

Characterization and Evaluation of Psychological Traits of Southern African Cultural Groups and Its Impact on SISR Integration

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Abstract

The dynamism in man's public sphere, with its associated diversity in the socio-cultural and religious inclination of people, have over time resulted in variation in the personality psychological traits of people in these environments. In most developing countries, the level of integration of Social Interactive Service Robots (SISRs) in public sphere has been greatly hampered; owing to the disparity in the psychological traits of the people in this region. This to a great extent has impeded the level of acceptance of SISRs in most public places. In an effort to remediate this challenge, there is need to understand and characterize the psychological trait of the people in this region. This work therefore, seeks to review psychological development and traits of the Zulu, Xhosa and Swati tribes of South Africa in a bid to characterize the inherent psychological trait variation of the people. It was also aims at establishing in quantitative terms, the variation in pro-social traits. Findings from this work, show that Xhosa and Zulu tribe have a higher propensity to integrate SISRs more than the Swati tribe, as they have higher positive correlation value in terms of pro-social traits: Agreeableness, Conscientiousness and Neuroticism with values of 0.45, 0.80 and 0.40 respectively. Also, result from the analysis show that the mean pro-social traits for the tribe combination: Xhosa/Zulu, Swati/Zulu and Swati/Xhosa have correlational values of 0.58, 0.54 and 0.53 respectively.

Keywords

Environment, Emotional Peculiarity, Personality, Psychological Traits, SISRS

1. Introduction

Human personality is constantly evolving over man's lifespan. In a bid to understand the dynamism in individual personality, several methods have over time been developed in the field of psychology all in an effort to better capture the concept of personality. Overall, personality is seen as a set of characteristics or traits with an overall underlying framework which allows for individual variation. This underlying structure allows for consistency in behavior overtime amidst changing environmental conditions and situation[1]–[4]. Several advances have been made in the formulation of functional theoretical trait framework for the investigation of this composition [5]. Currently, the Five-Factor Model which represent personality in five dimensions: Neuroticism (or Emotional Stability), Conscientiousness, Agreeableness, Openness (or Intellect) and Extraversion is the most generally accepted model for personality [6], [7]. Overall, culture and religion are seen as two external variables which have contributed greatly both in the formation and expression of traits of people in most developing countries [5]–[9]. Thus, it is necessary to investigate the variations and correspondence in the content and expression of these traits and the influence of the environment on these characteristics.

Therefore in this work, we seek to review psychological development and traits of the Zulu, Xhosa and Swati tribes of South Africa in a bid to characterize the inherent emotional differences of the people. It also aims at establishing in quantitative terms, the variation social traits across the tribes.

To be able to realize the specific objectives of this research, the remaining sections include an overview of the Trait Theories with a focus on the Five- Factor structure covered in Section II. Also, an overview of psychological characteristics of the Zulu, Xhosa, and Swati tribes of South Africa. Similarly, a characterization model to suit the traits to be investigated is treated in section III. Similarly, in section IV, we subject the developed model to data from this three tribes and results generated were discussed. Finally, in section V, conclusions were made from the obtained results and its usability for further research discussed.

