Clinical Psychology*, *43*(3), 245-265.

https://doi.org/10.1348/0144665031752934
Cucinotta, D & Vanelli, M. (2020). WHO Declares COVID-19 a Pandemic. *Acta Biomedica, 91(1)*, 157-160. doi: 10.23750/abm.v91i1.9397
DeWitt, T., Nguyen, D. T., & Marshall, R. (2008). Exploring customer loyalty following service recovery: The mediating effects of trust and emotions. *Journal of Service Research*, *10*(3), 269–281. https://doi.org/10.1177/1094670507310767
Dhanani, L. Y., & Franz, B. (2020). Unexpected public health consequences of the COVID-19 pandemic: a national survey examining anti-Asian attitudes in the USA. *International Journal of Public Health*, *65*, 747-754. https://doi.org/10.1007/s00038-020-01440-0
Díaz, R., & Cova, F. (2022). Reactance, morality, and disgust: the relationship between affective dispositions and compliance with official health recommendations during the COVID-19 pandemic. *Cognition and Emotion*, *36*(1), 120-136. https://doi.org/10.1080/02699931.2021.1941783
Donthu, N., & Gustafsson, A. (2020). Effects of COVID-19 on business and research. *Journal of Business Research*, *117*, 284-289. https://doi.org/10.1016/j.jbusres.2020.06.00
Druckman, D. (1994). Nationalism, patriotism, and group loyalty: A social psychological perspective. *Mershon International Studies Review*, *38*(Supplement_1), 43-68. https://doi.org/10.2307/222610
Duradoni, M., Fiorenza, M., & Guazzini, A. (2021). When Italians follow the rules against COVID infection: a psychological profile for compliance. *COVID*, *1*(1), 246-262. https://doi.org/10.3390/COVID1010020
Du Toit, A. (2020). Outbreak of a novel coronavirus. *Nature Reviews Microbiology*, *18*(3), 123-123. DOIhttps://doi.org/10.1038/s41579-020-0332-0
Dwivedi, Y. K., Hughes, D. L., Coombs, C., Constantiou, I., Duan, Y., Edwards, J. S., ... & Upadhyay, N. (2020). Impact of COVID-19 pandemic on information management research and practice: Transforming education, work and life. *International Journal of Information Management*, *55*, 102211. https://doi.org/10.1016/j.ijinfomgt.2020.10221
Ellsworth, P. C. (2013). Appraisal theory: Old and new questions. *Emotion Review*, *5*(2), 125-131. https://doi.org/10.1177/1754073912463617
Eniayejuni, A. (2023). Impact of positive and negative emotions on protest for institutional reform: An analysis of# EndSars Twitter posts. *Acta Psychologica*, *236*, 103929. https://doi.org/10.1016/j.actpsy.2023.103929
Etim, E., & Iwu, C. G. (2019). A descriptive literature review of the continued marginalisation of female entrepreneurs in sub-Saharan Africa. *International Journal of Gender Studies in Developing Societies*, *3*(1), 1-19. https://doi.org/10.1504/IJGSDS.2019.096755
Fairlie, R., & Fossen, F. M. (2021). The early impacts of the COVID-19 pandemic on business sales. *Small Business Economics*, *58***,** 1853–1864. https://doi.org/10.1007/s11187-021-00479-4
Finch, N., Halliday, S., Tomlinson, J., Meers, J., & Wilberforce, M. (2022). Undermining loyalty to legality? An empirical analysis of perceptions of 'lockdown' law and guidance during COVID-19. *The Modern Law Review*, *85*(6), 1419-1439. https://doi.org/10.1111/1468-2230.12755
Fleming, P. J., & Agnew-Brune, C. (2015). Current trends in the study of gender norms and health behaviors. *Current opinion in Psychology*, *5*, 72-77. https://doi.org/10.1016/j.copsyc.2015.05.001
Galasso, V., Pons, V., Profeta, P., Becher, M., Brouard, S., & Foucault, M. (2020). Gender

differences in COVID-19 attitudes and behavior: Panel evidence from eight countries. *Proceedings of the National Academy of Sciences, 117*(44), 27285-27291. https://doi.org/10.1073/pnas.2012520117

