Critical Discourse Analysis on Media Coverage of COVID-19 Contract Tracing Applications: Case of South Africa

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ABSTRACT

Media has the power to influence the public's views on certain issues, ideologies, and innovations. The media affects whether people accept or adopt a practice or innovation. How certain issues are portrayed in the media affects social reality through the kind of language used and how it is presented. Therefore, it is important to assess the discourse of contact-tracing applications, given how the public must adopt them to contain the spread of the coronavirus. This paper investigates the media discourse of contact-tracing applications in South Africa. We used Critical Discourse Analysis to analyse several media articles using Habermas's Theory of Communicative Action. This involved assessing four validity claims (truth, sincerity, comprehensibility, and legitimacy) to uncover systematic distortions which could affect how the public perceived the Information and Communications Technology artefacts. The analysis showed distortions that could create false impressions on the efficacy of the artefacts; these pushed the notion that would result in South Africans using them more. However, the distortions were overshadowed by the overall evidence from the claims which made a consensus that the media discourse on the application is credible.

CCS CONCEPTS

• General and reference; • Document types; • General conference proceedings;

KEYWORDS

COVID-19 News Media Discourse, Contact-Tracing Applications, Data Privacy, Language Distortion, Critical Discourse, COVID Alert SA, COVIDConnect, CoughWatchSA

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1 INTRODUCTION

The COVID-19 pandemic, which started at the end of 2019, caused panic around the world. It continuously affected every sector of the economy, including education, entertainment, business, tourism, and manufacturing. Globally, health sectors were overwhelmed. The prime challenge was that the public was always one step behind in controlling the spread of the virus, given that the virus is spread through physical contact [1]. This is due to the virus spreading even through asymptomatic people. Curbing the spread of the virus involves an interlocking set of activities and none of these works alone in contacting the virus [2]. Strategies used in the fight against the spread of the virus include symptom screening, testing, contact tracing, exposure notification, hotspot detection, social distancing, business closures, wearing masks, and other public health interventions. Contact-tracing applications were used to complement the existing measures and to help in preventing the further spread of the virus. It is believed that the use of the tracing applications would help in saving lives and flattening the curve. As expected, the use of the applications attracted media attention. It is of academic interest to understand the role of the media in the adoption and use of such innovations.

Media discourse contributes to shaping social reality [3]. The media does not only influence the content and what their readers are reading, but also reaches out to how the readers should think, their perceptions on innovations and ideologies, and hence their adoption and success [4]. It is important, therefore, to understand media discourse on information technology innovations in various disciplines, especially those that affect the public. This would help the different stakeholders to identify systematic distortions and how that would affect the adoption of the technology [3, 5]. The paper focuses on the media discourse on the COVID-19 tracing applications in South Africa. While previous studies have analysed the media discourse in various domains such as health, self-image,

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politics, as well as national development, we could not find studies focusing on media discourse on applications developed to enhance contact tracing [5, 6]. Given that the media plays a big part during the pandemic in updating the public about the cases, various implications and innovations such as the birth of the COVID Alert SA app, it is important to highlight the systematic distortions in the information released to the public so that the public should know, as this could contribute towards them making informed decisions [3]. The information and language used in the media, and how they are presented, have the power to influence whether people use the application/s or not [7].

We used Habermasian critical discourse analysis (CDA). CDA is the evaluation of language and discourse in social institutions; it is used to analyse and bring to light the underpinning forces and structures in the discourse [3]. Social relations, identity, knowledge, and power are constructed through written and spoken texts. CDA allows for the evaluation of written and spoken texts. CDA concerns itself with relations of power and inequality in language. According to [1, p.3] the purpose of CDA is to analyse “opaque as well as transparent structural relationships of dominance, discriminations, power and control as manifested in language”. We use CDA to analyse and uncover distortions in the media discourse of the contact-tracing applications, mainly because it aims to make the opaque power objects in modern societies more visible and transparent, by highlighting the distortions that come out as a result of the use of language in media. We used critical theory drawn from Habermas’s Theory of Communicative Action (TCA) to establish communication distortions in the media coverage on the contact-tracing applications in South Africa. There are other CDA options. The Foucauldian CDA, for example, examines more than just a communicative utterance. It also analyses the context in which an utterance was made by assessing the power relations between actors and the structures and processes that guide behaviour and constraints [8]. However, the objective of this paper is to evaluate how language is used to preserve and reflect social relations of power, domination, and ideology in the public sphere; this is done by assessing the language used in media coverage of ICT innovations in SA meant to empower the South African community to deal with COVID-19 to identify systematic distortions. Therefore, we used Habermasian CDA as it focuses primarily on the utterances that occur in different communicative forums [3], and thus aligns with the objective of this paper.

