



# **A Parallel of Patient Proactivity Behaviours and Attitudes between the Republic of South Africa and the United States of America**

**Christo Bisschoff<sup>1\*</sup>, Sam Fullerton<sup>2,3</sup>**

<sup>1</sup>Work Well Research Unit, NWU School of Business and Governance, North-West University, Potchefstroom, South Africa,

<sup>2</sup>Department of Marketing, Eastern Michigan University, Ypsilanti, Michigan, USA, <sup>3</sup>NWU School of Business and Governance, North-West University, Potchefstroom, South Africa. \*Email: [Christo.bisschoff@nwu.ac.za](mailto:Christo.bisschoff@nwu.ac.za)

## **ABSTRACT**

This study compares patient propensity towards proactive health behaviour of South Africans and Americans. While the health care system of South Africa is severely stretched to deliver medical services, the United States maintains high levels of medical services for their countrymen, hence enjoying a much higher life expectancy. The South Africa data consisted of a snowball social media campaign resulting in 180 responses while the United States data consists of 1031 responses from the general adult population of the country. Some were analysed from the United States. Both groups display a propensity towards proactive health behaviour while differing only on how ill they really are before deciding to see a doctor. The more important factors in South Africa were: Health is my own responsibility, preventative health, and information on illnesses, while the Americans identified: Early diagnosis, preventive treatment and consulting electronic information. Although both groups are sensitive to proactive attitudes and behaviours, there are differences between the latent variables the importance of the variables. The Americans seem to be much more inquisitive, and they seem to gather more information on health issues than the South Africans. The Americans also tend to react faster to arising health issues.

**Keywords:** Proactivity, Health, Healthcare

**JEL Classifications:** I12, I14

## **1. INTRODUCTION**

There have been monumental changes in the health care delivery system across the globe over the past years. Perhaps the most pronounced changes have been the shift in focus toward proactive health care; that is to live a healthier life and to prevent contracting diseases in the first place. In general, these changes have occurred in three distinct areas: Health care delivery; coverage for health care expenses; and lifestyle improvements. Typically the introduction of “Obama-care” in the United States (Patient Protection and Affordable Care Act) and the South African State Health Plan indicates public responsibility towards the health of the citizens in these two countries (US, 2010; Health Systems Trust, 2016).

The South African population, according to the most recent census in 2012, were an estimated 52 million people (WHO, 2015). Life

expectancy is 59.3 years for males and 66.2 for females. South Africa has a World Life Expectancy ranking of 148<sup>th</sup> in the World (WHO, 2017). The top five causes of death among South Africans are HIV/AIDS, stroke, diabetes, heart disease, influenza, and tuberculosis. Tragically, ignorance on proactive health care could improve health and even save lives if these diseases are detected early and treated. Early detection of specifically tuberculosis, diabetes and hypertension-related illnesses can enhance the longevity of the South Africans (WHO, 2017). Total expenditure on health during 2016 was ZAR35 637 million; this represents 8.6% of the gross domestic product (SA, 2016).

Seeing that such a large amount of money is being spent on health care in South Africa, and life expectancy is so short, a study into proactive health behaviour is needed. Looking into patient health, the history of being proactive regarding the health of patients and their attempts to stretch their healthier years are researched.

Another factor is to determine their attitudes and satisfaction levels; if they took precautionary steps towards their health did they experience an improved healthier outcome as a result?

Life expectancy of males is 76.3 years at birth last year while females could expect to live to 81.2 years (Bernstein, 2016). This is slightly down from down from 76.5 for males and 81.3 for females in 2014 (Copeland, 2017). The majority of Americans die from heart disease and cancer. Alzheimer's disease as a cause of death increased from 25.4 to 29.4 deaths per 100,000 people. Insurance premiums for Americans have more than doubled since 2000 and many middle-class families are committing over 20% of the annual income to health care expenditures (Centre for Financing, Access and Cost Trends, 2007).

The Americans have (as expected from a developed country) a significantly better life expectancy than South Africa as developing the country. This harsh reality raises several questions regarding the South Africans. What are their prevailing attitudes regarding proactive behaviours? Do they engage in proactive behaviour in an effort to have a positive impact on their own health? Regarding the attitudes and behaviours, are there underlying dimensions that comprise this environment? Finally, how do the results vary when comparing the United States to South Africa? It is these questions which represent the foundation for this study.

## 2. PROBLEM STATEMENT

Irrespective of the quality of medical service providers aim to provide, patients would choose not become unwell in the first place rather than to deal with treatment and recuperation (Groenewoud, 2015). Additionally, early diagnoses of a number of major life-threatening diseases increase the probability of better health, quality of life, longevity or even cure or prevention of the disease at all. Typical examples are cancer, hypertension, diabetes and high cholesterol levels. Also, early detection also results in more successful treatment and improved quality of life. Fullerton and McCullough (2014) states that American patients engage in proactive behaviour to prevent illnesses completely or to otherwise lessen their severity and cure them if they cannot be avoided. Similarly, a study by Cloete and Bisschoff (2015) shows significant propensity among South Africans regarding proactive health attitudes and behaviours. Both studies indicated that patients believe that they can benefit from the incorporation of proactive behaviours, thereby living healthier and longer while maintaining a better quality of life.

Although both studies (Fullerton and McCullough, 2014; Cloete and Bisschoff, 2015) indicated positive attitudes and behaviours regarding proactivity, these studies did not attempt to identify any latent variables of proactive behaviour. Latent variables can be used successfully in behavioural intervention if correctly identified. Unilever's Pepsodent toothpaste proved that back in 1942 by using the latent variables to overcome consumer resistance against brushing teeth. Although they rejected the clear health benefits of brushing their teeth, consumers eagerly accepted the latent social variable of "white teeth" and a "nice smile;" their behaviour changed and they started brushing their teeth regularly (with Pepsodent) (Duhugg, 2012).