Graziani, A. R., Botindari, L., Menegatti, M., & Moscatelli, S. (2022). So far, so close: identification with proximal and distal groups as a resource in dealing with the COVID-19 pandemic. *International Journal of Environmental Research and Public Health*, *19*(18), 11231. https://doi.org/10.3390/ijerph191811231

Gutiérrez-Cobo, M. J., Megías-Robles, A., Gómez-Leal, R., Cabello, R., & Fernández-Berrocal, P. (2021). Is it possible to be happy during the COVID-19 lockdown? A longitudinal study of the role of emotional regulation strategies and pleasant activities in happiness. *International Journal of Environmental Research and Public Health*, *18*(6), 3211. https://doi.org/10.3390/ijerph18063211

Hayes, A. F. (2012). PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling [White paper]. Retrieved from www.afhayes.com/public/ process2012.pdf

Harper, C. A., Satchell, L. P., Fido, D., & Latzman, R. D. (2021). Functional fear predicts public health compliance in the COVID-19 pandemic. *International Journal of Mental Health and Addiction*, *19*, 1875-1888. https://doi.org/10.1007/s11469-020-00281-5

Heise, D. R. 1979. *Understanding events: Affect and the construction of social action*. New York: Cambridge University Press.

Heise, D. R. 1985. Affect control theory: Respecification, estimation, and tests of the formal model. *Journal of Mathematical Sociology, 11*(3), 191-222. https://doi.org/10.1080/0022250X.1985.9989989

Henry, K. B., Arrow, H., & Carini, B. (1999). A tripartite model of group identification: Theory and measurement. *Small Group Research*, *30*(5), 558-581. https://doi.org/10.1177/104649649903000504

Hildreth, J. A. D., Gino, F., & Bazerman, M. (2016). Blind loyalty? When group loyalty makes us see evil or engage in it. *Organizational Behavior and Human Decision Processes*, *132*, 16-36. https://doi.org/10.1016/j.obhdp.2015.10.001

Hills, S., & Eraso, Y. (2021). Factors associated with non-adherence to social distancing rules during the COVID-19 pandemic: a logistic regression analysis. *BMC Public Health*, *21*(1), 1-25. https://doi.org/10.1186/s12889-021-10379-7

Hoofman, J., & Secord, E. (2021). The effect of COVID-19 on education. *Pediatric Clinics*, *68*(5), 1071-1079. doi: 10.1016/j.pcl.2021.05.009

Huang, F., Ding, H., Liu, Z., Wu, P., Zhu, M., Li, A., & Zhu, T. (2020). How fear and collectivism influence public's preventive intention towards COVID-19 infection: a study based on big data from the social media. *BMC Public Health*, *20*(1), 1-9. https://doi.org/10.1186/s12889-020-09674-6

Huang, C. Y., & Tsai, W. (2022). Asian American parents' experiences of stress, discrimination, and mental health during COVID-19. *Families, Systems, & Health, 41*(1), 68–77. https://doi.org/10.1037/fsh0000715

Hyland, P., Shevlin, M., Murphy, J., McBride, O., Fox, R., Bondjers, K., ... & Vallières, F. (2021). A longitudinal assessment of depression and anxiety in the Republic of Ireland before and during the COVID-19 pandemic. *Psychiatry Research*, *300*, 113905. https://doi.org/10.1016/j.psychres.2021.113905

Ibeneme, S., Karamagi, H., Muneene, D., Goswami, K., Chisaka, N., & Okeibunor, J. (2022). Strengthening health systems using innovative digital health technologies in Africa. *Frontiers in Digital Health*, *4*, 854339. https://doi.org/10.3389/fdgth.2022.854339