This study contributes to the existing body of literature by looking into the media discourse of various contact-tracing applications in South Africa, which to our knowledge has never been done, evidenced by the lack of studies on this topic.

2 DIGITAL CONTACT TRACING IN SOUTH AFRICA

The COVID-19 virus can easily be transmitted from one person to the next. At the time of writing, the disease has a case fatality rate greater than 1% and there is no official effective antiviral therapy or vaccine. The most effective ways being used by countries in trying to fight this pandemic is through containment and mitigation [8–10]. Some strategies used in the fight against the virus include symptom screening, testing, contact tracing, exposure notification,

hotspot detection, social distancing, business closures, wearing masks, and other public health interventions.

Contact tracing is defined as “the identification and follow-up of persons who may have had contact with someone exposed to an infectious disease.” [9, p. 1]. This process identifies people who could have been in physical contact with an individual who is infected with the virus so that they can be isolated and prevent further transmission. An epidemic model [9] showed that if 50% of the positive cases were identified, 60% of their contacts need to be contacted immediately for effective containment. Immediate identification of infected individuals, isolating, or putting the individuals in quarantine, and monitoring the individuals and their contacts, can effectively stop the disease transmission and prevent further spread of the virus [10]. The process can be a manual or digital process or a hybrid of both. In the manual process, the patient is asked who they have been in contact with. Registers in public spaces with people’s details and time of entry are also used to check contacts in the public spaces. A delay of at least two days in the identification of contact dramatically reduces the chances of containing the virus. This results in enormous strain and pressure on manual contact-tracing methods to meet these tight requirements; it also motivates digital tools to be used.

The digital process uses an automated approach where a location or proximity system on a user’s phone, or some other identifier, provides information on with whom the infected individual has been in contact. Digital tools for contact tracing are composed of three areas: 1) outbreak response; 2) proximity tracing, and 3) symptom tracking. In this paper, we focus on proximity tracking tools. Proximity tracking tools, also known as proximity tracking tools, use Bluetooth technology to search and keep track of the movements of individuals to identify people who could be exposed to an infected person or have been in the past [2, 9]. An important advantage of using Bluetooth Low Energy over location data from Global Positioning System (GPS), cell towers, or Wi-Fi, is that Bluetooth low energy does not infringe on privacy rights as it does not collect personal data which can be linked to one’s identity [11]. Several countries also launched smartphone contact-tracing applications using centralized or decentralized approaches for processing contact data [12].

The application was designed to complement and strengthen the existing methods, by enabling the instant notification of contacts following a positive test [8]. The application does not violate privacy rights, nor does it infringe requirements, as it does not collect personal information or track a user’s actual location. The app generates a random code, then emits it. The code is picked up by other users when two phones come into proximity of one another [13]. This code is unique, and it changes frequently so that it cannot be associated with the identity of the user. The application keeps a record of all encounters a person makes and, with time, a user will have a history of other users they have been in contact with. When a user tests positive, they must report anonymously in the application and, when they do so, a notification is sent out to all the other users with whom they have been in contact for the past 14 days [11, 14]. The notification informs the other users that they had been exposed to someone who tested positive and should also get tested, and self-isolate. The identity of the user is not revealed at any point in this process.

Contact-tracing applications have raised several concerns including security and privacy concerns, and accessibility concerns, since most automated contact-tracing solutions require smartphone ownership, internet access, and Bluetooth technology [1, 15]. Contact-tracing applications are said to compromise people's privacy as they collect, analyse, and have access to personal health data such as health behaviour, status, travelling history, household coordinates, positions, and location [12]. However, the COVID Alert SA app only utilizes the generated codes and uses them to determine if a person has been in close contact with someone with COVID-19, as it uses Bluetooth technology as opposed to location data. At no point does the application use a person's identity or personal identifiable information [16].

Proximity tracking tools are only effective if there is wide-scale adoption because their success depends on the use of the tool by a lot of people. This needs people to have access to a smartphone that is always charged and working and has a stable connection to the internet. If digital contact-tracing design and deployment are *not done optimally*, it can result in deviations from the initial objectives, particularly in a continent such as Africa with disproportionate levels of digital divides and other structural inequalities [1, 17]. Therefore, it is particularly important to investigate the issues and how they can affect the public.

3 THE THEORY OF COMMUNICATIVE ACTION (TCA)

This paper used CDA, based on Habermas's TCA. Validity claims are used as the framework to analyse the discourse. Research in Information Systems has employed different approaches to CDA such as Foucauldian discourse analysis. The paper opted to use the Habermasian approach as was operationalized by Cukier et al [3] since it enabled us to analyse many texts [18].