This example accentuates the problem which is that at present only the proactive attitudes and behaviours were studied in both countries according to the individual variables in the questionnaires. No attempt was made in either study to identify the latent variables as drivers of proactive health behaviours. This is important in managing and promoting proactive health and to improve attitudes towards preventative health. Also, important is the relative importance of the latent variables in the two groups from a cross-cultural perspective.

The results could, finally, also provide some information regarding attitudes and behaviours in a developing country such as South Africa in comparison to respondents from a first world country (like the United States of America) where health management has long been a key focus area.

## 3. OBJECTIVES

The primary objective is to draw parallels or otherwise identify points of difference regarding the proactive health behaviours of consumers of their home country's health care system of the Republic of South Africa and those of the United States of America.

The secondary objectives are to:

1. Ensure validity of the measuring instrument in both countries;
2. Compare aggregate mean values;
3. Identify latent variables (factors) within each of the data sets;
4. Draw up demographic profiles of the respondents in both countries; and
5. Discuss similarities and dissimilarities identified in the study.

## 4. PATIENT PROACTIVITY

In the past half-century, global changes took place to enhance productivity and efficiency in every conceivable area. The medical profession and service delivery are not excluded from this phenomenon. There have been noteworthy changes in the health care delivery system worldwide (WHO, 2016). As delineated earlier, these changes can be classified in mostly three identifiable areas, namely:

- Health care and delivery;
- Construction of medical aid packages; and
- The abundance of information.

Medical aides and pharmaceutical producers, as well as various other medical experts who keep consumers much more informed about medicines that are available on the market, can definitely benefit from this study. Also, patients became active readers of medical information, using the Internet and on social networking sites for consumers to gather knowledge and then to apply in an effort to maintain healthier lifestyles for themselves and their families (Hawn, 2009). The more "involved" patient can actively communicate with health care providers and sought additional information from external sources (such as Internet sites and blogs) (Discovery Health, 2017; Proactive Health, 2017). Continuous research in the medical field, reward systems by medical insurance

companies, as well as the explosion of newly available technology such as applications on tablets, androids, and smart cell phones, all contribute to medical information that is only a click away. This educates patients on how to lead a proactive lifestyle). Contrary to a 2009 study that stated that many physicians dread the Internet-informed patient (Schrager and Gaard, 2009), Tan and Goonawardene (2017) found that Internet health information seeking can improve the patient-physician relationship if the patient discusses the information with the physician and patients can engage better in health decisionmaking.

Physicians have grown increasingly interested in patient satisfaction because it has been shown to be related to patient loyalty (Rundle-Thiele and Russell-Bennett, 2010). Given this set of relationships, one can readily understand why there is an increased emphasis on satisfaction. Consequently, an array of factors related to patient satisfaction has been identified and studied, especially in the timeframe following the emergence of for-profit hospitals and an evolving paradigm that some critics argue places too much emphasis on the business side of health care. But whether the focus is on for-profit or non-profit health care organizations, there seems to be a commonly accepted belief that patient satisfaction should be measured and improved (Roberts et al., 2016, p. 381; Welsh et al., 2016; Vierhapper et al., 2017). One of the biggest factors related to patient satisfaction with health care delivery appears to be treatment outcome. If a patient experiences a positive health outcome from a medical treatment or procedure, then that patient tends to feel more satisfied with the health care delivery system (Basta et al., 2016), while a poor outcome from a medical treatment or procedure leads dissatisfied of patient and also those close to the patient, indicating that that patient satisfaction or dissatisfaction is a transferable trait between family members and the patient (Aoun et al., 2017).

Researchers suggest that active communication with patients leads to more proactivity, more positive attitudes by patients (Talen et al., 2011) and displays shared decision-making regarding treatment protocols and treatment (Radina et al., 2011). Physicians at "Hello Health" feel so strongly about the benefits of Internet communications that they regularly "blog" and "tweet" with their patients (Hello Health, 2017). This pioneering medical practice has found that the Internet-savvy American population appreciates the quick interactive feedback, the convenience of the Internet communications, and the low patient-cost of their delivery system. A recent article in Fortune Magazine addressed the issue of "Big Data" and how patients collect their own health data, perhaps using a "biochip," and share it with their physicians (Agus, 2016).

## 5. RESEARCH METHODOLOGY

### 5.1. The Questionnaire

The original proactive health questionnaire was developed by Fullerton and Davidson (1991). This eight item questionnaire for assessing patient proactivity was further developed, and several additional preventive health care behaviours identified by Cangelosi et al. (2009) were added to the questionnaire. Finally, a set of additional items was identified by Fullerton and McCullough

(2014). This revised instrument was presented to a group of non-physician practitioners who work in the health care field and revised per their input. The finalised draft of the questionnaire was presented to a general practitioner (MD) for critical review where after several items were slightly modified, and three items were added. The questionnaire used to collect the data utilised a 6-point Likert scale ranging from strongly agree to strongly disagree to capture respondents' views, regarding their proactive health behaviour. Questions about the respondents' demographic profile were included as the final section of the questionnaire.