Impouma, B., Mboussou, F., Farham, B., Wolfe, C. M., Johnson, K., Clary, C., ... & Moeti, M. (2021). The COVID-19 pandemic in the WHO African region: the first year (February 2020 to February 2021). *Epidemiology & Infection*, *149*, e263. https://doi.org/10.1017/S0950268821002429

Isen, A. M. (2000). Some perspectives on positive affect and self-regulation. *Psychological Inquiry*, *11*(3), 184-187. https://www.jstor.org/stable/1449800

Isen, A. M. (2001). An influence of positive affect on decision making in complex situations: Theoretical issues with practical implications. *Journal of Consumer Psychology*, *11*(2), 75-85. https://doi.org/10.1207/S15327663JCP1102_01

Isen, A. M., & Simmonds, S. F. (1978). The effect of feeling good on a helping task that is incompatible with good mood. *Social Psychology*, *41*(4), 346-349. https://doi.org/10.2307/3033588

James, K., & Cropanzano, R. (1994). Dispositional group loyalty and individual action for the benefit of an ingroup: Experimental and correlational evidence. *Organizational Behavior and Human Decision Processes*, *60*(2), 179-205. https://doi.org/10.1006/obhd.1994.1080

Jasper, J. M. (1998). The emotions of protest: Affective and reactive emotions in and around social movements. *Sociological Forum*, *13*, 397-424. https://doi.org/10.1023/A:1022175308081

Kleinig, J. (2022). Friendship and loyalty. In D. Jeske (Ed.) *The routledge handbook of philosophy of friendship* (pp. 311-320). New York: Routledge. https://doi.org/10.4324/9781003007012

Kleitman, S., Fullerton, D. J., Zhang, L. M., Blanchard, M. D., Lee, J., Stankov, L., & Thompson, V. (2021). To comply or not comply? A latent profile analysis of behaviours and attitudes during the COVID-19 pandemic. *PloS One*, *16*(7), e0255268. https://doi.org/10.1371/journal.pone.0255268

Kraemer, H. C., & Blasey, C. M. (2004). Centring in regression analyses: a strategy to prevent errors in statistical inference. *International Journal of Methods in Psychiatric Research*, *13*(3), 141-151.

Krekel, C., Swanke, S., De Neve, J., & Fancourt, D. (2022). Are happier people more compliant? Global evidence on preventive health behaviours during COVID-19 lockdowns. DOI: https://doi.org/10.21203/rs.3.rs-1521911/v1

Krishnamurthy, M. (2013). Political solidarity, justice and public health. *Public Health Ethics*, *6*(2), 129-141. doi:10.1093/phe/pht017

Kudo, Y. (2021). Does criminalizing discriminatory cultural practices improve women's welfare? A simple model of Levirate marriage in Africa. *Economics Letters*, *199*, 109728. https://doi.org/10.1016/j.econlet.2021.109728

Kumar, A., & Nayar, K. R. (2021). COVID 19 and its mental health consequences. *Journal of Mental Health*, *30*(1), 1-2. https://doi.org/10.1080/09638237.2020.1757052

Le Couteur, D. G., Anderson, R. M., & Newman, A. B. (2020). COVID-19 through the lens of gerontology. *The Journals of Gerontology: Series A*, *75*(9), e119-e120. https://doi.org/10.1093/gerona/glaa077

Lerner, J. S., & Keltner, D. (2000). Beyond valence: Toward a model of emotion-specific influences on judgement and choice. *Cognition & Emotion*, *14*(4), 473-493. https://doi.org/10.1080/026999300402763

Lindebaum, D., & Jordan, P. J. (2012). Positive emotions, negative emotions, or utility of discrete emotions?. *Journal of Organizational Behavior*, *33*(7), 1027-1030. https://doi.org/10.1002/job.1819

Liu, J. H. (2021). Majority world successes and European and American failure to contain

COVID-19: Cultural collectivism and global leadership. *Asian Journal of Social Psychology*, *24*(1), 23-29. https://doi.org/10.1111/ajsp.12461