2. Overview of the Personality Psychological Trait Theories

Over the last few decade, the field personality psychological has witnessed re-emergence of interest in traits. As such the upsurge of several modern trait theories. According to Gordon Allport a foremost trait theorists, traits could be categorized into three hierarchical levels namely: Cardinal traits or master control; which influences and forms an individual's behavior. Central traits, these basically the building blocks that fashion most of our behavior. They are inherent in varying degrees in individuals. (Examples include: Kindness, agreeableness, loyalty, wildness, friendliness). The Secondary traits on the other hand are not noticeable and consistent as the others. However, they are numerous but are only visible under certain circumstances (Example include: expression of anger by a friendly person, display of nervousness in public speaking by one who is not anxious [10]–[12]. Similarly, Raymond Cattell on performing factor analysis on life data, questionnaires, and experimental data was able to categorize human personality into sixteen traits (16PF) namely: openness to change, perfectionism, self-reliance, social boldness, abstractedness, warmth, apprehension, emotional stability, sensitivity, rule-consciousness, tension, dominance and vigilance, liveliness and intelligence. However, the 16PF theory is been greatly criticized for being too broad[9], [12], [13]. This lead Hans Eysenck, a personality theorist, who believes that one's personality is influenced greatly by genetic constituents, to develop a three personality dimension namely: neuroticism vs. stability; psychoticism vs. socialization and extroversion vs. introversion. The Eysenck's theory, even though the first to quantify personality traits, has been criticized for not being empirically verifiable and also for being too narrow. In the light of this, different psychological theorists independently developed the five-factor (Big Five personality traits) model. However, disparity abound in the parameters (name of the factors) for different theorist. Over time the factors proposed by Paul Costa's and Robert McCrae's have mostly been used by the psychologist. The five personality traits proposed in their theory are: Openness to Experience, Conscientiousness, Extraversion, Agreeableness and Neuroticism. While the Openness to experience translates to the extent to which a person expresses his/her creative ability, curiosity, emotions, appreciation for art, novelty and variety. Similarly conscientiousness, deals with an individual's tendency towards thoughtfulness, self-discipline, achievement-striving and competence. It focuses on the extent to which individual thoughts and conscious intention influence their behavior. Also Extraversion refers to an individual's tendency be seek the company of others, express high level of assertiveness, positive emotions, sociability and talkativeness. On the other hand, Agreeableness evaluates, a persons to tendency to cooperate and be

compassionate to others. Finally, Neuroticism constitute the tendency for an individual to experience unpleasant emotions, such as depression, anxiety, anger, or vulnerability. It captures the extent to which an individual is emotionally stable and have good hold of impulse. Thus the five-factor model depicts a range of personality types. Even though these traits are relatively stable during a person's lifespan, they have the tendency to increase or decrease slightly [1], [2], [9], [12]–[15].

3. Psychological Characteristics

Personality have been identified as a set of composite characteristics or traits structured along a few high level dimensions sufficient to capture the core of individual behavior. The lexical Big-Five model have been established to be in consonance with the Five-Factor model in number and dimensions despite their disparity in theory, composition and methods as in fig 1. According to Ashton and Lee [5], psychological traits can be grouped into two: pro-social tendencies (Agreeableness, Conscientiousness and Neuroticism) and anti-social tendencies (Openness and Extraversion) as in table 1.