For South African use, the Fullerton-McCullough questionnaire was adapted as required so as to fit country-specific influences. The content validity of the questionnaire was confirmed by subjecting it to a quantitative research panel consisting of South African business management academia. The panel's comments were presented and discussed with Fullerton as the lead author of the original questionnaire for comments (Cloete, 2014). In addition, the questionnaire was tested in a pilot study by Cloete and Bisschoff (2015) to ensure that it would perform well in the South African managerial environment. This questionnaire was used to collect the data from the South African respondents while the original questionnaire, as validated by Fullerton and McCullough (2014) for use in the United States of America, was retained to collect the data from the American respondents. This means that minor country-oriented differences do exist between the two versions of the questionnaire used in the two countries but that the two instruments were deemed congruent for the task of collecting the primary data.

### 5.2. Data Collection

The South African data were collected by using a convenience snowball sample estimated to have reached more than 300 managers in Gauteng and North-West Provinces in South Africa. The survey was distributed via the social media platform Facebook. The initial target group was managers, studying part-time towards an executive MBA degree from the North-West University, who reside in the two selected provinces. The questionnaire was shared with them (as Facebook friends) with a request to complete the questionnaire and then to re-share the questionnaire together with the request to a non-student Facebook friend fitting the managerial profile. One reminder message was sent out to increase the response rate. A total of 180 completed questionnaires were received. Since no accurate response rate can be calculated, the sample adequacy was statistically calculated using the Kaiser, Meyer, and Olkin (KMO) test of sample adequacy. Respondents emailed their completed questionnaires to the North-West University's Statistical Consultation Services (Potchefstroom campus) where the data were coded and analysed. Regarding the United States respondents, the data were collected using a self-administered questionnaire. An independent research company Research Now was appointed to collect the data. The company uses consumer panels and an Internet protocol whereby it contacts its members and sends a series of e-mails to panel members who are consistent with the target market - in this case, the aggregate American adult population at least 21 years of age. Those opting to respond were directed to the survey via a link that was embedded within the e-mail. A number of

data controls were initiated to ensure that the results could be generalised to the target population. These controls were: The batch composition of emails was monitored throughout the data collection process, the skewness of data monitoring revealed that female respondents and respondents with graduate degrees started to be overrepresented; the corrective action was taken by adjusting the invitations to the target respondents. Resultantly, the data were deemed to be representative of the American population on several key demographics. A total of 1,031 completed questionnaires comprises the final database (Fullerton and McCullough, 2014).

The data collected for this study reflect proactive health behaviours in the United States and South Africa. However, the United States data are regarded to be generalizable to the aggregate American adult population while the South Africa data aimed to reflect proactive health behaviours of managers in the Gauteng and North-West Provinces in South Africa. This means that the target populations differ in one regard. While the United States data contain a segment of managers which are directly comparable to South Africa managers, they are embedded within the greater data set. Hence, the study aimed not to compare the proactivity of the countries directly, but rather to analyse and identify typical proactive behaviours of groups of individuals in each country, where these behaviours coincide and where they differ from one another. This means that the samples are somewhat more comparable as they represent individuals who likely have the greatest access to the health care delivery systems of the respective countries.

### 5.3. Statistical Analysis

In addition to calculating the sample adequacy by means of the KMO, exploratory factor analysis was used to identify the latent variables of patient proactivity for the two sample groups. A “good” KMO score exceeds 0.60 while a score of 0.70 and higher is regarded to represent a very good sample adequacy (Field, 2009, p. 788). Bartlett’s test of sphericity ( $P \leq 0.01$ ) was employed to ensure that neither of the data sets violates the assumption of sphericity (Laerd, 2015). This means that the F statistic is valid and can be used to determine statistical significance. Hence the data are suitable to employ in multivariate analysis such as exploratory factor analysis (Tabachnick and Fidell, 2014; Mutambara et al., 2015).

Cronbach’s coefficient alpha was used to determine reliability coefficients for the data sets as a whole as well as for each of the identified latent factors. Reliability coefficients where  $\alpha \geq 0.7$  is preferable (Field, 2009) although Cortina (1993) pointed out that a secondary reliability coefficient (especially when analysing scaled data) of  $\alpha \geq 0.57$  could also be regarded as sufficiently reliable. However, low satisfactory levels of reliability ( $\alpha \leq 0.50$ ) do not seriously reduce the usefulness of the data (Field, 2009, p. 675-6). Descriptive statistics were employed to compile the demographic profiles of both respondent groups.

The comparison between the United States and South African data is done according to suggestions by Fields and Bisschoff (2014) where some nominal differences exist in the measurement instruments of two sets of data about a common cause. The

measures used are an assessment of the demographic profiles germane to the two samples, comparison of the factors; variance explained by the factors; points of inflection of the factors; reliability of the factors (and the data sets); determine the goodness of fit of the respective data sets.

## 6. RESULTS

The comparison follows the methodological guidelines suggested by Fields and Bisschoff (2014). These results are presented in the six categories and the same order as delineated above.

### 6.1. Demographic Profile of South Africa

The respondents participating in South Africa indicted good health (89%). Some 10% indicted minor health issues, and 1% had serious health issues. The majority (93.3%) are members of private medical insurance plans as part of their employee fringe benefits. Some 5% of the respondents had no private medical insurance. The remaining 1.7% of the respondents relies on government health programs (these respondents all belonged to the lower 15% income categories. In general, income scales were commonly between ZAR250 000 (US\$19 069)<sup>1</sup> and ZAR750 000 (US\$57 208). Some 10.6% of the South African respondents were high income earners. Another 15.0% opted not to disclose their income. Regarding gender, 67.8% of the respondents were male. Most respondents are married (67.2%), 24.4% are single while the rest of the respondents are either divorced or living with their partners, but not married. Only one respondent was widowed. About sexual orientation 82.2% are heterosexual, 2.2% were homosexual (none were bi-sexual) and 11.7% were not prepared to indicate their sexual orientation. The other 3.9% left the question unanswered. Almost all (91.1%) were employed full time. Some 66.1% had university degrees while an additional 11.9% had completed a management development programme, signifying that the post-school education level of the group is 78.0%. The high education levels were expected given the target population and the data collection process which employed a snowball sample that focussed on managers (demographics as extracted from Cloete, 2014; Bisschoff and Cloete, 2015).