3.1 TCA Overview

According to Habermas, human action falls into four categories: teleological, normatively regulated action, dramaturgical action, as well as communicative action [4]. This paper focuses on communicative action. This idea states that actors in society use argument, which is reasoned, agreement, and cooperation, as opposed to stringent strategic action to try to achieve their own goals individually. Communicative action is an action created to encourage an agreed consensus in a group and to also promote actors to work together cooperatively, as opposed to actions solely designed simply to achieve an individual's personal goals. [19]

Haberman notes:

"I am of the opinion that social pathologies can be understood as forms of manifestation of systematically distorted communication, and if that is the case, one must be able to use a theory of communication to analyse the normal patterns of undistorted communication." [19]

The theory of communicative action allows an empirical analysis of communicative interplay, interpretive analysis of meaning, and normative analysis of systemic distortion and violation of the fairness of discourse in humans' ordinary communication. If the language that is used to communicate daily to regulative, constative,

and expressive aspects of languages and, again, if the references can be understood easily, without argumentation, then it is easier to achieve public valuations which are rational and justification of political, moral, and aesthetic values. Furthermore, the communicative model does not see action and communication as equal in the mere sense of speech. [19]

3.2 TCA Validity Claims

The notion that all speech acts, oriented to understanding the concept of validity claims, lies at the heart of Habermas's TCA [19]. The validity claims are truth, legitimacy, comprehensibility, and sincerity. The validity claims are usually applied as a standard for CDA, and they are used in identifying distortions in communication. They must, therefore, exist for the ideal speech situation to be realized [4].

When the ideal speech situation is not achieved, distortions in communication exist [20]. Revealing the distortions improves the rationality as well as the planning and decision-making. The standard provided by Habermas for evaluating the validity of communications is unique and it offers a conceptual framework that can be applied, not only to analyse the distortions in media discourse but also to find ways to fix the distortions in communications, thereby improving delivery and practice.

3.2.1 Truth. The truth claim assesses the verifiability or validity of the arguments made, regardless of the intention, motives, and agenda of the speaker [4]. An important part of assessing this claim involves consideration of the objective facts in the speech. Specifically, by looking for false assertions and statements made without providing evidence [19, 21]. That is why TCA suggests that truth relates to a 'cognitive use,' belongs to the objective world,' and uses a 'constatives' speech act [21, p. 4]. Truth differs from sincerity in that it is objective and rooted in the positivism philosophy, which assumes that a single reality exists and can be objectively measured [22].

In other words, a statement, or an argument is *true* and *valid* if it is *evident* or *verifiable*, based on its underlying *facts*. This, "depends on how well the evidence supports the claims being made" in the statement [22, p. 110]. A claim that 'a software is centralized' would be considered true if there is evidence that 'it is designed in a Client-Server architecture' or that 'the software relies on a central component (usually a server) to function', independent of the geographic location and context in which this statement is made, as well as the subject who makes it. "*If an argument is valid, then, if all its premises are true, then its conclusion is also true*" [44, p. 1]. This typically depends on the nature of the relationship between premises, which can be either exclusive (all premises must be true) or inclusive (at least one of the premises must be true).

When assessing the truthfulness of the media discourse in this study, we sought to establish whether the media provided evidence of their claims (by supporting them with facts or disclosing their source to allow verification).

3.2.2 Sincerity. Sincerity can be defined as a characteristic of a person who communicates and behaves in a manner that is following their true sentiments, values, opinions, and wishes, in a way

that is genuine and honest [4]. Sincerity may be assessed by observing the implicit lexical relationship between the speaker's own personal agenda and the articulated literal meaning [5]. Sincerity claims assess a relationship between what a speaker says and their intention [4, 19]. This would also assess the implied relationship among the parties to the speech act, to see if it is appropriate or not.

Sincerity must be deduced; it is difficult, if not impossible, to directly establish intention. One must figure out what the speaker is saying versus what they do and the way the speaker says what they say. Sincerity is assessed by taking note of the appropriateness of the meaning that is expressed and what the speaker wants to talk about [19]. Similarly, to the truth construct, sincerity needs to be inferred by the reader as it is not possible to immediately determine the intent of the discourse [5].