Lloyd-Sherlock, P., Ebrahim, S., Geffen, L., & McKee, M. (2020). Bearing the brunt of COVID-19: older people in low and middle income countries. *BMJ*, *368*. doi: https://doi.org/10.1136/bmj.m1052

Lone, S. A., & Ahmad, A. (2020). COVID-19 pandemic–an African perspective. *Emerging Microbes & Infections*, *9*(1), 1300-1308. https://doi.org/10.1080/22221751.2020.1775132

Maaravi, Y., Levy, A., Gur, T., Confino, D., & Segal, S. (2021). "The tragedy of the commons": How individualism and collectivism affected the spread of the COVID-19 pandemic. *Frontiers in Public Health*, *9*, 627559. https://doi.org/10.3389/fpubh.2021.627559

Mackenbach, J. P. (2014). Cultural values and population health: a quantitative analysis of variations in cultural values, health behaviours and health outcomes among 42 European countries. *Health & Place*, *28*, 116-132. https://doi.org/10.1016/j.healthplace.2014.04.004

McCarthy, H., Potts, H. W., & Fisher, A. (2021). Physical activity behavior before, during, and after COVID-19 restrictions: longitudinal smartphone-tracking study of adults in the United Kingdom. *Journal of medical Internet Research*, *23*(2), e23701. doi: 10.2196/23701

Mbow, M., Lell, B., Jochems, S. P., Cisse, B., Mboup, S., Dewals, B. G., ... & Yazdanbakhsh, M. (2020). COVID-19 in Africa: Dampening the storm?. *Science*, *369*(6504), 624-626. DOI: 10.1126/science.abd3902

Mehta, J. M., Chakrabarti, C., De Leon, J., Homan, P., Skipton, T., & Sparkman, R. (2023). Assessing the role of collectivism and individualism on COVID-19beliefs and behaviors in the Southeastern United States. *PLoS One*, *18*(1), e0278929. https://doi.org/10.1371/journal.pone.0278929

Moore, J. T., Ricaldi, J. N., Rose, C. E., Fuld, J., Parise, M., Kang, G. J., ... & Westergaard, R. (2020). Disparities in incidence of COVID-19 among underrepresented racial/ethnic groups in counties identified as hotspots during June 5–18, 2020—22 states, February–June 2020. *Morbidity and Mortality Weekly Report*, *69*(33), 1122–1126. doi: 10.15585/mmwr.mm6933e1

Mueller, A. L., McNamara, M. S., & Sinclair, D. A. (2020). Why does COVID-19 disproportionately affect older people?. *Aging (Albany NY)*, *12(10)*, 9959-9981. doi: 10.18632/aging.103344.

Murphy, M. P. (2020). COVID-19 and emergency eLearning: Consequences of the securitization of higher education for post-pandemic pedagogy. *Contemporary Security Policy*, *41*(3), 492-505. https://doi.org/10.1080/13523260.2020.1761749

Nachega, J. B., Sam-Agudu, N. A., Masekela, R., van der Zalm, M. M., Nsanzimana, S., Condo, J., ... & Suleman, F. (2021). Addressing challenges to rolling out COVID-19 vaccines in African countries. *The Lancet Global Health*, *9*(6), e746-e748. https://doi.org/10.1016/S2214-109X(21)00097-8

Napier, A. D., Ancarno, C., Butler, B., Calabrese, J., Chater, A., Chatterjee, H., ... & Woolf, K. (2014). Culture and health. *The Lancet*, *384*(9954), 1607-1639. https://doi.org/10.1016/S0140-6736(14)61603-2

Ogbuju, E., Mpama, I., Oluwafemi, T. M., Ochepa, F. O., Agbogun, J., Yemi-Peters, V., ... & Taoheed, B. (2022). The Sentiment Analysis of EndSARS Protest in Nigeria. *Journal of Applied Artificial Intelligence*, *3*(2), 13-23. https://doi.org/10.48185/jaai.v3i2.560

Oleribe, O. O., Momoh, J., Uzochukwu, B. S., Mbofana, F., Adebiyi, A., Barbera, T., ... &