### 6.2. Demographic Profile of the United States

In the American group, slightly more women than men (52.9%) responded (Fullerton and McCullough, 2014). Regarding education report, 40.3% have at least a bachelor’s degree including 13.3% who report the completion of a graduate degree. Some 56.3% are married, 23.9% consider themselves single, with divorcees, widows and separated respondents accounting for 14.2% of the respondents. Almost half of the 1031 respondents are (45.5%) are full-time employed, 11.1% are part-time employed, and 8% are self-employed. Some 6% are unemployed but seek work actively. The respondents are fairly normally distributed regarding their age with 10.3% and 15.3% being younger than 25 and 25-35 years old respectively while 15.5% are over 65 years of age. The majority are thus between the ages of 36 and 65 years old (58.3%). Although 13.0% preferred not to indicate their annual income, the majority of the respondents (29.2%) indicated that their household income fell

<sup>1</sup> At the time of the study the ZAR traded against the US\$ at \$13.11/1.

between US\$25000 and US\$50000 while 21.1% reported earning between US\$50000 and US\$75000 per annum. This is followed by 20.4% earning more than US\$100000 (of which 10% exceeds US\$125000). The respondents, according to the United States 2010 Census, paint a fairly representative picture of the United States population (US Census Bureau, 2010).

### 6.3. Sample Adequacy and Data Suitability

An assessment of the adequacy of the South African sample is required because the response rate could not be calculated. Also, the American data consist of 1031 completed questionnaires. To statistically confirm and compare the sample adequacy of the South African and the American data, the KMO of the American data was calculated. Statistical sample adequacy confirmation not only sets a sound scientific basis for analysis but also provides ease of mind about the results obtained from the data. The KMO values for both the South African and the American data appear in Table 1. In addition, the Table 1 also provides the metric regarding sphericity according to Bartlett's test.

From Table 1 it is clear that the KMO value of the South African data (0.621) exceeds the 0.60 thresholds while the American data exhibits an excellent sampling adequacy value of 0.813. Hence both samples are deemed to be adequate. Therefore the data are suitable for multivariate analyses. Regarding the sphericity, both the American ( $\chi^2_{(300)} = 3364.181$ ;  $P \leq 0.01$ ) and South African results ( $\chi^2_{(253)} = 755.541$ ;  $P \leq 0.01$ ) have values below 0.01 as required; this supports multivariate data analysis such as exploratory factor analysis to identify the factors of proactive health.

### 6.4. Mean Values

The health proactivity of the two groups is compared by calculating the mean values. On the balanced 6-point scale, values above the midpoint of 3.5 indicate a propensity to engagement in proactive behaviour; values below this midpoint indicate an unwillingness to do so. Additionally, significant practical differences between the two groups are calculated using the effect size (Ellis and Steyn, 2003). Significant differences are indicated where  $d \geq 0.80$ . Table 2 shows the behaviour to engage into proactive health care.

From Table 2 both the South African and American respondents indicated a strong propensity to engage in proactive health behaviour with scores more than four on the balanced 6-point scale. The South African group display neutrality towards their satisfaction with their health plan, scoring close to the midpoint (3.57). Some 81% of these respondents had a private health insurance; the cost is almost equally shared between company sponsored and personally paid premiums. The American respondents are neutral having their annual flu shots. In Table 3

the South Africans are even less proactive in their health behaviour regarding flu shots, they score less than three on the scale. Table 3 shows where the respondents have a lower propensity to towards proactive health behaviour.

Both groups regard Facebook as well as Internet chat rooms the least important proactive actions. Interesting though is the fact that South Africans are less prone to use the Internet and medical websites for proactive health purposes (scoring 3.21 on the scale). This is different in the American group where they identified medical websites as a strong proactive activity (scoring 4.21 on the scale). None of the behaviours had a  $d$ -value above 0.80, indicating that the groups do not significantly differ in practice from one another in their propensity not to engage in proactive health activities.

### 6.5. Latent Variables

The exploratory factor analysis (varimax rotation) was used to identify the latent variables. Eigenvalues equal to or exceeding one was extracted according to the Kaiser criterion (Kaiser, 1958). The number of factors was also confirmed using the Parallel Analysis Engine developed by Patil et al. (2008). The variance explained by the factors of both the United States and South Africa are shown in Table 4. Lorenzo-Seva (2013) points out that the cumulative variance explained should exceed 50% to signify a good fit to the data.

The South African data produced eight identifiable factors with eigenvalues exceeding 1.0. These eight latent factors explained a 68.89% of the total variance. Factor 1 explained 16.96% and is the most influential factor. The variance explained decreases with each successive factor; Factor 2 explains 10.22%, Factor 3 explains 8.03 down to Factor 8 which explains 4.44%. In comparison to South Africa, the American data identified seven underlying factors and explained a 56.44% of the total variation. These factors follow a similar trend to that exhibited with the South African data with Factor 1 being the most important, explaining 10.13%, Factor 2 explains 9.73, while the last factor, Factor 7 explains 5.24% of the variance. Both the South African and the United States factors explain more than 50% of the variance to provide a satisfactory fit to the data while both sets of factors clearly indicate the order of importance of the factors. As noted earlier, all the factors of both countries have eigenvalues exceeding 1.0 thereby signifying that the correct number of factors in each case has been extracted (Kaiser, 1958; Brown, 2001, p. 17).