To infer sincerity in the discourse, the consumer of news needs to first fully understand what the speaker is saying, alongside the perceived actions of the speaker, as well as the way the speaker articulates their point. The continued and persistent utilisation of metaphorical and emotive language tends to highlight blatant instances of insincerity in discourse. The perceived presence or absence of sincerity in discourse can be evaluated in many ways, as sincerity necessitates the existence of similarity between what is being said or written, and what is being meant (implicit intention) by the discourse. This then means that for discourse to be sincere, there can be no ulterior intentions. [5]

Besides, the choice of literary devices has strong societal and philosophical implications. They often reveal the views of the discourse content creators on news actors, newsworthy incidents, and the characteristics of the social situation (that is typically not immediately and explicitly articulated) [23]. This means that irrespective of the explicit content being conveyed in any medium of discourse, certain perspectives are implied, depending on the content creators' use of rhetorical devices. At a fundamental level, the choice of the language used in the news has a major bearing on how a consumer of news interprets the message [5].

By paying attention to and cross-examining the usage of metaphorical language, exaggerations, and suggestive language applied in text, one may begin to expose the nuances that were *not* obvious at a superficial level [23].

Metaphorical language usage is employed as a means of clarifying and simplifying complicated topics to the consumer of news media (reader/audience); it ultimately creates a pre-meditated notion of the subject matter [5].

3.2.3 Comprehensibility. Comprehensibility assesses whether the communication is understandable, makes logical sense, and is complete. The need for clarity is driven by the reality that different people who are on the communication receiving end all have different personal, interpersonal, group, institutional, national, and cultural knowledge concerning the phenomenon being communicated. Therefore, there is the need for a general clear shared understanding of the communication content. The content within the media of communication should have terms that can be understood in the same way by all the different people consuming the content [21]. The content should not have unnecessarily complicated language or jargon. In other words, the terms used in the content should be

as clear as possible and written in a way to inform the public and not to impress the public. [24]

The language used should be an everyday language that everyone can relate to [4]. If these characteristics are met in the content being communicated, then the content passes the comprehensibility validity claim test [23]. Comprehensible narrative can contribute to the shared understanding of the phenomenon and provides a foundation for the content reader to make informed judgments [4]. Violations of comprehensibility are usually considered in circumstances where the message being communicated gives out more information than what is needed, or the message is presented in jargon or complicated words [5]. The instances are likely to confuse the reader or result in a misunderstanding, which compromises the reader's capacity to make an informed judgement.

The direct use of language as a medium for communication is seen as a comprehensibility fundamental claim. For this reason, it is believed that comprehensibility is the basis for truth, sincerity, and legitimacy validity claims. [25]

If there is no shared understanding of the language used in the communication, then the other three validity claims are rejected. The shared understanding here refers to the context of domains of reality that the language seeks to communicate. The domains can be either objective, social, or subjective worlds. The language serves a distinct function on each of the worlds and is directly related to each of the other three validity claims. The function of language in the truth validity claim is to cognitively communicate an objective world. In the sincerity validity claim, language function is seen as a way to expressively communicate a subjective world. The legitimacy validity claim can be accepted if the language is used interactively in a social world.

Comprehensibility in communication can manifest itself in three different practical levels [4]:

- Face-to-face level whereby the content communicated lacks sense and is confusing,
- An organization level where jargon is used to exclude the public regarding the phenomenon,
- The political, social, and economic structure level where the content is complex and mystifying.

3.2.4 Legitimacy. Legitimacy focuses on the role of the speaker and whether they can say something factually, or just make assumptions on an issue and assess the validity of the stance. The stakeholders [19] should be identified, and their voices should be clearly articulated to present all sides of a discussion. Legitimacy is the representation of different perspectives and, in the analyses of legitimacy within discourse, "it is expected that all perspectives be represented" [26]. The management and utilization of regulatory and reasoning perspectives have often been used in conventional studies on legitimacy [27]. However, more conversational approaches [28] in the study of legitimization have also become more popular [29, 30]. A plethora of authors notes a battle of ideas as commonly placed within a legitimization discourse [31–34]. Legitimization is diverse; there are several approaches towards legitimization, delegitimizing, and re-legitimation [35].

To analyzing the legitimacy of the media discourses using, Habermas's TCA was operationalized using approaches in a framework by Bob Hodge and Gabriela Coronado. This framework has four major