Taylor-Robinson, S. D. (2019). Identifying key challenges facing healthcare systems in Africa and potential solutions. *International Journal of General Medicine*, 395-403. : https://doi.org/10.2147/IJGM.S22388

Onwujekwe, O., Orjiakor, C. T., Hutchinson, E., McKee, M., Agwu, P., Mbachu, C., ... & Balabanova, D. (2020). Where do we start? Building consensus on drivers of health sector corruption in Nigeria and ways to address it. *International Journal of Health Policy and Management*, *9*(7), 286-296. doi: 10.15171/ijhpm.2019.128

Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin, 128*(1), 3–72. https://doi.org/10.1037/0033-2909.128.1.3

Oyserman, D., & Lee, S. W. S. (2008). Does culture influence what and how we think? Effects of priming individualism and collectivism. *Psychological Bulletin, 134*(2), 311–342. https://doi.org/10.1037/0033-2909.134.2.311

Páez, D., Rimé, B., Basabe, N., Wlodarczyk, A., & Zumeta, L. (2015). Psychosocial effects of perceived emotional synchrony in collective gatherings. *Journal of Personality and Social Psychology, 108*(5), 711–729. https://doi.org/10.1037/pspi0000014

Paramita, W., Rostiani, R., Winahjoe, S., Wibowo, A., Virgosita, R., & Audita, H. (2021). Explaining the voluntary compliance to COVID-19 measures: An extrapolation on the gender perspective. *Global Journal of Flexible Systems Management*, *22*(Suppl 1), 1-18. https://doi.org/10.1007/s40171-021-00261-1

Peitz, L., Lalot, F., Douglas, K., Sutton, R., & Abrams, D. (2021). COVID-19 conspiracy theories and compliance with governmental restrictions: The mediating roles of anger, anxiety, and hope. *Journal of Pacific Rim Psychology*, *15*, 1-13. doi/pdf/10.1177/18344909211046646

Rashid, S., & Yadav, S. S. (2020). Impact of COVID-19 pandemic on higher education and research. *Indian Journal of Human Development*, *14*(2), 340-343. https://doi.org/10.1177/0973703020946700

Nanda, S., & Ryan, J. M. (2022). The importance of culture in understanding the COVID-19 pandemic 1. In J. M. Ryan (Ed.), *COVID-19: Cultural change and institutional adaptations* (pp. 29-44). London: Routledge. https://doi.org/10.4324/9781003302612

Neville, F. G., Templeton, A., Smith, J. R., & Louis, W. R. (2021). Social norms, social identities and the COVID-19 pandemic: Theory and recommendations. *Social and Personality Psychology Compass*, *15*(5), e12596. https://doi.org/10.1111/spc3.12596

Sachs, J. D., Karim, S. S. A., Aknin, L., Allen, J., Brosbøl, K., Colombo, F., ... & Michie, S. (2022). The Lancet Commission on lessons for the future from the COVID-19 pandemic. *The Lancet*, *400*(10359), 1224-1280. https://doi.org/10.1016/S0140-6736(22)01585-9

Sargeant, E., Murphy, K., McCarthy, M., & Williamson, H. (2023). The formal-informal control nexus during COVID-19: what drives informal social control of social distancing restrictions during lockdown?. *Crime & Delinquency*, *69*(4), 707-726. https://doi.org/10.1177/00111287219918 24

Schwarz, N. (1990). Feelings as information: Informational and motivational functions of affective states. In E. T. Higgins & R. M. Sorrentino (Eds.), *Handbook of motivation and cognition: Foundations of social behaviour* (Vol. 2, pp. 527–561). The Guilford Press.

Peterson, C., & Seligman, M. E. (2004). *Character strengths and virtues: A handbook and classification* (Vol. 1). New York: Oxford University Press.