The rotated matrix of the South African factors is shown in Table 5. The criteria, their respective factor loadings, and their affinity to specific factors are also shown in the Table 5 (Appendix A shows the descriptions of the South African criteria in accordance with their criteria numbers).

Although the minimum factor loadings for inclusion was 0.40 (as suggested by Field, 2009), high factors loadings were recorded in all except two of the criteria. These two criteria did not achieve the minimum factor loading. Criterion 2 dealt with the respondent's present health, and Criterion 10 dealt with making a list of questions to ask the doctor when visiting respectively. Noteworthy is the fact that 89% of the respondents indicated that they were in

**Table 1: Sample adequacy and sphericity**

Analysis	RSA	USA
Kaiser-Meyer-Olkin measure of sampling adequacy	0.621	0.813
Bartlett's test of sphericity	755.541	3364.181
Approximately Chi-square	253	300
df	0.000	0.000
Sig.		

**Table 2: Propensity to engage in proactive behaviour**

Proactive behaviour	RSA Mean	US Mean	d value
I believe that I am the person who is primarily responsible for my own health	5.79	5.52	0.48
It is important to recognize the early symptoms and warning signs of disease	5.57	5.30	0.41
I only go to the doctor when I am really sick	5.48	4.38	1.42
It is important to know how to prevent diseases and illnesses from occurring	5.39	5.25	0.21
When a doctor gives me a prescription, I generally have it filled and begin taking it right away	5.31	5.37	0.07
It is important to have a family physician	5.16	5.28	0.12
When a doctor gives me a prescription, I take it as instructed until I run out – even if I feel better before I have taken all of the prescribed medicine	4.67	5.18	0.38
When appropriate, I engage in self-examinations which will help me identify potential health problems	4.43	4.35	0.05
I often read articles from news resources and magazines which contain information on health – and how to maintain my health	4.37	4.21	0.12
I take vitamins as a way of maintaining better health	4.34	4.38	0.02
My current health insurance plan does a good job of meeting my needs	4.34	4.40	0.04
I like to ask my doctors questions; in fact I think it is smart to take a written list of questions when visiting a doctor	4.07	5.01	0.64
I have a physical exam on a relatively regular basis	3.76	4.47	0.49
In general, I am satisfied with the health care system in the United States/South Africa	3.57	***	0.08
I visit Internet sites such as WebMD to get information about illnesses and their cures	***	4.19	0.57
I have a flu shot most years	***	3.61	0.42
Valid N (listwise)	180	1031	

\*\*\* - value not calculated due to differences between questionnaires

**Table 3: Propensity not to engage in proactive behaviour**

Proactive behaviour	RSA Mean	US Mean	d value
In general, I am satisfied with the health care system in the United States/South Africa	***	3.45	0.08
I use herbal supplements that are advertised as a way to improve my health	3.28	2.99	0.17
I visit Internet sites such as WebMD to get information about illnesses and their cures	3.21	***	0.57
I have a flu shot most years	2.88	***	0.42
I have visited Internet chat rooms (and blogs) where specific illnesses are discussed	2.56	2.51	0.03
I sometimes visit social media sites such as Facebook to get information about certain diseases and their treatments	2.54	2.13	0.28
Valid N (listwise)	180	1031	

\*\*\* - value not calculated due to differences between questionnaires

good health when they completed the questionnaire (Criterion 2). The non-importance of Criterion 10 to South African patients is no surprise because subjecting a doctor with a written list of questions is, in addition, to being culturally impolite to the doctor, also not a standard practice in the country. As a result of their low factor loadings, these two criteria were discarded from the analysis. The component matrix also shows that none of the factor loadings are negative. This means that the South African respondents did not deem any criterion to be inversely formulated and that reversed scoring was not required for any item.

The eight South African factors were labelled according to the criteria loading to each factor. Specifically, the factors are labelled: Health is my own responsibility (16.9%), preventative health

(10.2%), information on illnesses (8.0%), really ill before visiting doctor (7.7%), Follow medical advice (6.5%), health plan (5.8%), corrective health actions (5.2%) and state health plan (4.4%).

Factors 5 and 8 consist of single, but high loading criterion (numbers 20 and 23) and have to be retained as factors (the eigenvalues also exceed 1). Criterion 20 pertains to following the doctor's instructions regarding medication, thus dealing with following the doctor's advice and not to stop taking the medication once the patient is feeling better. Criterion 23 deals with the state health plan. Criterion 23, and understandably so, cannot be compared to any of the other criteria because of they all state scenarios of service delivery. Presently South African state medical care is just not able to provide the needed health care. Health institutions in the public sector have suffered poor management, underfunding and deteriorating infrastructure while facing huge medical challenges such as hypertension, tuberculosis and HIV/AIDS (SA, 2016). While access has improved, the quality of health care has fallen. Consequently, whenever affordable, South Africans tend to opt to take out private medical insurance and to not use state medical care.

The seven factors of the United States data appear in Table 6. The factor loadings and the criteria are shown in the Table 6 (Appendix B shows the descriptions of the United States criteria in accordance with their criteria numbers). All the criteria from the United States loaded onto seven factors. In addition, there are also no single-criterion factors (compared to Factors 5 and 8 in the South African data where only one criterion loaded strongly onto a factor). In total, the American data resulted in seven factors being identified. These factor loadings were all above the required 0.40 minimum, and as such, all the criteria were retained in the rotated factor matrix. These seven factors have been labelled accordingly: Early diagnosis, preventive treatment, consulting electronic information, knowledge, health insurance, preventative measures, and health orientated lifestyle.