Table 1: Item per construct

Construct	Item	Variable definition
Truth	Facts	The arguments, underlying facts, references, data records, or other forms of evidence used by media to support their claims
Sincerity	Proven claims	Key statements, with evidence, put forward by media to portray the applications
	Unproven claims	Key statements, with no evidence, put forward by media to portray the applications
	Exaggerations	The representation of information as more extreme or dramatic than it really is
	Intentions	Goal, purpose, or aim of the utterance
Legitimacy	Suggestive language	Suggestive language subtly communicates to the reader the views of the speaker without explicitly saying it
	Perspectives	Representation of multiple views within the discourse under-representation of one discourse in favour of another delegitimizes the discourse
	Voices	The voices that state cases for or against the perspectives within discourse can be used as measures of legitimacy
	Strategy	The mobilization of resources to create a sense of legitimacy or illegitimacy within the discourse
Comprehensibility	Jargons	Identifies all the jargon in the media discourse: Content should be clear, written in a way to inform and not impress the public
	Undefined words	Terms, either technical or not, that were not defined
	Defined words	Terms, either technical or not, that were defined

categories of legitimization strategy: authorization, moral evaluation, rationalization, and mythopoesis. Authorization grants legitimization through reference to the authority of tradition, custom, or law, or from persons in whom institutional authority is vested. Moral evaluation grants legitimization through reference to a value system. Rationalization grants legitimization through reference to the goals and uses of institutionalized social action. Mythopoesis grants legitimization through narratives whose outcomes reward legitimate actions . [30]

3.3 Operationalization of the Framework

Table 1 summarizes how we operationalized the validity claims for the study.

4 METHODOLOGY

We used Critical Discourse Analysis from the perspective of Habermas’s TCA. This involved utilizing the four validity claims of the TCA as an analytical tool.

4.1 Data Collection and Sampling

Data for the study were collected between October and November 2020. We retrieved news articles from diverse sources, including the PressReader and GoogleNew databases, as well as various media websites such as the Department of Health’s news dashboard, and Google News search engine. The initial phase of data retrieval was done independently by each researcher. The individual results were then compared to eliminate duplicates and then combined as final search results. We used a logical combination of the following terms:

Coronavirus or COVID* and (“contact tracing” or “COVID Alert SA” or “COVIDConnect” or “CoughWatchSA”).

The different search strings used and exploited suggested trendy topical articles via Search Engine Optimisation (SEO), allowing

us to gather relevant content. The following were used as criteria of selection: Country - ‘South Africa; Language -’ ‘English’, and Type of publication - ‘All publications. Academic papers such as journal articles, conference papers, books, were excluded because they were beyond the scope of this study.

The study used 13 articles (see Appendix). This is consistent with previous studies [36, 37], which argue that a fair representation of discourse can be sufficiently achieved with a sample of 12 online news articles. To ensure the reliability of data, we drew a sample from the mediated content, using the availability approach [38].

4.2 Analysis

We employed a deductive approach; applied existing themes and data links from the four constructs of Habermas’s theory: truth, sincerity, legitimacy, and comprehensibility [39]. To assess the constructs in such a way as to ensure the validity of the findings, ie, ensuring that “the findings are really about what they appear to be about” [22], the four themes were broken down into sub-themes (items) to capture aspects of constructs. We used the sub-themes summarized in Table 1

We used Nvivo software to analyse the sub-themes quantitatively (based on their number of occurrences in the articles) and qualitatively (based on the context). This led to conclusions on how the media articles portrayed contact-tracing applications in South Africa. The individual conclusions contributed toward the general conclusion of whether the media discourse about this matter was distorted.

5 RESULTS

5.1 Validity Claim of Truth

As shown in Table 2, the media provided evidence to support their claims on most of the occasions (20 observations of fact supporting

Table 2: Summary of the assessment of Truth

Sub-themes	Articles	Occurrences
Facts	A1, A2, A4, A5, A6, A7, A8,20	
Proven claims	A9, A10, A11, A12, A13	20
Unproven claims	A4, A5, A8, A10, A12	8

20 claims). On fewer occasions, the media made unsupported statements (eight observations) of which one did not explicitly disclose the source to allow verification (one observation).

One of the main claims of the articles is that the app “*can save lives*” since it helps to “*break the chain of transmission*” (A5). The claims are based on the fact that contact tracing applications may reduce “*the time between exposure and knowing one has been exposed so that one can take action*” (A7) compared to the manual contact tracing. Indeed, manual contact tracing is a “*time-consuming process*” relying “*on those who test positive for COVID-19 to remember all the people they have been in close contact with in the past two weeks and have their contact details*” (A5). Furthermore, the media suggest that using the COVID Alert SA app, up to “*15-20 hospital admissions could be prevented, and two lives saved*” for every “*100 infections prevented*”. However, the media do not give evidence of this claim. No recorded case of this scenario is provided. Likewise, the media do not disclose some of their sources, nor do they provide evidence to support that the claim that the use of the COVID Alert SA app would improve the way the country protects the citizens from the pandemic.