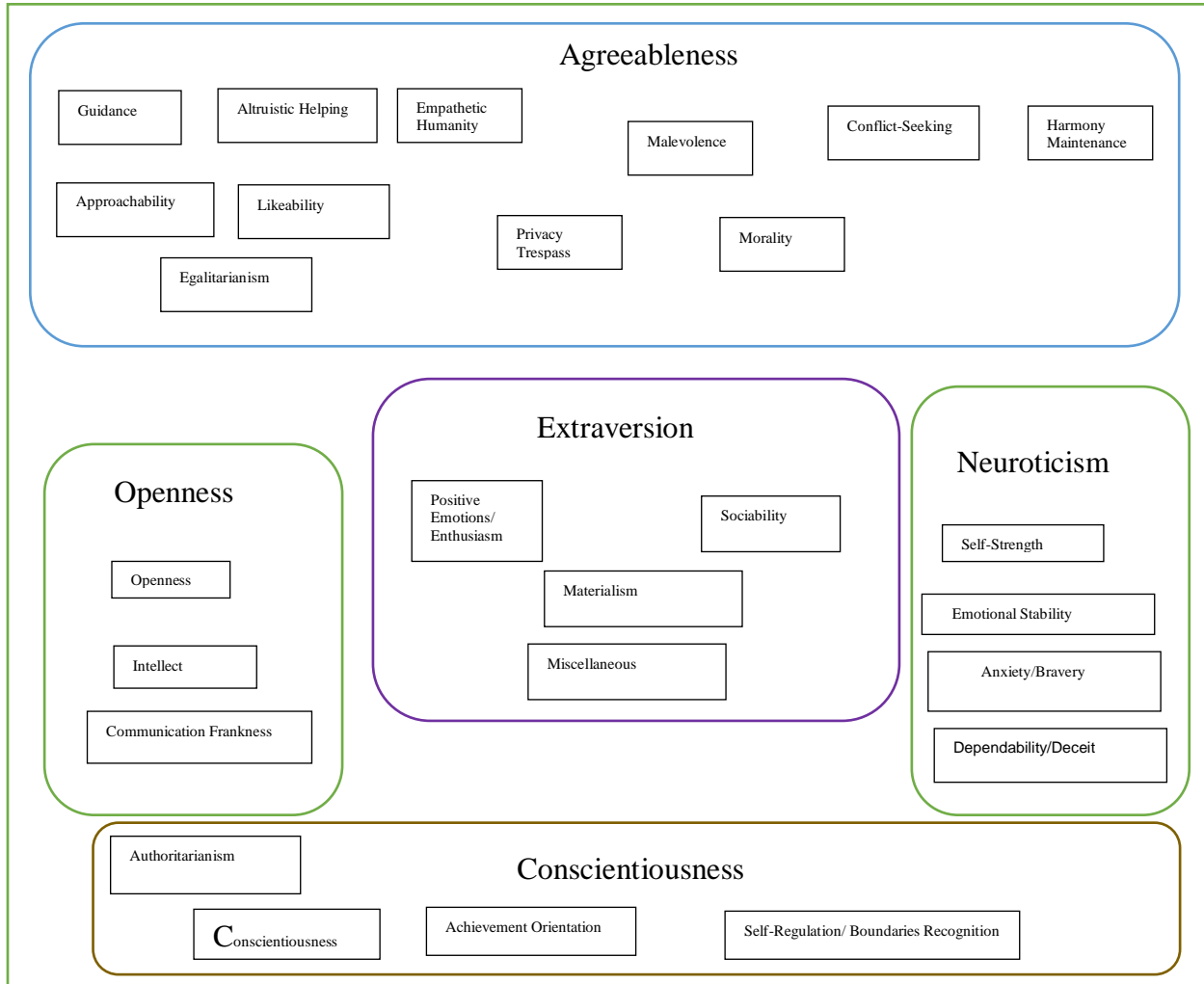


Figure1: Five-Factor Psychological model consisting of 26 cluster personality descriptive terms.

Table1: Pro-Social and Antisocial Traits Categorization

Categories	Traits
Pro-Social	Agreeableness
	Conscientiousness
	Neuroticism
Anti-Social	Extraversion
	Openness

4. Characterization and Analysis

In order to be able to realize the specific objective of this work, we condensed the 26 cluster personality descriptive terms in [5] into the five-factor model as in fig.1. Responses from the selected sample group from each of the tribes regarding the facets that contributes to each of the descriptive terms in the cluster were grouped in order to establish a correlation between these facets in a cluster and their relationship with a particular psychological trait. Also a correlation was also established psychological traits across the tribes. The results obtained are thus discussed:

4.1.1. Correlation between Composite factors that constitute Openness & Openness across the Tribes.

In this section we establish a correlations between the descriptive factors that constitute openness trait and how this trait correlate across the tribes under investigation. It is seen from figure 2, that there is a positive correlation between the pro-social descriptive factors that constitute openness such as: Eager to learn and intelligence, understanding and knowledge and outspoken and emotional sharing; with values of correlation in the range of: 0.95, 0.75 and 0.65 respectively. Similarly, it is observed that there is a positive correlation in terms of the openness traits among the tribes. However, Xhosa and Zulu have a correlation of 0.75, while Swati and Xhosa and Swati and Zulu have a correlation of 0.45 and 0.4 respectively.

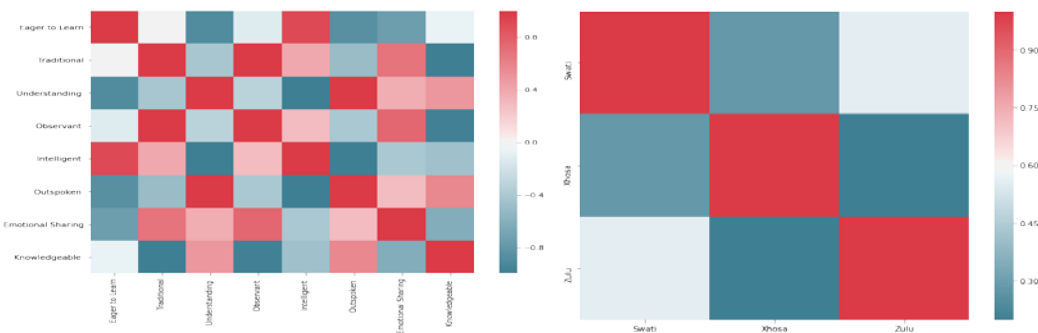


Figure2: Correlation between Openness Composite factors & Openness across the various tribes.