**Table 4: Total variance explained**

Factors	RSA: Variance explained			USA: Variance explained		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	3.893	16.926	16.926	2.532	10.129	10.129
2	2.353	10.229	27.155	2.432	9.727	19.856
3	1.846	8.028	35.183	2.310	9.240	29.097
4	1.770	7.697	42.879	2.297	9.187	38.283
5	1.488	6.470	49.350	1.636	6.543	44.827
6	1.342	5.836	55.185	1.595	6.379	51.205
7	1.211	5.266	60.452	1.309	5.238	56.443
8	1.021	4.439	64.891	***	***	***

Extraction method: Principal component analysis. \*\*\*Not identified

**Table 5: South Africa's rotated component matrix**

Criteria	Component							
	1	2	3	4	5	6	7	8
6	0.850							
7	0.750							
5	0.612							
8	0.546							
4	0.407							
13		0.785						
11		0.678						
12		0.663						
9		0.637						
15			0.830					
21			0.725					
14			0.672					
3				0.896				
22				0.891				
20					0.829			
1						0.781		
16						0.481		
17						0.406		
19							0.733	
18							0.648	
23								0.883

Extraction method: Principal component analysis. Rotation method: Varimax with Kaiser normalization. Rotation converged in 7 iterations

Factor 1 is the most influential and explains 10.13% of the cumulative variance. However, Criteria 1, 3 and 4 shows strong negative factor loadings. This means that the respondents deem these questions to be reverse scored. Hence they do not agree with these three criteria's formulation. Criterion 1 states that respondents only visit doctors when really sick and do not go for check-ups. Taking into consideration the negative factor loading on this criteria it clearly states that the respondents do go for check-ups and do not only visit a doctor when really ill. Similarly, Criterion 3 indicates that United States respondents do not save medicine for a rainy day, and the respondents indicated that rather than waiting for an appointment to visit their personal physician when feeling sick, an urgent care facility is used (Criterion 4). Although reverse scored criteria do not pose any problems in factor analysis, it requires data correction (inverting these scores) when calculating the reliability of the factor (Field, 2009). None of the other criteria loaded negatively on the United States component matrix.

### 6.6. Reliability of the Data

The reliability of the extracted factors from both South Africa and the United States are indicated by Cronbach's Alpha coefficient in Table 5. The data about negative factor loadings in Factor 1 of the

United States component matrix were reverse-scored as required for reliability analysis (Field, 2009).

The reliability coefficients of the South African factors showed that the first four factors could be regarded as reliable because their Cronbach alpha coefficients exceed the required 0.50 benchmark with ease (although only Factor 4 displays an excellent reliability coefficient exceeding 0.80). The reliability of Factor 5 (state health plan) and Factor 8 (Follow medical advice) could not be calculated due to a single item comprising these factors. Factors 5 (Health plan) and 8 (Corrective health actions), show marginal reliability with coefficients above 0.36 but below the benchmark of 0.50.

The reliability coefficients of the American factors indicate that Factor 2 (Preventative treatment), Factor 3 (Consulting electronic information), Factor 4 (Knowledge) and Factor 6 (Preventative treatment) all exceed the required 0.50 coefficient and can be regarded as reliable factors. Factor 1 (Early diagnosis) and Factor 5 (Health insurance) are somewhat reliable with alpha coefficients of 0.471 and 0.470, respectively. This is marginally below the required coefficient of 0.50. Factor 7 (Health orientated lifestyle) is not a reliable factor as perceived by the United States respondents (Table 7).

Regarding the lower reliability of several factors identified in both the South African and United States data, it is important to note that the factors exhibiting higher alpha coefficients are more likely to be identified again as proactive health factors in a similar research setting (Mutambara et al., 2015; Hamid, 2014). It does not mean that lower reliability factors are less important or less influential to this study than the higher order reliability factors (Imandin et al., 2015) if merely based on the Cronbach alpha coefficients (Kolassa, 2016). Kolassa, in support of other statisticians, continues to state that before unreliable factors are discarded, the negative factor loadings should be corrected, checked to see if any items are correlating negatively with the others (Flom, 2016), item communalities should be accounted for (Field, 2009), and poor item quality should be identified (for example almost everyone give the same answer to a particular criterion) (Epaminondas, 2016).

In this study, the low reliability factors of the South Africa and the United States have been examined according to these guidelines

**Table 6: United states rotated component matrix**

	Component						
	1	2	3	4	5	6	7
1	-0.807						
2	0.718						
3	-0.523						
4	-0.507						
5	0.440						
6	0.403						
7		0.737					
8		0.689					
9		0.570					
10		0.506					
11		0.496					
12			0.760				
13			0.697				
14			0.647				
15				0.711			
16				0.642			
17					0.761		
18					0.674		
19					0.550		
20						0.739	
21						0.610	
22						0.435	
23							0.754
24							0.476
25							0.475

Extraction method: Principal component analysis. Rotation method: Varimax with Kaiser normalization. Rotation converged in 13 iterations

**Table 7: Reliability of the factors**

RSA			USA		
Factor	Alpha	No. items	Factor	Alpha	No. items
1. Health is own responsibility	0.627	5	1. Early diagnosis	0.471*	6
2. Preventative health	0.654	4	2. Preventive treatment	0.583	5
3. Information on illness	0.688	3	3. Consulting electronic information	0.631	3
4. Really ill before visiting doctor	0.847	2	4. Knowledge	0.503	2
5. Follow medical advice	**	1	5. Health insurance	0.470	3
6. Health plan	0.370	3	6. Preventative measures	0.516	3
7. Corrective health actions	0.366	2	7. Health orientated lifestyle	0.280	3
8. State health plan	**	1			
Total data set	0.739	23	Total data set	0.681	25

\*Calculated after correcting the reverse scored United States criteria 1, 3 and 4 (uncorrected  $\alpha = -0.197$ ). \*\*Not calculated due to limited criteria

before discarding any factor. The majority of the communalities are above 0.5, hence acceptable (Field, 2009). There are also no significant negative correlations ( $P \leq 0.05$ ) in either of the correlation matrices, and the data were inspected to check poor item quality. None were found. The three negative factor loadings were recorded in the American Factor 1. As a result of these actions, no factor was discarded from the study based on their reliability coefficients.