Roseman, I. J. (1996). Appraisal determinants of emotions: Constructing a more accurate and

comprehensive theory. *Cognition & Emotion*, *10*(3), 241-278. https://doi.org/10.1080/026999396380240

Shereen, M. A., Khan, S., Kazmi, A., Bashir, N., & Siddique, R. (2020). COVID-19 infection: Emergence, transmission, and characteristics of human coronaviruses. *Journal of Advanced Research*, *24*, 91-98. https://doi.org/10.1016/j.jare.2020.03.005

Sivadas, E., Bruvold, N. T., & Nelson, M. R. (2008). A reduced version of the horizontal and vertical individualism and collectivism scale: A four-country assessment. *Journal of Business Research*, *61*(3), 201-210. https://doi.org/10.1016/j.jbusres.2007.06.016

Sun, P. C., & Lin, C. M. (2010). Building customer trust and loyalty: an empirical study in a retailing context. *The Service Industries Journal*, *30*(9), 1439-1455. https://doi.org/10.1080/02642060802621478

Tei, S., & Fujino, J. (2022). Social ties, fears and bias during the COVID-19 pandemic: Fragile and flexible mindsets. *Humanities and Social Sciences Communications*, *9, 202*. https://doi.org/10.1057/s41599-022-01210-8

Thompson, F. M., Newman, A., & Liu, M. (2014). The moderating effect of individual level collectivist values on brand loyalty. *Journal of Business Research*, *67*(11), 2437-2446. https://doi.org/10.1016/j.jbusres.2014.02.011

Travaglino, G. A., & Moon, C. (2021). Compliance and self-reporting during the COVID-19 pandemic: a cross-cultural study of trust and self-conscious emotions in the United States, Italy, and South Korea. *Frontiers in Psychology*, *12*, 565845. https://doi.org/10.3389/fpsyg.2021.565845

Triandis, H. C. (1993). Collectivism and individualism as cultural syndromes. *Cross-cultural Research*, *27*(3-4), 155-180. https://doi.org/10.1177/106939719302700301

Triandis, H. C. (1994). Major cultural syndromes and emotion. In S. Kitayama & H. R. Markus (Eds.), *Emotion and culture: Empirical studies of mutual influence* (pp. 285–308). American Psychological Association. https://doi.org/10.1037/10152-008

Triandis, H. C., & Gelfand, M. J. (1998). Converging measurement of horizontal and vertical individualism and collectivism. *Journal of Personality and Social Psychology*, *74*(1), 118–128. https://doi.org/10.1037/0022-3514.74.1.118

Van Stekelenburg, J., & Klandermans, B. (2013). The social psychology of protest. *Current Sociology*, *61*(5-6), 886-905. https://doi.org/10.1177/0011392113479314

Van Vugt, N, & Hart, C. M. (2004). Social identity as social glue: The origins of group loyalty. *Journal of Personality and Social Psychology*, *86* (4), 585-598. DOI: 10.1037/0022-3514.86.4.585

Von Neumann, J., & Morgenstern, O. (1947). *Theory of games and economic behavior* (2nd Ed.). Princeton: Princeton University Press.

Ungson, N. D., Bucher, K., Marsh, J. K., Lamadrid L, A. J., & Packer, D. J. (2023). Won't you be my neighbor? Local community identification predicted decreased stress over the first year of the COVID-19 pandemic. *Social and Personality Psychology Compass*, e12764. https://doi.org/10.1111/spc3.12764

Wang, G., Yao, Y., Wang, Y., Gong, J., Meng, Q., Wang, H., ... & Zhao, Y. (2023). Determinants of COVID-19 vaccination status and hesitancy among older adults in China. *Nature Medicine*, *29*(3), 623-631. https://doi.org/10.1038/s41591-023-02241-7

Watson, D., & Clark, L. A. (1994). PANAS-X. Manual for the positive and negative affect schedule expanded form. lowa City, IA: The University of Iowa.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, *54*(6), 1063–1070. https://doi.org/10.1037/0022-3514.54.6.1063