4.1.2. Correlation between Composite factors that constitute Conscientiousness & Conscientiousness across the Tribes.

Also, we determine the correlations between the descriptive factors that constitute conscientiousness trait and how it correlate across the tribes under investigation. It is seen from figure 3, that there is a positive correlation between the pro-social descriptive factors that constitute conscientiousness such as: Achievement orientation and Competence,

Dedication and Discipline and Maturity and Strictness with values of correlation in the range of: 0.85, 0.73 and 0.68 respectively. Similarly, it is observed that there is a positive correlation in terms of the conscientiousness among the tribes. However, Xhosa and Zulu have a correlation of 0.80, while Swati and Xhosa and Swati and Zulu have a correlation of 0.50 and 0.43 respectively

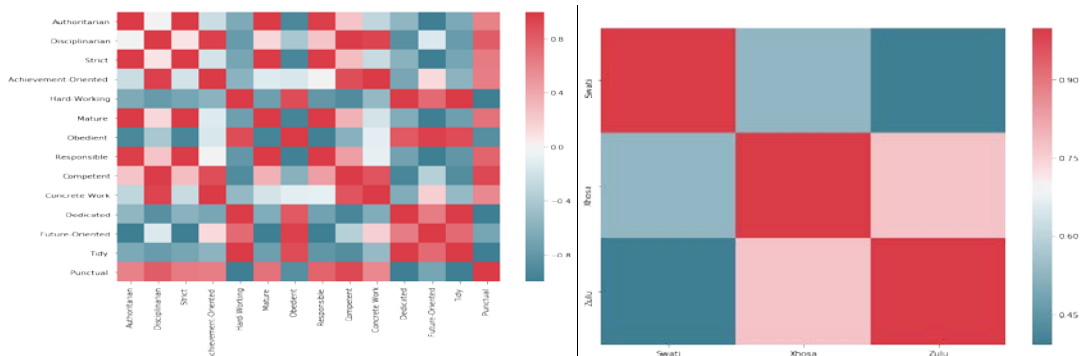


Figure 3: Correlation between Composite factors for Conscientiousness & its correlation across tribes.

4.1.3. Correlation between Composite factors that constitute Extraversion & Extraversion across the Tribes.

Similarly, in this section we establish a connection between the descriptive factors that constitute Extraversion and how this trait relates to the tribes under study. It is seen from figure 4, that there is a positive correlation between the pro-social descriptive factors that constitute openness such as: Social able and humorous, Appreciative and Materialism, Playful and Fashionable; with values of correlation in the range of: 0.98, 0.97 and 0.96 respectively. Similarly, it is observed that there is a positive correlation in terms of the extraversion traits among the tribes. However, Xhosa and Zulu have a correlation of 0.85, while Swati and Xhosa and Swati and Zulu have a correlation of 0.46 and 0.42 respectively.

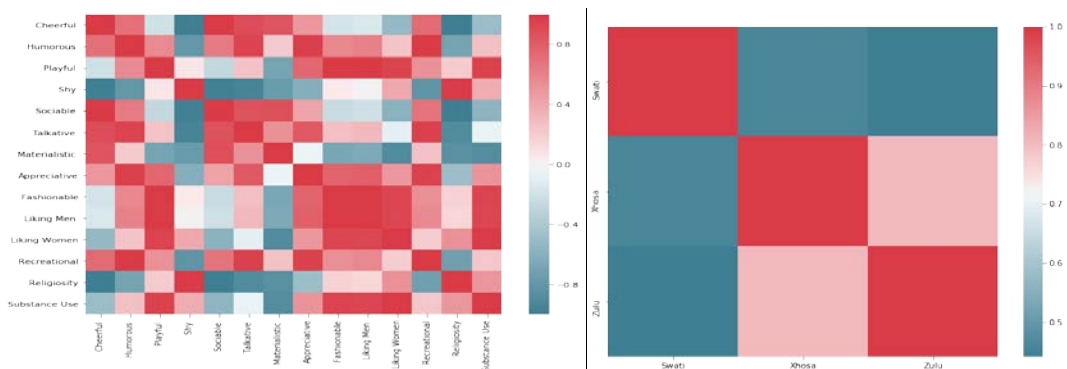


Figure 4: Correlation between Composite factors that constitute Extraversion & Extraversion across the Tribes.