The media also assure South Africans that they do not need to be “*skeptical of the COVID Alert SA app due to concerns about the collection of private data*” (A6). Nearly the entire corpus supports the claim that the app was secure, anonymous, and privacy-preserving (A10). This is true to the extent that the app used “*self-sovereign identity*” technology (A2), a feature of Blockchain technology that does not rely on a central component, such as a server, but instead stores users’ data on their individual devices [37, 39]. The COVID Alert SA app “*uses Bluetooth, and not location data*” (A2, A3, A4, A6, and A8). However, some media report that “*there are reasons to be concerned that mobile tracking will abuse the privacy of users*” (A10). This was the case with the previous contact tracing app called COVIDConnect and would be the case with the upcoming app called CoughWatchSA. In comparison to the COVID Alert SA app that uses “*anonymized keys that can’t be traced back to a person or phone number*,” the media claim that CoughWatchSA would require users “*to sign into the app to use the service*”, which makes it harder to keep logged information anonymous (A9).

In summary, the number of supported claims exceeds the number of unsupported claims (20 vs 7). Therefore, it can be concluded that the media discourse on the COVID Alert SA app and related technologies used to enhance COVID-19 management in South African is *truthful*.

5.2 Validity Claim of Sincerity.

We assessed the sincerity validity claim using part of the coding schema guideline provided by Vergeer, Chigona and Metfula [24]. Table 3 summarizes the assessment of the sincerity validity claim.

Table 3: Summary of the assessment of sincerity

Sub-themes	Number of articles	Occurrences
Exaggerations	6	7
Intentions	9	11
Suggestive language	9	9

We assessed sincerity claims using the three main rhetorical devices: logos (the appeal to reasoning), pathos (the appeal to sentiment), and ethos (the appeal to moral values) [42, 43]. COVID-19 is the phenomenon spurring the rapid research and development of innovative new methods of patient contact tracing, using technology. Most of the articles in the corpus depicted the contact tracing applications as the primary means of aiding public and private health facilities by augmenting manual contact tracing efforts and ultimately bolstering the efforts of the government in containing the spread of the virus [2]. This argument forms the logical premise for the argument in favour of the applications (logos):

“While it was never meant to replace manual contact tracing, it was envisaged as a way to lessen the workload for healthcare workers and speed up the process of disrupting the spread of COVID-19”. (A2)

In terms of the appeal to emotions/sentiment (pathos), the articles noted the general public’s level of skepticism and suspicions on the intentions of the various stakeholders in the contact-tracing applications (including the government). However, the articles tended to focus on the perspectives of the application stakeholders which favored the position of reassurance and cautious optimism:

“The app development team foresaw that South Africans would be skeptical about the safety of their data and privacy using this app” and proceeded to report that “...we really didn’t want to create fear in people’s minds, so we diverted away from that completely”. (A2)

This hints that, with this application, stakeholders took the position of reassurance and cautious optimism purposefully.

Lastly, the ethos of most of the articles is rooted in the implicit reliance on expertise from software developers and/or government consultations. This is exemplified in A8: “*To address the shortcomings of COVIDConnect, the department decided to build its own contact tracing app.*” Would a bespoke proprietary application from the department mitigate the identified shortcomings?

“... it used a software framework designed by Google and Apple in which to build an app suited to South Africa’s needs: it is small, doesn’t drain the cell phone battery, is privacy-preserving and is zero-rated by all mobile operators”. (A8)

Among other things, this raises the questions of whether Apple and Google, being American-based multinational corporations, understand the true extent of real South African needs.

“... Apple and Google’s framework was chosen because it is privacy-preserving and because some people might trust the tech giants more than they trust the government.” (A4)

“... In releasing the framework, the companies promised that they would make sure citizens around the world wouldn’t have to trade their data privacy for their health.” (A10)

On the surface, this extract intends to inform the audience of (i) the secured framework being utilized in the development of the contact-tracing application, and (ii) to reassure potential users that their private data would be secured. Sincerity concerns become apparent once we question the intention of the speaker for explicitly mentioning how the brands of Apple and Google are used to pacify potential skeptics of the application. Mentioning Apple and Google was probably intentional to obscure the real drivers of the application (government) and their intentions.

Exaggerations such as the overemphasis of positive or negative characteristics of products, concepts, events, or phenomena surrounding a particular subject matter, are discourse tactics used to avoid further critical examination or questioning from stakeholders and other interested partakers [5]. Exaggerations are typically unsubstantiated claims made to strengthen a position of argument or negotiation [23]. A7 quoted a lead developer of the COVID Alert SA app:

“For every 100 infections we are able to prevent using this technology, we could prevent as many as 15-20 hospital admissions.” (A7)

Here the exaggeration is the uncorroborated claim of the prevented hospitalisations. This statement creates a false impression of the efficacy of the COVID Alert SA app. Another example of exaggerated language is: *“The app is free and uses only a small amount of data every day to check in with a central server.” (A4)* The claim that the application only requires a small amount of data to communicate with a central server network is not substantiated. South Africa has one of the highest data costs on the continent and, with that in mind, the undisclosed amount of data required takes on a different meaning [23]. By not providing an approximate data-consumption figure, the reader is potentially misled.