The low reliability coefficients in this study heed caution to future researchers because the lower reliability factors could present two future research problems, namely: That these factors are less likely to present themselves; and that these factors cannot be generalised to the population without caution and re-substantiation of the factors per se (Imandin et al., 2015).

## 7. DISCUSSION

The discussion begins by assessing the demographic profiles emanating from the independent samples that reflect the representativeness as well as the comparability of the two samples so as to give credibility to a comparative study of South African and American consumers of their domestic health care systems. Given the wide-spread availability of health care services in the United States, the sampling objective was that of attaining a representative sample of the aggregate adult population. Despite slight over-representation of older and more highly educated consumers, the sample has been deemed to be sufficiently representative of that target population. The sampling objective for South Africa was more targeted. Health care in South Africa is not readily available to a significant portion of the population, and even when available, it is often eschewed by those who might conceivably benefit from it. So, the objective was to draw a sample that was representative, not of the entire South African population but of the segment of the population that is most inclined to be a consumer of the South African health care delivery system. The demographic profile of the South Africa sample seems to support the belief that this sample is indeed a good representation of the target population. Therefore, a comparison of the results from the two countries is appropriate. Again, South Africans are not being compared to Americans per se; rather South African consumers who are participants in the health care delivery system are being compared to their peers in the United States.

Prior to engaging in any cross-cultural comparison, the quality of the sample and the data needed to be confirmed. The two samples

were deemed to be of sufficient quality by virtue of the outcomes associated with the KMO scores and Bartlett's coefficient of sphericity. Therefore the data extracted from the two samples were deemed adequate for multivariate analysis. This leads to the next step. There is a favourable opinion of engaging in proactive health care procedures in both countries. In general, the two groups closely resemble similar proactive health behaviour with the South Africans scoring 4.25 on the balanced 6-point scale versus the Americans' score of 4.31. Both exceed the midpoint indicating a propensity towards proactive health behaviour. That is to say, both groups exhibit a tendency to seek knowledge, to take steps designed to prevent illness and to engage in routine examinations designed to catch potential problems early. This is important as the literature has indicated that patient proactivity results in better outcomes and these better outcomes result in higher levels of satisfaction with the health care delivery system. Employee wellness programs such as drug abuse intervention and smoking cessation assistance are also viewed favourably in both countries. It is logical to conclude that healthier employees result in greater productivity. So, patient proactivity is most assuredly a win-win situation rather than simply a benefit for the patient.

The propensity to engage in information searches is present in both countries. This search has been greatly facilitated by the widespread availability of the World-Wide Web. But not only has the Web spawned basic information searches, but it has also improved the ability to engage in an interactive search. Blogs, chatrooms, and interactive opportunities with health care practitioners are three of these information-gathering tools that have contributed to patient proactivity. These interactive opportunities are again mutually beneficial as the patient feels engaged and involved in a collaborative relationship. Such relationships are being sought by today's health care consumers. And though consumers in both countries seek external information, there is a tendency for American consumers to engage in these searches at a somewhat greater frequency than do the South Africans.

While the primary objective of this research was to examine what might be characterized as a unidimensional phenomenon, it was expected that latent sub-dimensions for patient proactivity would be identified. Such was the case. Neither country exhibited a unidimensional structure regarding proactive health. However, in each country, the factors that were identified explained more than 50% of the total variation within the data set. From a comparative perspective, some similarities and some differences across the two countries surfaced. The South African data produced eight sub-dimensions whereas the American data resulted in the delineation of seven underlying factors. Three of the most important factors, as measured by the percentage of the variation explained, were quite similar. The commonalities were: The wisdom of engaging in proactive health care and early diagnoses; the seeking of information from external sources; and the reliance on a third party payer such as a government program or private insurance. Each of these sub-dimensions included three or more items, and all but one (South African's third party payer) exhibited sufficient reliability with alpha scores falling between 0.470 and 0.688. However, other factors were delineated in each country. For example, a meaningful factor in the South African data is focused on the

belief that one's health is their own responsibility – for better or worse. Interestingly, despite this revelation, the South African data produced a factor designated as “state health plan” that focuses on someone else protecting and ensuring one's health. There was no similar factor identified with the American data. Conversely, the American data identified “consultation of electronic information” whereas there was no equivalent sub-dimension gleaned from the South African data. Another significant difference was the designation of adherence to a healthier lifestyle for the Americans while the South African sub-dimensions stressed delaying doctor visit until very ill, following medical advice, and engaging in corrective actions. Arguably, these are the antithesis of engaging in a healthier lifestyle. These results point to the difficulty that practitioners have when they attempt to take research done in another country and apply it elsewhere.

## 8. SUMMARY

This research has documented some similarities and some differences between the health care consumers of South Africa and the United States. In doing so, it has allowed the conclusion to be drawn that patient proactivity leads to more satisfied consumers of health care. Thus it provides practitioners with insight regarding the need to induce a higher level of proactivity on the part of patients and potential patients.