4.1.4. Correlation between Composite factors that constitute Agreeableness & Agreeableness across the Tribes

Furthermore, we establish the correlations between the descriptive factors that constitute Agreeableness and how it agrees across the tribes under investigation. From figure 5, it is seen that there is a positive correlation between the pro-social descriptive factors that constitute conscientiousness such as: Well-Mannered and Attentive, Dedicated

and Helpful, Encouraging and Guiding; with values of correlation in the range of: 0.98, 0.97 and 0.84 respectively. Similarly, it is observed that there is a positive correlation in terms of the Agreeableness among the tribes. However, Xhosa and Zulu have a correlation of 0.46, while Swati and Xhosa and Swati and Zulu have a correlation of 0.57 and 0.42 respectively

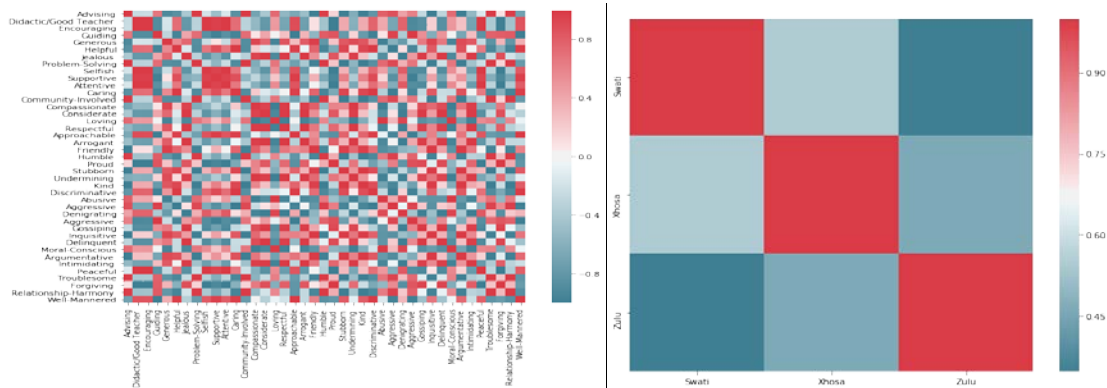


Figure 5: Correlation between Composite factors that constitute Agreeableness & Its variation across the Tribes

4.1.5. Correlation between Composite factors that constitute Neuroticism & Neuroticism across the Tribes.

Finally, in this section we create a connection between the descriptive factors that constitute Extraversion and how this trait relates to the tribes under study. It is seen from figure 4, that there is a positive correlation between the pro-social descriptive factors that constitute openness such as: Even tempered and Sensitivity, Trustworthy and Courageous and Independent and Self respectful; with values of correlation in the range of: 1.00, 0.97 and 0.96 respectively. Also, it is observed that there is a positive correlation in terms of the openness traits among the tribes. However, Xhosa and Zulu have a correlation of 0.51, while Swati and Xhosa and Swati and Zulu have a correlation of 0.66 and 0.76 respectively.

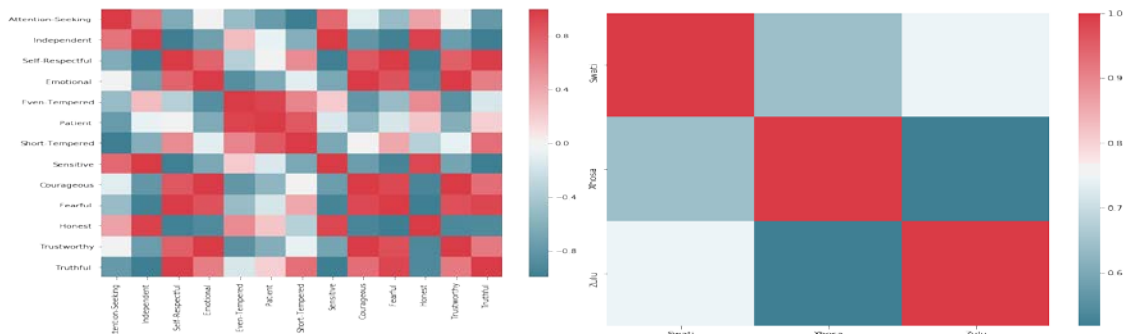


Figure 6: Correlation between Composite factors that constitute Neuroticism & Neuroticism across the Tribes