Wolf, M. S., Serper, M., Opsasnick, L., O'Conor, R. M., Curtis, L., Benavente, J. Y., ... & Bailey, S. C. (2020). Awareness, attitudes, and actions related to COVID-19 among adults with chronic conditions at the onset of the US outbreak: a cross-sectional survey. *Annals of Internal Medicine*, *173*(2), 100-109. https://doi.org/10.7326/M20-1239

Wright, L., & Fancourt, D. (2021). Do predictors of adherence to pandemic guidelines change over time? A panel study of 22,000 UK adults during the COVID-19 pandemic. *Preventive Medicine*, *153*, 106713. doi: 10.1016/j.ypmed.2021.106713

Wright, A. L., Sonin, K., Driscoll, J., & Wilson, J. (2020). Poverty and economic dislocation reduce compliance with COVID-19 shelter-in-place protocols. *Journal of Economic Behavior & Organization*, *180*, 544-554. https://doi.org/10.1016/j.jebo.2020.10.008

Zdaniuk, B., & Levine, J. M. (2001). Group loyalty: Impact of members' identification and contributions. *Journal of Experimental Social Psychology*, *37*(6), 502-509. https://doi.org/10.1006/jesp.2000.1474

Zagefka, H., Dela Paz, E., Macapagal, M. E. J., & Ghazal, S. (2022). Personal willingness to receive a COVID-19 vaccine and its relationship with intergroup psychology: Evidence from the Philippines and Pakistan. *Applied Psychology: Health and Well-Being*, *14*(4), 1273-1290. https://doi.org/10.1111/aphw.12334

Zhao, Y., & Watterston, J. (2021). The changes we need: Education post COVID-19. *Journal of Educational Change*, *22*(1), 3-12. DOIhttps://doi.org/10.1007/s10833-021-094173

Zhou, H., Cárdenas, D., & Reynolds, K. J. (2023). Norms and COVID-19 health behaviours: A longitudinal investigation of group factors. *European Journal of Social Psychology*. *53*(4), 720-731. https://doi.org/10.1002/ejsp.2932.

Appendix 1

1. COVID-19 Compliance Scale with the obtained Factor analysis indices

Items

1. How often did you obey the national rules on COVID-19 prevention?
2. How frequent did you wear a face mask?
3. How frequent did you observe the social/physical distance guide?
4. How frequent did you stay indoors during the lockdown?
5. How often did you comply with the state/national curfew timeline?
6. How frequent did you wash your hand or used hand sanitizer to prevent COVID-19?
7. I obeyed all the guidelines by the COVID-19 taskforce very well

Factor analysis result

Item	Mean (SD)	Inter-item correlation matrix							h^2	λ
1.	5.07(1.64)	-							.66	.84
2.	4.70(1.81)	.69	-						.60	.77
3.	4.61(1.86)	.73	.73	-					.70	.85
4.	5.32(1.84)	.49	.44	.56	-				.46	.63
5.	5.76(1.75)	.38	.35	.41	.57	-			.42	.55
6.	5.21(1.75)	.64	.56	.61	.44	.51	-		.61	.78
7.	4.88(1.81)	.74	.64	.74	.58	.54	.76	-	.75	.89

SD = standard deviation; h^2 = communality; λ = Factor loading coefficient

2. Group Loyalty Scale with the obtained Factor analysis indices

Items

1. My happiness depends very much on the happiness of those around me
2. I usually sacrifice my self-interest for the benefit of my group
3. I would sacrifice an activity that I enjoy very much if my family, group, or community did not approve it
4. I will do what would please my family, group, or community, even if I detested that activity
5. The well-being and welfare of my family, group, and community is more important to me than my own personal desires and pleasure

Factor analysis result

Item	Mean (SD)	Inter-item Item correlation matrix					h^2	λ
1.	5.47(1.47)	-					.38	.67
2.	4.31(1.83)	.46	-				.40	.67
3.	4.72(1.66)	.44	.53	-			.44	.74
4.	5.73(1.29)	.55	.38	.55	-		.45	.72
5.	5.13(1.66)	.36	.48	.43	.43	-	.31	.61

SD = standard deviation; h^2 = communality; λ = Factor loading coefficient