The power of suggestive language is often useful in supporting the positions or arguments of certain groups with power and, at the same time, undermining and/or marginalizing others [4, 5]. This is evidenced in several news articles that speak on behalf of the government, referring to data security concerns:

“Legal expert Stuart Scott said the app did not collect personal information or track the location of the phone user. COVID Alert SA is entirely anonymous.” (A8)

“Efforts are also being made internationally by the likes of Apple and Google, who recently announced a Bluetooth-based COVID-19 contact-tracing platform,” (A13)

By quoting a legal expert on the level of data privacy of the application, potential consumers of the product would be inclined to trust the fidelity of the application. Furthermore, the explicit mention of system development partners such as multinational corporations e.g., Google and Apple, is purposefully attempting to legitimize the application platform.

The media articles were mostly factual with few signs of ulterior motives. Of the 13 articles analysed, six articles expressed instances

Table 4: Summary of the assessment of comprehensibility

Sub-themes	Number of articles	Occurrences
Undefined terms	9	15
Defined terms	4	3
Jargon	8	14

of considerable/explicit exaggerations. In addition, nine articles utilized suggestive language. However, the instances of insincerity are isolated and, broadly speaking, the news media provided sincere coverage of the COVID-19 contact-tracing application.

5.3 Validity Claim of Comprehensibility

To assess the comprehensibility validity claim, we used part of the coding schema guideline provided by Vergeer, Chigona and Metfula [24]. Table 4 summarizes the assessment of the comprehensibility validity claim.

Most of the articles in the corpus contained technical terms that were not defined. A1 uses the terms GPS, Bluetooth, and cell tower metadata:

“... that collect GPS and Bluetooth location and proximity data...”

“South Africa relies on the triangulation of cell tower metadata supplied by electronic communication service providers,”

Some of the articles, although writing about COVID-19 contact-tracing apps, did not provide definitions of what a contact-tracing app is. Furthermore, the articles were not consistent in the way they used some of the terms. The contract-tracing app is referred to with three different terms: app, application and platform:

- *“...that’s where the new COVID symptom tracking app...” (A1)*
- *“Once downloaded, the application is zero-rated.” (A12)*
- *“...after which it’ll officially launch as a complementary surveillance platform”. (A1)*

The use of different terms may confuse the reader. The difficulty in understanding the content also comes from the technical terms in the corpus without definitions.

The majority of the media articles in the corpus contained jargon, with language that is difficult and complex to understand. For example:

“The Bluetooth contact-tracing app places user privacy and security at the core of the design. Built on the Apple-Google Exposure Notifications application programmable interface. . .” (A5)

“The Apple-Google COVID-19 exposure notification framework works through the exchange of anonymous cryptographic tokens using Bluetooth low-energy signals.” (A13)

We posit that the jargon used in the media articles targeted only the tech-savvy while neglecting the technology-illiterate ones.

Table 5: Summary of the assessment of the sub-theme of Voices

Voice	Number of articles	Occurrences
Civil society	2	4
Government	6	11
Health Department	2	7
Healthcare workers	1	2
Legal Experts	2	8
Private health	2	2

Table 6: Summary of the assessment of the sub-theme of strategies

Strategy	Number of articles	Occurrences
Authorization	11	23
Moral evaluation	6	18
Rationalization	8	20
Mythopoesis	4	6

5.4 Validity Claim of Legitimacy

One way to assess legitimization of discourse is to ascertain participation; whose voices are heard, and which voices are muted [5]. Table 5 represents the voices heard within the sample of media articles that discuss contact-tracing applications are described in Table 5 below:

The voice of the government is heard the most in the corpus, mainly the executive ie, the President and the Department of Health. This is unsurprising since the contact-tracing applications have been predominantly a government effort through the Department of Health. The voice that follows is that of legal experts speaking on behalf of citizens, followed by civil society groups. The actual public does not have a voice nor any input in the contact-tracing application. Healthcare workers' voice occurs the least and their views are advocated by the Department of Health, particularly those in charge of the contact-tracing application effort.

In an attempt to mostly legitimize the position of the government, one saw the use of the strategies outlined by Joe Bob Hester and Elizabeth Dougall [35]. As shown in Table 6, the corpus leans heavily on user authorization to legitimize its position regarding COVID-19 contact-tracing applications.