4.2. Propensity to adopt SISRs by the different Tribes.

In this section, we establish the likelihood of the various tribes to integrate SISRs in their public sphere. To be able to realize this we categorize our data pro-social (Conscientiousness, Neuroticism and Agreeableness) and anti-social

(Openness and Extraversion) trait tendencies for the tribes. The correlation obtained from the descriptive facets for the tribes is thus presented:

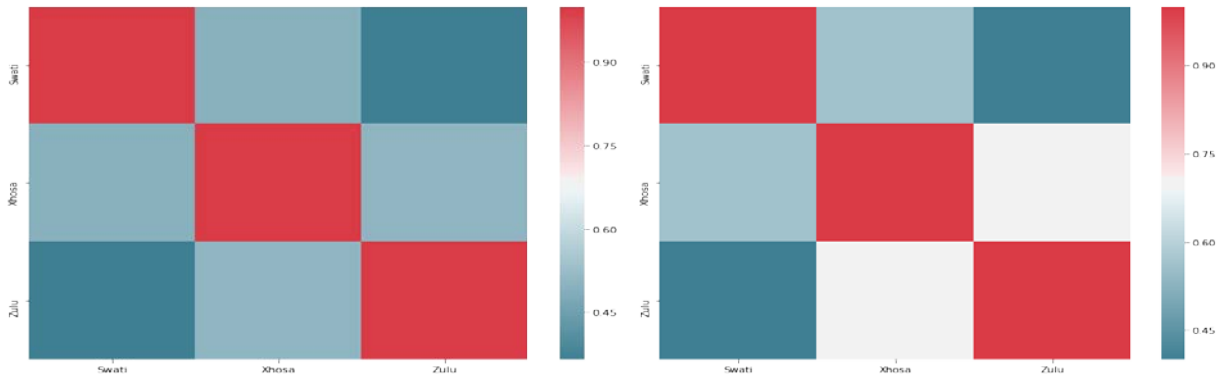


Figure7: Pro-social and anti-social trait tendencies across the tribes

From figure7, it is seen that there is a correlation of about 0.61 between the Xhosa and Zulu tribe while Swazi and Xhosa and Swazi and Zulu have 0.58 and 0.45 respectively for the pro-social traits. Similarly, in term of the anti-social inclination, the Xhosa and Zulu tribe have a correlation of 0.70, while Swazi and Xhosa and Swazi and Zulu have a correlation of 0.50 and 0.3. It could be deduced from this correlation that the Xhosa and Zulu tribes have a higher propensity to integrate SISRs more, as they have a mean pro-social correlational value of 0.58 relative to Swazi/Zulu and Swazi/Xhosa which have mean correlational values of 0.54 and 0.53 respectively as in table 2.

Table2: Correlational values for Pro-social and Antisocial traits for the tribes

categories	Traits	Swazi	Zulu	Xhosa
Pro-Social	Agreeableness	0.40	0.45	0.55
	Conscientiousness	0.40	0.80	0.5
	Neuroticism	0.75	0.50	0.55
Anti-Social	Extraversion	0.40	0.85	0.45
	Openness	0.55	0.25	0.30

5. Conclusion

Haven established that coherent and consistent pro-social attributes, are key factors required for the speedy integration of SISRs in the public sphere of most developing countries, we have been able to identify and characterize these distinct psychological traits of the: Zulu, Xhosa and Swazi people of Southern Africa cultural groups. Result from the correlational analysis shows that: that the Xhosa and Zulu tribe have a higher propensity to integrate SISRs more than the Swati tribe as result in in table1 shows that these tribes have mean pro-social trait values of 0.58 and 0.54 respectively. We strongly believe that if these traits variations of the people in developing countries are taken into consideration while developing SISRs for public environment, it would help improve both the level of SISRs–Human interaction and the extent to which they are integrated in our public sphere.

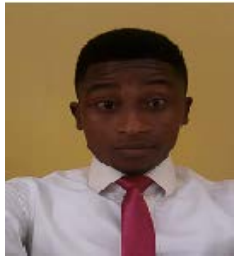
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