Consumers in both countries seek more accurate diagnoses and more effective treatment. This is facilitated by proactive efforts to gain additional insight regarding maladies, treatments, and pharmaceuticals. Such is the essence of patient proactivity. The extent to which patients feel like they have some control over their own health heightens their level of satisfaction with the broader health care delivery system. The industry has come to recognize this philosophy. Based on a desire to increase levels of patient satisfaction, more health care practitioners have begun to emphasize best practices which help to accomplish that goal. Those who have not would be advised to do so. Information encourages involvement which conveys control which produces satisfaction on the part of patients who are more likely to experience positive outcomes. This requires a focus on individuals in the marketplace.

Also documented is the reality that patient proactivity is not a unidimensional construct. There are identifiable sub-dimensions within this multi-dimensional phenomenon. And while there are some similarities between the two countries, the reality is that there are varying structures that define proactivity in the eyes of South African and American consumers. This reality gives credence to the need to engage in similar research in countries where patient proactivity is sought. It would be risky to assume that any other culture is congruent to what was documented in either of the two countries in the current study. Furthermore, the original study by Fullerton and Davidson (1991) served as a benchmark, but the follow-up study by Fullerton and McCullough (2014) documented numerous changes in the marketplace. As additional sources of information become available, consumers will become more active participants thus requiring more research to better understand the consumer health care market. And while there is undoubtedly need to perform cross-sectional studies that look at a single country, the

cross-cultural differences delineated in the current study illustrate the need to engage in more comparative studies that cross national boundaries.

The health care market continues to evolve. Practitioners and consumers alike will benefit from the ability to implement strategies that induce greater levels of patient proactivity. The results emanating from this study indicate that consumers will be healthier, they will be more satisfied with the health care delivery system, and the general workplace will become more productive. This means that innovation, consumer research, and the implementation of effective strategies designed to enhance patient proactivity go hand-in-hand. The concepts of theory and practice blend into a cohesive approach to the market and deliver tomorrow's health care products.

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## APPENDICES

### Appendix A: South Africa proactive measuring health criteria

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1. Describes your current health care plan?
  2. How would you describe your health over the past year or so?
  3. I only see a doctor when I am really sick
  4. I believe that I am the person who is primarily responsible for my own health
  5. I often read articles from news resources and magazines which contain information on health – and how to maintain my health
  6. It is important to know how to prevent diseases and illnesses from occurring
  7. It is important to recognize the early symptoms and warning signs of disease
  8. It is important to have a family physician
  9. I have a physical exam on a relatively regular basis
  10. I like to ask my doctors questions; in fact I think it is smart to take a written list of questions when visiting a doctor
  11. I have a flu shot most years
  12. I take vitamins as a way of maintaining better health
  13. I use herbal supplements that are advertised as a way to improve my health
  14. I visit Internet sites such as WebMD to get information about illnesses and their cures
  15. I have visited Internet chat rooms (and blogs) where specific illnesses are discussed
  16. My current health insurance plan does a good job of meeting my needs
  17. A medical aid fund is superior to traditional health care insurance
  18. When a doctor gives me a prescription, I generally have it filled and begin taking it right away
  19. When appropriate, I engage in self-examinations which will help me identify potential health problems
  20. When a doctor gives me a prescription, I take it as instructed until I run out – even if I feel better before I have taken all of the prescribed medicine
  21. I sometimes visit social media sites such as Facebook to get information about certain diseases and their treatments
  22. I only go to the doctor when I am really sick
  23. In general, I am satisfied with the health care system in the South Africa
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### Appendix B: American proactive health measuring criteria

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1. I only see a doctor when I am actually sick, never just for a routine check-up
  2. I have a physical exam on a relatively regular basis
  3. Rather than throw away prescription medicine that I or another member of my household did not use, I prefer to save it and use it when I think it is needed
  4. When I think I'm sick, rather than making an appointment to see a primary care physician, I prefer to go to an Urgent Care facility or a hospital's Emergency Room
  5. It is important to have a regular primary care physician
  6. I like to ask my doctors questions
  7. When a doctor gives me a prescription, I generally have it filled and begin taking it right away
  8. When a doctor gives me a prescription, I take it as instructed - even if I feel better before I have taken all of the prescribed medicine
  9. If I ever noticed a symptom that I thought was associated with a severe disease, rather than wait to see how it progressed, I'd make an appointment to see a doctor as soon as possible. I might even go to the emergency room
  10. I have a flu shot most years
  11. It is important to recognize the early symptoms and warning signs of disease
  12. I have visited Internet chat rooms (and blogs) where specific illnesses and other medical issues are discussed
  13. I visit Internet sites such as WebMD to get information about illnesses, cures, and medicines
  14. I sometimes visit social media sites on the Internet such as Facebook to get information about certain diseases and their treatments
  15. I believe that I am the person who is primarily responsible for my own health
  16. It is important to know how to prevent diseases and illnesses from occurring
  17. In general, I am satisfied with the health care system in the United States
  18. My current health insurance plan does a good job of meeting my needs
  19. An HMO or PPO is superior to a traditional 3<sup>rd</sup> party health care insurance plan
  20. I take vitamins as a way of maintaining better health
  21. I use herbal supplements that are advertised as a way to improve my health
  22. When appropriate, I engage in self-examinations which will help me identify potential health problems
  23. People who stop smoking, exercise regularly, join health clubs, avoid eating at fast food restaurants, maintain a weight consistent with their height and build, avoid processed foods, and avoid excessive consumption of alcohol are generally deemed to be healthy
  24. I often read articles from news sources such as magazines which contain information on health issues - and how to maintain my own health
  25. In general, I support the health care reform law that was passed by Congress last year
-