The following were the principal user authorization used by media:

- Members of the executive government: "Cyril Ramaphosa urged South Africans to use government's new coronavirus contact-tracing app, which was launched earlier this month." (A4)
- Legal experts and former judges: "I understand that a lot of people are feeling a bit anti-government at the moment and a bit like everything they do must be dodgy. I've looked at this app in detail and I'm not worried about it." says social media law expert Emma Sadleir. (A2)
- Tech giants such as Apple and Google: "To address the shortcomings of COVIDConnect, the department decided to build

Table 7: Summary of the assessment of the sub-theme of Perspectives

Perspective	Number of articles	Occurrences
Public health	3	4
Privacy	7	23

its own contact-tracing app. It used a software framework designed by Google and Apple." (A2)

This further strengthens the voice of the government in the conversation around contact tracing. The second most popular strategy which has been used is rationalization. Here, arguments about existing inefficiencies in the manual contact-tracing process and danger to healthcare workers are the primary arguments used to legitimize the use of the applications:

"The South African government is currently struggling to track and trace people who are believed to have come into contact with those who tested positive." (A10)

The third most used legitimization tool was moral evaluation. Sentiments such as: *"It is an important tool to combating the epidemic, which can help slow the spread of the virus and save lives"* (A8), dominate the moral argument in advocating for the use of the applications. The least used strategy was that of mythopoesis, where cautionary tales have been used to tilt the discourse, mostly in the direction of use:

"To date, digital participatory surveillance has not been widely used on the African continent, despite its potential value. But it's been used in other parts of the world." (A3)

Analysing legitimacy assesses if perspectives within a discourse are equally represented. From the corpus, it is obvious that the question of public health comes second to that of user privacy. To de-legitimize, the privacy concern, the voice of the government comes across more than other voices as does the use of authorization as the dominant strategy to achieve the de-legitimization of privacy concerns [45]. The perspective that is mostly represented within the corpus is that of data privacy concerns over public health benefits:

"... Legal experts and civil society organisations raised concerns . . . that there was no mechanism for oversight in the process as to how data will be stored and accessed. The government was soon forced to declare it was not 'spying' on anyone and amended..." (A2)

"... What worries us is the fact that users need to sign into the app to use the service, which makes it far harder to keep logged information anonymous." (A9)

"... There are, of course, concerns that mobile tracking will abuse the privacy of users. If such sensitive information lands in the wrong hands, people's private information could be compromised..." (A10)

Table 7 shows this disproportionate representation of the privacy perspective over public health calls to question the legitimacy of the articles. The media favor the data privacy discourse regarding the contact-tracing app over public health.

6 DISCUSSION AND CONCLUSION

The study sought to uncover the systematic distortions in the discourse of the COVID-19 tracing applications in South Africa. The study used validity claims based on TCA. Both COVID-19 and the tracing applications are nascent and fast-changing. It is vitally important that the information about the application be accurate and clear for the citizens. At the same time, being nascent means that the media houses would need to learn about the concepts fast.

The findings showed some evidence of distortions in the media discourse. Few articles lacked facts, research, data records, or sources to back up some of their claims. Distortions in the articles also stemmed from an exaggeration of uncorroborated claims. Although quotes from legal and technical experts on complex issues such as privacy were given in some cases, the key claim about the exact effectiveness of the COVID Alert SA app in terms of the number of hospitalisations prevented or the number of lives saved was not firmly backed by convincing evidence. The media discourse is not totally comprehensible. The language used by articles may be complex for someone with no technical knowledge; there is excessive use of jargon that could lead to confusion.

Although the media discourse contained some distortions, the distortions were overshadowed by the overall evidence from the claims which formed a consensus that the media discourse on the application is credible. The findings show that the media contained valuable information about the artefacts.

Noteworthy in the discourse is the emphasis on data privacy over the effectiveness of applications in the fight against the disease. This is probably linked with the scarcity of evidence of the benefits of the application in fighting the spread of the disease. This could also be a result of concerns around the stigma around the COVID-19; many potential users wanted to be assured that their data was safe.

One of the limitations of the study was that the data were not diverse. By only focusing on several news media publishers that primarily distribute content via dedicated news portals, we could not capitalize on the rich data that social media, podcasts, and television interviews potentially could have provided. The second limitation is the number of articles used. Larger sample size would yield greater variance in the observations, which would lead to more rigorous and significant results. We also acknowledge that our experiences with news media hype, often being incongruent with reality, could possibly have resulted in having assumptions that may have led to research bias.

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A APPENDIX

A.1 List of articles analysed.

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